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Technical Specification

3rd Generation Partnership Project; Technical Specification Group Terminals; User Equipment (UE) conformance specification; Part 1: Protocol conformance specification (3GPP TS 34.123-1 version 3.4.0 Release 1999)

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Contents

Foreword

This Technical Specification (TS) has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

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y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

The present document is the first part of a multi-part conformance specification. TS 34.123-2 (part 2) [11] contains a pro-forma for the Implementation Conformance Statement (ICS). TS 34.123-3 (part 3) [12] contains a detailed and executable description of the test cases written in a standard testing language, TTCN, as defined in ISO/IEC 9646.

For at least a minimum set of services, the prose descriptions of test cases will have a matching detailed test case implemented in TTCN [12].

The minimum set of services are defined as:

- voice calls;
- emergency calls;
- SMS (both Point-to-point and Cell broadcast);
- Circuit Switched data at up to 64 k bits/second;
- fax;

including the underlying layers to support these services.

Release 99 will also include the areas:

- auto-calling restrictions.

The present document may contain descriptions of tests for additional services, but these tests may not have matching TTCN test cases.

The present document will not contain any tests on the USIM, or the interface between the UE and the USIM. These tests are documented elsewhere.

Version 1.0.0 of this specification is intended to be at least 60% complete as judged against its anticipated release 99 contents. Version 3.0.0 is intended to be better that 98% complete as judged against its anticipated release 99 contents. These figures should not be taken as representing test coverage of the release 99 core specifications.

1 Scope

The present document specifies the protocol conformance testing for the 3rd Generation User Equipment (UE).

This is the first part of a multi-part test specification. The following information can be found in this part:

- the overall test structure;
- the test configurations;
- the conformance requirement and reference to the core specifications;
- the test purposes; and
- a brief description of the test procedure, the specific test requirements and short message exchange table.

The following information relevant to testing can be found in accompanying specifications:

- the default setting of the test parameters [9]
- the applicability of each test case [11]

A detailed description of the expected sequence of messages can be found in the 3rd part of this test specification.

The Implementation Conformance Statement (ICS) pro-forma can be found in the 2nd part of this specification.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document in the same Release as the present document.

[1] 3GPP TR 21.905: "3G Vocabulary".

[2] 3GPP TS 23.003: "Numbering, Addressing and Identification".

[3] 3GPP TS 23.022: "Functions related to Mobile Station (MS) in idle mode".

[4] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3".

[5] 3GPP TS 25.214: "FDD; physical layer procedures".

[6] 3GPP TS 25.321: "Medium Access Control (MAC) Protocol Specification".

[7] 3GPP TS 25.322: "Radio Link Control (RLC) Protocol Specification".

[8] 3GPP TS 25.331: "Radio Resource Control (RRC) Protocol Specification".

[9] 3GPP TS 34.108: "Reference Environment for Conformance Testing of 3G user equipment (UE)".

[10] 3GPP TS 34.109: "Logical Test Interface (TDD and FDD)".

[11] 3GPP TS 34.123-2: "Mobile Station (MS) Conformance Specification, Part 2 - ICS".

[12] 3GPP TS 34.123-3: "Mobile Station (MS) Conformance Specification, Part 3 - Abstract Test Suites".

[13] 3GPP TS 11.10: "Mobile Station (MS) Conformance Specification".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 apply, unless specified below.

example: text used to clarify abstract rules by applying them literally.

3.2 Abbreviations

For the purposes of the present document, the abbreviations specified in TR 25.905 apply, with any additional abbreviations specified below:

SS System Simulator

4 Overview

4.1 Test Methodology

4.1.1 Testing of optional functions and procedures

Any function or procedure which is optional, as indicated in this TS , may be subject to a conformance test if it is implemented in the UE.

A declaration by the apparatus supplier (ICS) is used to determine whether an optional function/procedure has been implemented.

4.1.2 Test interfaces and facilities

Detailed descriptions of the UE test interfaces and special facilities for testing are provided in [10].

4.2 Implicit Testing

For some 3GPP signalling and protocol features conformance is not verified explicitly in this TS. This does not imply that correct functioning of these features is not essential, but that these are implicitly tested to a sufficient degree in other tests.

5 Reference Conditions

The reference environments used by all signalling and protocol tests are specified in TS 34.108. Where a test requires an environment that is different, this will be specified in the test itself.

5.1 Generic setup procedures

A set of basic generic procedures for radio resource signalling, and generic setup procedures for layer 3 NAS signalling are described in TS 34.108 Clause 7. These procedures are used in numerous test cases throughout this specification.

6 Idle mode operations

In the following paragraphs some explanatory text is given concerning the nature of the tests in this clause and the general behaviour of the SS is described.

Since the conformance requirements of most of the tests in this clause cannot be tested explicitly, testing is done implicitly by testing the UE behaviour from its responses to the SS.

In some cases, a test is performed in multiple stages in order that the requirements can be tested within the above constraints.

For any UE all the carriers are in its supported band(s) of operation.

Unless otherwise stated in the method of test, in all of the tests of this clause:

- the default values of the system information data fields given in TS 34.108 are used;
- the UE is equipped with a USIM containing default values. The USIM is in the idle updated state in the default location area with a TMSI assigned at the beginning of each test;
- the cells shall be configured such that Squal>0 and Srxlev>0 while applying Qqualmin and Qrxlevmin in Table 6.1. In addition, for an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm (definition of High Quality cell, see TS 25.304, 5.1.2.2).

Three different methods A, B and C are applied in the tests:

Method A:

- the SS is continuously paging the UE on all cells at the start of the test and does not respond to RACH requests from the UE (which causes a cell reselection). Where a test specifies that the UE is not paged on a particular cell, only idle paging is transmitted. This method is similar to the one used in TS 51.010-1, clause 20.

Method B:

- the SS is continuously paging the UE on all cells at the start of the test and responds to RACH requests from the UE with an IMMEDIATE ASSIGNMENT REJECT (GERAN cell) or RRC CONNECTION REJECT (UTRAN cell) message which causes the UE to return to Idle mode. Where a test specifies that the UE is not paged in a particular cell, only idle paging is transmitted

Method C:

- no continuously paging as in method A or B. Normal response to RACH requests so Location Updating and Calls can be done.

Table 6.1: Default values of the system information fields

Parameter	Setting
IMSI attach/detach	Method A, B: Not allowed Method C: Allowed
Intra-frequency cell re-selection indicator	Allowed
Cell_selection_and_reselection_quality_measure	CPICH E_c/N_o
Qqualmin	-20 dB
Qrxlevmin	-115 dBm

It is a UE option whether to indicate access technologies to the user (TS 23.122, 4.4.3.1.2). Therefore, for combined UTRAN/GSM tests, it is indicated in parentheses which access technology shall be indicated to the user if the UE has this capability.

If a parameter is indicated with a *, it means that the parameter is calculated internally in the UE and is only shown for clarification of the test procedure.

The PLMN numbers indicated in Table 6.2 are used in test cases to associate a cell with an MCC and MNC for that cell. If no PLMN is explicitly specified, the default value is PLMN 1.

Table 6.2: Location Area Information (LAI) in System Information type 3 messages broadcast on the BCCH

PLMN	MCC1	MCC2	MCC3	MNC1	MNC2	MNC3	LAC
1	0	0	1	0	1	F	x
2	0	0	2	1	F	F	x
3	0	0	4	2	F	F	x
4	0	0	5	3	F	F	x
5	0	0	6	4	F	F	x
6	0	0	7	5	F	F	x
7	0	0	8	6	F	F	x
8	0	0	9	7	F	F	x
9	0	1	0	0	F	F	x
10	0	1	1	1	F	F	x
11	0	1	2	2	F	F	x
12	0	1	3	3	F	F	x

NOTE: 'x' denotes any value

References: TS 23.122, Annex A and TS 23.003, 2

The test channel numbers indicated in Table 6.3 and 6.4 are used in test cases to associate a cell with a frequency for that cell. The frequencies for GSM and DCS cells in Table 6.4 are identical to those used in TS 51.010-1, clause 26.3.1. The RF signal levels for GSM cells are given in Table 6.4 and for UTRAN cells in TS 34.108, Table 6.1.1. If no channel is explicitly specified, the default value is Test Channel 1.

Table 6.3: UTRA test frequencies

		ITU region 2
Test Channel	UARFCN (uplink)	UARFCN (uplink)
1	9613	9263
2	9663	9313
3	9713	9363
4	9763	9413
5	9813	9463
6	9863	9513

References: TS 34.108, 5.1.1 and TS 34.121, 4

Table 6.4: GSM/DCS test frequencies and levels

	GSM 900		DCS 1 800	
Test Channel	level dBµVemf( )	BCCH ARFCN	level dBµVemf( )	BCCH ARFCN
1	+65	1	+65	520
2	+63	7	+63	580
3	+61	39	+61	610
4	+55	65	+55	702
5	+59	66	+59	703
6	+57	85	+57	830
7	+55	97	+55	885
8	+53	124		

	GSM 450		DCS 480	
Test Channel	level dBμVemf( )	BCCH ARFCN	level dBμVemf( )	BCCH ARFCN
1	+65	259	+65	306
2	+63	261	+63	308
3	+61	267	+61	314
4	+55	268	+55	315
5	+59	281	+59	328
6	+57	288	+57	335
7	+55	291	+55	338
8	+53	293	+53	340

	Multiband 900/1800		PCS 1900	
Test Channel	level dBμVemf( )	BCCH ARFCN	leveldBmVemf( )	BCCH ARFCN
1	+65	520	+65	512
2	+63	7	+63	520
3	+61	39	+61	580
4	+55	702	+55	610
5	+59	66	+59	702
6	+57	85	+57	703
7	+55	885	+55	800
8	+53	124		

	Multiband 450/900		Multiband 480/900	
Test Channel	level dBμVemf( )	BCCH ARFCN	level dBμVemf( )	BCCH ARFCN
1	+65	1	+65	1
2	+63	261	+63	308
3	+61	267	+61	314
4	+55	65	+55	65
5	+59	281	+59	328
6	+57	288	+57	335
7	+55	124	+55	124
8	+53	293	+53	340

	Multiband 450/1800		Multiband 480/1800	
Test Channel	level dBμVemf( )	BCCH ARFCN	level dBμVemf( )	BCCH ARFCN
1	+65	520	+65	520
2	+63	261	+63	308
3	+61	267	+61	314
4	+55	702	+55	702
5	+59	281	+59	328
6	+57	288	+57	335
7	+55	885	+55	885
8	+53	293	+53	340

For testing an E-GSM Mobile station, the BCCH ARFCN of GSM Test Channel 7 at GSM 900 column shall be 985 (instead of 97). For testing an R-GSM Mobile station, the BCCH ARFCN of GSM Test Channel 7 at GSM 900 column shall be 965 (instead of 97).

6.1 In a pure 3GPP environment

6.1.1 PLMN selection and reselection

6.1.1.1 PLMN selection of RPLMN, HPLMN, UPLMN and OPLMN; Manual mode

6.1.1.1.1 Definition

Test to verify that the UE can present the available PLMNs in priority order to the user when asked to do so in manual mode and that the displayed PLMNs can be selected / reselected by the user. Forbidden PLMNs shall also by displayed in the list. If available, the RPLMN shall be selected at switch-on, otherwise the displayed list shall include in priority order HPLMN, User-PLMN and Operator-PLMN. The last priority in the list is “Other PLMN/access technology combinations” which is not included in this test.

Only UTRAN cells and a UE equipped with a USIM with Radio Access Technology fields set to UTRAN are considered.

6.1.1.1.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage,the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

   If successful registration is achieved, the MS indicates the selected PLMN.

   If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Manual Network Selection Mode Procedure:

   The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes "Forbidden PLMNs" and PLMNs which only offer services not supported by the MS.

   If displayed, PLMNs meeting the criteria above are presented in the following order:

   2.1 HPLMN;

   2.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   2.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   2.4 Other PLMN/access technology combinations with received high quality signal in random order;

   2.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the forbidden LAI lists, "forbidden PLMNs for GPRS service" lists and forbidden PLMN lists.

   If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell giving priority to cell with received high quality signal and enter the limited service state.

3. If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode. A PLMN is removed from the "forbidden" list if, after a subsequent manual

selection of that PLMN, there is a successful LR. This list is retained when the MS is switched off or the SIM is removed. The HPLMN shall not be stored on the list of "forbidden PLMNs".

References

1. TS 23.122, 4.4.3.1
2. TS 23.122, 4.4.3.1.2
3. TS 23.122, 3.1

NOTE: TS 31.102 defines the USIM fields

6.1.1.1.3 Test purpose

1. To verify that if available, the RPLMN is selected at switch-on.
2. To verify that in Manual Network Selection Mode Procedure, the UE presents the HPLMN, UPLMN and OPLMN in a prioritized order.
3. To verify that forbidden PLMNs are also displayed in the list.

6.1.1.1.4 Method of test

Initial conditions

The UE is in manual PLMN selection mode.

All Radio Access Technology USIM fields and cells are UTRAN.

Cell	Test Channel	PLMN
Cell 1	1	PLMN 1
Cell 2	2	PLMN 2
Cell 3	3	PLMN 3
Cell 4	4	PLMN 4
Cell 5	5	PLMN 5
Cell 6	6	PLMN 6

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF_{LOCI}		PLMN 1
$EF_{HPLMNwAcT}$	1st	PLMN 2
$EF_{PLMNwAcT}$	1st	PLMN 3
	2nd	PLMN 4
$EF_{OPLMNwAcT}$	1st	PLMN 5
	2nd	PLMN 6
EF_{FPLMN}	PLMN 3	

Test procedure

Method B is applied.

a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE

b) The UE is switched on

c) The SS waits for random access requests from the UE

d) Cell 1 is switched off

e) PLMN 4 shall be selected when the PLMN list is presented

f) The SS waits for random access requests from the UE

g) Cell 4 is switched off

h) PLMN 3 shall be selected when the PLMN list is presented. The SS shall reject the Registration Request from the UE.

i) PLMN 5 shall be selected (the list is already available)

j) The SS waits for random access requests from the UE

k) Cell 5 is switched off

l) PLMN 2 shall be selected when the PLMN list is presented

m) The SS waits for random access requests from the UE

n) Cell 2 is switched off

o) PLMN 6 shall be selected when the PLMN list is presented

p) The SS waits for random access requests from the UE

q) Cell 6 is switched off

6.1.1.1.5 Test Requirements

1) In step c), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN 1.

2) In step e), the list shall be presented. The priority shall be as follows: PLMN 2, PLMN 3, PLMN 4, PLMN 5, PLMN 6.

3) In step f), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN 4.

4) In step h), the list shall be presented. The priority shall be as follows: PLMN 2, PLMN 3, PLMN 5, PLMN 6. After PLMN 3 has been selected, the list shall appear again as the UE cannot perform registration.

6) In step j), the response from the UE shall be on Cell 5. The displayed PLMN shall be PLMN 5.

7) In step l), the list shall be presented. The priority shall be as follows: PLMN 2, PLMN 3, PLMN 6.

8) In step m), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN 2.

9) In step o), the list shall be presented. The priority shall be as follows: PLMN 3, PLMN 6.

10) In step p), the response from the UE shall be on Cell 6. The displayed PLMN shall be PLMN 6.

11) After step q), the UE shall inform that only limited service is possible.

6.1.1.2 PLMN selection of “Other PLMN / access technology combinations”; Manual mode

6.1.1.2.1 Definition

Test to verify that the UE can present the available PLMNs in priority order to the user when asked to do so in manual mode and that the displayed PLMNs can be selected / reselected by the user. Forbidden PLMNs shall also by displayed in the list. In this test are only considered “Other PLMN/access technology combinations” in the priority list.

Only UTRAN cells and a UE equipped with a USIM with Radio Access Technology fields set to UTRAN are considered.

6.1.1.2.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage,the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

   If successful registration is achieved, the MS indicates the selected PLMN.

If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Manual Network Selection Mode Procedure:

   The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes "Forbidden PLMNs" and PLMNs which only offer services not supported by the MS.

   If displayed, PLMNs meeting the criteria above are presented in the following order:

   2.1 HPLMN;

   2.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   2.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   2.4 Other PLMN/access technology combinations with received high quality signal in random order;

   2.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   In 2.5, the MS shall order the PLMN/access technology combinations in order of decreasing signal quality within each access technology. The order between PLMN/access technology combinations with different access technologies is an MS implementation issue.

   The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the forbidden LAI lists, "forbidden PLMNs for GPRS service" lists and forbidden PLMN lists.

   If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell giving priority to cell with received high quality signal and enter the limited service state.

3. If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode. A PLMN is removed from the "forbidden" list if, after a subsequent manual selection of that PLMN, there is a successful LR. This list is retained when the MS is switched off or the SIM is removed. The HPLMN shall not be stored on the list of "forbidden PLMNs".

4. The UE shall scan all RF channels in the UTRA band according to its capabilities to find available PLMNs. On each carrier, the UE shall search for the "strongest" cell (according to the cell search procedures for FDD, see TS 25.214) and read its system information, in order to find out which PLMN the cell belongs to. If UE can read the PLMN identity, the found PLMN is reported to the non-access stratum as a high quality PLMN, provided that the following high quality criterion is fulfilled:

   - For an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm.

   The found PLMNs, which do not fulfil the high quality criterion but the UE has been able to read their PLMN identities, are reported to the non-access stratum as other PLMNs in decreasing CPICH RSCP order for UTRA FDD cells.

References

1. TS 23.122, 4.4.3.1

2. TS 23.122, 4.4.3.1.2

3. TS 23.122, 3.1

4. TS 25.304, 5.1.2.2

NOTE: TS 31.102 defines the USIM fields

6.1.1.2.3 Test purpose

1. To verify that in Manual Network Selection Mode Procedure, the UE presents "Other PLMN/access technology combinations" in a prioritized order according to conformance requirement 2.4 and 2.5.

2. To verify that forbidden PLMNs are also displayed in the list.

6.1.1.2.4 Method of test

Initial conditions

The UE is in manual PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP.

All Radio Access Technology USIM fields and cells are UTRAN.

Cell	CPICH_RSCP [dBm]	High Quality signal	Test Channel	PLMN
Cell 1	-85	Yes	1	PLMN 6
Cell 2	-80	Yes	2	PLMN 7
Cell 3	-80	Yes	3	PLMN 8
Cell 4	-98	No	4	PLMN 9
Cell 5	-101	No	5	PLMN 10
Cell 6	-104	No	6	PLMN 11

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF_{LOCI}		PLMN 1
$EF_{HPLMNwAcT}$	1st	PLMN 2
$EF_{PLMNwAcT}$	1st	PLMN 3
	2nd	PLMN 4
$EF_{OPLMNwAcT}$	1st	PLMN 5
	2nd	PLMN 6
EF_{FPLMN}	PLMN 10	

Test procedure

Method B is applied.

a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE

b) The UE is switched on

c) PLMN 9 shall be selected when the PLMN list is presented

d) The SS waits for random access requests from the UE

e) Cell 4 is switched off

f) PLMN 7 shall be selected when the PLMN list is presented

g) The SS waits for random access requests from the UE

h) Cell 2 is switched off

i) PLMN 6 shall be selected when the PLMN list is presented

j) The SS waits for random access requests from the UE

k) Cell 1 is switched off

l) PLMN 11 shall be selected when the PLMN list is presented

m) The SS waits for random access requests from the UE

n) Cell 6 is switched off

o) PLMN 10 shall be selected when the PLMN list is presented. The SS shall reject the Registration Request from the UE.

p) Cell 5 is switched off

q) PLMN 8 shall be selected (the list is already available)

r) The SS waits for random access requests from the UE

s) Cell 3 is switched off

6.1.1.2.5 Test Requirements

1) In step c), the list shall be presented. The priority shall be as follows: PLMN 6 followed by PLMN 7, PLMN 8 in random order, followed by PLMN 9, PLMN 10, PLMN 11.

2) In step d), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN 9.

3) In step f), the list shall be presented. The priority shall be as follows: PLMN 6 followed by PLMN 7, PLMN 8 in random order, followed by PLMN 10, PLMN 11.

4) In step g), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN 7.

5) In step i), the list shall be presented. The priority shall be as follows: PLMN 6, PLMN 8, PLMN 10, PLMN 11.

6) In step j), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN 6.

7) In step l), the list shall be presented. The priority shall be as follows: PLMN 8, PLMN 10, PLMN 11.

8) In step m), the response from the UE shall be on Cell 6. The displayed PLMN shall be PLMN 11.

9) In step o), the list shall be presented. The priority shall be as follows: PLMN 8, PLMN 10. After PLMN 10 has been selected, the list shall appear again as the UE cannot perform registration.

10) In step q), the list shall be presented and shall only contain PLMN 8.

11) In step r), the UE shall respond on Cell 3. The displayed PLMN shall be PLMN 8.

12) After step s), the UE shall inform that no network is available.

6.1.1.3 PLMN selection; independence of RF level and preferred PLMN; Manual mode

6.1.1.3.1 Definition

Test to verify that in Manual Network Selection Mode, the UE is able to obtain normal service on a PLMN which is neither the better nor a preferred PLMN and that it tries to obtain service on a VPLMN if and only if the user selects it manually.

6.1.1.3.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage,the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

If successful registration is achieved, the MS indicates the selected PLMN.

If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Manual Network Selection Mode Procedure:

   The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes "Forbidden PLMNs" and PLMNs which only offer services not supported by the MS.

   If displayed, PLMNs meeting the criteria above are presented in the following order:

   2.1 HPLMN;

   2.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   2.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   2.4 Other PLMN/access technology combinations with received high quality signal in random order;

   2.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the forbidden LAI lists, "forbidden PLMNs for GPRS service" lists and forbidden PLMN lists.

   If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell giving priority to cell with received high quality signal and enter the limited service state.

References

1. TS 23.122, 4.4.3.1
2. TS 23.122, 4.4.3.1.2

NOTE: TS 31.102 defines the USIM fields

6.1.1.3.3 Test purpose

1. To verify that the selected PLMN at switch-on is the HPLMN
2. To verify that in Manual Network Selection Mode Procedure the UE tries to obtain service on a VPLMN if and only if the user selects it manually
3. To verify that the UE is able to obtain normal service on a PLMN which is neither the better nor a prefered PLMN.

6.1.1.3.4 Method of investigation

Initial conditions

The UE is in manual PLMN selection mode.

“IMSI attach” flag in the BCCH is set to allowed.

Step a-d:

Parameter	Unit	Cell 1	Cell 2	Cell 3
Test Channel		1	2	3
CPICH_Ec/Io	dB	-12	-15	OFF
Qqualmin	dB	-20	-20	-20
Squal*	dB	8	5	-
PLMN		1	2	3

Step e-f:

CPICH_Ec/Io		-12 -> OFF	-15	OFF

Step g-h:

CPICH_Ec/Io		OFF	-15	OFF -> -12

Step i-l:

CPICH_Ec/Io		OFF	-15 -> OFF	-12

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF_{LOCI}		
$EF_{HPLMNwAcT}$	1st	PLMN 1
$EF_{PLMNwAcT}$	1st	PLMN 3

Test procedure

Method C is applied.

a) The SS activates cells 1 and 2.

b) The UE is switched on.

c) PLMN 1 is selected manually

d) The SS waits for random access requests from the UE. A complete Location Update is done.

e) Cell 1 is switched off.

f) The SS waits to see if there is any random access request from the UE

g) Cell 3 is switched on

h) The SS waits to see if there is any random access request from the UE

i) PLMN 2 is selected manually

j) The SS waits for random access requests from the UE. A complete Location Update is done.

k) Cell 2 is switched off

l) The SS waits to see if there is any random access request from the UE

6.1.1.3.5 Test Requirements

1) In step d), there shall be a response on Cell 1. The selected PLMN shall be PLMN 1.

2) In step f), there shall be no response from the UE within 2 min.

3) In step h), there shall be no response from the UE within 2 min.

4) In step j), there shall be a response on Cell 2. The selected PLMN shall be PLMN 2.

5) In step l), there shall be no response from the UE within 2 min.

6.1.1.4 PLMN selection of RPLMN, HPLMN, UPLMN and OPLMN; Automatic mode

6.1.1.4.1 Definition

Test to verify that in Automatic Network Selection Mode, the UE selects PLMNs in a prioritized order. Forbidden PLMNs shall not be selected. If available, the RPLMN shall be selected at switch-on, otherwise the list shall include in priority order HPLMN, User-PLMN and Operator-PLMN. The last priority in the list is “Other PLMN/access technology combinations” which is not included in this test.

Only UTRAN cells and a UE equipped with a USIM with Radio Access Technology fields set to UTRAN are considered.

6.1.1.4.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage,the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

   If successful registration is achieved, the MS indicates the selected PLMN.

   If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Automatic Network Selection Mode Procedure:

   The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

   2.1 HPLMN (if not previously selected);

   2.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order)

   2.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order)

   2.4 Other PLMN/access technology combinations with received high quality signal in random order

   2.5 Other PLMN/access technology combinations in order of decreasing signal quality

   If successful registration is achieved, the MS indicates the selected PLMN.

   If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

   If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in a forbidden LAI list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

3. If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode. A PLMN is removed from the "forbidden" list if, after a subsequent manual selection of that PLMN, there is a successful LR. This list is retained when the MS is switched off or the SIM is removed. The HPLMN shall not be stored on the list of "forbidden PLMNs".

References

1. TS 23.122, 4.4.3.1
2. TS 23.122, 4.4.3.1.1
3. TS 23.122, 3.1

NOTE: TS 31.102 defines the USIM fields

6.1.1.4.3 Test purpose

1. To verify that if available, the RPLMN is selected at switch-on.
2. To verify that in Automatic Network Selection Mode Procedure, the UE selects the RPLMN, HPLMN, UPLMN and OPLMN in a prioritized order.
3. To verify that forbidden PLMNs are not selected.

6.1.1.4.4 Method of test

Initial conditions

The UE is in automatic PLMN selection mode.

All Radio Access Technology USIM fields and cells are UTRAN.

Cell	Test Channel	PLMN
Cell 1	1	PLMN 1
Cell 2	2	PLMN 2
Cell 3	3	PLMN 3
Cell 4	4	PLMN 4
Cell 5	5	PLMN 5
Cell 6	6	PLMN 6

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF_{LOCI}		PLMN 1
$EF_{HPLMNwAcT}$	1st	PLMN 2
$EF_{PLMNwAcT}$	1st	PLMN 3
	2nd	PLMN 4
$EF_{OPLMNwAcT}$	1st	PLMN 5
	2nd	PLMN 6
EF_{FPLMN}	PLMN 3	

Test procedure

Method B is applied.

a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE

b) The UE is switched on

c) The SS waits for random access requests from the UE

d) Cell 1 is switched off

e) The SS waits for random access requests from the UE

f) Cell 2 is switched off

g) The SS waits for random access requests from the UE

i) Cell 4 is switched off

j) The SS waits for random access requests from the UE

k) Cell 5 is switched off

l) The SS waits for random access requests from the UE

m) Cell 6 is switched off

6.1.1.4.5 Test Requirements

1) In step c), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN 1.

2) In step e), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN 2.

3) In step g), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN 4.

4) In step j), the response from the UE shall be on Cell 5. The displayed PLMN shall be PLMN 5.

5) In step l), the response from the UE shall be on Cell 6. The displayed PLMN shall be PLMN 6.

6) After step m), the UE shall inform that only limited service is possible

6.1.1.5 PLMN selection of “Other PLMN / access technology combinations”; Automatic mode

6.1.1.5.1 Definition

Test to verify that in Automatic Network Selection Mode, the UE selects PLMNs in a prioritized order. Forbidden PLMNs shall not be selected. In this test are only considered “Other PLMN/access technology combinations” in the priority list.

Only UTRAN cells and a UE equipped with a USIM with Radio Access Technology fields set to UTRAN are considered.

6.1.1.5.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage,the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

   If successful registration is achieved, the MS indicates the selected PLMN.

   If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Automatic Network Selection Mode Procedure:

   The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

   2.1 HPLMN (if not previously selected);

   2.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order)

   2.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order)

   2.4 Other PLMN/access technology combinations with received high quality signal in random order

   2.5 Other PLMN/access technology combinations in order of decreasing signal quality

   In 2.5, the MS shall order the PLMN/access technology combinations in order of decreasing signal quality within each access technology. The order between PLMN/access technology combinations with different access technologies is an MS implementation issue.

   If successful registration is achieved, the MS indicates the selected PLMN.

   If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in a forbidden LAI list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

3. If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode. A PLMN is removed from the "forbidden" list if, after a subsequent manual selection of that PLMN, there is a successful LR. This list is retained when the MS is switched off or the SIM is removed. The HPLMN shall not be stored on the list of "forbidden PLMNs".

4. The UE shall scan all RF channels in the UTRA band according to its capabilities to find available PLMNs. On each carrier, the UE shall search for the "strongest" cell (according to the cell search procedures for FDD, see TS 25.214) and read its system information, in order to find out which PLMN the cell belongs to. If UE can read the PLMN identity, the found PLMN is reported to the non-access stratum as a high quality PLMN, provided that the following high quality criterion is fulfilled:

   - For an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm.

   The found PLMNs, which do not fulfil the high quality criterion but the UE has been able to read their PLMN identities, are reported to the non-access stratum as other PLMNs in decreasing CPICH RSCP order for UTRA FDD cells.

References

1. TS 23.122, 4.4.3.1
2. TS 23.122, 4.4.3.1.1
3. TS 23.122, 3.1
4. TS 25.304, 5.1.2.2

NOTE: TS 31.102 defines the USIM fields

6.1.1.5.3 Test purpose

1. To verify that in Automatic Network Selection Mode Procedure, the UE selects “Other PLMN/access technology combinations” in a prioritized order according to conformance requirement 2.4 and 2.5.
2. To verify that forbidden PLMNs are not selected.

6.1.1.5.4 Method of test

Initial conditions

The UE is in automatic PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP.

All Radio Access Technology USIM fields and cells are UTRAN.

Cell	CPICH_RSCP [dBm]	High Quality signal	Test Channel	PLMN
Cell 1	-85	Yes	1	PLMN 6
Cell 2	-80	Yes	2	PLMN 7
Cell 3	-80	Yes	3	PLMN 8
Cell 4	-98	No	4	PLMN 9
Cell 5	-101	No	5	PLMN 10
Cell 6	-104	No	6	PLMN 11

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF_{LOCI}		PLMN 1
$EF_{HPLMNwAcT}$	1st	PLMN 2
$EF_{PLMNwAcT}$	1st	PLMN 3
	2nd	PLMN 4
$EF_{OPLMNwAcT}$	1st	PLMN 5
	2nd	PLMN 6
EF_{FPLMN}	PLMN 10	

Test procedure

Method B is applied.

a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE

b) The UE is switched on

c) The SS waits for random access requests from the UE

d) Cell 1 is switched off

e) The SS waits for random access requests from the UE

f) The cell associated to the currently shown PLMN shall be switched off

g) The SS waits for random access requests from the UE

h) The cell associated to the currently shown PLMN shall be switched off

i) The SS waits for random access requests from the UE

j) Cell 4 is switched off

k) The SS waits for random access requests from the UE

l) Cell 6 is switched off

6.1.1.5.5 Test Requirements

1) In step c), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN 6.

2) In step e), the response from the UE shall be on either Cell 2 or 3. The displayed PLMN shall be the one associated with the cell on which the response was received.

3) In step g), the response from the UE shall be on either Cell 2 or 3 (excluding the cell in step 2). The displayed PLMN shall be the one associated with the cell on which the response was received.

4) In step i), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN 9.

5) In step k), the response from the UE shall be on Cell 6. The displayed PLMN shall be PLMN 11.

6) After step l), the UE shall inform that only limited service is possible

6.1.1.6 UE will transmit only if PLMN available

6.1.1.6.1 Definition

Test to verify that the UE will not generate any RF output if no PLMN is available.

6.1.1.6.2 Conformance requirement

[FFS: Currently no requirements exist in core specs.]

6.1.1.6.3 Test purpose

1. To verify that the UE does not give any “Service indication” when no PLMN is available
2. To verify that the UE will not generate any RF output when no PLMN is available

6.1.1.6.4 Method of test

Initial conditions

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec/Io	dB	-13	-15	-17
Qqualmin	dB	-20	-20	-20
Squal*	dB	7	5	3

Test procedure

Method C is applied.

a) The SS activates the cells 1-3 and monitors them for random access requests from the UE

b) The UE is switched on.

c) The SS waits for random access request from the UE

d) Cells 1-3 are switched off

e) The SS shall wait 20 sec. to allow the UE to detect the loss of cells

f) By MMI, an attempt to originate a call is made

g) By MMI, an attempt to originate an emergency call is made (only if UE supports speech)

6.1.1.6.5 Test Requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step f) and g), the UE shall not produce any RF output, neither give any “service indication” within 2 min.

6.1.2 Cell selection and reselection

6.1.2.1 Cell reselection

6.1.2.1.1 Definition

Test to verify that the UE performs the cell reselection correctly for intra/inter-frequency cells if the serving cell becomes barred or S<0.

6.1.2.1.2 Conformance requirement

1. The UE shall evaluate the cell reselection criteria based on radio measurements, and if a better cell is found that cell is selected, procedure *Cell reselection*. The change of cell may imply a change of radio access technology.

2. A "suitable cell" is a cell on which the UE may camp on to obtain normal service. Such a cell shall fulfil all the following requirements.

   2.1 The cell is part of the selected PLMN or, for cell reselection only, of a PLMN considered as equivalent by the UE according to the information provided by the NAS

   2.2 The cell is not barred

   2.3 The cell is not part of the list of "forbidden LAs for regional provision of service"

   2.4 The cell selection criteria are fulfilled

   2.5 The SoLSA criteria are fulfilled [SoLSA support is not in the current release]

3. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:

   3.1 UE internal triggers, so as to meet performance as specified in TS 25.133

   3.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified

4. Cell Reselection Criteria:

   4.1 The UE shall perform ranking of all cells that fulfil the S criterion

   4.2 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If a FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell

   4.3 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval Treselection.

   4.4 The cell-ranking criterion R is derived from Q, Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME. However, $TEMP\_OFFSET_n$ and $PENALTY\_TIME_n$ are only applicable if the usage of HCS is indicated in system information.

5. Non-suitable cells (Squal > 0 and Srxlev > 0):

   If the best cell according to cell reselection criteria does not fulfil all requirements for a suitable cell, that cell, together with all cells on that frequency shall be removed as candidate for cell re-selection

6. When cell status "barred" is indicated, the UE shall select another cell according to the following rule:

   6.1 If the "Intra-frequency cell re-selection indicator" IE in Cell Access Restriction IE is set to value "allowed", the UE may select another cell on the same frequency if selection/re-selection criteria are fulfilled.

   6.2 If the "Intra-frequency cell re-selection indicator" IE is set to "not allowed" the UE shall not re-select a cell on the same frequency as the barred cell. For emergency call, the Intra-frequency cell re-selection indicator IE" shall be ignored, i.e. even if it is set to "not allowed" the UE may select another intra-frequency cell.

References

1. TS 25.304, 5.2.2
2. TS 25.304, 4.3
3. TS 25.304, 5.2.5.1
4. TS 25.304, 5.2.6.1.4
5. TS 25.304, 5.2.6.1.3
6. TS 25.304, 5.3.1.1

6.1.2.1.3 Test purpose

1. To verify that the UE performs cell reselection on the following occasions:

   1.1 Serving cell becomes barred

   1.2 S<0 for serving cell

2. To verify conformance requirement 5 and 6

NOTE: Reselection triggered by the cell becoming a part of a forbidden registration area is tested in clause 9.4.2.3 “Location updating / rejected / location area not allowed” and 9.4.2.4 “Location updating / rejected / roaming not allowed in this LA”

6.1.2.1.4 Method of test

Initial conditions

Treselection, Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME are not used, so the cell-ranking criterion R equals CPICH_Ec/Io.

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
Test Channel		1	1	2
CPICH_Ec/Io	dB	-13	-15	-17
Qqualmin	dB	-20	-20	-20
Squal*	dB	7	5	3
Intra-frequency cell re-selection indicator		Not Allowed	Not Allowed	Not Allowed
CellBarred		0	0	0

Step d-f:

CellBarred		0->1	0	0

Step g-h:

Intra-frequency cell re-selection indicator		Allowed	Allowed	Allowed
CellBarred		0->1	0	0

Step i:

Qqualmin	dB	-20 -> -10	-20	-20
Squal*	dB	7 -> -3	5	3

Test procedure

Method B is applied.

a) The SS activates Cell 1-3 and monitors them for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access requests from the UE

d) The SS sets Cell 1 to be barred

e) The SS waits for random access requests from the UE

f) The stored information cell selection list in the UE is deleted and the UE is switched off.

g) Step a-e) is repeated except that “Intra-frequency cell re-selection indicator” is set to “Allowed”

h) The stored information cell selection list in the UE is deleted and the UE is switched off.

i) Step a-e) is repeated except that in step d), Qqualmin is increased to -10 dB, so S will become negative instead of the cell being barred while maintaining the same RF level.

6.1.2.1.5 Test requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), the UE shall respond on Cell 3

3) In step g), the UE shall respond on Cell 2

4) In step i), the UE shall respond on Cell 2

6.1.2.2 Cell reselection using Qhyst, Qoffset and Treselection

6.1.2.2.1 Definition

Test to verify that the UE performs the cell reselection correctly if system information parameters Qoffset, Qhyst and Treselection are applied for non-hierarchical cell structures. TEMP_OFFSET and PENALTY_TIME are only applicable when HCS is applied and are tested in clause 6.1.2.4 and 6.1.2.5.

6.1.2.2.2 Conformance requirement

1. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:

   1.1 UE internal triggers, so as to meet performance as specified in TS 25.133

   1.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified

2. Cell Reselection Criteria:

   2.1 The UE shall perform ranking of all cells that fulfil the S criterion

   2.2 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If a FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell

   2.3 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval Treselection.

   2.4 The cell-ranking criterion R is derived from Q, Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME. However, TEMP_OFFSETn and PENALTY_TIMEn are only applicable if the usage of HCS is indicated in system information.

References

1. TS 25.304, 5.2.5.1

2. TS 25.304, 5.2.6.1.4

6.1.2.2.3 Test purpose

1. To verify that the UE calculates R from Qhyst and Qoffset and that the modification of these parameters on the BCCH triggers the cell reselection evaluation process. TEMP_OFFSET and PENALTY_TIME are not applied.

2. To verify that the UE reselects the new cell, if the cell reselection criteria are fulfilled during a time interval Treselection.

6.1.2.2.4 Method of test

Initial conditions

Step a-c:

Parameter	Unit	Cell 1	Cell 2
CPICH_Ec/Io	dB	-12	-15
Qqualmin	dB	-20	-20
Squal*	dB	8	5
$Qhyst2_s$	dB	10	
R_s*	dB	-2	
R_n*	dB	-15	

Step d-e:

CPICH_Ec/Io	dB	-12 -> -15	-15 -> -12
R_s*	dB	-2 -> -5	
R_n*	dB	-15 -> -12	

Step f-g:

$Qhyst2_s$	dB	10 -> 0	
R_s*	dB	-5 -> -15	
R_n*	dB	-12	

Step h-j:

CPICH_Ec/Io	dB	-12	-15
$Qoffset2_{s,n}$	dB	10	
R_s*	dB	-12	
R_n*	dB	-25	

Step k-l:

CPICH_Ec/Io	dB	-12 -> -15	-15 -> -12
R_s*	dB	-12 -> -15	
R_n*	dB	-25 -> -22	

Step m-n:

$Qoffset2_{s,n}$	dB	10 -> 0	
R_s*	dB	-15	
R_n*	dB	-22 -> -12	

Step o-p:

$Treselection_s$	s	30	

Test procedure

Method B is applied.

a) The SS activates Cell 1 and 2 and monitors them for random access requests from the UE.

b) The UE is switched on.

c) The SS waits to see if there is any random access requests from the UE

d) The SS changes the level of Cell 1 and 2

e) The SS waits for random access requests from the UE

f) The SS resets Qhyst for Cell 1

g) The SS waits for random access requests from the UE

h) The stored information cell selection list in the UE is deleted and the UE is switched off

i) The UE is switched on.

j) The SS waits to see if there is any random access requests from the UE

k) The SS changes the level of Cell 1 and 2

l) The SS waits for random access requests from the UE

m) The SS resets Qoffset for Cell 1

n) The SS waits for random access requests from the UE

o) Step h-n) is repeated except that Treselection is 30 sec.

6.1.2.2.5 Test Requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), the UE shall keep responding on Cell 1

3) In step g), the UE shall respond on Cell 2

4) In step j), the UE shall select a cell to camp on and eventually make a reselection to Cell 1

5) In step l), the UE shall keep responding on Cell 1

6) In step n), the UE shall respond on Cell 2

7) In step o), the UE shall respond as in previous steps except that with the reselection to Cell 2, there shall be no response from the UE on Cell 2 within [FFS: Treselection taken into account] seconds of broadcasting Qoffset but the UE shall respond on Cell 2 within [FFS: Treselection taken into account] seconds

6.1.2.3 HCS Cell reselection

6.1.2.3.1 Definition

Test to verify that the UE performs the cell reselection correctly for hierarchical cell structures. This shall be done according to the HCS priority, the received signal quality value Q and the quality level threshold criterion H.

6.1.2.3.2 Conformance requirement

1. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:

   1.1 UE internal triggers, so as to meet performance as specified in TS 25.133

   1.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified

2. Cell Reselection Criteria for hierarchical cells:

   2.1 The quality level threshold criterion H for hierarchical cell structures is used to determine whether prioritised ranking according to hierarchical cell re-selection rules shall apply, and is calculated from the Q, Qhcs, TEMP_OFFSET and PENALTY_TIME parameters.

   2.2 The UE shall perform ranking of all cells that fulfil the S criterion among all cells that have the highest HCS_PRIO among those cells that fulfil the criterion H >= 0.

   2.3 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If a FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell

   2.4 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval Treselection.

   2.5 The cell-ranking criterion R is derived from Q, Qhyst, Qoffset, TEMP_OFFSET, PENALTY_TIME.

References

1. TS 25.304, 5.2.2

2. TS 25.304, 5.2.6.1.4

6.1.2.3.3 Test purpose

1. Verify that the UE ignores cells with H<0 for reselection and that H is calculated from Qhcs. The modification of this parameter on the BCCH shall trigger the cell reselection evaluation process.

2. Verify that the UE ranks cells based on both HCS priority and R. Qhyst, Qoffset, TEMP_OFFSET, PENALTY_TIME and Treselection are not applied so R equals CPICH_Ec/Io

6.1.2.3.4 Method of test

Initial conditions

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec/Io	dB	-13	-15	-17
Qqualmin	dB	-20	-20	-20
Squal*	dB	7	5	3
HCS priority		6	7	7
$Qhcs_s$	dB	-30	-10	-10
H_s*	dB	17	-5	-7

Step d-e:

$Qhcs_s$	dB	-30	-10	-10 -> -30
H_s*	dB	17	-5	-7 -> 13

Step f-g:

$Qhcs_s$	dB	-30	-10 -> -30	-30
H_s*	dB	17	-5 -> 15	13

Test procedure

Method B is applied.

a) The SS activates the cells 1-3 and monitors them for random access requests from the UE

b) The UE is switched on.

c) The SS waits for random access requests from the UE

d) The SS changes Qhcs for Cell 3

e) The SS waits for random access requests from the UE

f) The SS changes Qhcs for Cell 2

g) The SS waits for random access requests from the UE

6.1.2.3.5 Test requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), the UE shall respond on Cell 3

3) In step g), the UE shall respond on Cell 2

6.1.2.4 HCS Cell reselection using reselection timing parameters for the H criterion

6.1.2.4.1 Definition

Test to verify that the UE performs the cell reselection correctly for hierarchical cell structures using TEMP_OFFSET and PENALTY_TIME applied to the H criterion.

6.1.2.4.2 Conformance requirement

1. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:

   1.1 UE internal triggers, so as to meet performance as specified in TS 25.133

   1.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified

2. Cell Reselection Criteria for hierarchical cells:

   2.1 The quality level threshold criterion H for hierarchical cell structures is used to determine whether prioritised ranking according to hierarchical cell re-selection rules shall apply, and is calculated from the Q, Qhcs, TEMP_OFFSET and PENALTY_TIME parameters.

   2.2 The UE shall perform ranking of all cells that fulfil the S criterion among all cells that have the highest HCS_PRIO among those cells that fulfil the criterion H >= 0.

   2.3 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If a FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell

   2.4 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval Treselection.

   2.5 The cell-ranking criterion R is derived from Q, Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME.

3. $TEMP\_OFFSET_n$ applies an offset to the H criteria for the duration of $PENALTY\_TIME_n$ after the timer T_n has started for that cell. T_n shall be started from zero when $Q_{meas\_LEV,n} > Qhcs_n$. TEMP_OFFSET is only applied to the H criteria if the cells have different HCS priorities.

References

1. TS 25.304, 5.2.2

2,3. TS 25.304, 5.2.6.1.4

6.1.2.4.3 Test purpose

1. Verify that TEMP_OFFSET is applied to the H criterion for a period of PENALTY_TIME and that the timer is started when $Q_{meas\_LEV,n} > Qhcs_n$ if serving and neighbour cell have different HCS priorities.

6.1.2.4.4 Method of test

Initial conditions

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec/Io	dB	-13	-17	-17
Qqualmin	dB	-20	-20	-20
Squal*	dB	7	3	3
HCS priority		2	4	7
$Qhcs_s$	dB	-20		
$Qhcs_{n=2}$	dB	-10		
$Qhcs_{n=3}$	dB	-10		
$TEMP\_OFFSET2_{n=2}$	dB	10		
$TEMP\_OFFSET2_{n=3}$	dB	10		
H_s*	dB	7		
$H_{n=2}$*	dB	-7		
$H_{n=3}$*	dB	-7		
$PENALTY\_TIME_{n=2}$	sec	40		
$PENALTY\_TIME_{n=3}$	sec	60		

Step d-e:

$Qhcs_s$	dB	-20		
$Qhcs_{n=2}$	dB	-10 -> -20		
$Qhcs_{n=3}$	dB	-10 -> -20		
H_s*	dB	7		
$H_{n=2}$*	dB	-7 -> 3 (after 40 sec)		
$H_{n=3}$*	dB	-7 -> 3 (after 60 sec)		

Test procedure

Method B is applied.

a) The SS activates the cells 1-3 and monitors them for random access requests from the UE

b) The UE is switched on.

c) The SS waits for random access requests from the UE

d) The SS changes Qhcs for Cell 2 and 3

e) The SS waits for random access requests from the UE

6.1.2.4.5 Test requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), there shall be no response from the UE on Cell 2 within 38 seconds of changing the parameters but the UE shall respond on Cell 2 within 61 seconds. The response on Cell 2 shall be before any response on Cell 3.

NOTE: Minimum time of sec. set by PENALTY_TIME (cell 2) - 2 sec. tolerance. Maximum time of 75 sec. set by PENALTY_TIME (cell 2) + 1280 msec. for DRX cycle + 1280 msec. for system info scheduling + 5 sec. actual reselection time + 1280 msec. for reading neighbour BCCH + 25%.

6.1.2.5 HCS Cell reselection using reselection timing parameters for the R criterion

6.1.2.5.1 Definition

Test to verify that the UE performs the cell reselection correctly for hierarchical cell structures using TEMP_OFFSET and PENALTY_TIME applied to the R criterion.

6.1.2.5.2 Conformance requirement

1. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:

   1.1 UE internal triggers, so as to meet performance as specified in TS 25.133

   1.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified

2. Cell Reselection Criteria for hierarchical cells:

   2.1 The quality level threshold criterion H for hierarchical cell structures is used to determine whether prioritised ranking according to hierarchical cell re-selection rules shall apply, and is calculated from the Q, Qhcs, TEMP_OFFSET and PENALTY_TIME parameters.

   2.2 The UE shall perform ranking of all cells that fulfil the S criterion among all cells, not considering HCS priority levels, if no cell fulfil the criterion H>=0.

   2.3 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If a FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell

   2.4 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval Treselection.

   2.5 The cell-ranking criterion R is derived from Q, Qhyst, Qoffset, TEMP_OFFSET, PENALTY_TIME.

3. $TEMP\_OFFSET_n$ applies an offset to the R criteria for the duration of $PENALTY\_TIME_n$ after the timer T_n has started for that cell. T_n shall be started from zero when $Q_{meas\_LEV,n} > Q_{meas\_LEV,s} + Qoffset2_{s,n}$. TEMP_OFFSET is only applied to the R criteria if the cells have identical priorities.

References

1. TS 25.304, 5.2.2

2,3. TS 25.304, 5.2.6.1.4

6.1.2.5.3 Test purpose

1. Verify that TEMP_OFFSET is applied to the R criterion for a period of PENALTY_TIME and that the timer is started when $Q_{meas\_LEV,n} > Q_{meas\_LEV,s} + Qoffset2_{s,n}$ if serving and neighbour cell have identical HCS priorities.

6.1.2.5.4 Method of test

Initial conditions

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec/Io	dB	-13	-17	-17
Qqualmin	dB	-20	-20	-20
Squal*	dB	7	3	3
HCS priority		1	1	1
H_s*	dB	-13		
$H_{n=2}$*	dB	-17		
$H_{n=3}$*	dB	-17		
R_s*	dB	-13		
$R_{n=2}$*	dB	-17		
$R_{n=3}$*	dB	-17		

Step d-e:

$Qoffset2_{s,n=2}$	dB	0 -> -10		
$Qoffset2_{s,n=3}$	dB	0 -> -10		
$TEMP\_OFFSET2_{n=2}$	dB	10		
$TEMP\_OFFSET2_{n=3}$	dB	10		
$PENALTY\_TIME_{n=2}$	sec	40		
$PENALTY\_TIME_{n=3}$	sec	60		
R_s*	dB	-13		
$R_{n=2}$*	dB	-17 -> -7 (after 40 sec)		
$R_{n=3}$*	dB	-17 -> -7 (after 60 sec)		

Test procedure

Method B is applied.

a) The SS activates the cells 1-3 and monitors them for random access requests from the UE

b) The UE is switched on.

c) The SS waits for random access requests from the UE

d) The SS broadcasts Qoffset, TEMP_OFFSET and PENALTY_TIME for Cell 2 and 3

e) The SS waits for random access requests from the UE

6.1.2.5.5 Test requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), there shall be no response from the UE on Cell 2 within 38 seconds of changing the parameters but the UE shall respond on Cell 2 within 61 seconds. The response on Cell 2 shall be before any response on Cell 3.

NOTE: Minimum time of sec. set by PENALTY_TIME (cell 2) - 2 sec. tolerance. Maximum time of 75 sec. set by PENALTY_TIME (cell 2) + 1280 msec. for DRX cycle + 1280 msec. for system info scheduling + 5 sec. actual reselection time + 1280 msec. for reading neighbour BCCH + 25%.

6.1.2.6 Emergency calls

6.1.2.6.1 Definition

Test to verify that the UE shall be able to initiate emergency calls when no suitable cells of the selected PLMN are available, but at least one acceptable cell is available.

6.1.2.6.2 Conformance requirement

1. Acceptable cell:

   An "acceptable cell" is a cell on which the UE may camp to obtain limited service (originate emergency calls). Such a cell shall fulfil the following requirements, which is the minimum set of requirements to initiate an emergency call in a UTRAN network:

   1.1 The cell is not barred

   1.2 The cell selection criteria are fulfilled

2. A "suitable cell" is a cell on which the UE may camp on to obtain normal service. Such a cell shall fulfil all the following requirements.

   2.1 The cell is part of the selected PLMN or, for cell reselection only, of a PLMN considered as equivalent by the UE according to the information provided by the NAS

   2.2 The cell is not barred

2.3 The cell is not part of the list of "forbidden LAs for regional provision of service"

2.4 The cell selection criteria are fulfilled

2.5 The SoLSA criteria are fulfilled [SoLSA support is not in the current release]

3. If no suitable cell is found, the UE shall attempt to find an acceptable cell of any PLMN, state *Any cell selection*. This state is also entered if a non-access stratum registration procedure is rejected, or if there is no USIM in the UE. If an acceptable cell is found, the UE shall camp on this cell and obtain limited service, state *Camped on any cell*. In this state, the UE shall behave as specified for state *Camped normally*, but typically with a different PLMN. Additionally, the UE shall regularly attempt to find a suitable cell using stored information, trying all radio access technologies that are supported by the UE. If a suitable cell is found, the PLMN is reselected.

   When a cell reselection is triggered, the UE shall evaluate the cell reselection criteria based on radio measurements, and if a better cell is found that cell is selected. The change of cell may imply a change of radio access technology.

References

1. TS 25.304, 4.3
2. TS 25.304, 4.3
3. TS 25.304, 5.2.2

6.1.2.6.3 Test purpose

1. To verify that the UE shall be able to initiate emergency calls when no suitable cells of the selected PLMN are available, but at least one acceptable cell is available.
2. To verify that the UE selects a cell with S>0 (acceptable cell) and CellBarred = 0 when no suitable cells of the selected PLMN are available.
3. To verify that the UE ranks the acceptable cells according to the cell-ranking criterion R which in this test case equals Q as Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME parameters are not used. Treselection is not used either.

6.1.2.6.4 Method of test

Initial conditions

In step a-d, Cell 1 and 2 are neither suitable nor acceptable cells. Cell 3 is an acceptable cell but not suitable.

In step e-f, both Cell 1 and 3 are acceptable cells.

Step a-d:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec/Io	dB	-15	-13	-17
Qqualmin	dB	-20	-10	-20
Squal*	dB	5	-3	3
CellBarred		1	0	0
PLMN		forbidden	forbidden	forbidden

Step e-f:

CellBarred		1 -> 0	0	0

NOTE: All the BCCH cells belong to the same PLMN, which is not the UE's home PLMN and is in the USIM's forbidden PLMN's list.

Test procedure

Method C is applied.

a) The SS activates the cells and monitors them for random access requests from the UE.

b) The UE is switched on.

c) 50 seconds after switch on, an emergency call is initiated on the UE.

d) The SS waits for random access request from the UE.

e) The SS changes the CellBarred of Cell 1 to 0.

f) After 30 seconds an emergency call is initiated on the UE.

g) The SS waits for random access request from the UE.

6.1.2.6.5 Test requirements

1) In step d), the first access from the UE shall be on Cell 3.

2) In step g), the first access from the UE shall be on Cell 1.

6.2 Multi-mode environment (2G/3G case)

6.2.1 PLMN and RAT selection and reselection

6.2.1.1 Selection of the correct PLMN and associated RAT

6.2.1.1.1 Definition

Test to verify that the UE selects the correct combination of PLMN and associated access technology according to the fields on the USIM.

6.2.1.1.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage,the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

   If successful registration is achieved, the MS indicates the selected PLMN.

   If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

References

1. TS 23.122, 4.4.3.1

NOTE: TS 31.102 defines the USIM fields

6.2.1.1.3 Test purpose

1. To verify that the UE selects the correct combination of PLMN and associated access technology according to the fields on the USIM.

6.2.1.1.4 Method of test

Initial conditions

The UE is in automatic PLMN selection mode.

Cell	Test Channel	PLMN	Radio Access Technology
Cell 1	1	PLMN 1	GSM
Cell 2	1	PLMN 1	UTRAN
Cell 3	2	PLMN 2	UTRAN
Cell 4	2	PLMN 2	GSM

The UE is equipped with a USIM containing default values except for those listed below.

USIM A

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}			
$EF_{HPLMNwAcT}$	1st	PLMN 1	GSM
	2nd		UTRAN

USIM B

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}			
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM

Test procedure

Method B is applied.

a) The SS activates cells 1-4 and monitors the cells for random access requests from the UE. The UE shall have a USIM with settings according to USIM A.

b) The UE is switched on

c) The SS waits for random access requests from the UE

d) The UE is switched off and a USIM with settings according to USIM B is inserted

e) The UE is switched on

f) The SS waits for random access requests from the UE

6.2.1.1.5 Test Requirements

1) In step c), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN1 (GSM).

2) In step f), the response from the UE shall be on Cell 3. The displayed PLMN shall be PLMN2 (UTRAN).

6.2.1.2 Selection of RAT for HPLMN; Manual mode

6.2.1.2.1 Definition

Test to verify that the UE selects the HPLMN RAT according to the HPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall try to obtain registration on the same PLMN using other UE-supported RATs.

6.2.1.2.2 Conformance requirement

1. To allow provision for multiple HPLMN codes, the HPLMN access technologies are stored on the SIM together with PLMN codes. This version of the specification does not support multiple HLPMN codes and the “HPLMN Selector with Access Technology” data field is only used by the MS to get the HPLMN access technologies. The HPLMN code is the PLMN code included in the IMSI.

2. For HPLMN, the MS shall search for all access technologies it is capable of. The MS shall start its search using the access technologies stored in the “HPLMN Selector with Access Technology” data field on the SIM in

priority order (i.e. the PLMN/access technology combinations are listed in priority order, if an entry includes more than one access technology then no priority is defined for the preferred access technology and the priority is an implementation issue).

3. Manual Network Selection Mode Procedure:

   The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes "Forbidden PLMNs" and PLMNs which only offer services not supported by the MS.

   If displayed, PLMNs meeting the criteria above are presented in the following order:

   3.1 HPLMN;

   3.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   3.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   3.4 Other PLMN/access technology combinations with received high quality signal in random order;

   3.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the forbidden LAI lists, "forbidden PLMNs for GPRS service" lists and forbidden PLMN lists.

   If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell giving priority to cell with received high quality signal and enter the limited service state.

NOTE: It is an MS implementation option whether to indicate access technologies to the user. If the MS does display access technologies, then the access technology used should be the access technology chosen by the user for that PLMN. If the MS does not display access technologies, then the access technology chosen for a particular PLMN should be the highest priority available access technology for that PLMN, if the associated access technologies have a priority order.

References

1. TS 23.122, 4.4.3
2. TS 23.122, 4.4.3.1.1 (f)
3. TS 23.122, 4.4.3.1.2

NOTE: TS 31.102 defines the USIM fields

6.2.1.2.3 Test purpose

1. To verify that,

   1.1 the UE searches for a HPLMN RAT according to the HPLMN Selector with Access Technology data field on the USIM in priority order

   1.2 If no RAT on the priority list is available, the UE tries to obtain registration on the same PLMN using other UE-supported RATs.

6.2.1.2.4 Method of test

Initial conditions

The UE is in manual PLMN selection mode.

Cell	Test Channel	PLMN	Radio Access Technology
Cell 1	1	PLMN 2	UTRAN
Cell 2	1	PLMN 2	GSM
Cell 3	2	PLMN 3	UTRAN
Cell 4	2	PLMN 3	GSM

The UE is equipped with a USIM containing default values except for those listed below.

USIM A

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM

USIM B

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		

Test procedure

Method B is applied.

a) The SS activates cells 1-4 and monitors the cells for random access requests from the UE. The UE shall have a USIM with settings according to USIM A.

b) The UE is switched on

c) PLMN2 (UTRAN) shall be selected when the PLMN list is presented

d) The SS waits for random access requests from the UE

e) Cell 1 is switched off

f) PLMN2 (GSM) shall be selected when the PLMN list is presented

g) The SS waits for random access requests from the UE

h) The UE is switched off and a USIM with settings according to USIM B is inserted. All cells except Cell 1 are active.

i) The UE is switched on

j) PLMN2 (GSM) shall be selected when the PLMN list is presented

k) The SS waits for random access requests from the UE

6.2.1.2.5 Test Requirements

1) In step c), the list shall be presented. It shall contain as highest priority PLMN2 (UTRAN as number 1 on the list and GSM as number 2).

2) In step d), the response from the UE shall be on Cell 1 (1st priority RAT for $EF_{HPLMNwAcT}$). The displayed PLMN shall be PLMN2 (UTRAN).

3) In step f), the list shall be presented. It shall contain as highest priority PLMN2 (GSM).

4) In step g), the response from the UE shall be on Cell 2 (2nd priority RAT for $EF_{HPLMNwAcT}$). The displayed PLMN shall be PLMN2 (GSM).

5) In step j), the list shall be presented. It shall contain as highest priority PLMN2 (GSM).

6) In step k), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN2 (GSM). (PLMN2 is not available on UTRAN so registration on the same PLMN is attempted using other UE-supported RATs).

6.2.1.3 Selection of RAT for UPLMN; Manual mode

6.2.1.3.1 Definition

Test to verify that the UE selects the UPLMN RAT according to the UPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall not try to obtain registration on the same PLMN(s) with other RAT(s) but instead search for PLMNs in the OPLMN list.

6.2.1.3.2 Conformance requirement

1. Manual Network Selection Mode Procedure:

   The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes "Forbidden PLMNs" and PLMNs which only offer services not supported by the MS.

   If displayed, PLMNs meeting the criteria above are presented in the following order:

   1.1 HPLMN;

   1.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.4 Other PLMN/access technology combinations with received high quality signal in random order;

   1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the forbidden LAI lists, "forbidden PLMNs for GPRS service" lists and forbidden PLMN lists.

   If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell giving priority to cell with received high quality signal and enter the limited service state.

NOTE: It is an MS implementation option whether to indicate access technologies to the user. If the MS does display access technologies, then the access technology used should be the access technology chosen by the user for that PLMN. If the MS does not display access technologies, then the access technology chosen for a particular PLMN should be the highest priority available access technology for that PLMN, if the associated access technologies have a priority order.

References

1. TS 23.122, 4.4.3.1.2

NOTE: TS 31.102 defines the USIM fields

6.2.1.3.3 Test purpose

1. To verify that,

   1.1 the UE selects the UPLMN RAT according to the UPLMN RAT priority list on the USIM.

   1.2 If no RAT on the list is available, the UE does not try to obtain registration on the same PLMN with another RAT but instead searches for PLMNs in the OPLMN list.

6.2.1.3.4 Method of test

Initial conditions

The UE is in manual PLMN selection mode.

Cell	Test Channel	PLMN	Radio Access Technology
Cell 1	1	PLMN 3	UTRAN
Cell 2	1	PLMN 3	GSM
Cell 3	2	PLMN 4	UTRAN
Cell 4	2	PLMN 4	GSM
Cell 5	3	PLMN 5	UTRAN

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM
$EF_{PLMNwAcT}$	1st	PLMN 3	UTRAN
	2nd	PLMN 4	GSM
$EF_{OPLMNwAcT}$	1st	PLMN 5	UTRAN
	2nd	PLMN 6	GSM

Test procedure

Method B is applied.

a) The SS activates cells 1-5 and monitors the cells for random access requests from the UE

b) The UE is switched on

c) PLMN3 (UTRAN) shall be selected when the PLMN list is presented

d) The SS waits for random access requests from the UE

e) Cell 1 is switched off

f) PLMN4 (GSM) shall be selected when the PLMN list is presented

g) The SS waits for random access requests from the UE

h) Cell 4 is switched off

i) PLMN5 (UTRAN) shall be selected when the PLMN list is presented

j) The SS waits for random access requests from the UE

6.2.1.3.5 Test Requirements

1) In step c), the list shall be presented. It shall contain in priority PLMN3 (UTRAN), PLMN4 (GSM), other PLMNs.

2) In step d), the response from the UE shall be on Cell 1 (1st priority RAT for $EF_{PLMNwAcT}$). The displayed PLMN shall be PLMN3 (UTRAN).

3) In step f), the list shall be presented. It shall contain in priority PLMN4 (GSM), PLMN5 (UTRAN), other PLMNs.

4) In step g), the response from the UE shall be on Cell 4 (2nd priority RAT for $EF_{PLMNwACT}$). The displayed PLMN shall be PLMN4 (GSM).

5) In step i), the list shall be presented. It shall contain as highest priority PLMN5 (UTRAN).

6) In step j), the response from the UE shall be on Cell 5 (1st priority RAT for $EF_{OPLMNwAcT}$). The displayed PLMN shall be PLMN5 (UTRAN).

6.2.1.4 Selection of RAT for OPLMN; Manual mode

6.2.1.4.1 Definition

Test to verify that the UE selects the OPLMN RAT according to the OPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall not try to obtain registration on the same PLMN(s) with other RAT(s) but instead search for other PLMN/access technology combinations with received high quality signal in random order.

6.2.1.4.2 Conformance requirement

1. Manual Network Selection Mode Procedure:

   The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes "Forbidden PLMNs" and PLMNs which only offer services not supported by the MS.

   If displayed, PLMNs meeting the criteria above are presented in the following order:

   1.1 HPLMN;

   1.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.4 Other PLMN/access technology combinations with received high quality signal in random order;

   1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the forbidden LAI lists, "forbidden PLMNs for GPRS service" lists and forbidden PLMN lists.

   If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell giving priority to cell with received high quality signal and enter the limited service state.

NOTE: It is an MS implementation option whether to indicate access technologies to the user. If the MS does display access technologies, then the access technology used should be the access technology chosen by the user for that PLMN. If the MS does not display access technologies, then the access technology chosen for a particular PLMN should be the highest priority available access technology for that PLMN, if the associated access technologies have a priority order.

References

1. TS 23.122, 4.4.3.1.2

NOTE: TS 31.102 defines the USIM fields

6.2.1.4.3 Test purpose

1. To verify that,

   1.1 the UE selects the OPLMN RAT according to the OPLMN RAT priority list on the USIM.

   1.2 If no RAT on the list is available, the UE does not try to obtain registration on the same PLMN(s) with other RAT(s) but instead searches for "other PLMN/access technology combinations with received high quality signal in random order".

6.2.1.4.4 Method of test

Initial conditions

The UE is in manual PLMN selection mode.

Cell	Test Channel	PLMN	Radio Access Technology
Cell 1	1	PLMN 5	UTRAN
Cell 2	1	PLMN 5	GSM
Cell 3	2	PLMN 6	UTRAN
Cell 4	2	PLMN 6	GSM
Cell 5	3	PLMN 7	UTRAN

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM
$EF_{PLMNwAcT}$	1st	PLMN 3	UTRAN
	2nd	PLMN 4	GSM
$EF_{OPLMNwAcT}$	1st	PLMN 5	UTRAN
	2nd	PLMN 6	GSM

Test procedure

Method B is applied.

a) The SS activates cells 1-5 and monitors the cells for random access requests from the UE

b) The UE is switched on

c) PLMN5 (UTRAN) shall be selected when the PLMN list is presented

d) The SS waits for random access requests from the UE

e) Cell 1 is switched off

f) PLMN6 (GSM) shall be selected when the PLMN list is presented

g) The SS waits for random access requests from the UE

h) Cell 4 is switched off

i) PLMN7 (UTRAN) shall be selected when the PLMN list is presented

j) The SS waits for random access requests from the UE

6.2.1.4.5 Test Requirements

1) In step c), the list shall be presented. It shall contain in priority PLMN5 (UTRAN), PLMN6 (GSM), other PLMNs.

2) In step d), the response from the UE shall be on Cell 1 (1st priority RAT for $EF_{OPLMNwAcT}$). The displayed PLMN shall be PLMN5 (UTRAN).

3) In step f), the list shall be presented. It shall contain as highest priority PLMN6 (GSM) followed by PLMN5 (GSM), PLMN6 (UTRAN) and PLMN7 (UTRAN) in random order.

4) In step g), the response from the UE shall be on Cell 4 (2nd priority RAT for $EF_{OPLMNwAcT}$). The displayed PLMN shall be PLMN6 (GSM).

5) In step i), the list shall be presented. It shall contain PLMN5 (GSM), PLMN6 (UTRAN) and PLMN7 (UTRAN) in random order.

6) In step j), the response from the UE shall be on Cell 5. The displayed PLMN shall be PLMN7 (UTRAN).

6.2.1.5 Selection of “Other PLMN / access technology combinations”; Manual mode

6.2.1.5.1 Definition

Test to verify that if neither RPLMN, HPLMN, UPLMN nor OPLMN is available, the UE first tries to obtain registration on “Other PLMN/access technology combinations with received high quality signal in random order” and secondly on “Other PLMN/access technology combinations in order of decreasing signal quality”.

6.2.1.5.2 Conformance requirement

1. Manual Network Selection Mode Procedure:

   The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes "Forbidden PLMNs" and PLMNs which only offer services not supported by the MS.

   If displayed, PLMNs meeting the criteria above are presented in the following order:

   1.1 HPLMN;

   1.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

   1.4 Other PLMN/access technology combinations with received high quality signal in random order;

   1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

   In 1.5, the MS shall order the PLMN/access technology combinations in order of decreasing signal quality within each access technology. The order between PLMN/access technology combinations with different access technologies is an MS implementation issue.

   The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the forbidden LAI lists, "forbidden PLMNs for GPRS service" lists and forbidden PLMN lists.

   If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell giving priority to cell with received high quality signal and enter the limited service state.

NOTE: It is an MS implementation option whether to indicate access technologies to the user. If the MS does display access technologies, then the access technology used should be the access technology chosen by the user for that PLMN. If the MS does not display access technologies, then the access technology chosen for a particular PLMN should be the highest priority available access technology for that PLMN, if the associated access technologies have a priority order.

2. UTRA case: The UE shall scan all RF channels in the UTRA band according to its capabilities to find available PLMNs. On each carrier, the UE shall search for the "strongest" cell (according to the cell search procedures for FDD, see TS 25.214) and read its system information, in order to find out which PLMN the cell belongs to. If UE can read the PLMN identity, the found PLMN is reported to the non-access stratum as a high quality PLMN, provided that the following high quality criterion is fulfilled:

   - For an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm.

   The found PLMNs, which do not fulfil the high quality criterion but the UE has been able to read their PLMN identities, are reported to the non-access stratum as other PLMNs in decreasing CPICH RSCP order for UTRA FDD cells.

3. GSM case: A PLMN shall be understood to be received with high quality signal if the signal level is above -85 dBm

References

1. TS 23.122, 4.4.3.1.2
2. TS 25.304, 5.1.2.2
3. TS 03.22, 4.4.3

NOTE: TS 31.102 defines the USIM fields

6.2.1.5.3 Test purpose

1. To verify that,

   1.1 If neither RPLMN, HPLMN, UPLMN nor OPLMN is available, the UE tries to obtain registration on “Other PLMN/access technology combinations with received high quality signal in random order”

   1.2 If no PLMN is available in test purpose 1.1, the UE tries to obtain registration on “Other PLMN/access technology combinations in order of decreasing signal quality”

2. The “random order” in test purpose 1.1 is not verified

6.2.1.5.4 Method of test

Initial conditions

The UE is in manual PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP.

Cell	CPICH_RSCP /RF signal level [dBm]	High Quality signal	Test Channel	PLMN	Radio Access Technology
Cell 1	-80	Yes	1	PLMN 7	UTRAN
Cell 2	-65	Yes	1	PLMN 8	GSM
Cell 3	-98	No	2	PLMN 9	UTRAN
Cell 4	-101	No	2	PLMN 10	UTRAN
Cell 5	-88	No	3	PLMN 11	GSM
Cell 6	-91	No	3	PLMN 12	GSM

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM
$EF_{PLMNwAcT}$	1st	PLMN 3	UTRAN
	2nd	PLMN 4	GSM
$EF_{OPLMNwAcT}$	1st	PLMN 5	UTRAN
	2nd	PLMN 6	GSM
EF_{FPLMN}	PLMN 7		
	PLMN 12		

Test procedure

Method B is applied.

a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE

b) The UE is switched on

c) PLMN11 shall be selected when the PLMN list is presented

d) The SS waits for random access requests from the UE

e) Cell 5 is switched off

f) PLMN8 shall be selected when the PLMN list is presented

g) The SS waits for random access requests from the UE

h) Cell 2 is switched off

i) PLMN10 shall be selected when the PLMN list is presented

j) The SS waits for random access requests from the UE

k) Cell 4 is switched off

l) PLMN7 shall be selected when the PLMN list is presented. The SS shall reject the Registration Request from the UE.

m) Cell 1 is switched off

n) PLMN9 shall be selected when the PLMN list is presented

o) The SS waits for random access requests from the UE

p) Cell 3 is switched off

q) PLMN12 shall be selected when the PLMN list is presented. The SS shall reject the Registration Request from the UE.

r) Cell 6 is switched off

6.2.1.5.5 Test Requirements

In all steps, the PLMN priority list shall be as follows: PLMN7, PLMN8 in random order followed by the other PLMNs. PLMN9 shall always come before PLMN10 and PLMN11 shall always come before PLMN12.

1) In step c), the list shall be presented and contain PLMN7, 8, 9, 10, 11, 12.

2) In step d), the response from the UE shall be on Cell 5. The displayed PLMN shall be PLMN11.

3) In step f), the list shall be presented and contain PLMN7, 8, 9, 10, 12.

4) In step g), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN8.

5) In step i), the list shall be presented and contain PLMN7, 9, 10, 12.

6) In step j), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN10.

7) In step l), the list shall be presented and contain PLMN7, 9, 12. After the PLMN has been selected, the list shall appear again as the UE cannot perform registration.

9) In step n), the list shall be presented and contain PLMN9, 12.

10) In step o), the response from the UE shall be on Cell 3. The displayed PLMN shall be PLMN9.

11) In step q), the list shall be presented and shall only contain PLMN12. After the PLMN has been selected, the list shall appear again as the UE cannot perform registration.

13) After step r), the UE shall inform that no network is available

6.2.1.6 Selection of RAT for HPLMN; Automatic mode

6.2.1.6.1 Definition

Test to verify that the UE selects the HPLMN RAT according to the HPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall try to obtain registration on the same PLMN using other UE-supported RATs.

6.2.1.6.2 Conformance requirement

1. To allow provision for multiple HPLMN codes, the HPLMN access technologies are stored on the SIM together with PLMN codes. This version of the specification does not support multiple HLPMN codes and the “HPLMN Selector with Access Technology” data field is only used by the MS to get the HPLMN access technologies. The HPLMN code is the PLMN code included in the IMSI.

2. For HPLMN, the MS shall search for all access technologies it is capable of. The MS shall start its search using the access technologies stored in the “HPLMN Selector with Access Technology” data field on the SIM in priority order (i.e. the PLMN/access technology combinations are listed in priority order, if an entry includes more than one access technology then no priority is defined for the preferred access technology and the priority is an implementation issue).

3. Automatic Network Selection Mode Procedure:

   The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

   3.1 HPLMN (if not previously selected);

   3.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order)

   3.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order)

   3.4 Other PLMN/access technology combinations with received high quality signal in random order

3.5 Other PLMN/access technology combinations in order of decreasing signal quality

If successful registration is achieved, the MS indicates the selected PLMN.

If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in a forbidden LAI list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

References

1. TS 23.122, 4.4.3
2. TS 23.122, 4.4.3.1.1 (f)
3. TS 23.122, 4.4.3.1.1

NOTE: TS 31.102 defines the USIM fields

6.2.1.6.3 Test purpose

1. To verify that,

1.1 the UE searches for a HPLMN RAT according to the HPLMN Selector with Access Technology data field on the USIM in priority order

1.2 If no RAT on the priority list is available, the UE tries to obtain registration on the same PLMN using other UE-supported RATs.

6.2.1.6.4 Method of test

Initial conditions

The UE is in automatic PLMN selection mode.

Cell	Test Channel	PLMN	Radio Access Technology
Cell 1	1	PLMN 2	UTRAN
Cell 2	1	PLMN 2	GSM
Cell 3	2	PLMN 3	UTRAN
Cell 4	2	PLMN 3	GSM

The UE is equipped with a USIM containing default values except for those listed below.

USIM A

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM

USIM B

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		

Test procedure

Method B is applied.

a) The SS activates cells 1-4 and monitors the cells for random access requests from the UE. The UE shall have a USIM with settings according to USIM A.

b) The UE is switched on

c) The SS waits for random access requests from the UE

d) The UE is switched off and a USIM with settings according to USIM A is again inserted. All cells except Cell 1 are active.

e) The SS waits for random access requests from the UE

f) The UE is switched off and a USIM with settings according to USIM B is inserted. All cells except Cell 1 are active.

g) The UE is switched on

h) The SS waits for random access requests from the UE

6.2.1.6.5 Test Requirements

1) In step c), the response from the UE shall be on Cell 1 (1st priority RAT for $EF_{HPLMNwAcT}$). The displayed PLMN shall be PLMN2 (UTRAN).

2) In step e), the response from the UE shall be on Cell 2 (2nd priority RAT for $EF_{HPLMNwAcT}$). The displayed PLMN shall be PLMN2 (GSM).

3) In step h), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN2 (GSM). (PLMN2 is not available on UTRAN so registration on the same PLMN is attempted using other UE-supported RATs).

6.2.1.7 Selection of RAT for UPLMN; Automatic mode

6.2.1.7.1 Definition

Test to verify that the UE selects the UPLMN RAT according to the UPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall not try to obtain registration on the same PLMN(s) with other RAT(s) but instead search for PLMNs in the OPLMN list.

6.2.1.7.2 Conformance requirement

1. Automatic Network Selection Mode Procedure:

   The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

   1.1 HPLMN (if not previously selected);

   1.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order)

   1.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order)

   1.4 Other PLMN/access technology combinations with received high quality signal in random order

   1.5 Other PLMN/access technology combinations in order of decreasing signal quality

   If successful registration is achieved, the MS indicates the selected PLMN.

   If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

   If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in a forbidden LAI list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

References

1. TS 23.122, 4.4.3.1.1

NOTE: TS 31.102 defines the USIM fields

6.2.1.7.3 Test purpose

1. To verify that,

   1.1 the UE selects the UPLMN RAT according to the UPLMN RAT priority list on the USIM.

   1.2 If no RAT on the list is available, the UE does not try to obtain registration on the same PLMN with another RAT but instead searches for PLMNs in the OPLMN list.

6.2.1.7.4 Method of test

Initial conditions

The UE is in automatic PLMN selection mode.

Cell	Test Channel	PLMN	Radio Access Technology
Cell 1	1	PLMN 3	UTRAN
Cell 2	1	PLMN 3	GSM
Cell 3	2	PLMN 4	UTRAN
Cell 4	2	PLMN 4	GSM
Cell 5	3	PLMN 5	UTRAN

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM
$EF_{PLMNwAcT}$	1st	PLMN 3	UTRAN
	2nd	PLMN 4	GSM
$EF_{OPLMNwAcT}$	1st	PLMN 5	UTRAN
	2nd	PLMN 6	GSM

Test procedure

Method B is applied.

a) The SS activates cells 1-5 and monitors the cells for random access requests from the UE

b) The UE is switched on

c) The SS waits for random access requests from the UE

d) Cell 1 is switched off

e) The SS waits for random access requests from the UE

f) Cell 4 is switched off

g) The SS waits for random access requests from the UE

6.2.1.7.5 Test Requirements

1) In step c), the response from the UE shall be on Cell 1 (1st priority RAT for $EF_{PLMNwAcT}$). The displayed PLMN shall be PLMN3 (UTRAN).

2) In step e), the response from the UE shall be on Cell 4 (2nd priority RAT for $EF_{PLMNwAcT}$). The displayed PLMN shall be PLMN4 (GSM).

3) In step g), the response from the UE shall be on Cell 5 (1st priority RAT for $EF_{OPLMNwAcT}$). The displayed PLMN shall be PLMN5 (UTRAN).

6.2.1.8 Selection of RAT for OPLMN; Automatic mode

6.2.1.8.1 Definition

Test to verify that the UE selects the OPLMN RAT according to the OPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall not try to obtain registration on the same PLMN(s) with other RAT(s) but instead search for other PLMN/access technology combinations with received high quality signal in random order.

6.2.1.8.2 Conformance requirement

1. Automatic Network Selection Mode Procedure:

   The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

   1.1 HPLMN (if not previously selected);

   1.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order)

   1.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order)

   1.4 Other PLMN/access technology combinations with received high quality signal in random order

   1.5 Other PLMN/access technology combinations in order of decreasing signal quality

   If successful registration is achieved, the MS indicates the selected PLMN.

   If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

   If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in a forbidden LAI list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

References

1. TS 23.122, 4.4.3.1.1

NOTE: TS 31.102 defines the USIM fields

6.2.1.8.3 Test purpose

1. To verify that,

   1.1 the UE selects the OPLMN RAT according to the OPLMN RAT priority list on the USIM.

   1.2 If no RAT on the list is available, the UE does not try to obtain registration on the same PLMN(s) with other RAT(s) but instead searches for “other PLMN/access technology combinations with received high quality signal in random order”.

6.2.1.8.4 Method of test

Initial conditions

The UE is in automatic PLMN selection mode.

Cell	Test Channel	PLMN	Radio Access Technology
Cell 1	1	PLMN 5	UTRAN
Cell 2	1	PLMN 5	GSM
Cell 3	2	PLMN 6	UTRAN
Cell 4	2	PLMN 6	GSM
Cell 5	3	PLMN 7	UTRAN

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM
$EF_{PLMNwAcT}$	1st	PLMN 3	UTRAN
	2nd	PLMN 4	GSM
$EF_{OPLMNwAcT}$	1st	PLMN 5	UTRAN
	2nd	PLMN 6	GSM

Test procedure

Method B is applied.

a) The SS activates cells 1-5 and monitors the cells for random access requests from the UE

b) The UE is switched on

c) The SS waits for random access requests from the UE

d) Cell 1 is switched off

e) The SS waits for random access requests from the UE

f) Cell 4 is switched off

g) The SS waits for random access requests from the UE

6.2.1.8.5 Test Requirements

1) In step c), the response from the UE shall be on Cell 1 (1st priority RAT for $EF_{OPLMNwAcT}$). The displayed PLMN shall be PLMN5 (UTRAN).

2) In step e), the response from the UE shall be on Cell 4 (2nd priority RAT for $EF_{OPLMNwAcT}$). The displayed PLMN shall be PLMN6 (GSM).

3) In step g), the response from the UE shall be on either Cell 2, 3 or 5 (other PLMN/access technology combination) with associated PLMN5 (GSM), PLMN6 (UTRAN) or PLMN7 (UTRAN) shown.

6.2.1.9 Selection of "Other PLMN / access technology combinations"; Automatic mode

6.2.1.9.1 Definition

Test to verify that if neither RPLMN, HPLMN, UPLMN nor OPLMN is available, the UE first tries to obtain registration on "Other PLMN/access technology combinations with received high quality signal in random order" and secondly on "Other PLMN/access technology combinations in order of decreasing signal quality".

6.2.1.9.2 Conformance requirement

1. Automatic Network Selection Mode Procedure:

The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

1.1 HPLMN (if not previously selected);

1.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order)

1.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order)

1.4 Other PLMN/access technology combinations with received high quality signal in random order

1.5 Other PLMN/access technology combinations in order of decreasing signal quality

In 1.5, the MS shall order the PLMN/access technology combinations in order of decreasing signal quality within each access technology. The order between PLMN/access technology combinations with different access technologies is an MS implementation issue.

If successful registration is achieved, the MS indicates the selected PLMN.

If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in a forbidden LAI list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

2. UTRA case: The UE shall scan all RF channels in the UTRA band according to its capabilities to find available PLMNs. On each carrier, the UE shall search for the "strongest" cell (according to the cell search procedures for FDD, see TS 25.214) and read its system information, in order to find out which PLMN the cell belongs to. If UE can read the PLMN identity, the found PLMN is reported to the non-access stratum as a high quality PLMN, provided that the following high quality criterion is fulfilled:

   - For an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm.

   The found PLMNs, which do not fulfil the high quality criterion but the UE has been able to read their PLMN identities, are reported to the non-access stratum as other PLMNs in decreasing CPICH RSCP order for UTRA FDD cells.

3. GSM case: A PLMN shall be understood to be received with high quality signal if the signal level is above -85 dBm

References

1. TS 23.122, 4.4.3.1.1
2. TS 25.304, 5.1.2.2
3. TS 03.22, 4.4.3

NOTE: TS 31.102 defines the USIM fields

6.2.1.9.3 Test purpose

1. To verify that,

   1.1 If neither RPLMN, HPLMN, UPLMN nor OPLMN is available, the UE tries to obtain registration on “Other PLMN/access technology combinations with received high quality signal in random order”

   1.2 If no PLMN is available in test purpose 1.1, the UE tries to obtain registration on “Other PLMN/access technology combinations in order of decreasing signal quality”

2. The “random order” in test purpose 1.1 is not verified

6.2.1.9.4 Method of test

Initial conditions

The UE is in automatic PLMN selection mode.

Cell_selection_and_reselection_quality_measure is CPICH_RSCP.

Cell	CPICH_RSCP /RF signal level [dBm]	"High Quality signal"	Test Channel	PLMN	Radio Access Technology
Cell 1	-80	Yes	1	PLMN 7	UTRAN
Cell 2	-65	Yes	1	PLMN 8	GSM
Cell 3	-98	No	2	PLMN 9	UTRAN
Cell 4	-101	No	2	PLMN 10	UTRAN
Cell 5	-88	No	3	PLMN 11	GSM
Cell 6	-91	No	3	PLMN 12	GSM

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF_{LOCI}		PLMN 1	
$EF_{HPLMNwAcT}$	1st	PLMN 2	UTRAN
	2nd		GSM
$EF_{PLMNwAcT}$	1st	PLMN 3	UTRAN
	2nd	PLMN 4	GSM
$EF_{OPLMNwAcT}$	1st	PLMN 5	UTRAN
	2nd	PLMN 6	GSM

Test procedure

Method B is applied.

a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE

b) The UE is switched on

c) The SS waits for random access requests from the UE

d) The cell on which a response was received, is switched off

e) Step c-d) is repeated until the UE informs that no network is available

6.2.1.9.5 Test Requirements

1) In step c), the displayed PLMN is noted

2) When the test procedure has finished, the noted PLMNs shall have appeared in the following order: PLMN7, PLMN8 in random order followed by the other PLMNs. PLMN9 shall come before PLMN10 and PLMN11 shall come before PLMN12.

6.2.2 Cell selection and reselection

6.2.2.1 Cell reselection if cell becomes barred or S<0; UTRAN to GSM

6.2.2.1.1 Definition

Test to verify that if both a GSM and UTRAN network is available, the UE performs cell reselection from UTRAN to GSM if the UTRAN cell becomes barred or S falls below zero.

6.2.2.1.2 Conformance requirement

1. The UE shall evaluate the cell reselection criteria based on radio measurements, and if a better cell is found that cell is selected, procedure *Cell reselection*. The change of cell may imply a change of radio access technology.

2. A "suitable cell" is a cell on which the UE may camp on to obtain normal service. Such a cell shall fulfil all the following requirements.

   2.1 The cell is part of the selected PLMN or, for cell reselection only, of a PLMN considered as equivalent by the UE according to the information provided by the NAS

   2.2 The cell is not barred

   2.3 The cell is not part of the list of "forbidden LAs for regional provision of service"

   2.4 The cell selection criteria are fulfilled

   2.5 The SoLSA criteria are fulfilled [SoLSA support is not in the current release]

3. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:

   3.1 UE internal triggers, so as to meet performance as specified in TS 25.133

   3.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified

4. Cell Reselection Criteria:

   4.1 The UE shall perform ranking of all cells that fulfil the S criterion

   4.2 The cells shall be ranked according to the R criteria specified above, deriving Qmap,n and Qmap,s and calculating the R values using CPICH RSCP, P-CCPCH RSCP and RXLEV for FDD, TDD and GSM cells, respectively.The best ranked cell is the cell with the highest R value. If a TDD or GSM cell is ranked as the best cell, then the UE shall perform cell re-selection to that TDD or GSM cell.

   4.3 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval Treselection.

   4.4 The cell-ranking criterion R is derived from Q, Qhyst, Qoffset, TEMP_OFFSET and PENALTY_TIME. However, TEMP_OFFSETn and PENALTY_TIMEn are only applicable if the usage of HCS is indicated in system information.

5. Different types of measurements are used in different radio access technologies and modes for the cell selection and reselection (CPICH Ec/N0 or CPICH RSCP in UTRA FDD, P-CCPCH RSCP in UTRA TDD, RXLEV in GSM). The use of mapping functions is indicated in system information. Mapping functions are used for mapping a certain range of measurement values Q_{meas_LEV} (CPICH_EC/N0, CPICH_RSCP_LEV, P-CCPCH_RSCP_LEV, RXLEV) to a representing quality value Q_{map} (0..99, step size 1).

References

1. TS 25.304, 5.2.2
2. TS 25.304, 4.3
3. TS 25.304, 5.2.5.1
4. TS 25.304, 5.2.6.1.4
5. TS 25.304, 7.1

NOTE: CPICH RSCP mapping is specified in TS 25.133, 9.1.1.3 and RXLEV mapping in GSMTS 05.08, 8.1.4.

6.2.2.1.3 Test purpose

1. To verify that the UE performs reselection from UTRAN to GSM on the following occasions:

1.1 Serving cell becomes barred

1.2 S<0 for serving cell

6.2.2.1.4 Method of test

Initial conditions

The USIM does not contain any preferred RAT.

Step a-c:

Parameter	Unit	Cell 1 (UTRAN)
Test Channel		1
CPICH_Ec/Io	dB	-11
CPICH RSCP	dBm	-74
Qmap*		41
Qqualmin	dB	-20
Qrxlevmin	dBm	-100
Squal*	dB	9
Srxlev*	dBm	26
CellBarred		0
Mapping info (RAT, Map_parameter_1, Map_parameter_2, Upper_limit)		(UTRA FDD, 0, 91, 91) (GSM, 5, 68, 63)

Parameter	Unit	Cell 2 (GSM)	Cell 3 (GSM)
Test Channel		1	2
RF Signal Level	dBm	-80	-85
Qmap*		36	31
RXLEV_ACCESS_MIN	dBm	-100	-100
C1*	dBm	20	15
FDD_Qmin	dB	-20	-20
XXX_Qoffset	dBm	0	0

Step d-f:

Parameter	Unit	Cell 1 (UTRAN)
CellBarred		0 -> 1

Step g:

Parameter	Unit	Cell 1 (UTRAN)
Qqualmin	dB	-20 -> -5
Squal*	dB	9 -> -6

NOTE: Q_{map} is only applicable when camping on a UTRAN cell. The chosen mapping ensures that RSCP and RXLEV are directly comparable

Test procedure

Method B is applied.

a) The SS activates cells 1, 2, and 3. The SS monitors cells 1, 2 and 3 for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access request from the UE

d) The SS sets Cell 1 to be barred

e) The SS waits for random access request from the UE

f) The stored information cell selection list in the UE is deleted and the UE is switched off.

g) Step a-e) is repeated except that in step d), Qqualmin is increased to -5 dB, so S will become negative instead of being barred

6.2.2.1.5 Test Requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), the UE shall respond on Cell 2

3) In step g), the UE shall respond on Cell 2 after Qualmin is increased to –5dB

6.2.2.2 Cell reselection if cell becomes barred or C1<0; GSM to UTRAN

6.2.2.2.1 Definition

Test to verify that if both a GSM and UTRAN network is available, the UE performs cell reselection from GSM to UTRAN if the GSM cell becomes barred or the path loss criterion C1 falls below zero for a period of 5 seconds.

6.2.2.2.2 Conformance requirement

1. At least every 5 s the MS shall calculate the value of C1 and C2 for the serving cell and re-calculate C1 and C2 values for non serving cells (if necessary). The MS shall then check whether:

   1.1 The path loss criterion (C1) for current serving cell falls below zero for a period of 5 seconds. This indicates that the path loss to the cell has become too high.

2. While camped on a cell of the selected PLMN ("camped normally"), the MS may need to select a different cell ("normal cell reselection" state). The following events trigger a cell reselection:

   2.1 The path loss criterion parameter C1 (see TS 03.22, 3.6) indicates that the path loss to the cell has become too high;

   2.2 The cell camped on (current serving cell) has become barred;

References

1. TS 05.08, 6.6.2

2. TS 03.22, 4.5

6.2.2.2.3 Test purpose

1. To verify that the UE performs reselection from GSM to UTRAN on the following occasions:

   1.1 Serving cell becomes barred

   1.2 The path loss criterion C1 for serving cell falls below zero for a period of 5 seconds

6.2.2.2.4 Method of test

Initial conditions

The USIM does not contain any preferred RAT.Step a-c:

Parameter	Unit	Cell 1 (GSM)
Test Channel		1
RF Signal Level	dBm	-50
Qmap*		66
RXLEV_ACCESS_MIN	dBm	-70
MS_TXPWR_MAX_CCH	dBm	Max. output power of UE
FDD_Qmin	dB	-20
XXX_Qoffset	dBm	0
CellBarred		0
C1*	dBm	20

Parameter	Unit	Cell 2 (UTRAN)	Cell 3 (UTRAN)
CPICH_Ec/Io	dB	-13	-15
CPICH_RSCP	dBm	-76	-78
Qmap*		40	38
Qqualmin	dB	-20	-20
Qrxlevmin	dBm	-100	-100
Squal*	dB	7	5
Srxlev*	dBm	24	22
Mapping info (RAT, Map_parameter_1, Map_parameter_2, Upper_limit)		(UTRA FDD, 0, 91, 91) (GSM, 5, 68, 63)	(UTRA FDD, 0, 91, 91) (GSM, 5, 68, 63)

Step d-e:

Parameter	Unit	Cell 1 (GSM)
CellBarred		0 -> 1

Step f-g:

Parameter	Unit	Cell 1 (GSM)
RF Signal Level	dBm	-50 -> -80 (4sec) -> -50
C1*	dBm	20 -> -10 (4sec) -> 20

Step h;

Parameter	Unit	Cell 1 (GSM)
RF Signal Level	dBm	-50 -> -80
C1*	dBm	20 -> -10

NOTE: Q_{map} is only applicable when camping on a UTRAN cell. The chosen mapping ensures that RSCP and RXLEV are directly comparable.

Test procedure

Method B is applied.

a) The SS activates cells 1, 2, and 3. The SS monitors cells 1, 2 and 3 for random access requests from the UE.

b) The UE is switched on.

c) The SS waits for random access request from the UE

d) The SS sets Cell 1 to be barred

e) The SS waits for random access request from the UE

f) The stored information cell selection list in the UE is deleted and the UE is switched off.

g) The SS reduces signal level on Cell 1 to –80 dBm for 4 sec. and then raises the level back to –50 dBm (C1 becomes –10 dBm during this period)

h) The SS reduces signal level on Cell 1 to –80 dBm.

6.2.2.2.5 Test Requirements

1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.

2) In step e), the UE shall respond on Cell 2

3) In step g), there shall be no access on Cell 2 within 30 sec.

4) In step h), the UE shall respond on Cell 2

6.2.2.3 Cell reselection timings; GSM to UTRAN

6.2.2.3.1 Definition

Test to verify that the UE meets the cell reselection timing requirements when both a GSM and UTRAN network is available.

6.2.2.3.2 Conformance requirement

1. If the 3G Cell Reselection list (see TS 04.18) includes UTRAN frequencies, the MS shall, at least every 5 s update the value RLA_C for the serving cell and each of the at least 6 strongest non-serving GSM cells.

   1.1 The MS shall then reselect a suitable UTRAN cell if its measured RSCP value exceeds the value of RLA_C for the serving cell and all of the suitable non-serving GSM cells by the value XXX_Qoffset for a period of 5 seconds and, for FDD, the UTRAN cells measured Ec/No value is equal or greater than the value FDD_Qmin.

   - Ec/No and RSCP are the measured quantities

   - FDD_Qmin and XXX_Qoffset are broadcast on BCCH of the serving cell. XXX indicates other radio access technology/mode.

   1.2 In case of a cell reselection occurring within the previous 15 seconds, XXX_Qoffset is increased by 5 dB.

   1.3 Cell reselection to UTRAN shall not occur within 5 seconds after the MS has reselected a GSM from an UTRAN cell if a suitable GSM cell can be found.

   1.4 If more than one UTRAN cell fulfils the above criteria, the UE shall select the cell with the greatest RSCP value.

2. The MS shall be able to identify and select a new best UTRAN cell on a frequency, which is part of the 3G Cell Reselection list, within 30 seconds after it has been activated under the condition that there is only one UTRAN frequency in the list and under good radio conditions.

The allowed time is increased by 30 seconds for each additional UTRAN frequency in the 3G Cell Reselection list. However, multiple UTRAN cells on the same frequency in the neighbour cell list does not increase the allowed time.

NOTE: Definitions of measurements are in TS 25.215 and TS 25.101, 3.2 and TS 05.08, 6.1.

References

1. TS 05.08, 6.6.5
2. TS 05.08, 6.6.4

6.2.2.3.3 Test purpose

1. To verify that

1.1 The UE meets conformance requirement 1.1 and additionally, that no reselection is performed if the period is less than 5 sec.

1.2 The UE meets conformance requirement 1.2

1.3 The UE meets conformance requirement 1.3

6.2.2.3.4 Method of test

Initial conditions

The USIM does not contain any preferred RAT.

Step a-c:

Parameter	Unit	Cell 1 (GSM)	Cell 2 (GSM)
Test Channel		1	2
RF Signal Level	dBm	-70	-85
Qmap*		46	31
RXLEV_ACCESS_MIN	dBm	-100	-100
MS_TXPWR_MAX_CCH	dBm	Max. output power of UE	Max. output power of UE
FDD_Qmin	dBm	-20	-20
XXX_Qoffset	dBm	5	5

Parameter	Unit	Cell 3 (UTRAN)
Test Channel		1
CPICH_Ec/Io	dB	-11
CPICH_RSCP	dBm	-74
Qmap*		41
Qqualmin	dB	-20
Qrxlevmin	dBm	-100
Squal*	dB	9
Srxlev*	dBm	26
Mapping info (RAT, Map_parameter_1, Map_parameter_2, Upper_limit)		(UTRA FDD, 0, 91, 91) (GSM, 5, 68, 63)

Step d-g:

Parameter	Unit	Cell 1 (GSM)	Cell 2 (GSM)
RF Signal Level	dBm	-70 -> -82 (4sec) -> -70	OFF

Step h-j:

Parameter	Unit	Cell 1 (GSM)	Cell 2 (GSM)
RF Signal Level	dBm	-82 -> -70	OFF

Step k-m:

Parameter	Unit	Cell 1 (GSM)	Cell 2 (GSM)
RF Signal Level	dBm	-82 -> -70 -> -82	OFF

NOTE: Q_{map} is only applicable when camping on a UTRAN cell. The chosen mapping ensures that RSCP and RXLEV are directly comparable.

Test procedure

NOTE: Step a-c): Test purpose 1.3. Step d-g): test purpose 1.1. Step h-k): test purpose 1.2

Method A is applied.

a) The SS activates the channels. The UE is not paged on any of the cells.

b) The UE is switched on.

c) After 50 seconds, the SS starts paging continuously on cells 1 and 3 for 20 seconds. The SS monitors cells 1 and 3 for random access requests from the UE.

d) Cell 2 is switched off. The SS stops paging on the cells and waits for 20 seconds. (The UE should revert to Cell 1 due to cell reselection).

e) The SS starts paging continuously on Cell 3.

f) The SS decreases the transmit level of Cell 1 to –82 dBm for a period of 4 s (RSCP will then exceed RXLEV by more than XXX_Qoffset) and then changes the level back to –70 dBm.

g) The SS waits to see if there is any random access requests from the UE on Cell 3

h) The SS stops paging on all cells and sets the transmit level of Cell 1 to –82 dBm

i) The SS waits 20 seconds and then starts paging continously on Cell 1. (The UE should revert to Cell 3 due to cell reselection).

j) The SS increases the transmit level of Cell 1 to –70 dBm and waits for the UE to access on Cell 1. The SS records the time t from the increase in the level of Cell 1 to the first response from the UE.

k) The SS stops paging on all cells and sets the transmit level of Cell 1 back to –82 dBm.

l) The SS waits 20 seconds. (The UE should revert to Cell 3 due to cell reselection).

m) The SS increases the transmit level of Cell 1 to –70 dBm. After t+2 seconds (i.e. 2 sec after reselection to Cell 1), the SS starts paging continuously on Cell 3, changes the level of Cell 1 back to –82 dBm and waits to see if there is any random access request on Cell 3. (Within 15 sec after reselection to GSM, the level of Cell 1 is –82+10 dBm=-72 dBm. After the 15 sec period, the level of Cell 1 is –82+5 dBm=-77 dBm. The level of Cell 3 is –74 dBm, thus leading to reselection to Cell 3 after 15 sec).

6.2.2.3.5 Test Requirements

1) In step c), after the UE has reselected Cell 1 from Cell 3 as indicated by random access requests, any random access requests on Cell 3 shall not occur within 4.5 sec of the last random access request on Cell 1.

2) In step g), there shall be no access on Cell 3 within 34 seconds of decreasing the level of Cell 1.

3) In step j), the UE shall respond on Cell 1.

4) In step m), there shall be no response on Cell 3 within 11 seconds after the level of Cell 1 is changed back to –82 dBm.

NOTE: The 11 seconds is derived from (t+15) seconds minimum cell reselection timer minus (t+2) seconds from the start of step m) up to the decrease of the level of Cell 1. A further 2 seconds are subtracted to cover for any uncertainty introduced by the random access process occurring after step g).

7 Layer 2

7.1 MAC

General

If not otherwise mentioned, the same procedures as used in RRC test specification (TS 34.123-1) or in the Generic procedure (TS 34.108) applies to reach Initial conditions for MAC testing.

If not explicitly described, the same message contents and settings are applied as described in the RRC test description default settings.

7.1.1 Permission to access the network

This is a placeholder.

7.1.1.1 Void

7.1.1.2 Definition and applicability

Yet to be standardised, but expected to include all UE.

7.1.1.3 Conformance requirement

TBD

Reference(s)

TBD

7.1.1.4 Test purpose

If the Broadcast channel carries access information (e.g. access class), this sub-clause will carry tests to ensure that an UE will not try and access the network if its access class is not appropriate.

7.1.1.5 Method of test

Initial conditions

The UE shall be attached to the network and in idle mode.

Related ICS/IXIT Statement(s)

TBD

Test procedure

This sub-clause details the test procedure.

7.1.1.6 Test requirements

This sub-clause details the conditions to be met for successful completion of the test.

7.1.2 RACH/FACH procedures

7.1.2.1 Selection and control of Power Level

7.1.2.1.1 Definition and applicability

All UE.

7.1.2.1.2 Conformance requirement

1. The UE sets the preamble transmit power to the value P_{RACH} given in sub-clause 5.1.1 of 25.214.
2. If the UE does not detect the positive or negative acquisition indicator corresponding to the selected signature in the downlink access slot corresponding to the selected uplink access slot, the UE increases the preamble transmission power with the specified offset ΔP_0.

Reference(s)

TS 25.214 clause 6.

TS 25.321 sub-clause 11.2.

7.1.2.1.3 Test purpose

To verify that the UE selects the correct preamble transmit power according to the value of I_{BTS} transmitted in layer 3 messages on the BCH, and that:

- if the RACH access is not responded to, the power is stepped according to the power step ΔP_0.
- if the RACH access is negatively acknowledged, the power is stepped according to the power step ΔP_1.

7.1.2.1.4 Method of test

Initial conditions

The UE is attached to the network and in idle mode.

Related ICS/IXIT Statement(s)

TBD

Foreseen Final State of the UE

The same as the initial conditions.

Test procedure

a) The SS pages the UE until it performs a RACH access.

b) The SS measures the power level of the RACH access.

c) The SS does not acknowledge the RACH access, causing the UE to retry.

d) The SS again measures the power level of the RACH access.

e) The SS repeats the procedure from step c) until the maximum number of retries N_{RA} have been attempted, and monitors the RACH channel until T_{xx} + Xs to ensure that no further RACH accesses occur.

f) The SS pages the UE until it performs a RACH access.

g) The SS responds with a negative acquisition indicator on the AICH.

h) The SS measures the power level of the next RACH access.

i) The SS repeats steps g) and h) until the maximum number of retries N_{RA} have been attempted.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	PAGE	
2	→		CHANNEL REQUEST	Power should be set to $\mathbf{L_{Perch} + I_{BTS} + C}$
3			Wait for T = ??	
4	→		CHANNEL REQUEST	Power should be set to $\mathbf{L_{Perch} + I_{BTS} + C} + \Delta P_0$
5	→		CHANNEL REQUEST	Power should be set to $\mathbf{L_{Perch} + I_{BTS} + C + 2}\Delta P_0$
6			…	Repeat (step 5)
7	→		CHANNEL REQUEST	Power should be set to $\mathbf{L_{Perch} + I_{BTS} + C + n}\Delta P_0$
8			Wait for T = ??	
9		←	PAGE	
10	→		CHANNEL REQUEST	Power should be set to $\mathbf{L_{Perch} + I_{BTS} + C}$
11		←	AICH = NEG ACQUISITION IND	Power should be set to $\mathbf{L_{Perch} + I_{BTS} + C} + \Delta P_1$
12	→		CHANNEL REQUEST	Power should be set to $\mathbf{L_{Perch} + I_{BTS} + C}$
13		←	AICH = NEG ACQUISITION IND	Power should be set to $\mathbf{L_{Perch} + I_{BTS} + C + 2}\Delta P_1$
14			…	Repeat (step 13)
15		←	AICH = NEG ACQUISITION IND	Power should be set to $\mathbf{L_{Perch} + I_{BTS} + C + n}\Delta P_1$

7.1.2.1.5 Test requirements

Initially, the measured power level should be:

- $\mathbf{P_{RACH}} = \mathbf{L_{Perch}} + \mathbf{I_{BTS}} + \mathbf{Constant\ value}$.

Where I_{BTS} and the Constant value are set by the SS, and L_{Perch} is the measured path loss on the PCCPCH, and reported back to the SS in measurement reports.

Subsequently the power should increase by ΔP_0 steps each retransmission until N_{RA} number of attempts have been made.

Then, no further RACH accesses should be received for then next T seconds.

At the start of the next phase of the test, the measured power level should be $\mathbf{P_{RACH}} = \mathbf{L_{Perch}} + \mathbf{I_{BTS}} + \mathbf{Constant\ value}$. Subsequently the power should increase in ΔP_1 steps until N_{RA} number of attempts have been made.

7.1.2.2 Correct application of Dynamic Persistence

7.1.2.2.1 Definition and applicability

All UE.

7.1.2.2.2 Conformance requirement

The UE implements the dynamic persistence algorithm by:

1. reading the current dynamic persistence value from the BCH;
2. perform a random draw against the current dynamic persistence value. The random function is TBD;
3. defer transmission for one frame and repeat the process if the result of the random draw is negative, otherwise proceed with a CHANNEL REQUEST.

Reference(s)

TS 25.214 clause 6.

7.1.2.2.3 Test purpose

To verify that if the dynamic persistence value in the last appropriate message on the BCH is set to zero, the UE will not attempt a RACH access.

7.1.2.2.4 Method of test

Initial conditions

The SS will be transmitting BCCH messages with the dynamic persistence value set to zero.

The UE shall be attached to the network and in idle mode.

Related ICS/IXIT Statement(s)

TBD

Foreseen Final State of the UE

The same as the initial conditions.

Test procedure

a) The SS repeatedly pages the UE for $T_{??}$ seconds.

b) The SS monitors the RACH for a CHANNEL REQUEST message from the UE.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		PAGE	
2			Wait for T = ??	

7.1.2.2.5 Test requirements

The SS should not detect any access on the RACH.

7.1.2.3 Correct Selection of RACH parameters

7.1.2.3.1 Definition and applicability

All UE.

7.1.2.3.2 Conformance requirement

The following parameters are randomly selected by the physical layer (possibly within constraints defined by ASC parameters):

- PRACH initial access slot;
- PRACH signature.

Reference(s)

TS 25.321 clause A.1.

7.1.2.3.3 Test purpose

To verify that the UE selects the correct initial access slot and PRACH signature.

7.1.2.3.4 Method of test

Initial conditions

The UE shall be attached to the network and in idle mode. The SS will broadcast the Access Service Class parameters [on the BCH?].

Related ICS/IXIT Statement(s)

TBD

Foreseen Final State of the UE

The same as the initial conditions.

Test procedure

a) The SS pages the UE until it performs a RACH access.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		PAGE	
2	→		CHANNEL REQUEST	Access slot and signature should be in accordance with ASC parameters

7.1.2.3.5 Test requirements

The RACH access should take place on a PRACH access slot, and using a PRACH signature allowed by the UE Access Service Class.

7.1.3 Dynamic Radio Bearer Control

7.1.3.1 Definition and applicability

Not yet defined in core spec.

7.1.3.2 Conformance requirement

The algorithm exists in the UE and is controlled by the network. The algorithm requests to RRC for a reconfiguring of radio resources, details are ffs.

Reference(s)

TS 25.321 sub-clause 11.1.

7.1.3.3 Test purpose

To verify that the RRC reconfiguration algorithm is correctly applied.

7.1.3.4 Method of test

Initial conditions

TBD

Related ICS/IXIT Statement(s)

TBD

Foreseen Final State of the UE

TBD

Test procedure

TBD

Expected sequence

Step	Direction	Message	Comments

7.1.3.5 Test requirements

TBD

7.1.4 RACH/FACH transmission and retransmission

Ensure the Stop and wait ARQ protocol is adhered to when RACH and FACH messages are lost.

7.1.5 MAC Access Control Function

Ensure the slotted ALOHA protocol is followed when RACH collisions occur.

7.1.6 Void

7.1.7 Inband identification of UE on DSCH

Check that the UE does not respond to DSCH traffic addressed to different RNTIs.

NOTE: The following items are FFS:

- user-plane MAC tests;
- prioritization of data on DTCH/DCCH;
- multicast channel.

7.1.8 Mapping between logical channels and transport channels

7.1.8.1 CCCH mapped to RACH/FACH / Invalid TCTF

7.1.8.1.1 Definition

This tests that the MAC applies the correct header to the MAC PDU according to the type of logical channel carried on the RACH/FACH transport channel. Incorrect application of MAC headers would result in inoperation of the UE.

7.1.8.1.2 Conformance requirement

CCCH mapped to RACH/FACH:

- TCTF field is included in MAC header.

TCTF	MAC SDU

The following fields are defined for the MAC header:

- Target Channel Type Field

…

Coding of the Target Channel Type Field on FACH for FDD

TCTF	Designation
00	BCCH
01000000	CCCH
01000001-01111111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
10000000	CTCH
10000001-10111111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
11	DCCH or DTCH over FACH

Reference(s)

TS 25.321 clauses 9.2.1 and 9.2.1.4.

7.1.8.1.3 Test purpose

1. To verify that the UE discards PDUs with reserved or incorrect values in the TCTF field

2. To verify that the TCTF field is correctly applied when a CCCH is mapped to the RACH/FACH

7.1.8.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, Ciphering Off.

User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

The SS starts broadcasting the System Information as specified in TS 34.108 clause 6.1, using the configuration for the PRACH and SCCPCH (signalled in SYSTEM INFORMATION 5) as follows:

1. The SCCPCH is configured as specified in TS 34.108 clause 6.10.2.4.3.3 (Interactive/Background 32 kbps RAB + SRB for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH).

2. The PRACH is configured as specified in TS 34.108 clause 6.10.2.4.4.1.

The SS follows the procedure in TS 34.108 clause 7.2.2.1 (CS UE) or 7.2.2.2 (PS UE) so that the UE shall be in idle mode and registered.

Test procedure

a) The SS is configured as follows:

1. The SCCPCH is configured using the parameters in the table below for the FACH:

Higher layer	RAB/signalling RB		SRB#1
	User of Radio Bearer		Test
RLC	Logical channel type		CCCH*
	RLC mode		TM
	Payload sizes, bit		168
	Max data rate, bps		33600)
	RLC header, bit		0
MAC	MAC header, bit		0
	MAC multiplexing		None
Layer 1	TrCH type		FACH
	TB sizes, bit		168
	TFS	TF0, bits	0x168
		TF1, bits	1x168
		TF2, bits	2x168
		TF3, bits	N/A (alt. 3x168)
	TTI, ms		10
	Coding type		CC 1/2
	CRC, bit		16
	Max number of bits/TTI before rate matching		752 (alt. 1136)
	RM attribute		200-240

*NOTE: The SS MAC layer must be configured not to add a MAC header so that the header can be added by the test case in order to create the necessary invalid values.

and using the configuration in TS 34.108 clause 6.10.2.4.3.3 for the PCH.

The TFCS should be configured as specified in clause 6.10.2.4.3.3.1.4.

b) The SS pages the UE.

c) The SS waits for the first RRC CONNECTION REQUEST message to arrive on the PRACH/CCCH.

d) The SS responds with an RRC CONNECTION SETUP message (specified in TS34.108 Clause 9: Contents of RRC CONNECTION SETUP message: UM (Transition to CELL_DCH). In this case the SS will transmit the message in 152 bit* segments, with a valid UM RRC header and with the MAC header set as follows:

Field	Value
TCTF	00'B

* In the case of a 2-bit MAC header the segment shall be padded to the correct length.

e) The SS receives the DPCH allocated in the RRC CONNECTION SETUP message sent in step d) and waits for T300 + 20% for an RRC CONNECTION SETUP COMPLETE message to be receiveed.

f) The SS repeats steps d) and e), with the TCTF field set as follows:

Iteration	TCTF Value
2	01000001'B
3	10000000'B
4	10000001'B
5	11000000'B

g) The SS repeats steps d) and e), with the TCTF field set as to 01000000'B.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		X	SCCPCH SS configuration	Set up SS RLC in TM.
2	←		PAGING TYPE 1	
3	→		RRC CONNECTION REQUEST	
4	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 1))	Sent with incorrect TCTF = 00'B
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT n))	
5		X	Wait to check there is no response from the UE	
6	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 1))	Sent with incorrect TCTF = 0100 0001'B
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT n))	
7		X	Wait to check there is no response from the UE	
8	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 1))	Sent with incorrect TCTF = 1000 0000'B
	←		MAC PDU(TCTF, UE-ID, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT n))	
9		X	Wait to check there is no response from the UE	
10	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 1))	Sent with incorrect TCTF = 1000 0001'B
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT n))	
11		X	Wait to check there is no response from the UE	
12	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 1))	Sent with incorrect TCTF = 1100 0000'B
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT n))	
13		X	Wait to check there is no response from the UE	
14	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 1))	Sent with correct TCTF = 0100 0000'B
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT n))	
15	→		RRC CONNECTION SETUP COMPLETE	TCTF Field is recognised as correct for the CCCH

Specific Message Contents

None.

7.1.8.1.5 Test Requirement

On the first iteration, and on each iteration in step f) the UE should not recognise the RRC CONNECTION SETUP message and therefore the SS should not receive any response within the wait time.

On the final iteration the UE should respond with an RRC CONNECTION SETUP COMPLETE message.

7.1.8.2 DTCH or DCCH mapped to RACH/FACH / Invalid TCTF

7.1.8.2.1 Definition

This tests that the MAC applies the correct header to the MAC PDU according to the type of logical channel carried on the RACH/FACH transport channel. Incorrect application of MAC headers would result in inoperation of the UE.

7.1.8.2.2 Conformance requirement

DTCH or DCCH mapped to RACH/FACH:

TCTF field, C/T field, UE-Id type field and UE-Id are included in the MAC header.

The following fields are defined for the MAC header:

- Target Channel Type Field

…

Coding of the Target Channel Type Field on FACH for FDD

TCTF	Designation
00	BCCH
01000000	CCCH
01000001-01111111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
10000000	CTCH
10000001-10111111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
11	DCCH or DTCH over FACH

Reference(s)

TS 25.321 clauses 9.2.1 and 9.2.1.1 c).

7.1.8.2.3 Test purpose

1. To verify that the UE discards PDUs with reserved or incorrect values in the TCTF field
2. To verify that the TCTF field, C/T field, UT-Id type and UE-Id field are correctly applied when a DTCH or DCCH is mapped to the RACH/FACH

7.1.8.2.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, Ciphering Off.

User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

The SS starts broadcasting the System Information as specified in TS 34.108 clause 6.1, using the configuration for the PRACH and SCCPCH (signalled in SYSTEM INFORMATION 5) as follows:

1. The SCCPCH is configured as specified in TS 34.108 clause 6.10.2.4.3.3 (Interactive/Background 32 kbps RAB + SRB for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH).

2. The PRACH is configured as specified in TS 34.108 clause 6.10.2.4.4.1.

The SS follows the procedure in TS 34.108 clause 7.4.2.1 (Mobile Terminated) so that the UE shall be in state BGP 6-2 (CS-CELL_FACH_INITIAL).

Test procedure

a) The SS receives the PAGING RESPONSE message from the UE and checks the TCTF field.

b) The SS is reconfigured as follows:

1. The SCCPCH is configured using the parameters in the table below for the FACH:

Higher layer	RAB/signalling RB		SRB#1
	User of Radio Bearer		Test
RLC	Logical channel type		DCCH*
	RLC mode		TM
	Payload sizes, bit		168
	Max data rate, bps		33600)
	RLC header, bit		0
MAC	MAC header, bit		0
	MAC multiplexing		None
Layer 1	TrCH type		FACH
	TB sizes, bit		168
	TFS	TF0, bits	0x168
		TF1, bits	1x168
		TF2, bits	2x168
		TF3, bits	N/A (alt. 3x168)
	TTI, ms		10
	Coding type		CC 1/2
	CRC, bit		16
	Max number of bits/TTI before rate matching		752 (alt. 1136)
	RM attribute		200-240

NOTE: The SS MAC layer must be configured not to add a MAC header so that the header can be added by the test case in order to create the necessary invalid values.

and using the configuration in TS 34.108 clause 6.10.2.4.3.3 for the PCH.

The TFCS should be configured as specified in clause 6.10.2.4.3.3.1.4.

c) The SS transmits MAC PDUs containing RLC AM PDUs containing a DIRECT TRANSFER message containing an AUTHENTICATION REQUEST message.

The DIRECT TRANSFER message will be segmented into 128-bit PUs, with correct RLC AM headers.

The MAC header shall be set as follows:

Field	Value
TCTF	00'B
UE ID Type	C-RNTI
UE ID	As set in RRC CONNECTION SETUP message.
C/T	Logical Channel ID for SRB #4 (AM-DCCH NAS High Priority)

Where a TCTF size of 8-bits is used, 6-bits from the RLC payload shall be discarded.

d) The SS receives a STATUS PDU on SRB #4 AM RLC on the RACH.

e) The SS repeats steps c) and d), with the TCTF field set as follows:

Iteration	TCTF Value
2	01000000'B
3	01000001'B
4	10000000'B
5	10000001'B

f) The SS repeats steps c) and d), with the TCTF field set as to 11'B.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	→		PAGING RESPONSE	Check TCTF
2			SS Reconfiguration	Use Transparent RLC and MAC
3	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with incorrect TCTF = 00'B
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
4	→		RLC-STATUS-PDU	NAK above PDUs
5	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with incorrect TCTF = 0100 0000'B
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
6	→		RLC-STATUS-PDU	NAK above PDUs
7	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with incorrect TCTF = 0100 0001'B
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
8	→		RLC-STATUS-PDU	NAK above PDUs
9	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with incorrect TCTF = 1000 0000'B
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
10	→		RLC-STATUS-PDU	NAK above PDUs
11	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with incorrect TCTF = 1000 0001'B
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
12	→		RLC-STATUS-PDU	NAK above PDUs
13	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with correct TCTF = 11'B

	←	MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
		…	
	←	MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
14	→	AUTHENTICATION RESPONSE	TCTF Field is recognised as correct for the DCCH

Specific Message Contents

None

7.1.8.2.5 Test Requirement

In step a) the TCTF field should have the value 00'B. Note that this may be implied frrom receipt of the PAGING RESPONSE message correctly by the SS test script.

On the first iteration, and on each iteration in step d) the UE should not transmit a STATUS PDU on the RLC AM entity associated with SRB #4, negatively acknowledging the PDUs transmitted in step c) as missing.

On the final iteration the UE should respond with an AUTHENTICATION RESPONSE message.

7.1.8.3 DTCH or DCCH mapped to RACH/FACH / Invalid C/T Field

7.1.8.3.1 Definition

This tests that the MAC applies the correct header to the MAC PDU according to the type of logical channel carried on the RACH/FACH transport channel. Incorrect application of MAC headers would result in inoperation of the UE.

7.1.8.3.2 Conformance requirement

DTCH or DCCH mapped to RACH/FACH:

TCTF field, C/T field, UE-Id type field and UE-Id are included in the MAC header.

The following fields are defined for the MAC header:

- C/T field
  The C/T field provides identification of the logical channel instance when multiple logical channels are carried on the same transport channel …

Structure of the C/T field

C/T field	Designation
0000	Logical channel 1
0001	Logical channel 2
...	...
1110	Logical channel 15
1111	Reserved (PDUs with this coding will be discarded by this version of the protocol)

Reference(s)

TS 25.321 clauses 9.2.1 and 9.2.1.1 c).

7.1.8.3.3 Test purpose

1. To verify that the UE discards PDUs with reserved or incorrect values in C/T field

2. To verify that the TCTF field, C/T field, UT-Id type and UE-Id field are correctly applied when a DTCH or DCCH is mapped to the RACH/FACH

7.1.8.3.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, Ciphering Off.

User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

The SS starts broadcasting the System Information as specified in TS 34.108 clause 6.1, using the configuration for the PRACH and SCCPCH (signalled in SYSTEM INFORMATION 5) as follows:

1. The SCCPCH is configured as specified in TS 34.108 clause 6.10.2.4.3.3 (Interactive/Background 32 kbps RAB + SRB for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH).

2. The PRACH is configured as specified in TS 34.108 clause 6.10.2.4.4.1.

The SS follows the procedure in TS 34.108 clause 7.4.2.1 (Mobile Terminated) so that the UE shall be in state BGP 6-2 (CS-CELL_FACH_INITIAL).

Test procedure

a) The SS receives the PAGING RESPONSE message from the UE and checks the C/T field.

b) The SS is reconfigured as follows:

1. The SCCPCH is configured using the parameters in the table below for the FACH:

Higher layer	RAB/signalling RB		SRB#1
	User of Radio Bearer		Test
RLC	Logical channel type		DCCH*
	RLC mode		TM
	Payload sizes, bit		168
	Max data rate, bps		33600)
	RLC header, bit		0
MAC	MAC header, bit		0
	MAC multiplexing		None
Layer 1	TrCH type		FACH
	TB sizes, bit		168
	TFS	TF0, bits	0x168
		TF1, bits	1x168
		TF2, bits	2x168
		TF3, bits	N/A (alt. 3x168)
	TTI, ms		10
	Coding type		CC 1/2
	CRC, bit		16
	Max number of bits/TTI before rate matching		752 (alt. 1136)
	RM attribute		200-240

NOTE: The SS MAC layer must be configured not to add a MAC header so that the header can be added by the test case in order to create the necessary invalid values.

and using the configuration in TS 34.108 clause 6.10.2.4.3.3 for the PCH.

The TFCS should be configured as specified in clause 6.10.2.4.3.3.1.4.

c) The SS transmits MAC PDUs containing RLC AM PDUs containing a DIRECT TRANSFER message containing an AUTHENTICATION REQUEST message.

The DIRECT TRANSFER message will be segmented into 128-bit PUs, with correct RLC AM headers.

The MAC header shall be set as follows:

Field	Value
TCTF	11'B
UE ID Type	C-RNTI
UE ID	As set in RRC CONNECTION SETUP message.
C/T	0111'B

Where a TCTF size of 8-bits is used, 6-bits from the RLC payload shall be discarded.

d) The SS receives a STATUS PDU on SRB #4 AM RLC on the RACH.

e) The SS repeats steps c) and d), with the C/T field set as follows:

Iteration	C/T Value
2	1111'B

f) The SS repeats steps c) and d), with the C/T field set to the Logical Channel ID for SRB #4 (AM-DCCH NAS High Priority): 0010'B.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	→		PAGING RESPONSE	Check C/T field
2			SS Reconfiguration	Use Transparent RLC and MAC
3	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with incorrect C/T = 0111'B
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
4	→		RLC-STATUS-PDU	NAK above PDUs
5	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with incorrect C/T 1111'B
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
6	→		RLC-STATUS-PDU	NAK above PDUs
7	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with correct C/T = 0010'B
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
8	→		AUTHENTICATION RESPONSE	C/T Field is recognised as correct for the DCCH

Specific Message Contents

None

7.1.8.3.5 Test Requirement

In step a) the C/T field should be set to the Logical Channel ID for SRB #4 (0010'B). Note that this may be implied frrom receipt of the PAGING RESPONSE message correctly by the SS test script.

On the first iteration, and on each iteration in step d) the UE should not transmit a STATUS PDU on the RLC AM entity associated with SRB #4, negatively acknowledging the PDUs transmitted in step c) as missing.

On the final iteration the UE should respond with an AUTHENTICATION RESPONSE message.

7.1.8.4 DTCH or DCCH mapped to RACH/FACH / Invalid UE ID Type Field

7.1.8.4.1 Definition

This tests that the MAC applies the correct header to the MAC PDU according to the type of logical channel carried on the RACH/FACH transport channel. Incorrect application of MAC headers would result in inoperation of the UE.

7.1.8.4.2 Conformance requirement

DTCH or DCCH mapped to RACH/FACH:

TCTF field, C/T field, UE-Id type field and UE-Id are included in the MAC header.

The following fields are defined for the MAC header:

- UE-Id Type
  The UE-Id Type field is needed to ensure correct decoding of the UE-Id field in MAC Headers.

Table 9.2.1.7: UE-Id Type field definition

UE-Id Type field 2 bits	UE-Id Type
00	U-RNTI
01	C-RNTI
10	Reserved (PDUs with this coding will be discarded by this version of the protocol)
11	Reserved (PDUs with this coding will be discarded by this version of the protocol)

Reference(s)

TS 25.321 clauses 9.2.1 and 9.2.1.1 c).

7.1.8.4.3 Test purpose

1. To verify that the UE discards PDUs with reserved values in UE-Id type field

2. To verify that the TCTF field, C/T field, UT-Id type and UE-Id field are correctly applied when a DTCH or DCCH is mapped to the RACH/FACH

7.1.8.4.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, Ciphering Off.

User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

The SS starts broadcasting the System Information as specified in TS 34.108 clause 6.1, using the configuration for the PRACH and SCCPCH (signalled in SYSTEM INFORMATION 5) as follows:

1. The SCCPCH is configured as specified in TS 34.108 clause 6.10.2.4.3.3 (Interactive/Background 32 kbps RAB + SRB for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH).

2. The PRACH is configured as specified in TS 34.108 clause 6.10.2.4.4.1.

The SS follows the procedure in TS 34.108 clause 7.4.2.1 (Mobile Terminated) so that the UE shall be in state BGP 6-2 (CS-CELL_FACH_INITIAL).

Test procedure

a) The SS receives the PAGING RESPONSE message from the UE and checks the UE-Id Type field.

b) The SS is reconfigured as follows:

1. The SCCPCH is configured using the parameters in the table below for the FACH:

Higher layer	RAB/signalling RB		SRB#1
	User of Radio Bearer		Test
RLC	Logical channel type		DCCH*
	RLC mode		TM
	Payload sizes, bit		168
	Max data rate, bps		33600)
	RLC header, bit		0
MAC	MAC header, bit		0
	MAC multiplexing		None
Layer 1	TrCH type		FACH
	TB sizes, bit		168
	TFS	TF0, bits	0x168
		TF1, bits	1x168
		TF2, bits	2x168
		TF3, bits	N/A (alt. 3x168)
	TTI, ms		10
	Coding type		CC 1/2
	CRC, bit		16
	Max number of bits/TTI before rate matching		752 (alt. 1136)
	RM attribute		200-240

NOTE: The SS MAC layer must be configured not to add a MAC header so that the header can be added by the test case in order to create the necessary invalid values.

and using the configuration in TS 34.108 clause 6.10.2.4.3.3 for the PCH.

The TFCS should be configured as specified in clause 6.10.2.4.3.3.1.4.

c) The SS transmits MAC PDUs containing RLC AM PDUs containing a DIRECT TRANSFER message containing an AUTHENTICATION REQUEST message.

The DIRECT TRANSFER message will be segmented into 128-bit PUs, with correct RLC AM headers.

The MAC header shall be set as follows:

Field	Value
TCTF	11'B
UE ID Type	10'B
UE ID	As set in RRC CONNECTION SETUP message.
C/T	Logical Channel ID for SRB #4 (AM-DCCH NAS High Priority): 0010'B

d) The SS receives a STATUS PDU on SRB #4 AM RLC on the RACH.

e) The SS repeats steps c) and d), with the UE-Id type field set as follows:

Iteration	UE-Id type Value
2	11'B

f) The SS repeats steps c) and d), with the UE-Id type field set to indicate a C-RNTI: 01'B.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	→		PAGING RESPONSE	Check UE-Id Type
2			SS Reconfiguration	Use Transparent RLC and MAC
3	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with incorrect UE-Id Type = 10'B
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
4	→		RLC-STATUS-PDU	NAK above PDUs
5	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with incorrect UE-Id Type = 11'B
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
6	→		RLC-STATUS-PDU	NAK above PDUs
7	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with correct UE-Id Type = 01'B
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
8	→		AUTHENTICATION RESPONSE	UE-Id is recognised as correct for the UE

Specific Message Contents

None

7.1.8.4.5 Test Requirement

In step a) the UE-Id Type field should be set to 01'B. Note that this may be implied frrom receipt of the PAGING RESPONSE message correctly by the SS test script.

On the first iteration, and on each iteration in step d) the UE should not transmit a STATUS PDU on the RLC AM entity associated with SRB #4, negatively acknowledging the PDUs transmitted in step c) as missing.

On the final iteration the UE should respond with an AUTHENTICATION RESPONSE message.

7.1.8.5 DTCH or DCCH mapped to RACH/FACH / Incorrect UE ID

7.1.8.5.1 Definition

This tests that the MAC applies the correct header to the MAC PDU according to the type of logical channel carried on the RACH/FACH transport channel. Incorrect application of MAC headers would result in inoperation of the UE.

7.1.8.5.2 Conformance requirement

DTCH or DCCH mapped to RACH/FACH:

TCTF field, C/T field, UE-Id type field and UE-Id are included in the MAC header.

The following fields are defined for the MAC header:

- UE-Id
  The UE-Id field provides an identifier of the UE on common transport channels…

Lengths of UE Id field

UE Id type	Length of UE Id field
U-RNTI	32 bits
C-RNTI	16 bits

Reference(s)

TS 25.321 clauses 9.2.1 and 9.2.1.1 c).

7.1.8.5.3 Test purpose

1. To verify that the UE ignores PDUs with UE-Ids that do not match the Id allocated to it.
2. To verify that the TCTF field, C/T field, UT-Id type and UE-Id field are correctly applied when a DTCH or DCCH is mapped to the RACH/FACH

7.1.8.5.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, Ciphering Off.

User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

The SS starts broadcasting the System Information as specified in TS 34.108 clause 6.1, using the configuration for the PRACH and SCCPCH (signalled in SYSTEM INFORMATION 5) as follows:

1. The SCCPCH is configured as specified in TS 34.108 clause 6.10.2.4.3.3 (Interactive/Background 32 kbps RAB + SRB for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH).
2. The PRACH is configured as specified in TS 34.108 clause 6.10.2.4.4.1.

The SS follows the procedure in TS 34.108 clause 7.4.2.1 (Mobile Terminated) so that the UE shall be in state BGP 6-2 (CS-CELL_FACH_INITIAL).

Test procedure

a) The SS receives the PAGING RESPONSE message from the UE and checks the UE-Id Type field.

b) The SS is reconfigured as follows:

1. The SCCPCH is configured using the parameters in the table below for the FACH:

Higher layer	RAB/signalling RB		SRB#1
	User of Radio Bearer		Test
RLC	Logical channel type		DCCH*
	RLC mode		TM
	Payload sizes, bit		168
	Max data rate, bps		33600)
	RLC header, bit		0
MAC	MAC header, bit		0
	MAC multiplexing		None
Layer 1	TrCH type		FACH
	TB sizes, bit		168
	TFS	TF0, bits	0x168
		TF1, bits	1x168
		TF2, bits	2x168
		TF3, bits	N/A (alt. 3x168)
	TTI, ms		10
	Coding type		CC 1/2
	CRC, bit		16
	Max number of bits/TTI before rate matching		752 (alt. 1136)
	RM attribute		200-240

NOTE: The SS MAC layer must be configured not to add a MAC header so that the header can be added by the test case in order to create the necessary invalid values.

and using the configuration in TS 34.108 clause 6.10.2.4.3.3 for the PCH.

The TFCS should be configured as specified in clause 6.10.2.4.3.3.1.4.

c) The SS transmits MAC PDUs containing RLC AM PDUs containing a DIRECT TRANSFER message containing an AUTHENTICATION REQUEST message.

The DIRECT TRANSFER message will be segmented into 128-bit PUs, with correct RLC AM headers.

The MAC header shall be set as follows:

Field	Value
TCTF	11'B
UE ID Type	C-RNTI
UE ID	Address allocated in RRC CONNECTION SETUP message + 1.
C/T	Logical Channel ID for SRB #4 (AM-DCCH NAS High Priority): 0010'B

d) The SS receives a STATUS PDU on SRB #4 AM RLC on the RACH.

e) The SS repeats steps c) and d), with the UE-Id field set to the address allocated in RRC CONNECTION SETUP message.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	→		PAGING RESPONSE	Check UE-Id
2			SS Reconfiguration	Use Transparent RLC and MAC
3	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with incorrect UE-Id = C-RNTI+1
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
4	→		RLC-STATUS-PDU	NAK above PDUs
5	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with correct UE-Id = C-RNTI
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
6	→		AUTHENTICATION RESPONSE	UE-Id is recognised as correct for the UE

Specific Message Contents

None

7.1.8.5.5 Test Requirement

In step a) the UE-Id field should be set to the C-RNTI allocated in the RRC CONNECTION SETUP message. Note that this may be implied frrom receipt of the PAGING RESPONSE message correctly by the SS test script.

On the first iteration in step d) the UE should not transmit a STATUS PDU on the RLC AM entity associated with SRB #4, negatively acknowledging the PDUs transmitted in step c) as missing.

On the second iteration the UE should respond with an AUTHENTICATION RESPONSE message.

7.1.8.6 DTCH or DCCH mapped to DSCH or USCH

7.1.8.6.1 Definition and applicability

Applicable for if mode TDD only or FDD only is supported.

7.1.8.6.2 Conformance requirement

The TCTF field is included in the MAC header for TDD only. The UE-Id type and UE-Id are included in the MAC header for FDD only. The C/T field is included if multiplexing on MAC is applied.

Reference(s)

TS 25.321 clause 9.2.1.1.

7.1.8.6.3 Test purpose

To verify when DTCH or DCCH is mapped to DSCH or USCH, the TCTF field is applied for TDD only, the UE-Id type and UE-Id are applied for FDD only. If multiplexing on MAC is applied, C/T field is included, otherwise, the C/T field is not included in the MAC header.

7.1.8.6.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters. Ciphering Off.

User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

The UE is in Connected mode and a connection is established as described in the TS 34.123-1, 7.3 PDCP testing, clause ”Setup a UE originated PS session using IP Header compression in AM RLC (using Loop back test mode 1).

Related ICS/IXIT Statement(s)

TBD

Foreseen Final State of the UE

Test procedure

a) The SS sends a certain data block to the UE.

b) After having received the data block via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.

c) The SS receives the returned data block and checks its MAC header whether the TCTF is applied for TDD only, or the UE-Id type and UE-Id are applied for FDD onlyand the C/T field shall not be applied.

d) The SS configures the RLC

e) The SS starts a Radio Bearer Reconfiguration procedure to be connected in RLC transparent mode and configures the Radio Bearer for multiplexing.

f) The SS sends a certain data block to the UE.

g) After having received the data block via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.

h) The SS receives the returned data block and check its MAC header whether the TCTF is applied for TDD only, or the UE-Id type and UE-Id are applied for FDD only and the C/T field is applied.

i) The SS reconfigures its RLC mode to be in AM.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DATA BLOCK	The SS sends one data block with MAC header, sets TCTF as ”DCCH or DTCH over USCH or DSCH” for TDD only, or sets UE-Id type as ”C-RNTI”, and UE-Id as C-RNTI of UE for FDD only.
2	→		LOOP BACK DATA BLOCK	SS receives the loop back data block from the Uplink RB and checks the MAC header.
3				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”AM mode”.
4	←		RADIO BEARER RECONFIGURE	Reconfigures the downlink and uplink radio bearer as multiplexing .
5	→		RADIO BEARER RECONFIGURATION COMPLETE	
6				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”Transparent mode”.
7	←		DATA BLOCK	The SS sends one data block with MAC header, sets TCTF as ”DCCH or DTCH over USCH or DSCH” for TDD only, or sets UE-Id type as ”C-RNTI”, and UE-Id as C-RNTI of UE for FDD only and C/T field is included.
8	→		LOOP BACK DATA BLOCK	SS receives the loop back data block from the Uplink RB and checks the MAC header.
9				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”AM mode”.

Specific Message Contents

RADIO BEARER SET UP:

Information Element	Value/remark
RLC info - RLC mode	 AM RLC
RB mapping info -Downlink - Number of logical channels - Downlink transport channel type	 1 DSCH
-Uplink - Number of logical channels - Uplink transport channel type	 1 USCH

RADIO BEARER RECONFIGURE:

Information Element	Value/remark
RLC info - RLC mode	 AM RLC
RB mapping info -Downlink - Number of logical channels - Downlink transport channel type -Uplink - Number of logical channels - Uplink transport channel type	 2 DSCH 2 USCH

7.1.8.6.5 Test requirements

TCTF field in the MAC header of loop back data block is ”DTCH or DCCH over DSCH or USCH” for TDD only. The UE-ID type and UE-Id are applied in the MAC header for FDD only. If multiplexing on MAC is applied, C/T field is included, otherwise, C/T field is not included.

7.1.8.7 DTCH or DCCH mapped to CPCH

7.1.8.7.1 Definition and applicability

All UEs which support CPCH.

7.1.8.7.2 Conformance requirement

UE-Id type field and UE-Id are included in the MAC header. The C/T field is included in the MAC header if multiplexing on MAC is applied.

Reference(s)

TS 25.321 sub-clause 9.2.1.1 and 11.3.

TS 25.214 clause 6.2.

TS 25.211 clause 5.3.3.11.

7.1.8.7.3 Test purpose

To verify when DTCH or DCCH mapped to CPCH, UE-Id type field and UE-Id are included in the MAC header. if multiplexing on MAC is applied, the C/T field is included in the MAC header, otherwise, C/T field is not included.

7.1.8.7.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, Ciphering Off.

User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

The UE is in Connected mode and a connection is established as described in the TS 34.123-1, 7.3 PDCP testing, clause ”Setup a UE originated PS session using IP Header compression in UM RLC (using Loop back test mode 1).

Related ICS/IXIT Statement(s)

TBD

Foreseen Final State of the UE

Test procedure

a) The SS sends SIBs 7, 8, and 9, sends CSICH information and waits 30 seconds.

b) The SS reconfigures its RLC mode to be in transparent mode RLC. Afterwards its sends a certain data block to the UE .

c) After having received the data block via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.

d) The SS receives the returned data block and checks its MAC header, whether a UE-Id type and a UE-Id are included.

e) The SS reconfigures its RLC mode to be in AM.

f) The SS starts a Radio Bearer Reconfiguration procedure to be connected in RLC transparent mode and configures the Radio Bearer for multiplexing.

g) The SS sends the next data block via its MAC entity with MAC header, including the UE-Id type as ”C-RNTI” and UE-Id as C-RNTI of the UE.C/T field.

h) After having received the data block via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.

i) The SS receives the returned data block and checks its MAC header, whether UE-Id type, UE-Id field are included and C/T field is applied or not.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		SIBs 7, 8 and 9 and CSICH information	Containing default settings for CPCH.
2	←		DATA BLOCK	The SS sends one data block with MAC header, sets UE-Id type as ”C-RNTI”, and UE-Id as C-RNTI of UE.
3	→		LOOP BACK DATA BLOCK	SS receives the loop back data block from the Uplink RB and checks the MAC header.
4				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”AM mode”.
5	←		RADIO BEARER RECONFIGURE	Reconfigures the downlink and uplink radio bearer as multiplexing.
6	→		RADIO BEARER RECONFIGURATION COMPLETE	
7				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”Transparent mode”.
8	←		DATA BLOCK	The SS sends one data block with MAC header, sets UE-Id type as ”C-RNTI”, and UE-Id as C-RNTI of UE.
9	→		LOOP BACK DATA BLOCK	SS receives the loop back data block from the Uplink RB and checks the MAC header.
10				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”AM mode”.

Specific Message Contents

RADIO BEARER SET UP:

Information Element	Value/remark
RLC info - RLC mode	 AM RLC
RB mapping info -Downlink - Number of logical channels - Downlink transport channel type	 1 FACH
-Uplink - Number of logical channels - Uplink transport channel type	 1 CPCH

RADIO BEARER RECONFIGURE:

Information Element	Value/remark
RLC info - RLC mode	 AM RLC
RB mapping info -Downlink - Number of logical channels - Downlink transport channel type -Uplink - Number of logical channels - Uplink transport channel type	 2 FACH 2 CPCH

PRACH persistence level info in System Information Block type 7

Information Element	Value/Remark
PRACHs listed in SIB 5 - Dynamic persistence level	 All set to 8, which maps to minimum persistence value, no access allowed
PRACHs listed in SIB 6 - Dynamic persistence level	 All set to 8, which maps to minimum persistence value, no access allowed

CPCH parameters in System Information Block type 8

Information Element	Value/Remark
Back off control parameters	
- $N_{ap\_retrans\_max}$	15
- N_{access_fails}	15
- $NF_{bo\_no\ aich}$	15
- NS_{bo_busy}	15
- $NF_{bo\_all\_busy}$	15
- $NF_{bo\_mismatch}$	15
- T_{CPCH}	0
Power Control Algorithm	algorithm 1
TPC step size	1
DL DPCCH BER	15

CPCH set info in System Information Block type 8

Information Element	Value/Remark
AP preamble scrambling code	16
AP-AICH channelisation code	15
CD preamble scrambling code	17
CD/CA-ICH channelisation code	16
DeltaPp-m	0
UL DPCCH Slot Format	1
N_start_message	8
CPCH status indication mode	PA mode
PCPCH Channel #1 info	
- UL scrambling code	18
- DL channelisation code	15
- PCP length	8
- UCSM info	
- Minimum spreading factor	64
- NF_max	64
- AP signature	15
PCPCH Channel #2 info	
- UL scrambling code	19
- DL channelisation code	14
- PCP length	8
- UCSM info	
- Minimum spreading factor	64
- NF_max	64
- AP signature	14

PCPCH persistence level info in System Information Block type 9

Information Element	Value/Remark
CPCH set persistence levels	
- PCPCH persistence level	Both set to 1, immediate access allowed

CSICH Information broadcast by SS PHY

Information Element	Value/Remark
PCPCH Channel Availability (PCA) :	
-PCA1	Available
-PCA2	Available

7.1.8.7.5 Test requirements

The UE-Id type and UE-Id field are included in the MAC header. When multiplexing on MAC is not applied, C/T field is included in the MAC header. Otherwise, C/T field is not included.

7.1.8.8 DTCH or DCCH mapped to DCH / Invalid C/T Field

7.1.8.8.1 Definition

This tests that the MAC applies the correct header to the MAC PDU according to the type of logical channel carried on the RACH/FACH transport channel. Incorrect application of MAC headers would result in inoperation of the UE.

7.1.8.8.2 Conformance requirement

DTCH or DCCH mapped to DCH, no multiplexing of dedicated channels on MAC: -no MAC header is required.

DTCH or DCCH mapped to DCH, with multiplexing of dedicated channels on MAC: -C/T field is included in MAC header.

The following fields are defined for the MAC header:

- C/T field
  The C/T field provides identification of the logical channel instance when multiple logical channels are carried on the same transport channel …

Structure of the C/T field

C/T field	Designation
0000	Logical channel 1
0001	Logical channel 2
...	...
1110	Logical channel 15
1111	Reserved (PDUs with this coding will be discarded by this version of the protocol)

Reference(s)

TS 25.321 sub-clauses 9.2.1 and 9.2.1.1 b).

7.1.8.8.3 Test purpose

1. To verify that the UE discards PDUs with reserved or incorrect values in C/T field

2. To verify that the C/T field is correctly applied when a DTCH or DCCH is mapped to a DCH

7.1.8.8.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, Ciphering Off.

User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

The SS starts broadcasting the System Information as specified in TS 34.108 clause 6.1, using the configuration for the PRACH and SCCPCH (signalled in SYSTEM INFORMATION 5) as follows:

1. The SCCPCH is configured as specified in TS 34.108 clause 6.10.2.4.3.3 (Interactive/Background 32 kbps RAB + SRB for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH).

2. The PRACH is configured as specified in TS 34.108 clause 6.10.2.4.4.1.

The SS follows the procedure in TS 34.108 clause 7.4.2.1 (Mobile Terminated) so that the UE shall be in state BGP 6-1 (CS-CELL_DCH_INITIAL). During this procedure the RRC CONNECTION SETUP message shall allocate a DCH to carry the signalling radio bearers as follows:

1. The DCH/DPCH is configured as specified in TS 34.108 clause 6.10.2.4.1.2: Stand-alone UL:3.4 DL:3.4 kbps SRBs for DCCH.

Test procedure

a) The SS receives the PAGING RESPONSE message from the UE and checks the C/T field.

b) The SS is reconfigured as follows:

1. The SCCPCH is configured using the parameters in the table below for the DPCH:

Higher layer	RAB/signalling RB		**SRB#3**
	User of Radio Bearer		NAS_DT High prio
RLC	Logical channel type		DCCH
	RLC mode		TM
	Payload sizes, bit		148
	Max data rate, bps		3700
	RLC header, bit		0
MAC	MAC header, bit		0*
	MAC multiplexing		Simulated by SS
Layer 1	TrCH type		DCH
	TB sizes, bit		148
	TFS	TF0, bits	0x148
		TF1, bits	1x148
	TTI, ms		40
	Coding type		CC 1/3
	CRC, bit		16
	Max number of bits/TTI before rate matching		516
	Uplink: Max number of bits/radio frame before rate matching		129
	RM attribute		155-165

NOTE: The SS MAC layer must be configured not to add a MAC header so that the header can be added by the test case in order to create the necessary invalid values.

The TFCS should be configured as specified in clause 6.10.2.4.1.2.1.1.2.

c) The SS transmits MAC PDUs containing RLC AM PDUs containing a DIRECT TRANSFER message containing an AUTHENTICATION REQUEST message.

The DIRECT TRANSFER message will be segmented into 128-bit PUs, with correct RLC AM headers.

The MAC header shall be set as follows:

Field	Value
C/T	0100'B

d) The SS receives a STATUS PDU on SRB #3 AM RLC on the DCH.

e) The SS repeats steps c) and d), with the C/T field set as follows:

Iteration	C/T Value
2	1111'B

f) The SS repeats steps c) and d), with the C/T field set to the Logical Channel ID for SRB #3 (AM-DCCH NAS High Priority): 0010'B.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	→		PAGING RESPONSE	Check C/T field
2			SS Reconfiguration	Use Transparent RLC and MAC
3	←		MAC PDU(C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with incorrect C/T = 0100'B
	←		MAC PDU(C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
4	→		RLC-STATUS-PDU	NAK above PDUs
5	←		MAC PDU(C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with incorrect C/T 1111'B
	←		MAC PDU(C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
6	→		RLC-STATUS-PDU	NAK above PDUs
7	←		MAC PDU(C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 1))	Sent with correct C/T = 0010'B
	←		MAC PDU(C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT 2))	
			…	
	←		MAC PDU(C/T, RLC AM PDU(SN, DIRECT TRANSFER(AUTHENTICATION REQUEST) SEGMENT n))	
8	→		AUTHENTICATION RESPONSE	C/T Field is recognised as correct for the DCCH

Specific Message Contents

None

7.1.8.8.5 Test Requirement

In step a) the C/T field should be set to the Logical Channel ID for SRB #3 (0010'B). Note that this may be implied frrom receipt of the PAGING RESPONSE message correctly by the SS test script.

On the first iteration, and on each iteration in step d) the UE should not transmit a STATUS PDU on the RLC AM entity associated with SRB #3, negatively acknowledging the PDUs transmitted in step c) as missing.

On the final iteration the UE should respond with an AUTHENTICATION RESPONSE message.

7.1.9 Selection of appropriate Transport format for each Transport Channel depending on instantaneous source rate

7.1.9.1 Selection of Transport Format depending on instantaneous source rate

7.1.9.1.1 Definition and applicability

All UE.

7.1.9.1.2 Conformance requirement

Given the Transport Format combination set assigned by RRC, MAC selects the appropriate transport format within an assigned transport format set for each active transport channel depending on source rate. The control of transport formats ensures efficient use of transport channels.

Reference(s)

TS 25.321 sub-clause 25.301 5.3.1.2

7.1.9.1.3 Test purpose

To verify that appropriate transport format is selected for each transport channel depending on source rate.

7.1.9.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, Ciphering Off.

User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

The UE is in Connected mode and a connection is established as described in the TS 34.123-1, 7.3 PDCP testing, clause ”Setup a UE originated PS session using IP Header compression in AM RLC (using Loop back test mode 1), but for two Badio Bearer entities. Therefore two uplink- and downlink settings shall be configured.

Related ICS/IXIT Statement(s)

TBD

Foreseen Final State of the UE

Test procedure

a) The SS sends certain data blocks.

b) After having received the data block via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.

c) The SS receives the returned data and read the TFCI which indicate the Transport Format.

d) The SS checks, that high data rate RBs have a high bit rate Transport Format.

e) The SS reconfigures its RLC mode to be in AM RLC.

f) Repeat step a) to e) for different data rates.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header, and CRLC_CONFIG_REQ with RLC mode as "Transparent Mode" for each Radio Bearer.
2	←		DATA BLOCKS	
3	→		LOOP BACK DATA BLOCKS	Read the Transfer Format of loop back data blocks, the high bit transfer format apply to the Radio Bearer with high data rate.
4				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header, and CRLC_CONFIG_REQ with RLC mode as "Transparent Mode".
5				The step 1 to 10 shall be repeated for different data rates.

Specific Message Contents

RADIO BEARER SET UP:

Information Element	Value/remark
RLC info - RLC mode	 AM RLC
RB1 - TTI - Downlink - Number of logical channels - Downlink transport channel type	 10ms 1 DCH
RB2 - TTI - Uplink - Number of logical channels - Uplink transport channel type	 10ms 1 DCH
RB3 - TTI - Downlink - Number of logical channels - Downlink transport channel type	 80ms 1 DCH
RB4 - TTI - Uplink - Number of logical channels - Uplink transport channel type	 80ms 1 DCH
TFS	TF0 (1X366) TF1 (2X366) TF2 (4X366) TF3 (8X366)

7.1.9.1.5 Test requirements

The "High bit rate" TF is applied to the high data rate Radio Bearer. That is, the bit rate of TF in RB2 should be not less than RB4.

7.1.10 Priority handling between data flows of one UE

7.1.10.1 Priority handling between data flows of one UE

7.1.10.1.1 Definition and applicability

7.1.10.1.2 Conformance requirement

When selecting between the Transport Format Combinations in the given Transport Format

Combination Set, priorities of the data flows to be mapped onto the corresponding Transport

Channels can be taken into account.

Reference(s)

TS 25.301 sub-clause 5.3.1.2.

7.1.10.1.3 Test purpose

To verify that the priority between data flows of one UE was correctly handled.

7.1.10.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, Ciphering Off.

User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

The UE is in Connected mode and a connection is established as described in the TS 34.123-1, 7.3 PDCP testing, clause ”Setup a UE originated PS session using IP Header compression in AM RLC (using Loop back test mode 1), but for two Badio Bearer entities. Therefore two uplink- and downlink settings shall be configured.

Related ICS/IXIT Statement(s)

TBD

Foreseen Final State of the UE

Test procedure

a) The SS sends certain data blocks.

b) After having received the data block via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.

c) The SS receives the returned data and read the TFCI which indicate the Transport Format.

d) The SS checks, that high data rate RBs have a high bit rate Transport Format.

e) The SS reconfigures its RLC mode to be in AM RLC.

f) Repeat step a) to e) repeat with different MAC logical channel priority (MAC priority of RB1 and RB2 set as 3, MAC priority of RB3 and RB4 set as 1).

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header, and CRLC_CONFIG_REQ with RLC mode as "Transparent Mode".
2	←		DATA BLOCKS	
3	→		LOOP BACK DATA BLOCKS	Read the Transfer Format of loop back data blocks, the high bit transfer format apply to the Radio Bearer with high MAC logical channel priority.
4				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header, and CRLC_CONFIG_REQ with RLC mode as "Transparent Mode".
5				The step 1 to 4 shall be repeated with different MAC logical channel priority.

Specific Message Contents

RADIO BEARER SET UP:

Information Element	Value/remark
RLC info - RLC mode	 AM RLC
RB1 mapping info - MAC logical channel priority - Downlink - Number of logical channels - Downlink transport channel type	 4 1 DCH
RB2 mapping info - MAC logical channel priority - Uplink - Number of logical channels - Uplink transport channel type	 4 1 DCH
RB3 mapping info - MAC logical channel priority - Downlink - Number of logical channels - Downlink transport channel type	 2 1 DCH
RB4 mapping info - MAC logical channel priority - Uplink - Number of logical channels - Uplink transport channel type	 2 1 DCH
TFS	TF0 (1X366) TF1 (2X366) TF2 (4X366) TF3 (8X366)

7.1.10.1.5 Test requirements

The high bit rate TF is applied to high MAC logical channel priority Radio Bearer. That is, the bit rate of TF in RB4 should be not less than RB2.

7.1.11 Ciphering for transparent RLC

7.1.11.1 Ciphering

7.1.11.1.1 Definition and applicability

All UE.

7.1.11.1.2 Conformance requirement

Ciphering is performed in the MAC layer for transparent RLC mode.

Reference(s)

TS 25.301 sub-clause 5.3.1.2.

7.1.11.1.3 Test purpose

To verify that the ciphering is performed in the MAC layer for transparent RLC mode.

7.1.11.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters. Transparent Mode, Ciphering On.

User Equipment:

The UE shall operate under normal test conditions, Ciphering On.

The Test-USIM shall be inserted.

The UE is in Connected mode and a connection is established as described in the TS 34.123-1, 7.3 PDCP testing, clause ”Setup a UE originated PS session using IP Header compression in AM RLC (using Loop back test mode 1).

Related ICS/IXIT Statement(s)

TBD

Foreseen Final State of the UE

Test procedure

a) The MAC entity of SS was configured as Ciphering mode as ”Start” with CMAC_CONFIG-REQ primitive.

b) SS configures its RLC entity”Transparent mode”.

c) The SS sends a DATA BLOCK from RLC PCO without MAC header. After having received the data block via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.

d) The SS checks the returned data blocks and compare it with the data block asw sent before.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				SS sends CMAC_CONFIG-REQ to set ciphering mode as ”Start”.
2				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”Transparent mode”.
3	←		DATA BLOCKS	SS sends data blocks from downlink radio bearer, The data blocks is ciphered by SS and deciphered by UE.
4	→		LOOP BACK DATA BLOCKS	SS receives loop back data blocks from uplink radio bearer. The loop back data is ciphered by UE and deciphered by SS.
5				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”AM mode”.

Specific Message Contents

RADIO BEARER SET UP:

Information Element	Value/remark
Ciphering mode info	
- Ciphering mode command	Start
- Ciphering algorithm	UEA 1, kasumi.
RLC info	
- RLC mode	Transparent RLC
RB mapping info	
-Downlink	
- Number of logical channels	1
- Downlink transport channel type	DCH
-Uplink	
- Number of logical channels	1
- Uplink transport channel type	DCH

7.1.11.1.5 Test requirements

The loop back data shall be identical to the data sent out by SS.

7.1.12 Control of RACH transmissions.

7.1.12.1 Access Service class selection for RACH transmission

7.1.12.1.1 Definition and applicability

All UE.

7.1.12.1.2 Conformance requirement

The following ASC selection scheme shall be applied, where NumASC is the highest available ASC number and MinMLP the highest logical channel priority assigned to one logical channel:

In case all TBs in the TB set have the same MLP, select ASC=min(NumASC, MLP);

In case TBs in a TB set have different priority, determine the highest priority level MinMLP and select ASC=min(NumASC, MinMLP).

Reference(s)

TS 25.321 sub-clause 11.2.1

7.1.12.1.3 Test purpose

To verify that MAC selection ASC correctly.

7.1.12.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, Ciphering Off.

User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted

The UE is in Connected mode and a connection is established as described in the TS 34.123-1, 7.3 PDCP testing, clause ”Setup a UE originated PS session using IP Header compression in AM RLC (using Loop back test mode 1).

Related ICS/IXIT Statement(s)

TBD

Foreseen Final State of the UE

Test procedure

a) The SS configures its RLC entity for”Transparent Mode”.

b) The MAC entity in the SS side is configured with ASC as 4.

c) The SS sends certain data blocks to UE.

d) After having received the data block via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.

e) The SS receives the returned data blocks from the UE.

f) The MAC entity in SS side was reconfigured with ASC as any other data than 4.

g) The SS sends the next data blocks to UE.

h) The SS doesn’t receive any data blocks from the UE within 30 seconds.

i) The SS configures its RLC entity for AM mode” ..

j) The SS sends RADIO BEARER RELEASE message to UE.

k) The UE sends RADIO BEARER RELEASE COMPLETE message to SS.

l) The procedure from a to n was repeated 3 times with MAC logical priority set as 3, 2, 1 and configure the ASC in system simulator as 3, 2, 1 accordingly.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as "Transparent mode".
2			CMAC_CONFIG-Req	SS sets the ASC as 4.
3	←		DATA BLOCKS	SS sends data blocks.
4	→		LOOP BACK DATA BLOCKS	SS shall receive the data block from UE.
5			CMAC_CONFIG-Req	SS sets the ASC as other value than 4.
6	←		DATA BLOCKS	SS sends data blocks.
7	→		LOOP BACK DATA BLOCKS	SS shall not receive the loop back data blocks from UE in 30s.
8				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".
9			Repeat Step 1 to step 8 shall be repeated 3 times with MAC Priority set as 3, 2, 1 and the ASC of SS set as 3, 2, 1 accordingly	

7.1.12.1.5 Test requirements

When the ASC in SS side match with the MAC priority, SS can receive the loop back data blocks, otherwise, The SS can't receive the loop back data blocks. This requirement applies to the different MAC priority.

7.1.12.2 Control of RACH transmissions for FDD mode

7.1.12.2.1 Definition and applicability

All UE.

7.1.12.2.2 Conformance requirement

MAC receives the following RACH transmission control parameters from RRC with the CMAC-Config-REQ primitive: maximum number of preamble ramping cycles Mmax.

When preamble transmission counter M larger than Mmax, then the procedure will stop and enter Error handling procedure.

Reference(s)

TS25.321 11.2.2, TS25.321 Figure 11.2.2.1

7.1.12.2.3 Test purpose

To verify that the MAC entity controls RACH transmission correctly.

7.1.12.2.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, Ciphering Off.

SS broadcast System Information 5 with Mmax in RACH transmission parameters set as 0.

User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

The UE is in Connected mode and a connection is established as described in the TS 34.123-1, 7.3 PDCP testing, clause ”Setup a UE originated PS session using IP Header compression in AM RLC (using Loop back test mode 1).

Related ICS/IXIT Statement(s)

TBD

Foreseen Final State of the UE

The same as the initial conditions.

Test procedure

a) The SS configures its RLC entity for ”Transparent Mode” .

b) The SS sends certain DATA BLOCKS.

c) The SS shall not receive any LOOP BACK DATA BLOCKS within 30s.

Expected sequence:

Step	Direction		Message	Comments
	UE	SS		
1				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”Transparent mode”.
2	←		DATA BLOCKS	
3				SS shall not receive returned data blocks within 30s.
4				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”AM mode”.

7.1.12.2.5 Test requirements

The SS does not receive loop back data blocks from UE when M_{max} set as 0.

7.1.13 Control of CPCH transmissions.

7.1.13.1 Control of CPCH transmissions for FDD

7.1.13.1.1 Definition and applicability

All UEs which support CPCH.

7.1.13.1.2 Conformance requirement

1. If counter M is not less than N_access_fails, the UE shall execute an access failure error procedure and the CPCH access procedure ends.

2. If the sum of the Frame Count Transmitted counter plus the number of frames in the next TTI is larger than NF_max, the UE shall exit the CPCH transmission procedure.

3. If the CSICH information indicates no PCPCH is available, the UE shall not attempt CPCH access.
4. If the CPCH Persistency levels are all set to 8, the UE shall not attempt CPCH access.
5. If the SS issues an immediate Emergency Stop command in the DL-DPCCH for CPCH, the UE shall abort CPCH access.

Reference(s) TS25.321 11.3

TS 25.214 clause 6.

TS 25.211 clause 5.3.3.11

7.1.13.1.3 Test purpose

To verify that the MAC entity control CPCH transmission correctly.

7.1.13.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, Ciphering Off.

User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

The UE is in Connected mode and a connection is established as described in the TS 34.123-1, 7.3 PDCP testing, clause ”Setup a UE originated PS session using IP Header compression in AM RLC (using Loop back test mode 1).

Related ICS/IXIT Statement(s)

TBD

Foreseen Final State of the UE

The same as the initial conditions.

Test procedure

a) The SS ends SIBs 7, 8 and 9, sends CSICH information and waits 30 seconds.

b) The SS configures its RLC entity for”Transparent Mode”

c) The SS sends certain DATA BLOCKS to UE with UE-Id type and UE-Id field.

d) After having received the data block via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.

e) The SS receives returned DATA BLOCKS.

f) The SS configures its RLC entity for”AM mode

g) The SS starts the RB reconfiguration procedure by sending the RADIO BEARER RECONFIGURATION message.

h) After having received the UE confimation for the reconfiguration procedure, the SS configures its RLC entity for”Transparent Mode”

i) The SS sends SIB 8 on BCH with parameter : N_access_fails = 0 and waits 30 seconds.

j) The SS sends certain DATA BLOCKS.

k) The SS shall not receive any LOOP BACK DATA BLOCKS within 30s.

l) The SS configures its RLC entity for"AM mode".

m) The SS starts the RB reconfiguration procedure by sending the RADIO BEARER RECONFIGURATION message.

n) The SS receives RADIO BEARER RECONFIGURE COMPLETE.

o) After having received the UE confimation for the reconfiguration procedure, the SS configures its RLC entity for"Transparent Mode".

p) The SS sends SIB 8 on BCH with parameter : NF_max = 0 and waits 30 seconds.

q) The SS sends certain DATA BLOCKS.

r) The SS shall not receive any returned DATA BLOCKS within 30s.

s) The SS configures its RLC entity for"AM mode".

t) The SS starts the RB reconfiguration procedure by sending the RADIO BEARER RECONFIGURATION message.

u) The SS receives RADIO BEARER RECONFIGURE COMPLETE.

v) After having received the UE confimation for the reconfiguration procedure, the SS configures its RLC entity for"Transparent Mode".

w) The SS sends SIB 8 on BCH and waits 30 seconds.

x) The SS continuously sends CSICH information with PCA1=PCA2= NOT AVAILABLE.

y) The SS sends certain DATA BLOCKS.

z) The SS shall not receive any returned DATA BLOCKS within 30s.

aa) The SS configures its RLC entity for"AM mode".

bb) The SS starts the RB reconfiguration procedure by sending the RADIO BEARER RECONFIGURATION message.

cc) The SS receives RADIO BEARER RECONFIGURE COMPLETE.

dd) After having received the UE confimation for the reconfiguration procedure, the SS configures its RLC entity for"Transparent Mode".

ee) The SS sends CSICH information with PCA1=PCA2= AVAILABLE and the SS PHY is configured to send CPCH Emergency Stop message in all DL DPCCHs for CPCH after N_start_message frames.

ff) The SS sends certain DATA BLOCKS.

gg) The SS shall not receive any returned DATA BLOCKS within 30s.

hh) The SS configures its RLC entity for"AM mode".

ii) The SS starts the RB reconfiguration procedure by sending the RADIO BEARER RECONFIGURATION message.

jj) The SS receives RADIO BEARER RECONFIGURE COMPLETE.

kk) After having received the UE confimation for the reconfiguration procedure, the SS configures its RLC entity for"Transparent Mode".

ll) The SS sends SIB 9 on BCH with the CPCH persistence levels set to 8, no access allowed.

mm) The SS sends certain DATA BLOCKS

nn) The SS shall not receive any returned DATA BLOCKS within 30s.

oo) The SS configures its RLC entity for"AM mode".

pp) The SS starts the RB reconfiguration procedure by sending the RADIO BEARER RECONFIGURATION message.

qq) The SS receives RADIO BEARER RECONFIGURE COMPLETE.

rr) After having received the UE confimation for the reconfiguration procedure, the SS configures its RLC entity for"Transparent Mode".

ss) The SS sends SIB 9 on BCH with the CPCH persistence levels set to 1, immediate access allowed.

tt) The SS sends certain DATA BLOCKS.

uu) The SS receives returned DATA BLOCKS.

vv) The SS configures its RLC entity for"AM mode".

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		SIBs 7, 8 and 9 and CSICH information	Containing default settings for CPCH
2				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”Transparent mode”.
3	←		DATA BLOCKS	
4	→		LOOP BACK DATA BLOCKS	
5				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”AM mode”.
6	←		RADIO BEARER RECONFIGURATION	
7	→		RADIO BEARER RECONFIGURATION COMPLETE	
8				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”Transparent mode”.
9	←		SIB 8	N_access_fails = 0
10	←		DATA BLOCK	
11				The SS can’t receive loop back data blocks from UE in 30s.
12				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”AM mode”.
13	←		RADIO BEARER RECONFIGURATION	
14	→		RADIO BEARER RECONFIGURATION COMPLETE	
15				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”Transparent mode”.
16	←		SIB 8	NF_max = 0
17	←		DATA BLOCK	UE was trigged to send data block.
18				The SS can’t receive data from UE in 30s
19				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”AM mode”.
20	←		RADIO BEARER RECONFIGURATION	
21	→		RADIO BEARER RECONFIGURATION COMPLETE	
22				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”Transparent mode”.
23	←		SIB 8 and CSICH information	PCA1=PCA2= NOT AVAILABLE
24	←		DATA BLOCK	
25				The SS can’t receive data from UE in 30s
26				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”AM mode”.
27	←		RADIO BEARER RECONFIGURATION	
28	→		RADIO BEARER RECONFIGURATION COMPLETE	
29				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as ”Transparent mode”.

30	←	SIB 8 and CSICH information	PCA1=PCA2=AVAILABLE
31			SS sends a CPCH-Estop command in all DLDPCCHs for CPCH after N_start_message frames
32	←	DATA BLOCK	
33			The SS can't receive data from UE in 30s
34			SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".
35	←	RADIO BEARER RECONFIGURATION	
36	→	RADIO BEARER RECONFIGURATION COMPLETE	
37			SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as "Transparent mode".
38	←	SIB 9	CPCH Persistence levels set to 8; no access allowed
39	←	DATA BLOCK	
40			The SS can't receive data from UE in 30s
41			SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".
42	←	RADIO BEARER RECONFIGURATION	
43	→	RADIO BEARER RECONFIGURATION COMPLETE	
44			SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as "Transparent mode".
45	←	SIB 9	CPCH Persistence levels set to 1; immediate access allowed
46	←	DATA BLOCK	
47	→	LOOP BACK DATA BLOCKS	
48			SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".

Specific Message Contents

RADIO BEARER SET UP:

Information Element	Value/remark
RLC info - RLC mode	 AM RLC
RB mapping info -Downlink - Number of logical channels - Downlink transport channel type	 1 FACH
-Uplink - Number of logical channels - Uplink transport channel type	 1 CPCH

PRACH persistence level info in System Information Block type 7

Information Element	Value/Remark
PRACHs listed in SIB 5 - Dynamic persistence level PRACHs listed in SIB 6 - Dynamic persistence level	 All set to 8, which maps to minimum persistence value, no access allowed All set to 8,which maps to minimum persistence value, no access allowed

CPCH parameters in System Information Block type 8

Information Element	Value/Remark
Back off control parameters	
- $N_{ap\_retrans\_max}$	15
- N_{access_fails}	15
- $NF_{bo\_no\ aich}$	15
- NS_{bo_busy}	15
- $NF_{bo\_all\_busy}$	15
- $NF_{bo\_mismatch}$	15
- T_{CPCH}	0
Power Control Algorithm	algorithm 1
TPC step size	1
DL DPCCH BER	15

CPCH set info in System Information Block type 8

Information Element	Value/Remark
AP preamble scrambling code	16
AP-AICH channelisation code	15
CD preamble scrambling code	17
CD/CA-ICH channelisation code	16
DeltaPp-m	0
UL DPCCH Slot Format	1
N_start_message	8
CPCH status indication mode	PA mode
PCPCH Channel #1 info	
- UL scrambling code	18
- DL channelisation code	15
- PCP length	8
- UCSM info	
- Minimum spreading factor	64
- NF_max	64
- AP signature	15
PCPCH Channel #2 info	
- UL scrambling code	19
- DL channelisation code	14
- PCP length	8
- UCSM info	
- Minimum spreading factor	64
- NF_max	64
- AP signature	14

PCPCH persistence level info in System Information Block type 9

Information Element	Value/Remark
CPCH set persistence levels - PCPCH persistence level	Both set to 1, immediate access allowed

CSICH Information broadcast by SS PHY

Information Element	Value/Remark
PCPCH Channel Availability (PCA) : -PCA1 -PCA2	 Available Available

7.1.13.1.5 Test requirements

The SS can't receives data blocks from UE when N_access_fails or NF_max set as 0.

The SS can't receives data blocks from UE when NF_max set as 0.

The SS can't receives data blocks from UE when CSICH info indicates channels not available.

The SS can't receives data blocks from UE when CPCH Persistency level set to 8.

The SS can't receives data blocks from UE when Emergency Stop message terminates access.

7.2 RLC testing

7.2.1 Transparent mode

7.2.1.1 Segmentation and reassembly

Transparent mode segmentation and reassembly are not tested in this release of the specification.

7.2.2 Unacknowledged mode

7.2.2.1 General information for UM tests

A generic Radio Access Bearer is provided for UM tests. This RAB is based upon the Stand-alone 3.4kbps UL/DL Signalling RB, with an additional UM 3.4kbps path mapped to a DTCH. This logical channel is multiplexed on the same transport channel as the DCCH.

The UM test RAB is set up using the Generic Procedure described in Clause 7.1.3 of TS 34.108, and with the default RAB replaced as follows:

Table 7.2/1 RAB Configuration for UM testing (7-bit Lis)

Higher layer	RAB/signalling RB		**SRB#1**	**SRB#2**	**SRB#3**	**SRB#4**	**RAB #1**
	User of Radio Bearer		RRC	RRC	NAS_DT High prio	NAS_DT Low prio	User Plane
RLC	Logical channel type		DCCH	DCCH	DCCH	DCCH	DTCH
	RLC mode		UM	AM	AM	AM	UM
	Payload sizes, bit		136	128	128	128	136
	Max data rate, bps		3400	3200	3200	3200	3400
	AMD/UMD PDU header, bit		8	16	16	16	8
MAC	MAC header, bit		4	4	4	4	4
	MAC multiplexing		4 logical channel multiplexing				
Layer 1	TrCH type		DCH				
	TB sizes, bit		148				
	TFS	TF0, bts	0				
		TF1, bits	1x148				
	TTI, ms		40				
	Coding type		CC 1/3				
	CRC, bit		16				
	Max number of bits/TTI before rate matching		516				
	Uplink: Max number of bits/radio frame before rate matching		129				

The UM test RAB is used in all tests with the following exceptions:

- Tests that only involve 15-bit length indicators
- Tests that explicitly specify a different Radio Bearer configuration

Tests that involve only 15-bit length indicators require a modified Radio Bearer configuration. To accommodate the larger payload size, these tests use a coded composite transport channel consisting of two DCH. The first DCH is specified as for the 7-bit length indicators, but not including the DTCH (RAB#1). This is shown in Table 7.2/2A

Table 7.2/2A SRB Configuration for UM testing (15-bit Lis)

Higher layer	Signalling RB: **DCH 0**		**SRB#1**	**SRB#2**	**SRB#3**	**SRB#4**
	User of Radio Bearer		RRC	RRC	NAS_DT High prio	NAS_DT Low prio
RLC	Logical channel type		DCCH	DCCH	DCCH	DCCH
	RLC mode		UM	AM	AM	AM
	Payload sizes, bit		136	128	128	128
	Max data rate, bps		3400	3200	3200	3200
	AMD/UMD PDU header, bit		8	16	16	16
MAC	MAC header, bit		4	4	4	4
	MAC multiplexing		4 logical channel multiplexing			
Layer 1	TrCH type		DCH			
	TB sizes, bit		148			
	TFS	TF0, bts	0			
		TF1, bits	1x148			
	TTI, ms		40			
	Coding type		CC 1/3			
	CRC, bit		16			
	Max number of bits/TTI before rate matching		516			
	Uplink: Max number of bits/radio frame before rate matching		129			

This DCH is combined with a traffic DCH (at lower MAC priority) as described in Table 7.2/2B

Table 7.2/2B RAB Configuration for UM testing (15-bit Lis)

Higher layer	RAB: **DCH 1**		**RAB**
RLC	Logical channel type		DTCH
	RLC mode		UM
	Payload sizes, bit		1280
	Max data rate, bps		64000
	UMD PDU header, bit		8
MAC	MAC header, bit		0
	MAC multiplexing		N/A
Layer 1	TrCH type		DCH
	TB sizes, bit		1288
	TFS	TF0, bits	0
		TF1, bits	1x1288
	TTI, ms		20
	Coding type		TC
	CRC, bit		16

All other settings are the same.

7.2.2.2 Segmentation and reassembly / Selection of 7 or 15 bit Length Indicators

7.2.2.2.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. The selection of the size of the length indicator fields used must follow the specified rules. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.2.2 Conformance requirement

The size of the Length Indicator may be either 7 bits or 15 bits.

For UM, 7 bit indicators shall be used if the UMD PDU size is ≤ l25 octets. Otherwise 15bit indicators shall be used.

The length of the Length Indicator only depends on the size of the largest RLC PDU. The length of the Length Indicator is always the same for all PUs, for one RLC entity.

Reference(s)

TS 25.322 Clauses 9.2.2.8, 9.2.2.9

7.2.2.2.3 Test purpose

To test that if PDU carries a single PU, and the size of the largest PDU is ≤ l25 octets, 7 bit indicators are used, otherwise, 15 bit indicators are used.

7.2.2.2.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the following exceptions:

Higher layer	RAB/Signalling RB		RAB
RLC	Logical channel type		DTCH
	RLC mode		UM
	Payload sizes, bit		960
	Max data rate, bps		48000
	UMD PDU header, bit		8
MAC	MAC header, bit		0
	MAC multiplexing		N/A
Layer 1	TrCH type		DCH
	TB sizes, bit		968
	TFS	TF0, bits	0
		TF1, bits	1x968
	TTI, ms		20
	Coding type		TC
	CRC, bit		16

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 40 bytes.

Test procedure

a) The SS transmits an RLC SDU of size 80 bytes.

b) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink.

c) The SS reconfigures the Transport Channel as follows:

Higher layer	RAB/Signalling RB		RAB
RLC	Logical channel type		DTCH
	RLC mode		UM
	Payload sizes, bit		1280
	Max data rate, bps		64000
	UMD PDU header, bit		8
MAC	MAC header, bit		0
	MAC multiplexing		N/A
Layer 1	TrCH type		DCH
	TB sizes, bit		1288
	TFS	TF0, bits	0
		TF1, bits	1x1288
	TTI, ms		20
	Coding type		TC
	CRC, bit		16

All other settings the same.

d) The SS transmits an RLC SDUs of size 80 bytes.

e) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink

f) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	80 byte SDU + padding
3	→		UPLINK RLC PDU	40 byte SDU + padding
4	←		TRANSPORT CHANNEL RECONFIGURATION	PU size > 127 bytes
5	←		DOWNLINK RLC PDU	80 byte SDU + padding
6	→		UPLINK RLC PDU	40 byte SDU + padding
7			RB RELEASE	Optional step

7.2.2.2.5 Test requirements

The UE shall send 7 bit length indicators with values that correctly indicate the end of SDU in step b).

The UE shall send 15 bit length indicators with values that correctly indicate the end of SDU in step e).

7.2.2.3 Segmentation / 7-bit Length Indicators / Padding

7.2.2.3.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.3.2 Conformance requirement

The Length Indicator is used to indicate, each time, the end of an *S*DU occurs in the PU. The Length Indicator points out the number of octets between the end of the last Length Indicator field and up to and including the octet at the end of an SDU segment

A PU that has unused space, to be referred to as padding, shall use a Length Indicator to indicate that this space is used as padding unless the padding size is one octet for PDUs with 15-bit LIs. A padding Length Indicator must be placed after any Length Indicators for a PU.

One length indicator field shall be included for each end of a SDU that the PDU includes. The LI shall be set equal to the number of octets between the end of the header fields and the end of the segment. If padding is needed, another LI field set to only 1's shall be added unless the padding size is one octet for PDUs with 15-bit LIs.

Reference(s)

TS 25.322 Clauses 9.2.2.8 and 11.2.2.1.

7.2.2.3.3 Test purpose

To test that a large SDU is correctly segmented and padding added at the end.

7.2.2.3.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit length indicator tests in Clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 18 bytes.

Test procedure

a) The SS transmits an RLC SDU of size 18 bytes.

b) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 & Padding
4	→		UPLINK RLC PDU	No LI
5	→		UPLINK RLC PDU	Check Lis and re-assembled SDU
6			RB RELEASE	Optional step

7.2.2.3.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate that the remainder of the PDU contains padding.

The length and data content of the received SDU should be the same as the transmitted SDU.

7.2.2.4 Segmentation / 7-bit Length Indicators / LI = 0

7.2.2.4.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. A pre-defined length indicator value is used to indicate when an SDUs ends coincident with the end of the previous PU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.4.2 Conformance requirement

If the PDU is exactly filled with the last segment of a SDU and there is no room for an LI field, an LI field set to only 0's shall be included as the first length indicator in the following PDU.

Reference(s)

TS 25.322 Clause 11.2.2.1

7.2.2.4.3 Test purpose

To test that where an SDU exactly fills a PU, an LI of value zero is placed as the first LI in the next PU.

7.2.2.4.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit length indicator tests in Clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 17 bytes.

Test procedure

a) The SS transmits an RLC SDU of size 34 bytes.

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	LI=0 and padding
5	→		UPLINK RLC PDU	No Lis
6	→		UPLINK RLC PDU	Check Lis and re-assembled SDU
7			RB RELEASE	Optional step

7.2.2.4.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have an LI indicating that the SDU exactly filled the previous PU, and an LI indicating that the remainder of the PDU contains padding.

The length of the received SDU should be 17 bytes, and the data content the same as the first 17 bytes of the transmitted SDU.

7.2.2.5 Segmentation / 7-bit Length Indicators / Invalid LI value

7.2.2.5.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.5.2 Conformance requirement

Upon reception of an UMD PDU that contains Length Indicator value 1111110 ("piggybacked STATUS PDU") the receiver shall discard that UMD PDU.

Reference(s)

TS 25.322 Clause 11.2.4.1.

7.2.2.5.3 Test purpose

To test that PDUs with invalid length indicators are discarded by the receiving RLC.

7.2.2.5.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit length indicator tests in Clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1with the UL SDU size set to 24 bytes.

Test procedure

a) The SS transmits two RLC SDUs of size 24 bytes. In the third PDU for transmission, the SS sets the value of the second (padding) LI to 1111110.

b) The SS checks the length indicator sizes and values of any RLC PDUs returned on the uplink, and checks for the presence of any received RLC SDUs.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 & SDU 2
4	←		DOWNLINK RLC PDU	SDU 2 and invalid LI (=11111110)
5	→		UPLINK RLC PDU	SDU 1
6	→		UPLINK RLC PDU	SDU 1: Check Lis and re-assembled SDU
7			RB RELEASE	Optional step

7.2.2.5.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the end of the SDU, and a padding LI.

The length and data content of the received SDU should be the same as the first transmitted SDU. The second SDU should not be returned.

7.2.2.6 Segmentation / 7-bit Length Indicators / LI value > PDU size

7.2.2.6.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.6.2 Conformance requirement

If the length indicator of a PDU has a value that is larger than the PDU size – the number of octets containing LIs in the PDU – 1 and is not one of the predefined values listed in the table of 3GPP TS 25.322 subclause 9.2.2.8, the PDU shall be discarded and treated as a missing PDU.

If a PDU with sequence number < VR(US) is missing then all SDUs that have segments in this PDU shall be discarded.

Reference(s)

TS 25.322 Clauses 11.2.4.2 and 11.2.3.

7.2.2.6.3 Test purpose

To test that PDUs with length indicators that point beyond the end of the PDU are discarded by the receiving RLC.

7.2.2.6.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit length indicator tests in Clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 24 bytes.

Test procedure

a) The SS transmits three RLC SDUs of size 24 bytes. All the SDUs are concatenated or segmented over successive RLC PDUs. In the third PDU for transmission, the SS sets value of the length indicator to be 18 (decimal).

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDUs.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 & SDU 2
4	←		DOWNLINK RLC PDU	SDU 2 & SDU 3, with bad LI
5	←		DOWNLINK RLC PDU	SDU 3
6	←		DOWNLINK RLC PDU	SDU 3 and padding
7	→		UPLINK RLC PDU	SDU 1
8	→		UPLINK RLC PDU	SDU 1 and padding: Check Lis and re-assembled SDU
9			RB RELEASE	Optional step

7.2.2.6.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the end of an SDU and an LI indicating that the remainder of the PDU contains padding.

The length and data content of the received SDU should be the same as the first transmitted SDU. No further SDUs or PDUs should be received.

7.2.2.7 Segmentation / 7-bit Length Indicators / First data octet LI

7.2.2.7.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. A special LI is defined to indicate that the start of on SDU is coincident with the start of the PU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.7.2 Conformance requirement

LI = 1111100, UMD PDU: The first data octet in this RLC PDU is the first octet of a RLC SDU.

Reference(s)

TS 25.322 Clause 9.2.2.8.

7.2.2.7.3 Test purpose

To test that where the previous PDU contains the end of an SDU and padding, the start of the next SDU is coincident with the start of the next PDU, and is marked by a length indicator of 1111100.

7.2.2.7.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit length indicator tests in Clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 12 bytes.

Test procedure

a) The SS transmits a normal RLC SDU of size 12 bytes.

b) The SS waits until the SDU has been received back from the UE, and then transmits another SDU of 12 bytes.

c) The SS waits until this SDU has been received back from the UE.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3			…	Wait for loopback
4	→		UPLINK RLC PDU	SDU 1
5	←		DOWNLINK RLC PDU	SDU 2 with LI = 1111100
6	→		UPLINK RLC PDU	SDU 2 with LI = 1111100
7			RB RELEASE	Optional step

7.2.2.7.5 Test requirements

The UE shall return two RLC PDUs. The second shall have a LI indicating that the first octet of the PDU contains the first octet of an SDU.

The length and data content of each received SDU should be the same as the transmitted SDU.

7.2.2.8 Segmentation / 15-bit Length Indicators / Padding

7.2.2.8.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.8.2 Conformance requirement

The Length Indicator is used to indicate, each time, the end of an SDU occurs in the PU. The Length Indicator points out the number of octets between the end of the last Length Indicator field and up to and including the octet at the end of an SDU segment.

A PU that has unused space, to be referred to as padding, shall use a Length Indicator to indicate that this space is used as padding unless the padding size is one octet for PDUs with 15-bit LIs. A padding Length Indicator must be placed after any Length Indicators for a PU.

One length indicator field shall be included for each end of a SDU that the PDU includes. The LI shall be set equal to the number of octets between the end of the header fields and the end of the segment. If padding is needed, another LI field set to only 1's shall be added unless the padding size is one octet for PDUs with 15-bit LIs.

Reference(s)

TS 25.322 Clauses 9.2.2.8 and 11.2.2.1.

7.2.2.8.3 Test purpose

To test that a large SDU is correctly segmented and padding added at the end.

7.2.2.8.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit length indicator tests in Clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 161 bytes.

Test procedure

a) The SS transmits an RLC SDU of size 161 bytes.

b) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 & Padding
4	→		UPLINK RLC PDU	No LI
5	→		UPLINK RLC PDU	Check Lis and re-assembled SDU
6			RB RELEASE	Optional step

7.2.2.8.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate that the remainder of the PDU contains padding.

The length and data content of the received SDU should be the same as the transmitted SDU.

7.2.2.9 Segmentation / 15-bit Length Indicators / LI = 0

7.2.2.9.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. A pre-defined length indicator value is used to indicate when an SDUs ends coincident with the end of the previous PU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.9.2 Conformance requirement

If the PDU is exactly filled with the last segment of a SDU and there is no room for an LI field, an LI field set to only 0's shall be included as the first length indicator in the following PDU.

Reference(s)

TS 25.322 Clause 11.2.2.1.

7.2.2.9.3 Test purpose

To test that where an SDU exactly fills a PU, an LI of value zero is placed as the first LI in the next PU.

7.2.2.9.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit length indicator tests in Clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 160 bytes.

Test procedure

a) The SS transmits an RLC SDU of size 320 bytes.

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	LI=0 and padding
5	→		UPLINK RLC PDU	No Lis
6	→		UPLINK RLC PDU	Check Lis and re-assembled SDU
7			RB RELEASE	Optional step

7.2.2.9.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have an LI indicating that the SDU exactly filled the previous PU, and an LI indicating that the remainder of the PDU contains padding.

The length of the received SDU should be 160 bytes, and the data content the same as the first 160 bytes of the transmitted SDU.

7.2.2.10 Segmentation / 15-bit Length Indicators / One octet short LI

7.2.2.10.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. A pre-defined length indicator value is used to indicate when an SDUs ends one octet short of the end of the previous PU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.10.2 Conformance requirement

In the case where the last segment of an RLC SDU is one octet short of exactly filling the last RLC PU, and 15-bit Length Indicators are used, the next Length Indicator shall be placed as the first Length Indicator in the next PU and have value LI=111 1111 1111 1011.

In the case where a PDU contains a 15-bit LI indicating that an SDU ends with one octet left in the PDU, the last octet of this PDU shall be ignored and shall not be filled with the first octet of the next SDU data.

Reference(s)

TS 25.322 Clause 9.2.2.8.

7.2.2.10.3 Test purpose

To test that where an SDU is one byte short of filling a PU, an LI indicating one byte short is placed as the first LI in the next PU.

7.2.2.10.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit length indicator tests in Clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 159 bytes.

Test procedure

a) The SS transmits an RLC SDU of size 320 bytes.

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	LI=0 and padding
5	→		UPLINK RLC PDU	No Lis
6	→		UPLINK RLC PDU	Check Lis and re-assembled SDU
7			RB RELEASE	Optional step

7.2.2.10.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have an LI indicating that the SDU was one byte short of filling the previous PU, and an LI indicating that the remainder of the PDU contains padding.

The length of the received SDU should be 159 bytes, and the data content the same as the first 159 bytes of the transmitted SDU.

7.2.2.11 Segmentation / 15-bit Length Indicators / Invalid LI value

7.2.2.11.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.11.2 Conformance requirement

Upon reception of an UMD PDU that contains Length Indicator value 111111111111110 ("piggybacked STATUS PDU") the receiver shall discard that UMD PDU.

Reference(s)

TS 25.322 Clause 11.2.4.1.

7.2.2.11.3 Test purpose

To test that PDUs with invalid length indicators are discarded by the receiving RLC.

7.2.2.11.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit length indicator tests in Clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 220 bytes.

Test procedure

a) The SS transmits two RLC SDUs of size 220 bytes. In the third PDU for transmission, the SS sets the value of the second (padding) LI to 111111111111110.

b) The SS checks the length indicator sizes and values of any RLC PDUs returned on the uplink, and checks for the presence of any received RLC SDUs.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 & SDU 2
4	←		DOWNLINK RLC PDU	SDU 2 and invalid LI (=111111111111110)
5	→		UPLINK RLC PDU	SDU 1
6	→		UPLINK RLC PDU	SDU 1: Check Lis and re-assembled SDU
7			RB RELEASE	Optional step

7.2.2.11.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the end of the SDU, and a padding LI.

The length and data content of the received SDU should be the same as the first transmitted SDU. The second SDU should not be returned.

7.2.2.12 Segmentation / 15-bit Length Indicators / LI value > PDU size

7.2.2.12.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an

invalid LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.12.2 Conformance requirement

If the length indicator of a PDU has a value that is larger than the PDU size – the number of octets containing LIs in the PDU – 1 and is not one of the predefined values listed in the table of 3GPP TS 25.322 subclause 9.2.2.8, the PDU shall be discarded and treated as a missing PDU.

If a PDU with sequence number < VR(US) is missing then all SDUs that have segments in this PDU shall be discarded.

Reference(s)

TS 25.322 Clauses 11.2.4.2 and 11.2.3.

7.2.2.12.3 Test purpose

To test that PDUs with length indicators that point beyond the end of the PDU are discarded by the receiving RLC.

7.2.2.12.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit length indicator tests in Clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 220 bytes.

Test procedure

a) The SS transmits three RLC SDUs of size 220 bytes. All the SDUs are concatenated or segmented over successive RLC PDUs. In the third PDU for transmission, the SS sets value of the length indicator to be 161 (decimal).

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDUs.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 & SDU 2
4	←		DOWNLINK RLC PDU	SDU 2 & SDU 3, with bad LI
5	←		DOWNLINK RLC PDU	SDU 3
6	←		DOWNLINK RLC PDU	SDU 3 and padding
7	→		UPLINK RLC PDU	SDU 1
8	→		UPLINK RLC PDU	SDU 1 and padding: Check Lis and re-assembled SDU
9			RB RELEASE	Optional step

7.2.2.12.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the end of an SDU and an LI indicating that the remainder of the PDU contains padding.

The length and data content of the received SDU should be the same as the first transmitted SDU. No further SDUs or PDUs should be received.

7.2.2.13 Segmentation / 15-bit Length Indicators / First data octet LI

7.2.2.13.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size requested by MAC. Length indicators are added to allow correct reconstruction of SDUs. A special LI is defined to indicate that the start of on SDU is coincident with the start of the PU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.2.13.2 Conformance requirement

LI = 111111111111100, UMD PDU: The first data octet in this RLC PDU is the first octet of a RLC SDU.

Reference(s)

TS 25.322 Clause 9.2.2.8.

7.2.2.13.3 Test purpose

To test that where the previous PDU contains the end of an SDU and padding, the start of the next SDU is coincident with the start of the next PDU, and is marked by a length indicator of 111111111111100.

7.2.2.13.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit length indicator tests in Clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 150 bytes.

Test procedure

a) The SS transmits a normal RLC SDU of size 150 bytes.

b) The SS waits until the SDU has been received back from the UE, and then transmits another SDU of 150 bytes.

c) The SS waits until this SDU has been received back from the UE.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3			…	Wait for loopback
4	→		UPLINK RLC PDU	SDU 1
5	←		DOWNLINK RLC PDU	SDU 2 with LI = 111111111111100
6	→		UPLINK RLC PDU	SDU 2 with LI = 111111111111100
7			RB RELEASE	Optional step

7.2.2.13.5 Test requirements

The UE shall return two RLC PDUs. The second shall have a LI indicating that the first octet of the PDU contains the first octet of an SDU.

The length and data content of each received SDU should be the same as the transmitted SDU.

7.2.3 Acknowledged mode

7.2.3.1 General information for AM tests

A generic Radio Access Bearer is provided for AM tests. This RAB is based upon the Stand-alone 3.4kbps UL/DL Signalling RB, with an additional AM 3.4kbps path mapped to a DTCH. This logical channel is multiplexed on the same transport channel as the DCCH.

The AM test RAB is set up using the Generic Procedure described in Clause 7.1.3 of TS 34.108, and with the default RAB replaced as shown in Tables 7.2/3A and 7.23B:

Table 7.2/3A RAB Configuration for AM testing (7-bit Lis)

Higher layer	RAB/signalling RB		**SRB#1**	**SRB#2**	**SRB#3**	**SRB#4**	**RAB #1**
	User of Radio Bearer		RRC	RRC	NAS_DT High prio	NAS_DT Low prio	User Plane
RLC	Logical channel type		DCCH	DCCH	DCCH	DCCH	DTCH
	RLC mode		UM	AM	AM	AM	AM
	Payload sizes, bit		136	128	128	128	128
	Max data rate, bps		3400	3200	3200	3200	3200
	AMD/UMD PDU header, bit		8	16	16	16	16
MAC	MAC header, bit		4	4	4	4	4
	MAC multiplexing		5 logical channel multiplexing				
Layer 1	TrCH type		DCH				
	TB sizes, bit		148				
	TFS	TF0, bts	0				
		TF1, bits	1x148				
	TTI, ms		40				
	Coding type		CC 1/3				
	CRC, bit		16				
	Max number of bits/TTI before rate matching		516				
	Uplink: Max number of bits/radio frame before rate matching		129				

Unless specified in individual test cases, the default RLC settings are given in Table 7.2/3.

Table 7.2/3B RLC Parameters for AM testing

Uplink RLC	
Transmission RLC discard	
Max DAT retransmissions	
Max_DAT	4
Transmission window size	128
Timer_RST	500
Max_RST	4
Polling info	
Timer_poll_prohibit	disabled
Timer_poll	disabled
Poll_PU	disabled
Poll_SDU	disabled
Last transmission PU poll	TRUE
Last retransmission PU poll	TRUE
Poll_Window	disabled
Timer_poll_periodic	disabled
Downlink RLC	
In-sequence delivery	TRUE
Receiving window size	128
Timer_Status_Prohibit	disabled
Timer_EPC	disabled
Missing PU Indicator	TRUE
Timer_STATUS_periodic	disabled

The AM test RAB is used in all tests with the following exceptions:

- Tests that only involve 15-bit length indicators

- Tests that explicitly specify a different Radio Bearer configuration

Tests that involve only 15-bit length indicators require a modified Radio Bearer configuration. To accommodate the larger payload size, these tests use a coded composite transport channel consisting of two DCH. The first DCH is specified as for the 7-bit length indicators, but not including the DTCH (RAB#1). This is shown in Table 7.2/4A

Table 7.2/4A SRB Configuration for AM testing (15-bit Lis)

Higher layer	Signalling RB: **DCH 0**		**SRB#1**	**SRB#2**	**SRB#3**	**SRB#4**
	User of Radio Bearer		RRC	RRC	NAS_DT High prio	NAS_DT Low prio
RLC	Logical channel type		DCCH	DCCH	DCCH	DCCH
	RLC mode		UM	AM	AM	AM
	Payload sizes, bit		136	128	128	128
	Max data rate, bps		3400	3200	3200	3200
	AMD/UMD PDU header, bit		8	16	16	16
MAC	MAC header, bit		4	4	4	4
	MAC multiplexing		4 logical channel multiplexing			
Layer 1	TrCH type		DCH			
	TB sizes, bit		148			
	TFS	TF0, bts	0			
		TF1, bits	1x148			
	TTI, ms		40			
	Coding type		CC 1/3			
	CRC, bit		16			
	Max number of bits/TTI before rate matching		516			
	Uplink: Max number of bits/radio frame before rate matching		129			

This DCH is combined with a traffic DCH (at lower MAC priority) as described in Table 7.2/4B

Table 7.2/4B RAB Configuration for AM testing (15-bit Lis)

Higher layer	RAB: **DCH 1**		**RAB**
RLC	Logical channel type		DTCH
	RLC mode		AM
	Payload sizes, bit		1280
	Max data rate, bps		64000
	AMD/UMD PDU header, bit		16
MAC	MAC header, bit		0
	MAC multiplexing		N/A
Layer 1	TrCH type		DCH
	TB sizes, bit		1296
	TFS	TF0, bits	0
		TF1, bits	1x1296
	TTI, ms		20
	Coding type		TC
	CRC, bit		16

All other settings are the same.

7.2.3.2 Segmentation and reassembly / Selection of 7 or 15 bit Length Indicators

7.2.3.2.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. Length indicators are added to allow correct reconstruction of SDUs. The selection of the size of the length indicator fields used must follow the specified rules. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.2.2 Conformance requirement

The size of the Length Indicator may be either 7 bits or 15 bits.

For AM, 7bit indicators shall be used if the AMD PDU size is ≤ l26 octets. Otherwise 15bit indicators shall be used

The length of the Length Indicator only depends on the size of the largest RLC PDU. The length of the Length Indicator is always the same for all PUs, for one RLC entity.

Reference(s)

TS 25.322 Clauses 9.2.2.8, 9.2.2.9

7.2.2.2.3 Test purpose

To test that if PDU carries a single PU, and the size of the largetst PDU is £ l26 octets, 7 bit indicators are used, otherwise, 15 bit indicators are used.

7.2.3.2.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the following exceptions:

Higher layer	RAB/Signalling RB		RAB
RLC	Logical channel type		DTCH
	RLC mode		AM
	Payload sizes, bit		960
	Max data rate, bps		48000
	AMD PDU header, bit		16
MAC	MAC header, bit		0
	MAC multiplexing		N/A
Layer 1	TrCH type		DCH
	TB sizes, bit		976
	TFS	TF0, bits	0
		TF1, bits	1x976
	TTI, ms		20
	Coding type		TC
	CRC, bit		16

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 40 bytes.

Test procedure

a) The SS transmits an RLC SDU of size 80 bytes. The PDU carrying this SDU is transmitted with a poll for status.

b) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink.

c) The SS reconfigures the Transport Channel as follows:

Higher layer	RAB/Signalling RB		RAB
RLC	Logical channel type		DTCH
	RLC mode		AM
	Payload sizes, bit		1280
	Max data rate, bps		64000
	AMD PDU header, bit		16
MAC	MAC header, bit		0
	MAC multiplexing		N/A
Layer 1	TrCH type		DCH
	TB sizes, bit		1296
	TFS	TF0, bits	0
		TF1, bits	1x1296
	TTI, ms		20
	Coding type		TC
	CRC, bit		16

All other settings the same.

d) The SS transmits an RLC SDUs of size 80 bytes. The PDU carrying this SDU is transmitted with a poll for status.

e) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink

f) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	80 byte SDU + padding + poll
3	→		UPLINK RLC PDU	40 byte SDU + piggy-backed status + poll
3a	→		*STATUS PDU*	*If piggy-backed status is not used in 3*
4	←		STATUS PDU	
5	←		TRANSPORT CHANNEL RECONFIGURATION	PU size > 127 bytes
6	←		DOWNLINK RLC PDU	80 byte SDU + padding + poll
7	→		UPLINK RLC PDU	40 byte SDU + piggy-backed status + poll
7a	→		*STATUS PDU*	*If piggy-backed status is not used in 7*
8	←		STATUS PDU	
9			RB RELEASE	Optional step

7.2.3.2.5 Test requirements

The UE shall send 7 bit length indicators with values that correctly indicate the end of SDU in step b).

The UE shall send 15 bit length indicators with values that correctly indicate the end of SDU in step e).

7.2.3.3 Segmentation / 7-bit Length Indicators / Padding or Piggy-backed Status

7.2.3.3.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. Length indicators are added to allow correct reconstruction of SDUs. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.3.2 Conformance requirement

The Length Indicator is used to indicate, each time, the end of an *S*DU occurs in the PU. The Length Indicator points out the number of octets between the end of the last Length Indicator field and up to and including the octet at the end of an SDU segment

A PU that has unused space, to be referred to as padding, shall use a Length Indicator to indicate that this space is used as padding unless the padding size is one octet for PDUs with 15-bit LIs. A padding Length Indicator must be placed after any Length Indicators for a PU.

Upon reception of a SDU, RLC shall segment the SDU to fit into the fixed size of a PU. The segments are inserted in the data field of a PU. A length indicator shall be added to each PU that includes a border of an SDU, i.e. if a PU does not contain an LI, the SDU continues in the next PU. The length indicator indicates where the border occurs in the PU. The data after the indicated border can be either a new SDU, padding or piggybacked information. If padding or piggybacking is added another LI shall be added unless the padding size is one octet for PDUs with 15-bit LIs, see subclauses 9.2.2.8 and 9.2.2.9.

Reference(s)

TS 25.322 Clauses 9.2.2.8 and 11.3.2.1.2.

7.2.3.3.3 Test purpose

To test that a large SDU is correctly segmented and padding added at the end.

7.2.3.3.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 17 bytes.

Test procedure

a) The SS transmits an RLC SDU of size 17 bytes, and polls the receiver for status.

b) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 +poll + Padding
4	→		UPLINK RLC PDU	No LI
5	→		UPLINK RLC PDU	Check Lis and re-assembled SDU
5a	→		*STATUS PDU*	*If piggy-backed status is not used in 5*
6	←		STATUS PDU	
7			RB RELEASE	Optional step

7.2.3.3.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate either that the remainder of the PDU contains padding, or that it contains a piggy-backed status PDU.

The length and data content of the received SDU should be the same as the transmitted SDU.

7.2.3.4 Segmentation / 7-bit Length Indicators / LI = 0

7.2.3.4.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. A pre-defined length indicator value is used to indicate when an SDUs ends coincident with the end of the previous PU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.4.2 Conformance requirement

If the PDU is exactly filled with the last segment of a SDU and there is no room for an LI field, an LI field set to only 0's shall be included as the first length indicator in the following PDU.

Reference(s)

TS 25.322 Clause 11.3.2.1.

7.2.3.4.3 Test purpose

To test that where an SDU exactly fills a PU, an LI of value zero is placed as the first LI in the next PU.

7.2.3.4.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 16 bytes.

Test procedure

a) The SS transmits an RLC SDU of size 32 bytes. The SS polls the receiver for status in the last RLC PDU sent.

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	LI=0, poll and padding
5	→		UPLINK RLC PDU	No Lis
6	→		UPLINK RLC PDU	(Poll) Check Lis and re-assembled SDU
6a	→		*STATUS PDU*	*If piggy-backed status is not used in 6*
7	←		STATUS PDU	
8			RB RELEASE	Optional step

7.2.3.4.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have an LI indicating that the SDU exactly filled the previous PU, and an LI indicating either that the remainder of the PDU contains padding, or that it contains a piggy-backed STATUS PDU.

The length of the received SDU should be 16 bytes, and the data content the same as the first 16 bytes of the transmitted SDU.

7.2.3.5 Segmentation / 7-bit Length Indicators / Reserved LI value

7.2.3.5.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of a reserved LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.5.2 Conformance requirement

Upon reception of an AMD PDU that contains Length Indicator value “1111100” or “1111101”: PDUs with this coding will be discarded by this version of the protocol.

Reference(s)

TS 25.322 Clause 9.2.2.8.

7.2.3.5.3 Test purpose

To test that PDUs with reserved length indicators are discarded by the receiving RLC.

7.2.3.5.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

Test procedure

a) The SS transmits two RLC SDUs of size 24 bytes. In the second PDU, the SS sets the value of the LI to 1111100. In the fourth PDU for transmission, the SS sets the value of the second (padding) LI to 1111101.

b) The SS waits to receive a status report from the UE.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU #0	SDU 1
3	←		DOWNLINK RLC PDU #1	SDU 1 + SDU 2, LI = 1111100
4	←		DOWNLINK RLC PDU #2	SDU 2
5	←		DOWNLINK RLC PDU #3	SDU 2 + poll, second LI =1111101
6	→		STATUS PDU	Nack PDUs 1 and 3
7			RB RELEASE	Optional step

7.2.3.5.5 Test requirements

The UE shall return a STATUS PDU indicating that PDUs with sequence numbers 1 and 3 were incorrectly received.

7.2.3.6 Segmentation / 7-bit Length Indicators / LI value > PDU size

7.2.3.6.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.6.2 Conformance requirement

If the length indicator of a PDU has a value that is larger than the PDU size – the number of octets containing LIs in the PDU – 1 and is not one of the predefined values listed in the table of 3GPP TS 25.322 subclause 9.2.2.8, the PDU shall be discarded and treated as a missing PDU.

Reference(s)

TS 25.322 Clause 11.3.4.5.

7.2.3.6.3 Test purpose

To test that PDUs with length indicators that point beyond the end of the PDU are discarded by the receiving RLC.

7.2.3.6.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

Test procedure

a) The SS transmits three RLC SDUs of size 22 bytes. All the SDUs are concatenated or segmented over successive RLC PDUs. In the third PDU for transmission, the SS sets value of the length indicator to be 17 (decimal).

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the content of the received STATUS PDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU #0	SDU 1
3	←		DOWNLINK RLC PDU #1	SDU 1 & SDU 2
4	←		DOWNLINK RLC PDU #2	SDU 2 & SDU 3, with bad LI
5	←		DOWNLINK RLC PDU #3	SDU 3
6	←		DOWNLINK RLC PDU #4	SDU 3, poll and padding
7	→		STATUS PDU	Nack PDU #2
8			RB RELEASE	Optional step

7.2.3.6.5 Test requirements

The UE shall indicate that the PDU with sequence number 2 was not received correctly.

7.2.3.7 Segmentation / 15-bit Length Indicators / Padding or Piggy-backed Status

7.2.3.7.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. Length indicators are added to allow correct reconstruction of SDUs. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.7.2 Conformance requirement

The Length Indicator is used to indicate, each time, the end of an *S*DU occurs in the PU. The Length Indicator points out the number of octets between the end of the last Length Indicator field and up to and including the octet at the end of an SDU segment

A PU that has unused space, to be referred to as padding, shall use a Length Indicator to indicate that this space is used as padding unless the padding size is one octet for PDUs with 15-bit LIs. A padding Length Indicator must be placed after any Length Indicators for a PU.

Upon reception of a SDU, RLC shall segment the SDU to fit into the fixed size of a PU. The segments are inserted in the data field of a PU. A length indicator shall be added to each PU that includes a border of an SDU, i.e. if a PU does

not contain an LI, the SDU continues in the next PU. The length indicator indicates where the border occurs in the PU. The data after the indicated border can be either a new SDU, padding or piggybacked information. If padding or piggybacking is added another LI shall be added unless the padding size is one octet for PDUs with 15-bit LIs, see subclauses 9.2.2.8 and 9.2.2.9.

Reference(s)

TS 25.322 Clauses 9.2.2.8 and 11.3.2.1.2.

7.2.3.7.3 Test purpose

To test that a large SDU is correctly segmented and padding added at the end.

7.2.3.7.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit length indicator tests in Clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 161 bytes.

Test procedure

a) The SS transmits an RLC SDU of size 161 bytes, and polls the receiver for status.

b) The SS checks the length indicator sizes and values of the RLC PDU returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 +poll + Padding
4	→		UPLINK RLC PDU	No LI
5	→		UPLINK RLC PDU	Check Lis and re-assembled SDU
5a	→		*STATUS PDU*	*If piggy-backed status is not used in 5*
6	←		STATUS PDU	
7			RB RELEASE	Optional step

7.2.3.7.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have a LI indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate either that the remainder of the PDU contains padding, or that it contains a piggy-backed status PDU.

The length and data content of the received SDU should be the same as the transmitted SDU.

7.2.3.8 Segmentation / 15-bit Length Indicators / LI = 0

7.2.3.8.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. A pre-defined length indicator value is used to indicate when an SDUs ends coincident with the end of the previous PU.

Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.8.2 Conformance requirement

If the PDU is exactly filled with the last segment of a SDU and there is no room for an LI field, an LI field set to only 0's shall be included as the first length indicator in the following PDU.

Reference(s)

TS 25.322 Clause 11.3.2.1.

7.2.3.8.3 Test purpose

To test that where an SDU exactly fills a PU, an LI of value zero is placed as the first LI in the next PU.

7.2.3.8.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit length indicator tests in Clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 160 bytes.

Test procedure

a) The SS transmits an RLC SDU of size 320 bytes. The SS polls the receiver for status in the last RLC PDU sent.

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	LI=0, poll and padding
5	→		UPLINK RLC PDU	No Lis
6	→		UPLINK RLC PDU	(Poll) Check Lis and re-assembled SDU
6a	→		*STATUS PDU*	*If piggy-backed status is not used in 6*
7	←		STATUS PDU	
8			RB RELEASE	Optional step

7.2.3.8.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have an LI indicating that the SDU exactly filled the previous PU, and an LI indicating either that the remainder of the PDU contains padding, or that it contains a piggy-backed STATUS PDU.

The length of the received SDU should be 160 bytes, and the data content the same as the first 160 bytes of the transmitted SDU.

7.2.3.9 Segmentation / 15-bit Length Indicators / One octet short LI

7.2.3.9.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. A pre-defined length indicator value is used to indicate when an SDUs ends one octet short of the end of the previous PU. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.9.2 Conformance requirement

In the case where the last segment of an RLC SDU is one octet short of exactly filling the last RLC PU, and 15-bit Length Indicators are used, the next Length Indicator shall be placed as the first Length Indicator in the next PU and have value LI=111 1111 1111 1011.

In the case where a PDU contains a 15-bit LI indicating that an SDU ends with one octet left in the PDU, the last octet of this PDU shall be ignored and shall not be filled with the first octet of the next SDU data.

Reference(s)

TS 25.322 Clause 9.2.2.8.

7.2.3.9.3 Test purpose

To test that where an SDU is one byte short of filling a PU, an LI indicating one byte short is placed as the first LI in the next PU.

7.2.3.9.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit length indicator tests in Clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to 159 bytes.

Test procedure

a) The SS transmits an RLC SDU of size 320 bytes. The SS polls the receiver for status in the last RLC PDU sent.

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	LI=0, poll and padding
5	→		UPLINK RLC PDU	No Lis
6	→		UPLINK RLC PDU	(Poll) Check Lis and re-assembled SDU
6a	→		*STATUS PDU*	*If piggy-backed status is not used in 6*
7	←		STATUS PDU	
8			RB RELEASE	Optional step

7.2.3.9.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no LIs. The second shall have an LI indicating that the SDU was one byte short of filling the previous PU, and an LI indicating that the remainder of the PDU contains padding.

The length of the received SDU should be 159 bytes, and the data content the same as the first 159 bytes of the transmitted SDU.

7.2.3.10 Segmentation / 15-bit Length Indicators / Reserved LI value

7.2.3.10.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of a reserved LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.10.2 Conformance requirement

Upon reception of an AMD PDU that contains Length Indicator value “111111111111100” or “111111111111101”: PDUs with this coding will be discarded by this version of the protocol.

Reference(s)

TS 25.322 Clause 9.2.2.8.

7.2.3.10.3 Test purpose

To test that PDUs with reserved length indicators are discarded by the receiving RLC.

7.2.3.10.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit length indicator tests in Clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

Test procedure

a) The SS transmits two RLC SDUs of size 240 bytes. In the second PDU, the SS sets the value of the LI to 111111111111100. In the fourth PDU for transmission, the SS sets the value of the second (padding) LI to 111111111111101.

b) The SS waits to receive a status report from the UE.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU #0	SDU 1
3	←		DOWNLINK RLC PDU #1	SDU 1 + SDU 2, LI = 111111111111100
4	←		DOWNLINK RLC PDU #2	SDU 2
5	←		DOWNLINK RLC PDU #3	SDU 2 + poll, second LI =111111111111101
6	→		STATUS PDU	Nack PDUs 1 and 3
7			RB RELEASE	Optional step

7.2.3.10.5 Test requirements

The UE shall return a STATUS PDU indicating that PDUs with sequence numbers 1 and 3 were incorrectly received.

7.2.3.11 Segmentation / 15-bit Length Indicators / LI value > PDU size

7.2.3.11.1 Definition

The RLC segments and concatenates SDUs into payload units according to the payload unit size configured by RRC. Length indicators are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

7.2.3.11.2 Conformance requirement

If the length indicator of a PDU has a value that is larger than the PDU size – the number of octets containing LIs in the PDU – 1 and is not one of the predefined values listed in the table of 3GPP TS 25.322 subclause 9.2.2.8, the PDU shall be discarded and treated as a missing PDU.

Reference(s)

TS 25.322 Clause 11.3.4.5.

7.2.3.11.3 Test purpose

To test that PDUs with length indicators that point beyond the end of the PDU are discarded by the receiving RLC.

7.2.3.11.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit length indicator tests in Clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

Test procedure

a) The SS transmits three RLC SDUs of size 230 bytes. All the SDUs are concatenated or segmented over successive RLC PDUs. In the third PDU for transmission, the SS sets value of the length indicator to be 161 (decimal).

b) The SS checks the length indicator sizes and values of the RLC PDUs returned on the uplink, and checks the content of the received STATUS PDUs.

c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU #0	SDU 1
3	←		DOWNLINK RLC PDU #1	SDU 1 & SDU 2
4	←		DOWNLINK RLC PDU #2	SDU 2 & SDU 3, with bad LI
5	←		DOWNLINK RLC PDU #3	SDU 3
6	←		DOWNLINK RLC PDU #4	SDU 3, poll and padding
7	→		STATUS PDU	Nack PDU #2
8			RB RELEASE	Optional step

7.2.3.11.5 Test requirements

The UE shall indicate that the PDU with sequence number 2 was not received correctly.

7.2.3.12 Correct use of Sequence Numbering

7.2.3.12.1 Definition

Peer RLC entities use sequence numbering to detect missing PDUs, and for flow control purposes. Incorrect operation of sequence numbering will result in failure of the UE to communicate.

7.2.3.12.2 Conformance requirement

PUs are sequentially and independently numbered and may have the value 0 through n minus 1 (where n is the modulus of the sequence numbers). The modulus equals 2^{12} for AM …; the sequence numbers cycle through the entire range: 0 through $2^{12} – 1$ for AM.

If the PDU is transmitted for the first time, the Sequence Number field shall be set equal to VT(S) and VT(S) shall be updated

Reference(s)

TS 25.322, Clauses 9.4 and 11.3.2.1.

7.2.3.12.3 Test purpose

1. To verify that the UE transmits the first PDU with the Sequence Number field equal to 0.
2. To verify that the UE increments the Sequence Number field according to the number of PUs transmitted.
3. To verify that the UE wraps the Sequence Number after transmitting the 2^{12}-1th PU.

7.2.3.12.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC Transmission window size	4096
Downlink RLC Receiving window size	4096

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 31 bytes.

Test procedure

a) The SS sends 2048 RLC SDUs to the UE, each of 31 bytes. The SS polls for status on each 128th RLC PDU transmitted

b) The SS checks the sequence numbers of the RLC PDUs it receives in the uplink

c) The SS checks the content of the SDUs it receives from the UE.

d) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU #0	
3	←		DOWNLINK RLC PDU #1	
			…	Transmission of DOWNLINK PDUs continues
4	→		UPLINK RLC PDU	SN should be set to 0
5	→		UPLINK RLC PDU	SN should be set to 1
	→		…	Transfer of RLC PDUs continues to SN = 4 095
6	←		DOWNLINK RLC PDU #4095	
7	←		DOWNLINK RLC PDU #0	
8	→		UPLINK RLC PDU	SN should be set to 4095
9	→		UPLINK RLC PDU	SN should be set to 0
10			RB RELEASE	Optional step

7.2.3.12.5 Test requirements

The first PDU received should have the SN field set to 0. The second PDU should have the SN field set to 1, and the 4 096th PDU should have the SN field set to 0.

The size and data content of the received SDUs shall match those of the transmitted SDUs.

7.2.3.13 Control of Transmit Window

7.2.3.13.1 Definition

This test is to check that the UE is able to correctly control its RLC transmission window. Correct operation of RLC windowing is critical for acknowledged mode operation.

7.2.3.13.2 Conformance requirement

The transmitter shall not transmit a PU with SN $\geq$ VT(MS).

The receiver is always allowed to change the Tx window size of the peer entity during a connection, but the minimum and the maximum allowed value is given by RRC configuration. The Rx window of the receiver is not changed.

Reference(s)

TS 25.322, Clauses 9.2.2.11.3 and 9.4.

7.2.3.13.3 Test purpose

To verify that the UE does not transmit PUs with sequence numbers outside of the transmit window, even when the transmit window size is changed by the receiver.

7.2.3.13.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC Transmission window size	 8
Downlink RLC Missing PU Indicator Receiving window size	 FALSE 8

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 15 bytes.

Test procedure

Let W be the size of the transmit window.

The length of all transmitted SDUs is set to 15 bytes.

a) The SS transmits 3*W RLC SDUs to the UE, polling regularly.

b) The SS checks the RLC SDUs received on the uplink, but does not reply to poll requests from the UE, or transmit STATUS PDUs for any other reason.

c) After confirming that the UE has stopped transmitting new RLC SDUs for at least (2*W*TTI) ms, the SS transmits a STATUS PDU acknowledging all the RLC PDUs received so far.

d) The SS again checks the RLC SDUs received on the uplink, but does not reply to poll requests from the UE, or transmit further STATUS PDUs for any other reason.

e) After confirming that the UE has again stopped transmitting new RLC SDUs for at least (2*W*TTI) ms, the SS transmits a STATUS PDU acknowledging all the RLC PDUs received so far, and containing a WINDOW command to reduce the UE transmit window size (W) to half its initial size.

f) The SS checks the RLC SDUs received on the uplink, but does not reply to poll requests from the UE, or transmit STATUS PDUs for any other reason.

g) After confirming that the UE has stopped transmitting new RLC SDUs for at least (2*W*TTI) ms, the SS transmits a STATUS PDU acknowledging all the RLC PDUs received so far.

h) The SS checks the RLC SDUs received on the uplink.

i) The SS may optionally release the radio bearer.

NOTE: Window arithmetic is carried out modulo 4096.

The test procedure is run with the window transmit window size set to the default (8), and the repeated with the transmit window size set to 1536.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 2
4	←		DOWNLINK RLC PDU	SDU 3
5	←		DOWNLINK RLC PDU	SDU 4
6	←		…	SS continues to transmit RLC SDUs
7	←		DOWNLINK RLC PDU	SDU 3W
8	→		UPLINK RLC PDU	SDU 1
9	→		UPLINK RLC PDU	SDU 2
10	→		…	SS continues to receive RLC SDUs
11	→		UPLINK RLC PDU	SDU W
12				No new transmissions from UE
13	←		STATUS PDU	
14	→		UPLINK RLC PDU	SDU W+1
15	→		UPLINK RLC PDU	SDU W+2
16	→		…	SS continues to receive RLC SDUs
17	→		UPLINK RLC PDU	SDU 2W
18				No new transmissions from UE
19	←		STATUS PDU	WINDOW = W/2
20	→		UPLINK RLC PDU	SDU 2W+1
21	→		UPLINK RLC PDU	SDU 2W+2
22	←		…	SS continues to receive RLC SDUs
23	→		UPLINK RLC PDU	SDU 2W + W/2
24				No new transmissions from UE
25	←		STATUS PDU	
26	→		UPLINK RLC PDU	SDU 2W+W/2+1
27	→		UPLINK RLC PDU	SDU 2W+W/2+2
28	←		…	SS continues to receive RLC SDUs
29	→		UPLINK RLC PDU	SDU 3W
30			RB RELEASE	Optional step

Note: The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.13.5 Test requirements

From steps 8 to 11, the SDU contents reassembled from the uplink shall match those of the first W transmitted SDUs.

At step 12 there shall be no further transmission on the uplink DTCH whilst the SS is waiting, except for any repeats of the last transmitted PDU.

After step 13, the UE shall resume transmission of the next W SDUs. The contents of these SDUs shall match those of SDUs W+1 to 2*W sent on the downlink.

At step 18 there shall be no further transmission on the uplink DTCH whilst the SS is waiting, except for any repeats of the last transmitted PDU.

After step 19, the UE shall resume transmission of the next W/2 SDUs. The contents of these SDUs shall match those of SDUs 2*W+1 to 2*W+W/2 sent on the downlink.

At step 24 there shall be no further transmission on the uplink DTCH whilst the SS is waiting, except for any repeats of the last transmitted PDU.

After step 25, the UE shall resume transmission of the next W/2 SDUs. The contents of these SDUs shall match those of SDUs 2*W+W/2+1 to 3*W sent on the downlink.

7.2.3.14 Control of Receive Window

7.2.3.14.1 Definition

This test is to check that the UE is able to correctly control its RLC receive window. Correct operation of RLC windowing is critical for acknowledged mode operation.

This test applies to all UE.

7.2.3.14.2 Conformance requirement

Upon reception of a PU with SN<VR(R) or SN≥VR(MR) the receiver shall discard the PU.

Reference(s)

TS 25.32, Clause 11.3.4.2.

7.2.3.14.3 Test purpose

1. To verify that the UE discards PUs with sequence numbers outside of the receive window.

7.2.3.14.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC	
Transmission window size	8
Downlink RLC	
Missing PU Indicator	FALSE
Receiving window size	8

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 15 bytes.

Test procedure

Let W be the size of the receive window.

The length of all transmitted SDUs is set to 15 bytes.

a) The SS transmits 2*W RLC SDUs to the UE, polling only on the last RLC PDU.

b) The SS checks the RLC SDUs received on the uplink, and after receiving the STATUS PDU from the UE it transmits a further RLC SDU. The SS sets the sequence numbers for the associated RLC PDU above the top of the receive window, for example, 2*W+1.

c) The SS transmits a further RLC SDU with the sequence number set to the value of the next sequence number within the receive window.

d) The SS checks the RLC SDUs received on the uplink.

e) The SS may optionally release the radio bearer.

This test case is run once for the default receive window size (8) and again with the receive window size set to 1536.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 2
4	←		…	SS continues to transmit RLC SDUs
5	←		DOWNLINK RLC PDU	SDU 2W + Poll
6	→		STATUS PDU	
7	→		UPLINK RLC PDU	SDU 1
8	→		UPLINK RLC PDU	SDU 2
9			…	UE continues to transmit RLC SDUs
10	→		UPLINK RLC PDU	SDU W
11	←		DOWNLINK RLC PDU	SDU 2W+1, SN = 2W+1
12	←		DOWNLINK RLC PDU	SDU 2W+2, SN = W+1
13	→		UPLINK RLC PDU	SDU 2W+2
14			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.14.5 Test requirements

The SS shall receive back SDUs 1 to W, and SDU 2*W + 2 only. No other SDUs shall be looped back.

7.2.3.15 Polling for status / Last PU in transmission queue

7.2.3.15.1 Definition

This case tests that the UE will poll for a status request on the last PU in its transmission queue when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

7.2.3.15.2 Conformance requirement

The Polling bit shall be set to 1 if any of following conditions are fulfilled except when the poll prohibit function is used and the timer Timer_Poll_Prohibit is active:

1. Last PU in buffer is used and the last PU available for transmission is transmitted.

Reference

25.322 Clause 11.3.2.1.1.

7.2.3.15.3 Test purpose

1. To verify that a poll is performed when only one PU is available for transmission, and the poll prohibit timer is function is not used.

2. To verify that a poll is performed when only one PU is available for transmission, and the poll prohibit timer is function is used, but inactive.

7.2.3.15.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC	First run	Second run
Polling info		
Timer_poll_prohibit	disabled	200
Last transmission PU poll	TRUE	TRUE
Last retransmission PU poll	FALSE	FALSE

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 31 bytes.

Test procedure

a) The SS transmits an RLC SDU of length 63 bytes to the UE.

b) The SS checks the uplink RLC PDUs for a poll for status flag.

c) The SS may optionally release the radio bearer.

The test is repeated using the RLC parameters given in the Second run column of the configuration table for the initial conditions.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	SDU 1
5	←		DOWNLINK RLC PDU	SDU 1 + Poll
6	→		STATUS PDU	
7	→		UPLINK RLC PDU	SDU 1
8	→		UPLINK RLC PDU	SDU 1 + Poll
9	←		STATUS PDU	
10			RB RELEASE	Optional step

7.2.3.15.5 Test requirements

The Poll bit shall be set in the AMD PDU header of the PDU returned in step 8.

7.2.3.16 Polling for status / Last PU in retransmission queue

7.2.3.16.1 Definition

This case tests that the UE will poll for a status request on the last PU in its retransmission queue when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

7.2.3.16.2 Conformance requirement

The Polling bit shall be set to 1 if any of following conditions are fulfilled except when the poll prohibit function is used and the timer Timer_Poll_Prohibit is active:

1) …

2) Last PU in retransmission buffer is used and the last PU to be retransmitted is transmitted

Reference

25.322 Clause 11.3.2.1.1.

7.2.3.16.3 Test purpose

1. To verify that a poll is performed when only one PU is available for retransmission, and the poll prohibit timer is function is not used.

2. To verify that a poll is performed when only one PU is available for retransmission, and the poll prohibit timer is function is used, but inactive.

7.2.3.16.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC	First run	Second run
Polling info		
Timer_poll_prohibit	disabled	200
Last transmission PU poll	FALSE	FALSE
Last retransmission PU poll	TRUE	TRUE

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 31 bytes.

Test procedure

a) The SS transmits an RLC SDU of length 63 bytes to the UE.

b) The SS checks the uplink RLC PDUs for a poll for status flag.

c) The SS transmits a STATUS PDU negatively acknowledging the uplink RLC PDUs as missing.

d) The SS waits for the RLC PDUs to be retransmitted and then checks the uplink RLC PDUs for a poll for status flag.

e) The SS may optionally release the radio bearer.

The test is repeated using the RLC parameters given in the Second run column of the configuration table for the initial conditions.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	SDU 1
5	←		DOWNLINK RLC PDU	SDU 1 + Poll
6	→		STATUS PDU	
7	→		UPLINK RLC PDU	SDU 1
8	→		UPLINK RLC PDU	SDU 1
9	←		STATUS PDU	NAK: SN=0 and SN=1
10	…			Wait for retransmission
11	→		UPLINK RLC PDU	SDU 1
12	→		UPLINK RLC PDU	SDU 1 + Poll
13	←		STATUS PDU	
14			RB RELEASE	Optional step

7.2.3.16.5 Test requirements

The Poll bit shall be set in the AMD PDU header of the PDU returned in step 12.

7.2.3.17 Polling for status / Poll every Poll_PU PUs

7.2.3.17.1 Definition

This case tests that the UE will poll for a status request every Poll_PU PUs when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

7.2.3.17.2 Conformance requirement

VT(PU) should be incremented for both new and retransmitted PUs. When it reaches Poll_PU a new poll is transmitted and the state variable is set to zero.

The Polling bit shall be set to 1 if … Every Poll_PU PU is used and when VT(PU)=Poll_PU

Reference

25.322 Clauses 9. 4, 9.6 and 11.3.2.1.1.

7.2.3.17.3 Test purpose

1. To verify that a poll is performed when VT(PU) reaches Poll_PU.
2. To verify VT(PU) is incremented for both new and retransmitted PUs.

7.2.3.17.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC	
Polling info	
Poll_PU	4
Last transmission PU poll	FALSE
Last retransmission PU poll	FALSE

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 15 bytes.

Test procedure

Let the value of Poll_PU be P

a) The SS sends 3 * P - 2 RLC SDUs of size 15 bytes to the UE in PDUs with sequence numbers that are contiguous, starting from zero.

b) The SS checks the sequence numbers and polling bits of the RLC SDUs returned on the uplink.

c) The SS sends a STATUS PDU negatively acknowledging two RLC PDUs with a sequence numbers of already received PDUs. The other PDUs are acknowledged as received correctly.

d) The SS checks the sequence numbers and polling bits of the RLC SDUs returned on the uplink.

e) The SS terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 2
3	←		…	SS continues to transmit RLC SDUs
4	←		DOWNLINK RLC PDU	SDU 3P – 2
5	→		UPLINK RLC PDU	SDU 1
6	→		UPLINK RLC PDU	SDU 2
7	→		…	SS continues to receive RLC SDUs
8	→		UPLINK RLC PDU	SDU P, Poll
9	←		STATUS PDU	NAK SN=0 and SN=1
10	→		UPLINK RLC PDU	SDU 1
11	→		UPLINK RLC PDU	SDU 2
12	→		UPLINK RLC PDU	SDU P+1
13	→		…	SS continues to receive RLC SDUs
14	→		UPLINK RLC PDU	SDU 2P – 2, Poll
15	→		…	SS continues to receive RLC SDUs
16	→		UPLINK RLC PDU	SDU 3P – 2, Poll
17			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.17.5 Test requirements

The SS shall receive a poll for status in the RLC PDUs sent on the uplink in steps 8, 14 and 16 above.

7.2.3.18 Polling for status / Poll every Poll_SDU SDUs

7.2.3.18.1 Definition

This case tests that the UE will poll for a status request every Poll_SDU SDUs when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

7.2.3.18.2 Conformance requirement

The state variable VT(SDU) is used when the poll every Poll_SDU SDU function is used. It is incremented with 1 for each SDU that is transmitted. When it reaches Poll_SDU a new poll is transmitted and the state variable is set to zero. The poll bit should be set in the PU that contains the last segment of the SDU. The initial value of this variable is 0.

The Polling bit shall be set to 1 if … Every Poll_SDU is used and VT(SDU)=Poll_SDU and the PDU contains the last segment that SDU

Reference

25.322 Clauses 9. 4, 9.6 and 11.3.2.1.1.

7.2.3.18.3 Test purpose

1. To verify that a poll is performed when VT(SDU) reaches Poll_ SDU.
2. To verify that the poll is sent in the last PDU of the SDU.

7.2.3.18.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC Polling info Poll_SDU	 1

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 63 bytes.

Let the value of Poll_SDU be P.

a) The SS sends 2 * P RLC SDUs of size 15 bytes to the UE in PDUs with sequence numbers that are contiguous, starting from zero.

b) The SS checks the sequence numbers and polling bits of the RLC SDUs returned on the uplink.

c) The SS terminates the connection.

The test is repeated with Poll_SDU set to 64.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	DOWNLINK RLC PDU	SDU 1
2		←	DOWNLINK RLC PDU	SDU 2
3		←	…	SS continues to transmit RLC SDUs
4		←	DOWNLINK RLC PDU	SDU 2P
5		→	UPLINK RLC PDU	SDU 1 Expanded to 63 bytes by test function
6		→	UPLINK RLC PDU	
7		→	…	SS continues to receive RLC SDUs
8		→	UPLINK RLC PDU	SDU P, Poll
9		←	STATUS PDU	
10		→	UPLINK RLC PDU	SDU P+1 Expanded to 63 bytes by test function
11		→	UPLINK RLC PDU	
12		→	…	SS continues to receive RLC SDUs
13		→	UPLINK RLC PDU	SDU 2P, Poll
14			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.18.5 Test requirements

The UE shall return uplink PDUs that contain polls for status in sequence numbers 4 * P – 1 and 8 * P – 1. No other PDUs should poll for status.

7.2.3.19 Polling for status / Timer triggered polling (Timer_Poll_Periodic)

7.2.3.19.1 Definition

This case tests that the UE will poll for a status request every Timer_Poll_Periodic ms when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

7.2.3.19.2 Conformance requirement

Each time the timer expires, the timer is restarted and a poll is triggered (either by the transmission of a PDU which was not yet sent, or by a retransmission). If there is no PU to be transmitted and all PUs have already been acknowledged, a poll shall not be triggered and the timer shall only be restarted. The value of the timer is signalled by RRC.

The Polling bit shall be set to 1 if … timer based polling is used and Timer_Poll_Periodic has expired.

Reference

25.322 Clauses 9.5 and 11.3.2.1.1.

7.2.3.19.3 Test purpose

1. To verify that the UE polls the SS in the next PDU to be transmitted or retransmitted each time the Timer_Poll_Periodic timer expires.

2. To verify that if there is no PU to be transmitted, and all the PUs have already been acknowledged, the timer is restarted, but no poll is sent..

7.2.3.19.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC Polling info Timer_poll_periodic	First run 100	Second run 2000

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 15 bytes.

Test procedure

Let T be the value of Timer_Poll_Periodic

a) The SS waits for at least 2*T ms before starting any transmissions, and monitors the uplink.

b) The SS sends T * 0.1 RLC SDUs of size 15 bytes to the UE.

c) The SS waits for the first PDU to be received with the P bit set, records the arrival time (T_1) and responds with a STATUS PDU normally.

d) The SS waits for the reception of the next PDU with the P bit set, records the arrival time (T_2), and then transmits a STATUS PDU reporting that none of the unacknowledged PDUs were correctly received.

e) The SS waits for the next PDU received with the P bit set, and records the arrival time (T_3).

f) The SS waits for the reception of the next PDU with the P bit set and records the arrival time (T_4).

g) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU 0.1T
4	→		UPLINK RLC PDU	SDU 1
5	→		UPLINK RLC PDU	SDU 2
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = ceil(T/TTI), Poll: Note T_1
8	←		STATUS PDU	ACK SN 0 to SN ceil(T/TTI)
9	→		UPLINK RLC PDU	SN = ceil(T/TTI)+1
10	→		…	SS continues to receive RLC PDUs
11	→		UPLINK RLC PDU	SN = ceil(2T/TTI), Poll: Note T_2
12	←		STATUS PDU	NAK SN ceil(T/TTI)+1 to SN ceil(2T/TTI)
13	→		UPLINK RLC PDU	PDUs including some retransmissions
14	→		UPLINK RLC PDU	
15	→		…	SS continues to receive RLC PDUs
16	→		UPLINK RLC PDU	Poll: Note T_3
17	←		STATUS PDU	Normal
18	→		…	SS continues to receive RLC PDUs
19	→		UPLINK RLC PDU	Poll: Note T_4
20			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.19.5 Test requirements

Time $T_2 - T_1$ should be T ± TTI ms.

Time $T_4 - T_3$ should be T ± TTI ms.

7.2.3.20 Polling for status / Polling on Poll_Window% of transmission window

7.2.3.20.1 Definition

This case tests that the UE will poll for a status request when it has reached Poll_Window% of the transmission window, when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

This test applies to all UE.

7.2.3.20.2 Conformance requirement

The Polling bit shall be set to 1 if … Window based polling is used, , and J≥Poll_Window, where J is:

J≥Poll_Window, where J is the window transmission percentage defined by

$$J = \frac{(4096+VT(S) - VT(A)) \textbf{ mod } 4096}{VT(WS)} * 100 ,$$

where the constant 4096 is the modulus for AM described in 3GPP TS 25.322 Subclause 9.4.

Reference

25.322 Clause 9.6 and 11.3.2.1.1.

7.2.3.20.3 Test purpose

1. To verify that the UE polls the SS once the window based polling equation is satisfied.

7.2.3.20.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC	
Polling info	
Poll_Window	50
Transmission window size	8
Downlink RLC	
Receiving window size	8

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 15 bytes.

Test procedure

Let W be the size of the transmission window.

a) The SS transmits (W/2) + 2 RLC SDUs of size 15 bytes.

b) The SS checks the sequence number of the first uplink PDU to be received with the P bit set.

c) The SS sends another RLC SDU of size 15 bytes.

d) The SS checks the sequence number of the next uplink PDU to be received with the P bit set.

e) The SS sends a STATUS PDU acknowledging the first two RLC PDUs received, followed by two further RLC SDUs.

f) The SS checks the sequence number of the next uplink PDU to be received with the P bit set

g) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU W/2
4	→		UPLINK RLC PDU	SDU 1
5	→		UPLINK RLC PDU	SDU 2
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = W/2+1, Poll
3	←		DOWNLINK RLC PDU	
9	→		UPLINK RLC PDU	SN = W/2+2, Poll
8	←		STATUS PDU	ACK SN 0 to 3
3	←		DOWNLINK RLC PDU	
3	←		DOWNLINK RLC PDU	
11	→		UPLINK RLC PDU	SN = W/2+3
11	→		UPLINK RLC PDU	SN = W/2+4, Poll
20			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.20.5 Test requirements

The SS shall receive RLC PDUs with the P bit set in PDUs with sequence numbers of 5, 6 and 8. No other PDUs should have their P bits set.

7.2.3.21 Polling for status / Operation of Timer_Poll timer / Timer expiry

7.2.3.21.1 Definition

This case tests that the UE will retransmit a poll for status if it does not receive a STATUS PDU within Timer_Poll ms after a poll for status is transmitted. Incorrect operation of polling will cause degradation of service, or possible service failure.

7.2.3.21.2 Conformance requirement

The Polling bit shall be set to 1 if any of following conditions are fulfilled except when the poll prohibit function is used and the timer Timer_Poll_Prohibit is active

…

3) Poll timer is used and timer Timer_Poll has expired.

Upon expiry of the Timer_Poll the sender shall retransmit the poll. The poll can be retransmitted in either a new PDU or a retransmitted PDU.

Reference

25.322 Clauses 11.3.2.1.1 and 11.3.4.1.

7.2.3.21.3 Test purpose

1. To verify that if the timer expires and no STATUS PDU containing an acknowledgement or negative acknowledgement of the AMD PDUs up to that which triggered the timer has been received, the receiver is polled once more.

7.2.3.21.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC	First run	Second run
Polling info		
Timer_poll	500	1000
Timer_Poll_Periodic	2000	2000

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 15 bytes.

Test procedure

Let T be the value of the Timer_Poll_Periodic timer.

a) The SS transmits at least 2 * T / TTI SDUs of size 15 bytes..

b) The SS receives PDUs from the UE, and notes the time on receiving the first PU with the P bit set, but does not respond. This time will be recorded as T_1.

c) The SS continues to receive PDUs from the UE and notes the time on receipt of the next PU with the P bit set. This time will be recorded as T_2.

d) The SS may optionally release the radio bearer

The test case is run once for each set of initial RLC parameters.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU ceil(2T/TTI)
4	→		UPLINK RLC PDU	SDU 1
5	→		UPLINK RLC PDU	SDU 2
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = ceil(T/TTI), Poll: Note T_1
8	→		UPLINK RLC PDU	SN = ceil(T/TTI)+1
9	→		…	SS continues to receive RLC PDUs
10	→		UPLINK RLC PDU	Poll: Note T_2
11			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.21.5 Test requirements

For the first run, the measured time $T_2 - T_1$ should be 500 ± 40 ms (TTI = 40 ms).

For the second run, the measured time $T_2 - T_1$ should be 1000 ± 40 ms.

7.2.3.22 Polling for status / Operation of Timer_Poll timer / Stopping Timer_Poll timer

7.2.3.22.1 Definition

This case tests that the UE will stop the Timer_Poll timer if it receives a STATUS PDU within Timer_Poll ms after a poll for status is transmitted. Incorrect operation of polling will cause degradation of service, or possible service failure.

7.2.3.22.2 Conformance requirement

The timer is stopped when receiving a STATUS PDU that contains an acknowledgement of all AMD PDUs with SN up to and including VT(S)-1 at the time the poll was submitted to lower layer,or when a negative acknowledgement of the same PU is received.

Reference

25.322 Clause 9.5.

7.2.3.22.3 Test purpose

1. To verify that the timer is stopped when receiving a STATUS PDU that an acknowledgement of all AMD PDUs with SN up to and including VT(S)-1 at the time the poll was transmitted (or a negative acknowledgement of the same PU).

7.2.3.22.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC	First run	Second run
Polling info		
Timer_poll	500	1000
Timer_Poll_Periodic	2000	2000

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 15 bytes.

Test procedure

Let T be the value of the Timer_Poll_Periodic timer.

a) The SS transmits at least 2 * T / TTI SDUs of size 15 bytes.

b) The SS receives PDUs from the UE, and notes the time on receiving the first PDU with the P bit set. This time will be recorded as T_1.

c) The SS sends a STATUS PDU acknowledging all the PDUs up to and including the PDU carrying the poll request.

d) The SS continues to receive PDUs from the UE and notes the time on receipt of the next PU with the P bit set. This time will be recorded as T_2.

e) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU ceil(2T/TTI)
4	→		UPLINK RLC PDU	SDU 1
5	→		UPLINK RLC PDU	SDU 2
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = ceil(T/TTI), Poll: Note T_1
8	←		STATUS PDU	ACK SN 0 to SN ceil(T/TTI)
9	→		UPLINK RLC PDU	SN = ceil(T/TTI)+1
10	→		…	SS continues to receive RLC PDUs
11	→		UPLINK RLC PDU	SN = ceil(2T/TTI), Poll: Note T_2
12			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.22.5 Test requirements

For both execution runs, the measured time $T_2 - T_1$ should be 2000 ± 40 ms (TTI = 40ms).

7.2.3.23 Polling for status / Operation of Timer_Poll timer / Restart of the Timer_Poll timer

7.2.3.23.1 Definition

This case tests that the UE will restart the Timer_Poll timer if another poll request is transmitted whilst the timer is running. Incorrect operation of polling will cause degradation of service, or possible service failure.

This test applies to all UE.

7.2.3.23.2 Conformance requirement

If a new poll is sent when the timer is running it is restarted, with a new value of VT(S)-1.

Reference

25.322 Clause 9.5.

7.2.3.23.3 Test purpose

1. To verify that if a new poll is sent when the timer is running it is restarted.

7.2.3.23.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC	
Polling info	
Timer_poll	500
Poll_PU	10
Poll_SDU	12

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 15 bytes.

Test procedure

Let T be the value of the Timer_Poll timer.

a) The SS starts transmission of at least Poll_SDU + ceil(T / TTI) SDUs of size 15 bytes.

b) Whilst transmitting, the SS receives PDUs from the UE, and notes the time on receiving the second PDU with the P bit set. This time will be recorded as T_1.

c) The SS sends a STATUS PDU acknowledging all the PDUs up to, but not including the PDU carrying the poll request.

d) The SS continues to receive PDUs from the UE and notes the time on receipt of the next PU with the P bit set. This time will be recorded as T_2.

e) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU (Poll_SDU + ceil(T / TTI))
4	→		UPLINK RLC PDU	SDU 1
5	→		UPLINK RLC PDU	SDU 2
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = poll_PU - 1, Poll, Timer_Poll started
8	→		…	SS continues to receive RLC PDUs
9	→		UPLINK RLC PDU	SN = poll_SDU - 1, Poll, Timer_Poll restarted: Note T_1
10	←		STATUS PDU	ACK SN 0 to SN = poll_SDU - 2
11	→		UPLINK RLC PDU	SN = poll_SDU
12	→		…	SS continues to receive RLC PDUs
13	→		UPLINK RLC PDU	SN = poll_SDU + ceil(T/TTI), Poll: Note T_2
14			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.23.5 Test requirements

The measured time $T_2 - T_1$ should be 500 ± 40 ms (TTI = 40ms).

7.2.3.24 Polling for status / Operation of timer Timer_Poll_Prohibit

7.2.3.24.1 Definition

This case tests that the UE will not send a poll request within Timer_Poll_Prohibit ms of a previous poll request when this mode of operation is enabled. Incorrect operation of polling will cause degradation of service, or possible service failure.

7.2.3.24.2 Conformance requirement

This timer is only used when the poll prohibit function is used. It is used to prohibit transmission of polls within a certain period. The timer shall be started when the successful or unsuccessful transmission of a PDU containing a poll is indicated by lower layer (in UE) or a PDU containing a poll is submitted to lower layer (in UTRAN). The prohibit time is calculated from the time a PDU containing a poll is submitted to lower layer until the timer has expired. A poll shall be delayed until the prohibit time expires if a poll is triggered during the prohibit time. Only one poll shall be transmitted when the prohibit time expires even if several polls were triggered during the prohibit time. This timer will not be stopped by a received STATUS PDU.

The Polling bit shall be set to 1 if any of conditions in 3GPP TS 25.322 clause 11.3.2.1.1 are fulfilled except when the poll prohibit function is used and the timer Timer_Poll_Prohibit is active.

Reference

25.322 Clauses 9.5 and 11.3.2.1.1.

7.2.3.24.3 Test purpose

1. To verify that no poll is transmitted if one or several polls are triggered when the Timer_Poll_Prohibit timer is active and has not expired.

7.2.3.24.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC	
Polling info	
Timer_poll_prohibit	500
Poll_PU	10
Poll_SDU	12
Poll_Window	50
Transmission window size	32
Downlink RLC	
Receiving window size	32

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 15 bytes.

Test procedure

Let T be the value of the Timer_Poll_Prohibit timer.

a) The SS starts transmission of at least (Transmission Window Size / 2) + ceil(T / TTI) SDUs of size 15 bytes.

b) Whilst transmitting, the SS receives PDUs from the UE, and notes the time on receiving the first PDU with the P bit set. This time will be recorded as T_1.

c) The SS does not respond to the poll request.

d) The SS continues to receive PDUs from the UE and notes the time on receipt of the next PU with the P bit set. This time will be recorded as T_2.

e) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU Poll_PU
4	→		UPLINK RLC PDU	SDU 1
5	→		UPLINK RLC PDU	SDU 2
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = Poll_PU - 1, Poll: Note T_1
8	→		…	SS continues to receive RLC PDUs
9	→		UPLINK RLC PDU	SN = poll_SDU - 1, No Poll
10	→		UPLINK RLC PDU	SN = (Transmission Window Size / 2) – 1, No Poll
11	→		…	SS continues to receive RLC PDUs
12	→		UPLINK RLC PDU	SN = poll_PU + ceil(T/TTI), Poll: Note T_2
13			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.24.5 Test requirements

The measured time $T_2 - T_1$ should be 500 ± 40 ms (TTI = 40ms).

7.2.3.25 Receiver Status Triggers / Detection of missing PUs

7.2.3.25.1 Definition

This case tests that the UE transmits a status report whenever it detects that a PU is missing, if this mode of operation is enabled. Incorrect operation of status reporting will cause degradation of service, or possible service failure.

7.2.3.25.2 Conformance requirement

The receiver in any of following cases initiates this procedure … Detection of missing PUs is used and a missing PU is detected.

Reference

25.322 Clause 11.5.2.

7.2.3.25.3 Test purpose

1. To verify that a status report is transmitted if there are one or more missing PUs..

7.2.3.25.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

Test procedure

a) The SS transmits 7 SDUs, each of size 15 bytes, in PDUs with consecutive sequence numbers starting from 0, followed by 5 SDUs in PDUs with consecutive sequence numbers starting from 8, followed by an SDU in a PDU with a sequence number of 15.

b) While transmitting, the SS monitors the uplink for STATUS PDUs.

c) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SN = 0
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SN = 6
4	←		DOWNLINK RLC PDU	SN = 8
5	→		STATUS PDU	
6	←		DOWNLINK RLC PDU	
7	←		…	SS continues to receive RLC PDUs
8	←		DOWNLINK RLC PDU	SN = 12
9	←		DOWNLINK RLC PDU	SN = 15
10	→		STATUS PDU	
11			RB RELEASE	Optional step

7.2.3.25.5 Test requirements

A STATUS PDU should be received from the UE after step 4, indicating that the PDU with sequence number 7 was missing.

A STATUS PDU should be received from the UE after step 9, indicating that the PDUs with sequence numbers 13 and 14 were missing.

7.2.3.26 Receiver Status Triggers / Operation of timer Timer_Status_Periodic

7.2.3.26.1 Definition

This case tests that the UE transmits a status report every Timer_Status_Periodic ms when this mode of operation is enabled. Incorrect operation of status reporting will cause degradation of service, or possible service failure.

7.2.3.26.2 Conformance requirement

The timer is started when the successful or unsuccessful transmission of the last STATUS PDU in a status report is indicated by lower layer.

The receiver in any of following cases initiates this procedure … The timer based STATUS transfer is used and the timer Timer_Status_Periodic has expired.

Reference

25.322 Clauses 9.5, 9.7.2 and 11.5.2.

7.2.3.26.3 Test purpose

1. To verify that a status report is transmitted each time the Timer_Status_Periodic timer expires.

7.2.3.26.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Downlink RLC Timer_STATUS_periodic	 100

These settings apply to both the uplink and downlink DTCH.

Test procedure

Let T be the value of the Timer_STATUS_periodic timer.

a) The SS starts transmission of at least ceil(2 * T / TTI) SDUs of size 15 bytes.

b) The SS waits to receive a STATUS PDU and notes the time. This time will be recorded as T_1.

c) The SS waits to receive a second STATUS PDU and notes the time. This time will be recorded as T_2

d) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU ceil(T/TTI)-1
4	→		STATUS PDU	Note T_1
5	←		DOWNLINK RLC PDU	
6	←		…	SS continues to receive RLC PDUs
7	←		DOWNLINK RLC PDU	SDU ceil(2T/TTI)-1
8	→		STATUS PDU	Note T_2
9			RB RELEASE	Optional step

7.2.3.26.5 Test requirements

The measured time $T_2 - T_1$ should be 100 ± 40 ms (TTI = 40ms).

7.2.3.27 Receiver Status Triggers / Operation of timer Timer_Status_Prohibit

7.2.3.27.1 Definition

This case tests that the UE transmits a status report every Timer_Status_Prohibit ms when this mode of operation is enabled. Incorrect operation of status reporting will cause degradation of service, or possible service failure.

7.2.3.27.2 Conformance requirement

The sending of a status report shall be delayed, if … STATUS prohibit is used and the timer Timer_Status_Prohibit is active.

The status report shall be transmitted after the Timer_Status_Prohibit has expired. The receiver shall send only one status report, even if there are several triggers when the timer is active. The rules for when the timer Timer_status_Prohibit is active are defined in 3GPP TS 25.322 subclause 9.5.

Reference

25.322 Clause 11.5.2.

7.2.3.27.3 Test purpose

1. To verify that a status report is not transmitted while the Timer_Status_Prohibit timer is active.
2. To verify that only one status report is sent on the expiry of the Timer_Status_Prohibit timer if several triggers occur while it is active.

7.2.3.27.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Downlink RLC	
Timer_Status_Prohibit	500
Timer_STATUS_periodic	200

These settings apply to both the uplink and downlink DTCH.

Test procedure

Let T_{pro} be the value of the Timer_Status_Prohibit timer, and T_{per} be the value of the Timer_Status_Periodic timer.

a) The SS starts transmission of at least ceil(2 * T_{pro} / TTI) + ceil(T_{per}/TTI) SDUs of size 15 bytes.

b) Whilst transmitting, the SS monitors the uplink for a STATUS PDU and notes the time. This time will be recorded as T_1.

c) The SS sets the P bit in a downlink PDU transmitted within the next floor(T_{pro}/TTI) PDUs.

d) The SS waits to receive a second STATUS PDU and notes the time. This time will be recorded as T_2

e) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		…	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU ceil(T_{per}/TTI)
4	→		STATUS PDU	Note T_1
5	←		DOWNLINK RLC PDU	Poll
6	←		…	SS continues to transmit RLC PDUs
7	←		DOWNLINK RLC PDU	SDU ceil(T_{pro} / TTI) + ceil(T_{per}/TTI)
8	→		STATUS PDU	Note T_2
9			RB RELEASE	Optional step

7.2.3.27.5 Test requirements

The measured time $T_2 - T_1$ should be 500 ± 40 ms (TTI = 40ms).

7.2.3.28 Status reporting / Abnormal conditions / Reception of LIST SUFI with Length set to zero

7.2.3.28.1 Definition

Peer RLCs use STATUS PDUs to manage flow control and retransmission. On a STATUS report PDU with an invalid LIST SUFI the RLC must behave as specified. Incorrect behaviour may result in degradation of QoS, or failure of the UE to communicate.

7.2.3.28.2 Conformance requirement

The LENGTH field of the LIST SUFI is defined as:

The number of (SN_i , L_i)-pairs in the super-field of type LIST. The value "0000" is invalid and the list is discarded.

Reference

25.322 Clause 9.2.2.11.4.

7.2.3.28.3 Test purpose

To verify that if a STATUS PDU is received with a LIST SUFI and the LENGTH field is set to “0000” that the list is discarded.

7.2.3.28.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC	
Polling info	
Poll_PU	10

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 500 bytes.

Test procedure

a) The SS sends an SDU.

b) The SS monitors the received (looped back) PDUs for a poll request.

c) The SS responds to the poll request by transmitting a STATUS PDU with a LIST SUFI. The list contains an indication that two PDUs were not received, but has the length field set to "0000".

d) The SS continues to monitor the received PDUs to verify that none are retransmitted.

e) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	DOWNLINK RLC PDU	SDU 1 (start)
2		←	…	SS continues to transmit RLC PDUs
3		←	DOWNLINK RLC PDU	SDU 1 (end)
4		→	UPLINK RLC PDU	SDU 1 (start)
5		→	UPLINK RLC PDU	
6		→	…	SS continues to receive RLC PDUs
7		→	UPLINK RLC PDU	SN = Poll_PU - 1, Poll
3		←	STATUS PDU	LIST(LENGTH = "0000", SN = 1, SN = 2)
8		→	…	SS continues to receive RLC PDUs
9		→	UPLINK RLC PDU	Poll
3		←	STATUS PDU	Normal reply
11		→	…	SS continues to receive RLC PDUs
12		→	UPLINK RLC PDU	SDU 1 (end)
13			RB RELEASE	Optional step

Note: The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.28.5 Test requirements

No RLC PDUs should be retransmitted by the UE.

7.2.3.29 Timer based discard, with explicit signalling / Expiry of Timer_Discard

7.2.3.29.1 Definition

This case tests that when the transmission of an SDU exceeds a time limit, the SDU is discarded by the sender, and the discard is signalled to the receiver. SDU discard is used to keep network delays within limits, and incorrect operation will effect the quality of service.

7.2.3.29.2 Conformance requirement

If the transmission time exceeds a predefined value for a SDU in acknowledged mode RLC, this SDU is discarded in the transmitter and a Move Receiving Window (MRW) command is sent to the receiver so that AMD PDUs carrying that SDU are discarded in the receiver and the receiver window is updated accordingly.

This procedure is initiated by the sender when the following conditions are fulfilled … Timer based SDU discard with explicit signalling is used, and Timer_Discard expires for an SDU.

This status report is sent even if the 'STATUS prohibit' is used and the timer 'Timer_Status_Prohibit' is active.

The STATUS PDUs have higher priority than data PDUs.

Reference

25.322 Clauses 9.7.3.1, 11.3.4.3.1 and 11.6.

7.2.3.29.3 Test purpose

1. To verify that if the transmission time for an SDU exceeds Timer_Discard, the SDU is discarded in the transmitter and the MRW procedure is invoked.
2. ...

7.2.3.29.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC	
Transmission RLC discard	
Timer based with explicit signalling	
Timer_MRW	500
Timer_Discard	1
MaxMRW	5
Polling info	
Timer_poll_periodic	100
Downlink RLC	
Timer_Status_Prohibit	1000
Timer_STATUS_periodic	100

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 55 bytes.

Test procedure

a) The SS sends at least 2 RLC SDUs of size 15 bytes.

b) Whilst transmitting, the SS notes the time that the first RLC PDU is received on the uplink. This time will be recorded as T_1.

c) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU, negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.

d) The SS continues sending 15 byte RLC SDUs with poll requests.

e) The SS monitors received STATUS PDUs for the presence of a MRW SUFI, noting the time it was received. This time will be recorded as T_2.

f) The SS responds to the MRW command with a correct MRW_ACK.

g) The SS checks any RLC SDUs reassembled from the uplink.

h) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 2
3	←		…	SS continues to send RLC PDUs
4	→		UPLINK RLC PDU	SDU 1: Note T_1
5	→		…	SS continues to receive RLC PDUs
6	→		UPLINK RLC PDU	Poll
7	←		STATUS PDU	NAK SN=0
8	←		DOWNLINK RLC PDU	Poll
9	→		…	SS continues to receive RLC PDUs
10	→		UPLINK RLC PDU	Poll
11	←		STATUS PDU	NAK SN=0
12	←		DOWNLINK RLC PDU	SDU 3
13	→		…	SS continues to receive RLC PDUs
14	→		STATUS PDU	MRW Command: Note T_2
15	←		STATUS PDU	MRW_ACK
16			RB RELEASE	Optional step

7.2.3.29.5 Test requirements

The measured time $T_2 - T_1$ should be 1000 ± 40 ms (TTI = 40ms). The STATUS PDU shall contain MRW SUFIs indicating that the first four PDUs should be discarded, and that the data indicated in the fifth PDU by the first LI should also be discarded.

7.2.3.29a Timer based discard, with explicit signalling / Expiry of Timer_Discard when Timer_STATUS_prohibit is active

7.2.3.29a.1 Definition

This case tests that when the transmission of an SDU exceeds a time limit, the SDU is discarded by the sender, and the discard is signalled to the receiver while the Timer_STATUS_Prohibit is active. SDU discard is used to keep network delays within limits, and incorrect operation will effect the quality of service.

This test applies to all UE.

7.2.3.29a.2 Conformance requirement

If the transmission time exceeds a predefined value for a SDU in acknowledged mode RLC, this SDU is discarded in the transmitter and a Move Receiving Window (MRW) command is sent to the receiver so that AMD PDUs carrying that SDU are discarded in the receiver and the receiver window is updated accordingly.

Upon expiry of Timer_Discard the sender shall initiate the SDU discard with explicit signalling procedure.

This status report is sent even if the 'STATUS prohibit' is used and the timer 'Timer_Status_Prohibit' is active.

The STATUS PDUs have higher priority than data PDUs.

Reference

25.322 Clauses 9.7.3.1, 11.3.4.3.1 and 11.6.

7.2.3.29a.3 Test purpose

1. …
2. To verify that the MRW procedure status report is sent even if the 'STATUS prohibit' is used and the timer 'Timer_Status_Prohibit' is active.

7.2.3.29a.4 Method of test

TBD

7.2.3.29a.5 Test requirements

TBD

7.2.3.30 Timer based discard, with explicit signalling / Obsolete MRW_ACK

7.2.3.30.1 Definition

This case tests the ability of the receiving AM RLC entity to handle obsolete information that can be received during a failure of the SDU discard procedure. SDU discard is used to keep network delays within limits, and incorrect operation will effect the quality of service.

7.2.3.30.2 Conformance requirement

If Timer_MRW expires before the discard procedure is terminated,the MRW SUFI shall be retransmitted, VT(MRW) is incremented by one and Timer_MRW restarted. MRW SUFI shall be exactly the same as previously transmitted even though some new SDUs would have been discarded during the running of the Timer_MRW.

The received MRW_ACK shall be discarded in the following cases.

…

2. If the SN_ACK field in the received MRW_ACK < SN_MRW_{LENGTH} in the transmitted MRW SUFI.
3. If the SN_ACK field in the received MRW_ACK is equal to the SN_MRW_{LENGTH} in the transmitted MRW SUFI and the N field in the received MRW_ACK is not equal to the N_{LENGTH} field in the transmitted MRW SUFI
4. If the SN_ACK field in the received MRW_ACK > SN_MRW_{LENGTH} in the transmitted MRW SUFI and the N field in the received MRW_ACK is not equal to zero.

Reference

25.322 Clauses 11.6.5 and 11.6.6.3.

7.2.3.30.3 Test purpose

1. To verify that the MRW SUFI is retransmitted if Timer_MRW expires before a valid MRW_ACK is received.
2. To verify that the MRW_ACK is discarded if the SN_ACK field < SN_MRW_{LENGTH}.
3. To verify that the MRW_ACK is discarded if the N field is not equal to N_{LENGTH} transmitted in the MRW SUFI.
4. To verify that the MRW_ACK is discarded if the N field is not zero and the SN_ACK field > SN_MRW_{LENGTH} in the transmitted MRW SUFI.

7.2.3.30.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC	
Transmission RLC discard	
Timer based with explicit signalling	
Timer_MRW	500
Timer_Discard	1
MaxMRW	5
Polling info	
Timer_poll_periodic	100

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 55 bytes.

Test procedure

a) The SS sends at least 2 RLC SDUs of size 15 bytes.

b) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU, negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.

c) The SS continues sending 15 byte RLC SDUs with poll requests.

d) The SS monitors received STATUS PDUs for the presence of a MRW SUFI, noting the time it was received. This time will be recorded as T_1.

e) The SS responds to the MRW command with an MRW_ACK with the SN_ACK field set to $SN\_MRW_{LENGTH} - 1$.

f) The SS monitors received STATUS PDUs for another MRW SUFI, noting the time it was received. This time will be recorded as T_2.

g) The SS responds to the MRW command with an MRW_ACK with the SN_ACK field set to SN_MRW_{LENGTH}, and the N field set to $N_{LENGTH} - 1$.

h) The SS monitors received STATUS PDUs for another MRW SUFI, noting the time it was received. This time will be recorded as T_3.

i) The SS responds to the MRW command with an MRW_ACK with the SN_ACK field set to $SN\_MRW_{LENGTH} + 1$, and the N field set to 1.

j) The SS monitors received STATUS PDUs for another MRW SUFI

k) The SS responds to the MRW command with a correct MRW_ACK.

l) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 2
3	←		…	SS continues to send RLC PDUs
4	→		UPLINK RLC PDU	SDU 1
5	→		…	SS continues to receive RLC PDUs
6	→		UPLINK RLC PDU	Poll
7	←		STATUS PDU	NAK SN=0
8	←		DOWNLINK RLC PDU	Poll
9	→		…	SS continues to receive RLC PDUs
10	→		UPLINK RLC PDU	Poll
11	←		STATUS PDU	NAK SN=0
12	←		DOWNLINK RLC PDU	SDU 3
13	→		…	SS continues to receive RLC PDUs
14	→		STATUS PDU	MRW Command: Note T_1
15	←		STATUS PDU	MRW_ACK, SN_ACK = $SN\_MRW_{LENGTH} - 1$
16	→		STATUS PDU	MRW Command: Note T_2
17	←		STATUS PDU	MRW_ACK, N field = N_{LENGTH} - 1
18	→		STATUS PDU	MRW Command: Note T_3
19	←		STATUS PDU	MRW_ACK, SN_ACK = SN_MRW_{LENGTH} + 1, N field = 1
20	→		STATUS PDU	MRW Command
21	←		STATUS PDU	MRW_ACK
22			RB RELEASE	Optional step

7.2.3.30.5 Test requirements

The measured time $T_2 - T_1$ should be 500 ± 40 ms (TTI = 40ms). The measured time $T_3 - T_2$ should be 500 ± 40 ms (TTI = 40ms). The STATUS PDU shall contain MRW SUFIs indicating that the first four PDUs should be discarded, and that the data indicated in the fifth PDU by the first LI should also be discarded.

7.2.3.31 Timer based discard, with explicit signalling / Failure of MRW procedure

7.2.3.31.1 Definition

This case tests that if a failure occurs during the signalling of an SDU discard to the receiver, the retransmission protocol operates correctly. SDU discard is used to keep network delays within limits, and incorrect operation will effect the quality of service.

7.2.3.31.2 Conformance requirement

If the number of retransmission of a MRW command (i.e. VT(MRW)) reaches MaxMRW, an error indication shall be passed to RRC and RESET procedure shall be performed.

Reference

25.322 Clause 11.6.6.2.

7.2.3.31.3 Test purpose

1. To verify that when the number of retransmissions of a MRW command reaches MaxMRW, an error indication is passed to RRC and RESET procedure is initiated.

7.2.3.31.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC	
Transmission RLC discard	
Timer based with explicit signalling	
Timer_MRW	500
Timer_Discard	0.5
MaxMRW	4
Polling info	
Poll_PU	2

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 31 bytes.

Test procedure

a) The SS sends 4 RLC SDUs of size 31 bytes.

b) The SS checks the RLC PDUs received on the uplink and responds to all poll requests as follows: While the VR(H) is 4 or less, with a STATUS PDU, negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received. While the VR(H) is greater than 4, a STATUS PDU negatively acknowledging RLC PDUs with sequence numbers 0 and 4, and positively acknowledging all others.

c) The SS monitors received STATUS PDUs for the presence of an MRW SUFI, noting the time it was received. This time will be recorded as T_1.

d) The SS makes no response, but monitors for the next STATUS PDU containing an MRW SUFI, noting the time it was received. This time will be recorded as T_2.

e) The SS sends a STATUS PDU with an MRW_ACK indicating the discard of SDU 1 moving VR(R) to 4.

f) The SS monitors for further STATUS PDUs containing an MRW SUFI, or for a RESET PDU. The SS records the number of STATUS PDUs it received with MRW SUFI before it received the RESET PDU.

g) The SS checks any RLC SDUs reassembled from the uplink.

h) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 2
4	←		…	SS continues to send RLC PDUs
5	←		DOWNLINK RLC PDU	SDU 4
6	→		UPLINK RLC PDU	SDU 1
7	→		…	SS continues to receive RLC PDUs
8	→		UPLINK RLC PDU	Poll
9	←		STATUS PDU	NAK SN=0
10	→		…	SS continues to receive RLC PDUs
11	→		UPLINK RLC PDU	Poll
12	←		STATUS PDU	NAK SN=0, 4
13	→		…	SS continues to receive RLC PDUs
14	→		STATUS PDU	MRW Command: Note T_1
15	→		STATUS PDU	MRW Command: Note T_2
16	←		STATUS PDU	MRW_ACK indicating VR(R) = 4
17	→		STATUS PDU	MRW Command, discard SDU 3
18	→		STATUS PDU	MRW Command
19	→		STATUS PDU	MRW Command
20	→		STATUS PDU	MRW Command
21	→		RESET PDU	
22	←		RESET ACK PDU	
23			RB RELEASE	Optional step

The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.31.5 Test requirements

The measured time $T_2 - T_1$ should be 500 ± 40 ms (TTI = 40ms).

After step 16, the SS should detect 4 repeats of the MRW command before a RESET PDU is sent.

7.2.3.32 SDU discard after MaxDAT number of retransmissions

7.2.3.32.1 Definition

This case tests that if a PDU is unsuccessfully transmitted MaxDAT times, the SDU it carries, and therefore all other associated PDUs, are discarded by the transmitter and receiver. This mode of SDU discard is used to minimize data loss, and incorrect operation will effect the quality of service.

7.2.3.32.2 Conformance requirement

There is one VT(DAT) for each PU and it is incremented each time the PU is transmitted. The initial value of this variable is 0.

If SDU discard after MaxDAT number of retransmission is used and VT(DAT) ≥ MaxDAT for any PU, the sender shall initiate the SDU discard with explicit signalling procedure for the SDUs to which the PU with VT(DAT) ≥MaxDAT belongs.

Reference

25.322 Clauses 9.4 and 11.3.4.4.

7.2.3.32.3 Test purpose

1. To verify that if VT(DAT) ≥ MaxDAT for any PU the sender initiates the SDU discard with explicit signalling procedure.

7.2.3.32.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 31 bytes.

Test procedure

a) The SS sends 2 RLC SDUs of size 31 bytes.

b) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.

c) The SS monitors received STATUS PDUs for the presence of an MRW SUFI.

d) The SS responds with a STATUS PDU containing a valid MRW_ACK SUFI.

e) The SS checks any RLC SDUs reassembled from the uplink.

f) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 2
4	←		DOWNLINK RLC PDU	SDU 2
5	→		UPLINK RLC PDU	SDU 1
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SDU 2, Poll
8	←		STATUS PDU	NAK SN=0
9	→		UPLINK RLC PDU	Retransmit SN=0, Poll
10	←		STATUS PDU	NAK SN=0
11	→		UPLINK RLC PDU	Retransmit SN=0, Poll
12	←		STATUS PDU	NAK SN=0
13	→		UPLINK RLC PDU	Retransmit SN=0, Poll
14	←		STATUS PDU	NAK SN=0
15	→		STATUS PDU	MRW Command
16	←		STATUS PDU	MRW_ACK
17			RB RELEASE	Optional step

Note: The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.32.5 Test requirements

The uplink RLC PDU with sequence number 0 shall be retransmitted three times, then the SS shall detect a STATUS PDU with an MRW command.

7.2.3.33 Operation of the RLC Reset procedure / UE Originated

7.2.3.33.1 Definition

This case tests that when an unrecoverable protocol error occurs the UE will initiate and perform the RLC Reset procedure. Incorrect operation of this procedure may cause loss of service.

7.2.3.33.2 Conformance requirement

The procedure shall be initiated when a protocol error occurs.

The sender sends the RESET PDU when it is in data transfer ready state and enters reset pending state. The sender shall start the timer Timer_RST and increase VT(RST) with 1.

The RSN field shall indicate the sequence number of the RESET PDU. This sequence number is incremented every time a new RESET PDU is transmitted, but not when a RESET PDU is retransmitted.

Upon reception of a RESET PDU the receiver shall respond with a RESET ACK PDU. The receiver resets the state variables to their initial value and resets configurable parameters to their configured value. Both the transmitter and receiver side of the AM RLC entity are reset. All RLC PDUs in the AM RLC receiver shall be discarded. The RLC SDUs in the AM RLC transmitter that were transmitted before the reset shall be discarded.

When a RESET PDU is received, the receiver shall set the HFN (DL HFN when the RESET is received in UE or UL HFN when the RESET is received in UTRAN) equal to the HFNI field in the received RESET PDU.

Upon reception of a RESET ACK the Timer_RST shall be stopped. The sender resets the state variables to their initial value and resets configurable parameters to their configured value. The sender shall enter data transfer ready state.

Upon expiry of Timer_RST the sender shall retransmit the RESET PDU and increase VT(RST) with 1.

If VT(RST) becomes larger or equal to MaxRST the RRC layer shall be informed.

Reference

25.322 Clause 11.4.

7.2.3.33.3 Test purpose

1. To verify that the Reset procedure is initiated when a protocol error occurs.
2. To verify that the sender resets state variables to their initial value and resets configurable parameters to their configured value.

7.2.3.33.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC Transmission RLC discard No discard	

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in loop-back mode 1 with the UL SDU size set to 31 bytes.

Test procedure

a) The SS sends 2 RLC SDUs of size 31 bytes.

b) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.

c) The SS notes the time that the RESET PDU is received. This time will be recorded as T_1. The SS notes the value of the RSN bit.

d) The SS makes no response, and notes the time that the next RESET PDU is received. This time will be recorded as T_2. The SS notes the value of the RSN bit.

e) The SS sends a RESET ACK PDU with the RSN bit set to the same value as received in the RESET PDU received in step d).

f) The SS sends an RLC SDU of size 31 bytes.

g) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.

h) The SS notes the value of the RSN bit of the RESET PDU received

i) The SS sends a RESET ACK PDU with the RSN bit set to the value received in the RESET PDU in step c (the incorrect value).

j) The SS waits to receive another RESET PDU and checks the RSN bit.

k) The SS sends a RESET ACK PDU with the correct RSN bit.

l) The SS checks any RLC SDU received on the uplink.

m) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 2
4	←		DOWNLINK RLC PDU	SDU 2
5	→		UPLINK RLC PDU	SDU 1
6	→		…	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SDU 2, Poll
8	←		STATUS PDU	NAK SN=0
9	→		UPLINK RLC PDU	Retransmit SN=0, Poll
10	←		STATUS PDU	NAK SN=0
11	→		UPLINK RLC PDU	Retransmit SN=0, Poll
12	←		STATUS PDU	NAK SN=0
13	→		UPLINK RLC PDU	Retransmit SN=0, Poll
14	←		STATUS PDU	NAK SN=0
15	→		UPLINK RLC PDU	Retransmit SN=0, Poll
16	←		STATUS PDU	NAK SN=0
17	→		RESET PDU	Note T_1
18	→		RESET PDU	Note T_2, check RSN
19	←		RESET ACK PDU	
20	←		DOWNLINK RLC PDU	SDU 3
21	←		DOWNLINK RLC PDU	SDU 3
22	→		UPLINK RLC PDU	SDU 3, SN=0
23	→		UPLINK RLC PDU	SDU 3
24	→		UPLINK RLC PDU	SDU 3, Poll
25	←		STATUS PDU	NAK SN=0
26	→		UPLINK RLC PDU	Retransmit SN=0, Poll
27	←		STATUS PDU	NAK SN=0
28	→		UPLINK RLC PDU	Retransmit SN=0, Poll
29	←		STATUS PDU	NAK SN=0
30	→		UPLINK RLC PDU	Retransmit SN=0, Poll
31	←		STATUS PDU	NAK SN=0
32	→		UPLINK RLC PDU	Retransmit SN=0, Poll
33	←		STATUS PDU	NAK SN=0
34	→		RESET PDU	Check RSN
35	←		RESET ACK PDU	RSN = 0
34	→		RESET PDU	Check RSN
35	←		RESET ACK PDU	RSN = 1
36			RB RELEASE	Optional step

Note: The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.33.5 Test requirements

The measured time $T_2 - T_1$ should be 500 ± 40 ms (TTI = 40ms).

The SS shall receive an RLC SDU with contents that match the third RLC SDU sent to the UE. The first RLC PDU containing that SDU shall have sequence number 0.

The RSN bit of the first and second RESET PDUs received should be set to 0. The RSN bit of the third and fourth RESET PDU should be set to 1.

7.2.3.34 Operation of the RLC Reset procedure / UE Terminated

7.2.3.34.1 Definition

This case tests that when an unrecoverable protocol error occurs the UE will initiate and perform the RLC Reset procedure. Incorrect operation of this procedure may cause loss of service.

7.2.3.34.2 Conformance requirement

The procedure shall be initiated when a protocol error occurs.

The sender sends the RESET PDU when it is in data transfer ready state and enters reset pending state. The sender shall start the timer Timer_RST and increase VT(RST) with 1.

Upon reception of a RESET PDU the receiver shall respond with a RESET ACK PDU. The receiver resets the state variables to their initial value and resets configurable parameters to their configured value. Both the transmitter and receiver side of the AM RLC entity are reset. All RLC PDUs in the AM RLC receiver shall be discarded. The RLC SDUs in the AM RLC transmitter that were transmitted before the reset shall be discarded.

When a RESET PDU is received, the receiver shall set the HFN (DL HFN when the RESET is received in UE or UL HFN when the RESET is received in UTRAN) equal to the HFNI field in the received RESET PDU.

Upon reception of a RESET ACK the Timer_RST shall be stopped. The sender resets the state variables to their initial value and resets configurable parameters to their configured value. The sender shall enter data transfer ready state.

Upon expiry of Timer_RST the sender shall retransmit the RESET PDU and increase VT(RST) with 1.

If VT(RST) becomes larger or equal to MaxRST the RRC layer shall be informed.

Reference

25.322 Clause 11.4.

7.2.3.34.3 Test purpose

1. To verify that upon reception of a RESET PDU the receiver responds with a RESET ACK PDU.
2. To verify that the receiver resets its state variables to their initial value and resets configurable parameters to their configured value.

7.2.3.34.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (Clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit length indicator tests in Clause 7.2.3.1.

The following RLC parameter values are used in place of the values in Clause 7.2.3.1:

Uplink RLC Transmission RLC discard No discard	

These settings apply to both the uplink and downlink DTCH.

Test procedure

a) The SS sends 2 RLC SDUs of size 31 bytes.

b) The SS checks the STATUS PDUs received on the uplink until both SDUs have been acknowledged.

c) The SS transmits a RESET PDU.

d) The SS monitors the uplink for a RESET ACK PDU.

e) The SS sends an RLC SDU of size 31 bytes.

f) The SS checks for STATUS PDUs received on the uplink until the SDU has been acknowledged.

g) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 2
4	←		DOWNLINK RLC PDU	SDU 2
5	→		STATUS PDU	ACK SN=0, 1, 2 and 3
6	←		RESET PDU	
7	→		RESET ACK PDU	
8	←		DOWNLINK RLC PDU	SDU 3
9	←		DOWNLINK RLC PDU	SDU 3
10	→		STATUS PDU	ACK SN=0 and 1
11			RB RELEASE	Optional step

Note: The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.

7.2.3.34.5 Test requirements

The SS shall receive a RESET ACK PDU in step 7.

The SS shall receive acknowledgements for the third RLC SDU transmitted.

7.3 PDCP

7.3.1 General

7.3.1.1 General assumptions

If not otherwise mentioned, the same procedures as used in RRC test specification (TS 34.123-1) or in the Generic procedure (TS 34.108) applies to reach Initial conditions for PDCP testing. In this test description, common test sequences for PDCP (sub-clause 7.3.4.1) are defined and are applied either as preamble or post amble to establish or release a Packet Switched (PS) connection for a test case.

If not explicitly described, the same message contents and settings are applied as described in the RRC test description default settings.

Detailed IP header compression coding mechanism as well as mechanism related error recovery and packet reordering described in IETF RFC 2507 are not verified.

For PDCP testing TCP/IP data type and UDP/IP data type as Non-TCP/IP data types are applied for IP data.

An UE supporting IP Header compression method RFC 2507 shall be capable to store a header compression context of at least 512 bytes (Integer).

It shall be possible to reconfigure PDCP settings while UE test loop mode 1. With the applied test method using UE test loop mode 1, the UE as Originator and Receiver of PDCP SDUs (concurrent transmission) is tested.

7.3.1.2 Common Test sequences and Default message contents for PDCP

General

The settings and parameter used in the ”Common Test sequences for PDCP” are described in the ”Default PDCP Message Contents”. If not explicitly shown there, the message contents are identical with the default contents for the same message type of layer 3 messages for RRC tests, to establish a packet switched session or connection. The contents of test case specific message parameters are described in the test case (Expected Sequence). If not explicitly shown, default settings and parameter are used as message content for all Common Test sequences.

7.3.1.2.1 Common Test sequences for PDCP

7.3.1.2.1.1 Setup a UE originated PS session using IP Header compression in AM RLC (using UE Test loop test mode 1)

Initial Conditions

UE is in Idle mode.

Test procedure

After having received the System Informations, the SS starts to setup a RRC connection. After connection establishment and Radio Bearer Setup, the UE test loop mode 1 is activated and the UE test loop mode 1 is closed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	
2		→	RRC CONNECTION REQUEST	
3		←	RRC CONNECTION SETUP	Connection Setup message PS sessions in AM RLC used in RRC testing matches here
4		→	RRC CONNECTION SETUP COMPLETE	
5		←	ACTIVATE RB TEST MODE	
6		→	ACTIVATE RB TEST MODE COMPLETE	
7		←	RADIO BEARER SETUP	The Radio Bearer configuration is as described in TS 34.108, clause 6.10, RAB No. 23: QoS parameter: Traffic Class: Interactive or Background, max. UL:64 kbps max. DL:64 kbps, Residual BER as described in TS 34.108, clause: 6.10.
8		→	RADIO BEARER SETUP COMPLETE	
9		←	CLOSE UE TEST LOOP	The SS initiates UE test loop mode 1, indicated by the Parameter: ”UE test loop mode” 1 (X1=0 and X2=0) The ”DCCH dummy transmission” not used: disabled: (Y1=0)
10		→	CLOSE UE TEST LOOP COMPLETE	After having received the test mode acknowledgement, the UE test loop mode 1 is activated.

Specific message contents

The contents of test case specific message parameters are described in the test case (Expected Sequence). Default contents of messages are described in the clause Default PDCP Message Contents.

7.3.1.2.1.2 Setup a UE originated PS session using IP Header compression in UM RLC (using UE Test loop test mode 1)

Initial Conditions

UE is in Idle mode.

Test procedure

After having received the System Information, the SS starts to setup a RRC connection. After connection establishment and Radio Bearer Setup, the UE test loop mode 1 is activated and the UE test loop mode 1 is closed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		SYSTEM INFORMATION	
2	→		RRC CONNECTION REQUEST	
3	←		RRC CONNECTION SETUP	Connection Setup message PS sessions in UM RLC used in RRC testing matches here
4	→		RRC CONNECTION SETUP COMPLETE	
5	←		ACTIVATE RB TEST MODE	
6	→		ACTIVATE RB TEST MODE COMPLETE	
7	←		RADIO BEARER SETUP	The Radio Bearer configuration is as described in TS 34.108, clause 6.10, RAB No. 23: QoS parameter: Traffic Class: Interactive or Background, max. UL:64 kbps max. DL:64 kbps, Residual BER as described in TS 34.108, clause: 6.10.
8	→		RADIO BEARER SETUP COMPLETE	
9	←		CLOSE UE TEST LOOP	The SS initiates UE test loop mode 1, indicated by the Parameter: "UE test loop mode"1 (X1=0 and X2=0) The "DCCH dummy transmission" not used: disabled: (Y1=0)
10	→		CLOSE UE TEST LOOP COMPLETE	After having received the test mode acknowledgement, the UE test loop mode 1 is activated.

Specific message contents

The contents of test case specific message parameters are described in the test case (Expected Sequence) Default contents of messages are described in the clause Default PDCP Message Contents.

7.3.1.2.1.3 Deactivate a UE originated PS session using IP Header compression (using UE test loop mode 1)

Initial Conditions

UE is in connected mode, a UE test loop mode 1 for PDCP is activated, and the UE loop mode 1 is "closed".

Test procedure

The UE opens the UE test loop mode 1, deactivates the test mode and the PS session, releases the Radio Bearer and enters Idle mode.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		OPEN UE TEST LOOP	The SS terminates the UE test loop mode 1, (see described parameter)
2	→		OPEN UE TEST LOOP COMPLETE	After having received the test mode acknowledgement, the loop back mode 1 is deactivated.
3	←		DEACTIVATE RB TEST MODE	SS stops the UE test loop mode 1
4	→		DEACTIVATE RB TEST MODE COMPLETE	UE shall confirm the former message. Afterwards, the UE returns to normal operation
5	←		RRC CONNECTION RELEASE	SS terminates the connection
6	→		RRC CONNECTION RELEASE COMPLETE	UE confirms the connection release and returns to Idle mode

Specific message contents

The contents of test case specific message parameters are described in the test case (Expected Sequence). Default contents of messages are described in the clause Default PDCP Message Contents.

7.3.1.2.2 Default PDCP Message Contents

This clause contains the default values of RRC messages used for PDCP testing, other than those specified in TS 34.108 clauses 6 and 9, and default values of PDCP messages. Unless indicated otherwise in specific test cases, only PDCP related specific message contents are described here which shall be transmitted by the system simulator in RRC messages, and which are required to be received from the UE under test. If not explicitly described, the message contents are identical with the default contents for the same message type of layer 3 messages for RRC tests, to establish a packet switched session or connection.

The necessary L3 messages are listed in alphabetic order, with the exception of the SYSTEM INFORMATION messages, where it is the information elements which are listed in alphabetic order (this is because some information elements occur in several SYSTEM INFORMATION types).

In this clause, decimal values are normally used. However, sometimes a hexadecimal value, indicated by an "H", or a binary value, indicated by a "B" is used.

Default SYSTEM INFORMATION:

NOTE 1: SYSTEM INFORMATION BLOCK TYPE 1 (except for PLMN type ”GSM-MAP”), SYSTEM INFORMATION BLOCK TYPE 8, SYSTEM INFORMATION BLOCK TYPE 9, SYSTEM INFORMATION BLOCK TYPE 10, SYSTEM INFORMATION BLOCK TYPE 14, SYSTEM INFORMATION BLOCK TYPE 15 messages are not used.

Contents of SYSTEM INFORMATION BLOCK TYPE 16:

Predefined RB_configuration - RB information list - PDCP info	 Present

Contents of CONNECTION SETUP message:

Capability update requirement - UE radio access capability update requirement - System specific capability update requirement list	 TRUE UE only supports 1 system

Contents of CONNECTION SETUP COMPLETE message:

UE radio access capability - Conformance test compliance - PDCP Capability - Max PDCP SN - Support of lossless SRNS relocation - Supported algorithm types - RFC2507 - Maximum MAX_HEADER - Maximum TCP_SPACE - Maximum NON_TCP_SPACE - RLC Capability - Transport channel capability - RF Capability - Physical channel capability - UE multi-mode/multi-RAT capability - Security Capability - LCS Capability - Measurement capability	Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings
UE system specific capability	Value will be check. UE must include the classmark information for the supported system

Contents of ACTIVATE RB TEST MODE message:

Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000100B

Contents of ACTIVATE RB TEST MODE COMPLETE message:

Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000101B

Contents of DEACTIVATE RB TEST MODE message:

Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000110B

Contents of DEACTIVATE RB TEST MODE COMPLETE message:

Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000111B

Contents of CLOSE UE TEST LOOP message:

Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000000B
UE test loop mode	000000100B (X2=0 and X1=0 for UE test mode 1, Y1=0 DCCH dummy transmission disabled)
UE test loop mode 1 LB setup	
- Length of UE loop mode 1 LB setup IE	4 octets
- LB setup list	
- LB setup RAB subflow #1	
- Z13…Z0 (Uplink RLC SDU size in bits)	0…16383 (binary coded, Z13 most significant bit); value as negotiated

Contents of CLOSE UE TEST LOOP COMPLETE message:

Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000001B

Contents of OPEN UE TEST LOOP message:

IE Identifier (only in AM)	1000xxxx
Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000010B

Contents of OPEN UE TEST LOOP COMPLETE message:

Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000011B

7.3.2 IP Header Compression and PID assignment

7.3.2.1 UE in RLC AM

7.3.2.1.1 Transmission of uncompressed Header

7.3.2.1.1.1 Definition and applicability

Applicable for all UEs supporting RLC AM and a Radio Bearer as described in the Common Test Sequences. The UE shall be capable to deal with a TCP/IP and UDP/IP data packets with uncompressed IP header.

7.3.2.1.1.2 Conformance requirement

Packet Data Convergence Protocol shall perform the following functions:

- ...

- transfer of user data. Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa;

PDCP shall be able (...) to handle them with a correct header compression protocol and furthermore to indicate the type of the packet within a certain protocol.

PID value 0 is reserved permanently for no compression

Reference(s)

TS 25.323 clause 5

TS 25.323 sub-clause 5.1.1

7.3.2.1.1.3 Test purpose

The test case consists of two test procedures:

The first test procedure verifies, that the ”PDCP Data” PDU is used for uncompressed IP header packets, if no IP header compression is configured by higher layers. The second test procedure verifies, that the ”PDCP No header” PDU is used for uncompressed IP header packets, if no IP header compression is configured by higher layers.

1. To verify, that the UE transmits and receives in unacknowledged mode (RLC AM) TCP/IP and UDP/IP data packets without IP header compression as configured by higher layers.

2. To verify, that PID assignment rules are correctly applied, if usage of ”PDCP Data” PDU are negotiated, i.e. the UE shall recognize PID value = 0 for a received TCP/IP and UDP/IP data packet and it shall use PID=0 to transmit IP data packets, if no IP header compression is negotiated. If usage of ”PDCP No Header” PDU is negotiated, no PID assignment is used for transmitting and receiving TCP/IP and UDP/IP data packets.

7.3.2.1.1.4 Method of test

Initial conditions

UE is in Idle mode

Related ICS/IXIT Statement(s)

1. Test procedure: Transmission of uncompressed IP header packets using PDCP Data PDU

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC AM using Common test procedures for mobile originated PS switched sessions. Usage of ”PDCP Data” PDU has been configured by higher layers.

b) The SS sends a TCP/IP data packet with uncompressed IP Header.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PDCP PDU type and shall handle the received data packet with the appropriate decoding method. Then it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration using PDCP Data PDU.

d) The SS receives and decodes the TCP/IP data packet. The decoded data packet shall be identical with the data as sent before.

e) Step b) to d) shall be repeated by sending a UDP/IP data packet with uncompressed IP Header.

The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE originated PS session using IP Header compression in AM RLC (using UE test loop mode 1)				
1	←		PDCP Data	The SS creates a TCP/IP packet without IP header compression (PDCP Data PDU). The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression applied for this TCP/IP data packet) Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.

Step	Direction	Message	Comments
	UE | SS		
2	→	PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function for the received data
3	←	PDCP Data	The SS creates a UDP/IP packet without IP header compression (PDCP Data PDU). The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes with PID value = 0, there was no IP header compression applied for the UDP/IP packet. Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
4	→	PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: data: former received UDP/IP packet After reception of this UDP/IP data packet, the SS decodes the received data
Deactivate a UE originated PS session using IP Header compression (using UE test loop mode 1)			

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) which fits to the below described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.22 including described physical channel parameters, configuration for AM RLC max. DL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.23 including described physical channel parameters, Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108, Table 6.10.2.1.2)
- CN domain identity	PS domain
- RB information to setup - RB identity	 5
- PDCP info - Support of lossless SRNS relocation	 False (IE “ Support of lossless SRNS relocation ” only present, if RLC ”In-sequence delivery” is TRUE and in AM)
- PDCP PDU header	present
- RLC info - Downlink RLC mode	 (AM RLC)

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

2. Test procedure: Transmission of uncompressed IP header packets using No Header PDU

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC AM using Common test procedures for mobile originated PS switched sessions. Usage of ”PDCP No Header” PDU has been configured by higher layers.

b) The SS sends a TCP/IP data packet with uncompressed IP Header.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PDCP PDU type and shall handle the received data packet with the appropriate decoding method. Then it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration using PDCP No Header PDU.

d) The SS receives and decodes the TCP/IP data packet. The decoded data packet shall be identical with the data as sent before.

e) Step b) to d) shall be repeated by sending a UDP/IP data packet with uncompressed IP Header.

f) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE originated PS session using IP Header compression in AM RLC (using UE test loop mode 1)				
1	←		PDCP No Header	The SS creates a TCP/IP packet without IP header compression (PDCP No Header PDU). The SS sends a PDCP No Header PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: data: below described TCP/IP packet After having received the PDCP No Header PDU, the UE decodes the PDU and recognizes, there was no PID applied for the TCP/IP packet. Therefore, no IP header decompression shall be applied for this packet. Then, the data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP No Header	The UE sends a PDCP No Header PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function for the received data
				The SS creates a UDP/IP packet without IP header compression (PDCP No Header PDU).

Step	Direction		Message	Comments
	UE	SS		
3		←	PDCP No Header	The SS sends a PDCP No Header PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: data: below described UDP/IP packet After having received the PDCP No Header PDU, the UE decodes the PDU and recognizes, there was no PID applied for the UDP/IP packet. Therefore, no IP header decompression shall be applied for this packet. Then, the data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
4	→		PDCP No Header	The UE sends a PDCP No Header PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: data: former received TCP/IP packet After reception of this UDP/IP data packet, the SS decodes the received data
Deactivate a UE originated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) which fits to the below described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.22 including described physical channel parameters, configuration for AM RLC max. DL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.23 including described physical channel parameters, Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108, Table 6.10.2.1.2)
- CN domain identity	PS domain
- RB information to setup - RB identity	 5
- PDCP info - Support of lossless SRNS relocation	 False (IE " Support of lossless SRNS relocation " only present, if RLC "In-sequence delivery" is TRUE and in AM)
- PDCP PDU header	absent
- RLC info - Downlink RLC mode	 (AM RLC)

Content of PDCP No Header PDU (Step 1)

Information Element	Value/remark
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP No Header PDU (Step 3)

Information Element	Value/remark
Data	PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.2.1.1.5 Test requirements

1. Test requirements: Transmission of uncompressed IP header packets using PDCP Data PDU

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the former packets have been received and handled correctly (PDCP Data PDU). This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

2. Test requirements: Transmission of uncompressed IP header packets using PDCP No Header PDU

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the former packets have been received and handled correctly (PDCP No Header PDU). This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

7.3.2.1.2 Transmission of compressed Header

7.3.2.1.2.1 Definition and applicability

Applicable for all UEs supporting RLC AM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP and UDP/IP data packets and furthermore to establish a PDCP entity which applies IP header compression method RFC 2507.

7.3.2.1.2.2 Conformance requirement

Packet Data Convergence Protocol shall perform the following functions:

- ...

- transfer of user data. Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa;

PDCP shall be able (...) to handle them with a correct header compression protocol and furthermore to indicate the type of the packet within a certain protocol.

Reference(s)

TS 25.323 clause 5

TS 25.323 sub-clause 5.1.1

7.3.2.1.2.3 Test purpose

1. To verify, that the UE transmits and receives in unacknowledged mode (RLC AM) TCP/IP and UDP/IP data packets by using IP header compression method as described in RFC2507 as configured by higher layers.

2. To verify, that the PID assignment rules are correctly applied by the UE. The UE as shall use the correct PID value for the applied optimisation method for transmitting and receiving TCP/IP and UDP/IP data packets.

7.3.2.1.2.4 Method of test

Initial conditions

UE is in Idle mode

Related ICS/IXIT Statement(s)

Support of IP header compression method RFC 2507 - YES/NO

Test procedure

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC AM using Common test procedures for mobile originated PS switched sessions. Usage of ”PDCP Data” PDU has been configured by higher layers.

b) The SS sends a ”normal” TCP/IP data packet (no compression packet type), PID=0.

NOTE: According to the compression protocol RFC 2507, this is necessary for the decompression unit to create the internal CONTEXT with assigned CID.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression method. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

e) The SS sends a TCP/IP data packet with packet type: Full_Header, PID=1.

NOTE: According to the compression protocol RFC 2507, this is necessary to transmit the created CONTEXT and the assigned CID.

f) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression method. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

g) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

h) The SS sends a TCP/IP data packet with packet type: Compressed_TCP, PID=2.

i) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression method. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

j) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

k) The SS sends a TCP/IP data packet with packet type: Compressed_TCP_nondelta, PID=3.

l) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression method. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

m) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

n) Step b) to d) is repeated for a ”normal” UDP/IP data packet, PID=0.

o) Step e) to g) is repeated for a UDP/IP data packet with packet type: Full_Header, PID=1.

p) The SS sends a UDP/IP data packet with packet type: Compressed_non_TCP, PID=4.

q) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression method. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

r) The SS receives and decodes the UDP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

s) The SS deactivates the UE tests loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE originated PS session using IP Header compression in AM RLC (using UE test loop mode 1)				
1	←		PDCP Data	The SS creates a TCP/IP packet without IP header compression. The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression applied for this TCP/IP data packet) Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 5, except 4 (depending on the TCP/IP header format used by the UE) data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function dependent the assigned PID.
3	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 1 (Full_Header packet type [TCP/IP]) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU, recognizes PID value = 1 applied for this TCP/IP data packet and decompresses it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.

Step	Direction		Message	Comments
	UE	SS		
4	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 5, except 4 (depending on which TCP/IP header format is used by the UE) data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function dependent the assigned PID.
5	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 2 (Compressed_TCP packet type) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU, recognizes PID value = 2 applied for this TCP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
6	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 5, except 4 (depending on which TCP/IP header format is used by the UE) data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function dependent the assigned PID.
7	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 3 (Compressed_TCP_nondelta packet type) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU, recognizes PID value = 3 applied for this TCP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.

Step	Direction		Message	Comments
	UE	SS		
8	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 5, except 4 (depending on which TCP/IP header format is used by the UE) data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function dependent the assigned PID.
9	←		PDCP Data	The SS creates a UDP/IP packet without compressed IP header compression. The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes with PID value = 0, there was no IP header compression applied for the UDP/IP packet. Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
10	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (Data PDU with Header) PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE) data: below described UDP/IP packet After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.

Step	Direction	Message	Comments
	UE | SS		
11	←	PDCP Data	The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 1 (Full_Header packet type) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 1 applied for this UDP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
12	→	PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (Data PDU with Header) PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE) data: below described UDP/IP packet After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
13	←	PDCP Data	The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 4 (Compressed _non-TCP packet type) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 4 applied for this UDP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
14	→	PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (Data PDU with Header) PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE) data: below described UDP/IP packet After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
Deactivate a UE originated PS session using IP Header compression (using UE test loop mode 1)			

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble " Setup a UE originated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble " Setup a UE originated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.22 including described physical channel parameters, configuration for AM RLC max. DL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.23 including described physical channel parameters, Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108, Table 6.10.2.1.2)
- CN domain identity	PS domain
- RB information to setup - RB identity	 5
- PDCP info - Support of lossless SRNS relocation	 False (IE " Support of lossless SRNS relocation " only present, if RLC "In-sequence delivery" is TRUE and in AM)
- PDCP PDU header - Header compression information CHOICE *algorithm type* - RFC2507 - F_MAX_PERIOD - F_MAX_TIME - MAX_HEADER - TCP_SPACE - NON_TCP_SPACE - EXPECT_REORDERING	present 1 256 (Default) 5 (Default) 168 (Default) 15 (Default) 15 (Default) reordering expected (Default)
- RLC info - Downlink RLC mode	 (AM RLC)

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type PID Data	000 00001 (Full_Header, PID = 1) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 5)

Information Element	Value/remark
PDU type PID Data	000 00010 (Compressed_TCP, PID = 2) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 7)

Information Element	Value/remark
PDU type PID Data	000 00011 (Compressed_TCP_non-delta, PID = 3) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 9)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 11)

Information Element	Value/remark
PDU type PID Data	000 00001 (Full_Header, PID = 1) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 13)

Information Element	Value/remark
PDU type PID Data	000 00100 (Compressed_non-TCP, PID = 4) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.2.1.2.5 Test requirements

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the former packets have been received and handled with the correct compression method. This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

7.3.2.2 UE in RLC UM

7.3.2.2.1 Transmission of uncompressed Header

7.3.2.2.1.1 Definition and applicability

Applicable for all UEs supporting RLC UM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with a TCP/IP and UDP/IP data packets with uncompressed IP header.

7.3.2.2.1.2 Conformance requirement

Packet Data Convergence Protocol shall perform the following functions:

- ...

- transfer of user data. Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa;

PDCP shall be able (...) to handle them with a correct header compression protocol and furthermore to indicate the type of the packet within a certain protocol.

PID value 0 is reserved permanently for no compression

Reference(s)

TS 25.323 clause 5

TS 25.323 sub-clause 5.1.1

7.3.2.2.1.3 Test purpose

The test case consists of two test procedures:

The first test procedure verifies, that the ”PDCP Data” PDU is used for uncompressed IP header packets, if no IP header compression is configured by higher layers. The second test procedure verifies, that the ”PDCP No header” PDU is used for uncompressed IP header packets, if no IP header compression is configured by higher layers.

1. To verify, that the UE transmits and receives in unacknowledged mode (RLC UM) TCP/IP and UDP/IP data packets without IP header compression as configured by higher layers.

2. To verify, that PID assignment rules are correctly applied, if usage of ”PDCP Data” PDU are negotiated, i.e. the UE shall recognize PID value = 0 for a received TCP/IP and UDP/IP data packet and it shall use PID=0 to transmit IP data packets, if no IP header compression is negotiated. If usage of ”PDCP No Header” PDU is negotiated, no PID assignment is used for transmitting and receiving TCP/IP and UDP/IP data packets.

7.3.2.2.1.4 Method of test

Initial conditions

UE is in Idle mode

Related ICS/IXIT Statement(s)

1. Test procedure: Transmission of uncompressed IP header packets using PDCP Data PDU

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile originated PS switched sessions. Usage of ”PDCP Data” PDU has been configured by higher layers.

b) The SS sends a TCP/IP data packet with uncompressed IP Header.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PDCP PDU type and shall handle the received data packet with the appropriate decoding method. Then it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration using PDCP Data PDU.

d) The SS receives and decodes the TCP/IP data packet. The decoded data packet shall be identical with the data as sent before.

e) Step b) to d) shall be repeated by sending a UDP/IP data packet with uncompressed IP Header.

The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE originated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1	←		PDCP Data	The SS creates a TCP/IP packet without IP header compression (PDCP Data PDU). The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression applied for this TCP/IP data packet) Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function for the received data
				The SS creates a UDP/IP packet without IP header compression (PDCP Data PDU).

Step	Direction		Message	Comments
	UE	SS		
3		←	PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes with PID value = 0, there was no IP header compression applied for the UDP/IP packet. Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
4		→	PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: data: former received TCP/IP packet After reception of this UDP/IP data packet, the SS decodes the received data
Deactivate a UE originated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fits to the below described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.22 including described physical channel parameters, configuration for UM RLC max. DL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.23 including described physical channel parameters, Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108, Table 6.10.2.1.2)
- CN domain identity	PS domain
- RB information to setup - RB identity	 5
- PDCP info - PDCP PDU header	 present
- RLC info - Downlink RLC mode	 (UM RLC)

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

2. Test procedure: Transmission of uncompressed IP header packets using No Header PDU

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile originated PS switched sessions. Usage of "PDCP No Header" PDU has been configured by higher layers.

b) The SS sends a TCP/IP data packet with uncompressed IP Header.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PDCP PDU type and shall handle the received data packet with the appropriate decoding method. Then it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration using PDCP No Header PDU.

d) The SS receives and decodes the TCP/IP data packet. The decoded data packet shall be identical with the data as sent before.

e) Step b) to d) shall be repeated by sending a UDP/IP data packet with uncompressed IP Header.

f) The SS deactivates the Loop back test mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE originated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1	←		PDCP No Header	The SS creates a TCP/IP packet without IP header compression (PDCP No Header PDU). The SS sends a PDCP No Header PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: data: below described TCP/IP packet After having received the PDCP No Header PDU, the UE decodes the PDU and recognizes, there was no PID applied for the TCP/IP packet. Therefore, no IP header decompression shall be applied for this packet. Then, the data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP No Header	The UE sends a PDCP No Header PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function for the received data
				The SS creates a UDP/IP packet without IP header compression (PDCP No Header PDU).

Step	Direction	Message	Comments
	UE | SS		
3	←	PDCP No Header	The SS sends a PDCP No Header PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: data: below described UDP/IP packet After having received the PDCP No Header PDU, the UE decodes the PDU and recognizes, there was no PID applied for the UDP/IP packet. Therefore, no IP header decompression shall be applied for this packet. Then, the data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
4	→	PDCP No Header	The UE sends a PDCP No Header PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: data: former received UDP/IP packet After reception of this UDP/IP data packet, the SS decodes the received data
Deactivate a UE originated PS session using IP Header compression (using UE test loop mode 1)			

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fits to the below described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.22 including described physical channel parameters, configuration for UM RLC max. DL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.23 including described physical channel parameters, Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108, Table 6.10.2.1.2)
- CN domain identity	PS domain
- RB information to setup - RB identity	 5
- PDCP info	False
- PDCP PDU header	absent
- RLC info - Downlink RLC mode	 (UM RLC)

Content of PDCP No Header PDU (Step 1)

Information Element	Value/remark
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP No Header PDU (Step 3)

Information Element	Value/remark
Data	PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.2.2.1.5 Test requirements

1. Test requirements: Transmission of uncompressed IP header packets using PDCP Data PDU

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the former packets have been received and handled correctly (PDCP Data PDU). This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

2. Test requirements: Transmission of uncompressed IP header packets using PDCP No Header PDU

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the former packets have been received and handled correctly (PDCP No Header PDU). This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

7.3.2.2.2 Transmission of compressed Header

7.3.2.2.2.1 Definition and applicability

Applicable for all UEs supporting RLC UM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP and UDP/IP data packets and furthermore to establish a PDCP entity which applies IP header compression method RFC 2507.

7.3.2.2.2.2 Conformance requirement

Packet Data Convergence Protocol shall perform the following functions:

- ...

- transfer of user data. Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa;

PDCP shall be able (...) to handle them with a correct header compression protocol and furthermore to indicate the type of the packet within a certain protocol.

Reference(s)

TS 25.323 clause 5

TS 25.323 sub-clause 5.1.1

7.3.2.2.2.3 Test purpose

1. To verify, that the UE transmits and receives in unacknowledged mode (RLC UM) TCP/IP and UDP/IP data packets by using IP header compression method as described in RFC2507 as configured by higher layers.
2. To verify, that the PID assignment rules are correctly applied by the UE. The UE as shall use the correct PID value for the applied optimisation method for transmitting and receiving TCP/IP and UDP/IP data packets.

7.3.2.2.2.4 Method of test

Initial conditions

UE is in Idle mode

Related ICS/IXIT Statement(s)

Support of IP header compression method RFC 2507 - YES/NO

Test procedure

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile originated PS switched sessions. Usage of ”PDCP Data” PDU has been configured by higher layers.

b) The SS sends a ”normal” TCP/IP data packet (no compression packet type), PID=0.

NOTE: According to the compression protocol RFC 2507, this is necessary for the decompression unit to create the internal CONTEXT with assigned CID.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression method. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

e) The SS sends a TCP/IP data packet with packet type: Full_Header, PID=1.

NOTE: According to the compression protocol RFC 2507, this is necessary to transmit the created CONTEXT and the assigned CID.

f) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression method. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

g) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

h) The SS sends a TCP/IP data packet with packet type: Compressed_TCP, PID=2.

i) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression method. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

j) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

k) The SS sends a TCP/IP data packet with packet type: Compressed_TCP_nondelta, PID=3.

l) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression method. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

m) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

n) Step b) to d) is repeated for a ”normal” UDP/IP data packet, PID=0.

o) Step e) to g) is repeated for a UDP/IP data packet with packet type: Full_Header, PID=1.

p) The SS sends a UDP/IP data packet with packet type: Compressed_non_TCP, PID=4.

q) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression method. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

r) The SS receives and decodes the UDP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

s) The SS deactivates the UE test loop test mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE originated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1	←		PDCP Data	The SS creates a TCP/IP packet without IP header compression. The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression applied for this TCP/IP data packet) Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 5, except 4 (depending on the TCP/IP header format used by the UE) data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function dependent the assigned PID.
3	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 1 (Full_Header packet type [TCP/IP]) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU, recognizes PID value = 1 applied for this TCP/IP data packet and decompresses it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.

Step	Direction		Message	Comments
	UE	SS		
				The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
4	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 5, except 4 (depending on which TCP/IP header format is used by the UE) data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function dependent the assigned PID.
5	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 2 (Compressed_TCP packet type) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU, recognizes PID value = 2 applied for this TCP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
6	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 5, except 4 (depending on which TCP/IP header format is used by the UE) Data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function dependent the assigned PID.
7	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 3 (Compressed_TCP_nondelta packet type) Data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU, recognizes PID value = 3 applied for this TCP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.

Step	Direction	Message	Comments
	UE | SS		
8	→	PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 5, except 4 (depending on which TCP/IP header format is used by the UE) data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function dependent the assigned PID.
9	←	PDCP Data	The SS creates a UDP/IP packet without compressed IP header compression. The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) Data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes with PID value = 0, there was no IP header compression applied for the UDP/IP packet. Therefore, no IP header decompression is applied for this packet. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
10	→	PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (Data PDU with Header) PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE) data: below described UDP/IP packet After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
11	←	PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 1 (Full_Header packet type) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 1 applied for this UDP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.

Step	Direction		Message	Comments
	UE	SS		
				The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
12	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (Data PDU with Header) PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE) data: below described UDP/IP packet After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
13	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 4 (Compressed _non-TCP packet type) data: below described UDP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 1 applied for this UDP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
14	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (Data PDU with Header) PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE) data: below described UDP/IP packet After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
Deactivate a UE originated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble " Setup a UE originated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.22 including described physical channel parameters, configuration for UM RLC max. DL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.23 including described physical channel parameters, Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108, Table 6.10.2.1.2)
- CN domain identity	PS domain
- RB information to setup - RB identity	 5
- PDCP info	False
- PDCP PDU header	
- Header compression information	present
CHOICE *algorithm type*	1
- RFC2507	
- F_MAX_PERIOD	
- F_MAX_TIME	256 (Default)
- MAX_HEADER	5 (Default)
- TCP_SPACE	168 (Default)
- NON_TCP_SPACE	15 (Default)
- EXPECT_REORDERING	15 (Default)
- RLC info	reordering expected (Default)
- Downlink RLC mode	(UM RLC)

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type	000
PID	00001 (Full_Header, PID = 1)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 5)

Information Element	Value/remark
PDU type PID Data	000 00010 (Compressed_TCP, PID = 2) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 7)

Information Element	Value/remark
PDU type PID Data	000 00011 (Compressed_TCP_non-delta, PID = 3) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 9)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 11)

Information Element	Value/remark
PDU type PID Data	000 00001 (Full_Header, PID = 1) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 13)

Information Element	Value/remark
PDU type PID Data	000 00100 (Compressed_non-TCP, PID = 4) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.2.2.5 Test requirements

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the former packets have been received and handled with the correct compression method. This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

7.3.2.3 Extension of used compression methods

7.3.2.3.1 Definition and applicability

Applicable for all UEs supporting RLC UM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP data packets and furthermore to establish a PDCP entity which applies IP header compression method: RFC 2507.

7.3.2.2.3.2 Conformance requirement

Packet Data Convergence Protocol shall perform the following functions:

- ...

- transfer of user data. Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa;

PDCP shall be able (...) to handle them with a correct header compression protocol and furthermore to indicate the type of the packet within a certain protocol.

The PDCP layer shall be able to support several header compression protocols and it shall always be possible to extend the list of supported protocols in the future.

The table (PID value allocation table) is reconfigured every time the PDCP entity is reconfigured, with a change in the supported header compression protocols.

The assignment of the PID values follow the general rules listed below:

- PID values are reassigned for the PDCP entity after renegotiation of the header compression protocols;
- the list of negotiated (or re-negotiated) header compression entities shall be examined, starting from the first one in the list. The number of PID values to be assigned is specified in the sub-clause for this protocol;

Reference(s)

TS 25.323 clause 5

TS 25.323 sub-clause 5.1.1

TS 25.323 sub-clause 5.1

7.3.2.2.3.3 Test purpose

1. To verify, that the UE is able to handle an extended PID value allocation table after PDCP reconfiguration as configured by RRC.

7.3.2.2.3.4 Method of test

Initial conditions

UE is in Idle mode

Related ICS/IXIT Statement(s)

Support of IP header compression method RFC 2507 - YES/NO

Test procedure

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile originated PS switched sessions (with the UE test loop mode 1). Usage of ”PDCP Data PDU” and no optimisation method has been configured by higher layers.

b) The SS sends a TCP/IP data packet (no compression packet type), PID=0.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

e) The SS reconfigures (using RRC Radio Bearer Reconfiguration message) the PDCP entity by extending the PID value allocation table and therefore the applied optimisation method with the IP header compression method RFC 2507. The UE test loop mode 1 in RLC UM is still active.

f) The SS sends a TCP/IP data packet (no compression packet type), PID=0.

g) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

h) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

i) The SS sends a TCP/IP data packet with packet type: Full_Header, PID=1.

j) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

k) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

l) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE originated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
				The SS creates a TCP/IP packet without IP header compression.
1	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression applied for this TCP/IP data packet) Therefore, no IP header decompression shall be applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
3	←		RRC RADIO BEARER RECONFIGURATION	SS extends the ”PID value allocation table” with IP header compression PID (RFC 2507) in the UE.
4	→		RRC RADIO BEARER RECONFIGURATION COMPLETE	UE acknowledges its new settings
5	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (normal packet type [TCP/IP]) data: below described TCP/IP packet. After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression applied for this TCP/IP data packet) Therefore, no IP header decompression shall be applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.

Step	Direction		Message	Comments
	UE	SS		
6	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 5, except 4 (depending on which TCP/IP header format is used by the UE) data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
7	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 1 (Full_Header packet type [TCP/IP]) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 1 applied for this TCP/IP data packet and shall decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
8	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 5, except 4 (depending on the TCP/IP header format used by UE) data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
Deactivate a UE originated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC RADIO BEARER RECONFIGURATION message

The contents of the RRC RADIO BEARER RECONFIGURATION message applied in the preamble ” Setup a UE originated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
RB information to reconfigure list	1
RB information to reconfigure	
- PDCP info	
- PDCP PDU header	present
- Header compression information	1
CHOICE *algorithm type*	
- RFC2507	
- F_MAX_PERIOD	256 (Default)
- F_MAX_TIME	5 (Default)
- MAX_HEADER	168 (Default)
- TCP_SPACE	15 (Default)
- NON_TCP_SPACE	15 (Default)
- EXPECT_REORDERING	reordering expected (Default)

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement	
- UE radio access capability update requirement	TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.22 including described physical channel parameters, configuration for UM RLC max. DL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.23 including described physical channel parameters, Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108, Table 6.10.2.1.2)
- CN domain identity	PS domain
- RB information to setup - RB identity	 5
- PDCP info - PDCP PDU header	 present
- RLC info - Downlink RLC mode	 (UM RLC)

Content of PDCP Data PDU (Step 1 and 5)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 7)

Information Element	Value/remark
PDU type PID Data	000 00001 (Full_Header, PID = 1) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.2.2.3.5 Test requirements

After PDCP reconfiguration, the UE shall return the TCP/IP data packets as indication, that the extension of used optimisation method are applied by UE. This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

7.3.2.2.4 Compression type used for different entities

7.3.2.2.4.1 Definition and applicability

Applicable only for an UE supporting the establishment of more than one PDCP entity in parallel, i.e. it shall be possible to configure more than one Radio Bearer Loop Back entities (each PDCP entity are assigned via PDCP-SAP to its own Radio Bearer Loop Back entity).

Applicable for all UEs supporting RLC UM and a Radio Bearer as described in the Test procedure.

The UE shall be capable to deal with compressed TCP/IP data packets and furthermore it shall apply IP header compression method RFC 2507.

7.3.2.2.4.2 Conformance requirement

Packet Data Convergence Protocol shall perform the following functions:

- ...

- transfer of user data. Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa;

PDCP shall be able (...) to handle them with a correct header compression protocol and furthermore to indicate the type of the packet within a certain protocol.

The assignment of the PID values follow the general rules listed below:

- PID values are assigned independently to each PDCP entity;

Different PDCP entities may include header compression protocols of the same type

Reference(s)

TS 25.323 clause 5

TS 25.323 sub-clause 5.1.1

TS 25.323 sub-clause 5.1

7.3.2.2.4.3 Test purpose

NOTE: For this test case, the SS shall be configured to handle more than one received PDCP messages in parallel.

1. To verify, that a configured IP header compression protocol are applied to compress and decompress TCP/IP data packets by several PDCP entities in parallel, if more than one entities are established, i.e. the UE uses the same PID to transmit two TCP/IP data packets with the same content in parallel using two Radio Bearer configurations.

7.3.2.2.4.4 Method of test

Initial conditions

UE is in Idle mode

Related ICS/IXIT Statement(s)

Establishment of more than one PDCP entities - YES/NO

Support of IP header compression method RFC 2507 - YES/NO

Test procedure

a) The SS setups a packet switched session including two radio bearer configurations in parallel in UE test loop mode 1 and in RLC UM using Common test procedures for mobile originated PS switched sessions. Usage of IP header compression method RFC 2507 has been configured by higher layers.

b) The SS sends in parallel a ”normal” TCP/IP data packet, PID=0 via both PDCP configurations to their peer entities.

c) After having received the TCP/IP data packets, the PDCP entities of the UE shall recognize the PID value and shall handle the received data packet independent of the used PID with the correct decompression method. Then they forward the data to their Radio Bearer Loop Back entity. Both received data shall be returned by each Radio Bearer Loop Back entity.

d) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.

e) After having received the TCP/IP data packets, the PDCP entities of the UE shall recognize the PID value and shall handle the received data packets independent of the used PID with the correct decompression method. Then they forward the data to their Radio Bearer Loop Back entity. Both received data shall be returned by each Radio Bearer Loop Back entity.

f) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.

g) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE originated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1	←		PDCP Data	The SS sends in parallel a PDCP Data PDU using the RLC-UM-Data-Request Primitive via both PDCP entities with the following contents to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received both PDCP Data PDUs, the UE decodes each PDU and recognizes PID value = 0 (no IP header compression applied for both TCP/IP data packets). Although the same PID is used for both PDUs, the UE shall handle they with the correct method and it forwards both data packets via PDCP-SAPs to their Radio Bearer Loop Back (RB LB) entities. The RB LB entities in UE test loop mode 1 return the received data packets and send they back to their PDCP entities.

Step	Direction		Message	Comments
	UE	SS		
2	→		PDCP Data	The UE sends back for each PDCP configuration a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 5, except 4 (depending on the TCP/IP header format used by UE) data: former received TCP/IP packet After reception of TCP/IP data packets, the SS applies the appropriate decoding function for both received messages depending on which PID was assigned to the received data
3	←		PDCP Data	The SS sends in parallel a PDCP Data PDU using the RLC-UM-Data-Request Primitive via both PDCP entities with the following contents to the UE: PDU type = 000 (PDCP Data PDU) PID = 1 (Full_Header packet type [TCP/IP]) data: below described TCP/IP packet After having received both PDCP Data PDUs, the UE decodes each PDU and recognizes PID value = 1 (Full_Header packet type applied for both TCP/IP data packets). Although the same PID is used for both PDUs, the UE shall handle they with the correct method and it forwards both data packets via PDCP-SAPs to their Radio Bearer Loop Back (RB LB) entities. The RB LB entities in UE test loop mode 1 return the received data packets and send they back to their PDCP entities.
4	→		PDCP Data	The UE sends back for each PDCP configuration a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 to 5, except 4 (depending on the TCP/IP header format used by UE) data: former received TCP/IP packet After reception of TCP/IP data packets, the SS applies the appropriate decoding function for both received messages depending on which PID was assigned to the received data
Deactivate a UE originated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.22 including described physical channel parameters, configuration for UM RLC configuration for UM RLC max. DL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.23 including described physical channel parameters, Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108, Table 6.10.2.1.2)
- CN domain identity	PS domain
- RB information to setup	
- RB identity	5
- PDCP info	
- PDCP PDU header	present
- Header compression information CHOICE *algorithm type*	1
- RFC2507	
- F_MAX_PERIOD	256 (Default)
- F_MAX_TIME	5 (Default)
- MAX_HEADER	168 (Default)
- TCP_SPACE	15 (Default)
- NON_TCP_SPACE	15 (Default)
- EXPECT_REORDERING	reordering expected (Default)
- RLC info	
- Downlink RLC mode	(UM RLC)
- RB information to setup	(NOTE: for RB ID 6, the same RAB configurations are used (No. # 23 as described in TS 34.108) as described for RB ID 5)
- RB identity	6
- PDCP info	
- PDCP PDU header	present
- Header compression information CHOICE *algorithm type*	1
- RFC2507	
- F_MAX_PERIOD	256 (Default)
- F_MAX_TIME	5 (Default)
- MAX_HEADER	168 (Default)
- TCP_SPACE	15 (Default)
- NON_TCP_SPACE	15 (Default)
- EXPECT_REORDERING	reordering expected (Default)
- RLC info	
- Downlink RLC mode	(UM RLC)

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type PID Data	000 00001 (Full_Header, PID = 1) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.2.2.4.5 Test requirements

The UE shall return both TCP/IP data packets as indication that the former received data packets associated with the same PID value are handled in parallel with the same decompression method. This verifies, that more than one PDCP configuration on UE side using the same compression method is able to apply it in parallel.

7.3.2.2.5 Reception of not defined PID values

7.3.2.2.5.1 Definition and applicability

Applicable for all UEs supporting RLC UM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP data packets and furthermore to establish a PDCP entity, which applies PDCP Data PDU if no IP header compression method, is negotiated.

The UE shall not forward invalid PDCP PDU data contents to its Radio Bearer.

7.3.2.2.5.2 Conformance requirement

PDCP shall be able (...) to handle them with a correct header compression protocol and furthermore to indicate the type of the packet within a certain protocol;

PID values that are used and are not defined invalidate the PDCP PDU;

Reference(s)

TS 25.323 sub-clause 5.1.1

TS 25.323 sub-clause 5.1.2.1

7.3.2.2.5.3 Test purpose

1. To verify, that a UE considers a received PDCP PDU message with not defined PID value as invalid, i.e. such an invalid PDCP PDU is not forwarded to the Radio Bearer entity on UE side. Therefore the UE using test loop mode 1 does not return such data packet to the SS.

7.3.2.2.5.4 Method of test

Initial conditions

UE is in Idle mode

Related ICS/IXIT Statement(s)

Test procedure

a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile originated PS switched sessions. Usage of ”PDCP Data PDU” and no PDCP IP header compression method has been configured by higher layers.

b) The SS sends a ”normal” TCP/IP data packet (no compression packet type), PID=0.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decoding method. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

d) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.

e) The SS sends a TCP/IP data packet with packet type: Full_Header, PID=1.

f) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decoding method. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

g) The SS waits an amount of time to make sure, that no returned data packet was sent by UE.

h) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE originated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression applied for this TCP/IP data packet) Therefore, no IP header decompression shall be applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.

Step	Direction		Message	Comments
	UE	SS		
3		←	PDCP Data	The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 1 (Full_Header packet type [TCP/IP]) data: below described TCP/IP packet. After having received the PDCP Data PDU, the UE shall recognize, that a not defined PID value (as configured by higher layers) is inserted in the PDCP PDU. The UE shall consider this PDU as invalid, i.e. the data packet is not forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. Therefore this data packet is not returned to the SS.
4				The SS waits a amount of time to make sure, that the former data packet is not returned to the SS.
Deactivate a UE originated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in UM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.22 including described physical channel parameters, configuration for UM RLC max. DL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.23 including described physical channel parameters, Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108, Table 6.10.2.1.2)
- CN domain identity	PS domain
- RB information to setup - RB identity	 5
- PDCP info - PDCP PDU header	 present
- RLC info - Downlink RLC mode	 (UM RLC)

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type PID Data	000 00001 (Full_Header, PID = 1) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.2.2.5.5 Test requirements

The UE shall return the received TCP/IP data packet using the PDCP Data PDU with PID = 0 as indication, that the UE works as configured.

The UE shall not return the TCP/IP data packet using the PDCP Data PDU with PID = 1 as indication, that this PDU was considerd as invalid by the UE. This verifies, that the PDCP configuration on UE side has considered this PDU as invalid.

7.3.3 PDCP sequence numbering when lossless SRNS Relocation

7.3.3.1 Data transmission if lossless SRNS Relocation is supported

7.3.3.1.1 Definition and applicability

Applicable for all UEs supporting RLC AM, RLC in-sequence delivery, a Radio Bearer as described in the Common Test Sequences and lossless SRNS relocation.

The UE shall be capable to deal with uncompressed TCP/IP data packets and furthermore to establish a PDCP entity which applies PDCP Sequence Numbering

7.3.3.1.2 Conformance requirement

The PDCP layer shall carry out the following functions during lossless SRNS relocation:

- support PDCP sequence numbering as specified in subclause 5.4.1.

The PDCP layer shall carry out the following during lossless SRNS relocation:

- provide unconfirmed PDCP SDUs and sequence numbers for forwarding to the target RNC.

Reference(s)

TS 25.323 sub-clause 5.4

7.3.3.1.3 Test purpose

1. To verify, that a UE supporting lossless SRNS relocation is able to receive and to send IP data packets by using PDCP Sequence Numbering as configured by higher layers.

7.3.3.1.4 Method of test

Initial conditions

SS: 2 cells - Cell A belonging to the valid SRNS (Source SRNS), Cell B belonging to the DRNS (Target SRNS). Both cells are neighbour cells. Cell A has a higher RF power level than Cell B such that an UE shall find Cell A more suitable for service.

UE: It is in Idle mode and has selected cell A with valid SRNS (Source SRNS).

Related ICS/IXIT Statement(s)

Support of lossless SRNS Relocation - YES/NO

Support of RLC in-sequence delivery - YES/NO

Test procedure

a) The SS setups a packet switched session including Radio Bearer and UE test loop mode 1 in RLC AM and in-sequence delivery using Common test procedures for mobile originated PS switched sessions in Cell A. Usage of ”PDCP Data” PDU, support of lossless SRNS relocation and no IP header compression has been configured by higher layers. The PDCP SN window size has been negotiated by RRC.

b) The SS sends a TCP/IP data packet (no compression packet type), PID=0.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

e) The SS starts to broadcast BCCH messages on the primary CPICH in cell B with a power level higher than in cell A. The UE shall chose cell B to be more suitable for service and hence perform a cell reselection.

f) After completion of cell reselection, the UE transmits a CELL UPDATE message to the SS on the uplink CCCH of cell B with the Cell update cause ”Cell Reselection”.

g) After having performed SRNS relocation (target RNC allocated with new S-RNTI for the UE), the Target SRNS is the valid SRNS and the SS sends a ”CELL UPDATE CONFIRM” message with new RNC_ID to indicate the completion of the cell update.

h) The UE shall confirm the reallocation.

i) The SS sends the next TCP/IP data packet (no compression packet type), PID=0 using the ”PDCP Data” PDU to the UE.

j) After having received the TCP/IP data packet, the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

k) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.

l) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE originated PS session using IP Header compression in AM RLC (using UE test loop mode 1) in Cell A				
				The SS creates a TCP/IP packet without IP header compression.
1	←		PDCP Data	The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression applied for this TCP/IP data packet) Therefore, no IP header decompression shall be applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2	→		PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
3				The SS increases the RF power level of cell B and decreases the power level of Cell A such that the UE finds cell B more suitable for service.
4				The UE cell reselection is performed and Cell B are selected for service.
5	→		RRC CELL UPDATE	Then, the UE shall inform the SS about the new cell selection by sending cell update with new parameters (parameter values as used in RRC testing).

Step	Direction UE | SS	Message	Comments
6	←	RRC CELL UPDATE CONFIRM	After having performed SRNS relocation, the Target SRNS is the valid SRNS and the SS sends a "CELL UPDATE CONFIRM" message with new parameter "RNC_ID" to indicate the completion of SRNS relocation (parameters as used in RRC testing).
7	→	RNTI REALLOCATION COMPLETE	The UE confirms the newly received information (parameters as used in RRC testing).
8	←	PDCP Data	The SS sends the next PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression applied for this TCP/IP data packet) Therefore, no IP header decompression shall be applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
9	→	PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
Deactivate a UE originated PS session using IP Header compression (using UE test loop mode 1)			

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble " Setup a UE originated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble " Setup a UE originated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3

messages for RRC tests [TS 34.123-1] (PS connection for AM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.22 including described physical channel parameters, configuration for AM RLC max. DL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.23 including described physical channel parameters, Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108, Table 6.10.2.1.2)
- CN domain identity	PS domain
- RB information to setup - RB identity	 5
- PDCP info - Max PDCP SN window size - Support of lossless SRNS relocation - PDCP PDU header	 65535 TRUE present
- RLC info - Downlink RLC mode - In-sequence delivery	 (AM RLC) True

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP Data PDU (Step 8)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.3.1.5 Test requirements

After having sent the ”RRC RNTI REALLOCATION COMPLETE”, the UE shall return the received TCP/IP data packets as indication, that it supports lossless SRNS relocation. This implicitly verifies, that Sequence Numbering is used for lossless SRNS relocation.

7.3.3.2 Synchronisation of PDCP sequence numbers

7.3.3.2.1 Definition and applicability

Applicable for all UEs supporting RLC AM, RLC in-sequence delivery, a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP and UDP/IP data packets and furthermore it shall be capable to use IP Header compression method RFC 2507.

7.3.3.2.2 Conformance requirement

The PDCP SeqNum PDU shall be sent by the peer PDCP entities when synchronisation of the PDCP SN is required. (...) Synchronisation of PDCP SN is required after (...) RB reconfiguration.

Reference(s)

TS 25.323 sub-clause 5.4

7.3.3.2.3 Test purpose

1. To verify, that the UE supporting lossless SRNS relocation as configured by higher layers is able to handle the ”PDCP SeqNum” PDU to synchronize the used PDCP Sequence Number after reconfiguration of the Radio Bearer.

7.3.3.2.4 Method of test

Initial conditions

SS: 2 cells - Cell A belonging to the valid SRNS (Source SRNS), Cell B belonging to the DRNS (Target SRNS). Both cells are neighbour cells. Cell A has a higher RF power level than Cell B such that an UE shall find Cell A more suitable for service.

UE: It is in Idle mode and has selected cell A with valid SRNS (Source SRNS).

Related ICS/IXIT Statement(s)

Support of lossless SRNS relocation - YES/NO

Support of RLC in-sequence delivery - YES/NO

Test procedure

a) The SS setups a packet switched session including Radio Bearer and UE test loop mode 1 in RLC AM and in-sequence delivery using Common test procedures for mobile originated PS switched sessions in Cell A. Usage of ”PDCP Data” PDU, support of lossless SRNS relocation and no IP header compression has been configured by higher layers. The PDCP SN window size has been negotiated by RRC.

b) The SS sends a TCP/IP data packet (no compression packet type), PID=0.

c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

e) The SS reconfigures (using RRC Radio Bearer Reconfiguration message) the PDCP entity by extending the PID value allocation table and therefore the applied optimisation method with the IP header compression method RFC 2507. The UE test loop mode 1 in RLC AM is still active.

f) The SS sends the next TCP/IP data packet (no compression packet type), PID=0 using the ”PDCP SeqNum” PDU including the current PDCP Sequence Number value to the UE.

g) After having received the TCP/IP data packet, the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.

h) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.

i) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE originated PS session using IP Header compression in AM RLC (using UE test loop mode 1) in Cell A				
1		←	PDCP Data	The SS creates a TCP/IP packet without IP header compression. The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described TCP/IP packet After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression applied for this TCP/IP data packet) Therefore, no IP header decompression shall be applied for this packet. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
2		→	PDCP Data	The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (PDCP Data PDU) PID value = 0 data: former received TCP/IP packet After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
3		←	RRC RADIO BEARER RECONFIGURATION	SS extends the ”PID value allocation table” with IP header compression PID (RFC 2507) in the UE.
4		→	RRC RADIO BEARER RECONFIGURATION COMPLETE	UE acknowledges its new settings

Step	Direction	Message	Comments
	UE | SS		
5	←	PDCP SeqNum	The SS sends a PDCP SeqNum PDU including its current Sequence Number with the following content to the UE: PDU type = 001 (PDCP SeqNum PDU) PID = 0 (normal packet type [TCP/IP]) SeqNum = current PDCP Sequence Number data: below described TCP/IP packet After having received the PDCP SeqNum PDU, the UE shall set the received PDCP Sequence Number as its own valid value. It decodes the PDU, recognizes PID value = 0 applied for this TCP/IP data packet and shall decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.
6	→	PDCP PDU	The UE sends a PDCP PDU with PDCP Header back to the SS. The content is as follows: PDU type = 000 (PDCP Data PDU) PID value = 0 to 5, except 4 (depending on the TCP/IP Header format used by UE) SeqNum: current UE value, (optional parameter, depending on the used PDU) data: former received TCP/IP packet. After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.
Deactivate a UE originated PS session using IP Header compression (using UE test loop mode 1)			

Specific Message Contents

RRC RADIO BEARER RECONFIGURATION message

The contents of the RRC RADIO BEARER RECONFIGURATION message applied in the preamble ” Setup a UE originated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
RB information to reconfigure list	1
RB information to reconfigure	
- PDCP info	
- Max PDCP SN window size	65535
- Support of lossless SRNS relocation	TRUE
- PDCP PDU header	present
- Header compression information	1
CHOICE *algorithm type*	
- RFC2507	
- F_MAX_PERIOD	256 (Default)
- F_MAX_TIME	5 (Default)
- MAX_HEADER	168 (Default)
- TCP_SPACE	15 (Default)
- NON_TCP_SPACE	15 (Default)
- EXPECT_REORDERING	reordering expected (Default)

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	 TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble ” Setup a UE originated PS session using IP Header compression in AM RLC” of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	 No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.22 including described physical channel parameters, configuration for AM RLC max. DL: 64 kbps as described in TS 34.108, sub-clause 6.10.2.4.1.23 including described physical channel parameters, Residual BER as described in TS 24.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108, Table 6.10.2.1.2)
- CN domain identity	PS domain
- RB information to setup - RB identity	
- PDCP info	5
- Max PDCP SN window size	65535
- Support of lossless SRNS relocation	TRUE
- PDCP PDU header	present
- RLC info	
- Downlink RLC mode	(AM RLC)
- In-sequence delivery	True

Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

Content of PDCP SeqNum PDU (Step 5)

Information Element	Value/remark
PDU type PID Sequence number Data	001 00000 (No header compression, PID = 0) (16 Bit value) valid Sequence Number of the SS PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 5 Kbytes.

7.3.3.2.5 Test requirements

After having received the TCP/IP data packet conveyed with the ”PDCP SeqNum” PDU, the UE shall return the TCP/IP data packets as indication, that the UE is able to handle a Sequence Number synchronisation.

7.4 BMC

General

For BMC test description it is assumed, that UE manufacturers define CB data contents (CB-Data 1 and 2) for two different CB message types and for CB Data41 (ANSI-41 data contents) and describe how the reception is indicated in a clear way on the UE side.

Only Cell Broadcast Services (CBS) as distributed BMC service are applied. For a UE supporting BMC, it is assumed, that there is a BMC entity established, if Initial conditions are reached.

If not otherwise mentioned, the same procedures as used in RRC test specification [TS 34.123-1] applies to reach Initial conditions for BMC testing. The system information methods used to configure the BMC channel are mapped onto one FACH.

It shall be possible to activate and deactivate a certain CB message ID according to CB data 1, 2 and CB41 data 1 triggered by the user on the UE side.

7.4.1 General BMC message reception

7.4.1.1 UE in RRC Idle mode

7.4.1.1.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS message contents carried with certain activated CB message types in a clear way on the UE side.

7.4.1.1.2 Conformance requirement

A UE supporting Cell Broadcast Services shall be capable to receive BMC messages in the RRC Idle mode.

Reference(s)

TS 25.324 sub-clause 9.1

7.4.1.1.3 Test purpose

To verify, that a BMC configuration for a UE is able to receive activated CBS messages when in RRC Idle mode.

7.4.1.1.4 Method of test

Initial conditions

UE is in RRC Idle mode; BMC entity is established

SS: 1 cell,

NOTE: The CB message ID stored on the SIM shall be known for this test (parameter for CBS PDU's). The CBS data type shall be allocated and activated in the UE.

Related ICS/IXIT Statement(s)

ICS: CBS message support - YES/No

IXIT: CBS-Data 1: Bitstring of N*8 (where N≥1 and less than 1246)

NOTE: For CB-Data 1 IXIT, the manufacturer shall define CBS data as Bitstring together with the CB message ID used for transmitting this CB data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on the UE side (e.g. certain CBS traffic information)

Test procedure

a) The UE in RRC Idle mode is triggered to wait for the next system information. The UE is activated to receive expected CBS messages as described by the manufacturer,

b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS

c) The SS sends the CBS message containing an activated CBS message type according to CB-Data 1 to the UE; this shall be repeated for "CPREP" times (indicated by parameter "repetition period" in the schedule information)

d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB data contents)

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - CBS DRX Level 1 information (optional) - optional: Period of CTCH allocation on S-CCPCH - optional: CBS frame offset
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CBS data
3		←	BMC CBS Message	Activated CBS message with CB Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1,
4				After having received the BMC CBS message the UE shall indicate the reception of CB Data 1 in a clear way.

Specific Message Contents

SYSTEM INFORMATION TYPE 5

The contents of SYSTEM INFORMATION TYPE 5 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
PRACH system information	(see RRC default test settings)
Secondary CCPCH system	
- Secondary CCPCH information	1
- TFCS	(see RRC default test settings)
- FACH/PCH information	1
- TFS	(see RRC default test settings)
- CTCH indicator	TRUE
- PICH info	(see RRC default test settings)

BMC CBS Message

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041] according to the transmitted CB-Data 1 content.
Serial Number - Geographic Scope Indicator (2 bit) - Message Code (10 bit) - Update Number (4 bit)	[see TS 23.041] 11 (Normal Cell wide) in accordance with the Message ID for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Bitstring (N*8), [see IXIT value: CB-Data 1]

7.4.1.1.5 Test requirements

The UE shall store and decode a received activated CBS message.

7.4.1.2 UE in RRC Connected mode, state CELL_PCH

7.4.1.2.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS message contents carried with certain activated CB message types in a clear way on the UE side.

7.4.1.2.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages (...) in CELL_PCH RRC-state of Connected mode.

Reference(s)

TS 25.324 sub-clause 9.1

7.4.1.2.3 Test purpose

To verify, that a BMC configuration for a UE is able to receive activated CBS messages when in RRC Connected mode, state CELL_PCH.

7.4.1.2.4 Method of test

Initial conditions

UE is in Connected mode state CELL_PCH; BMC entity is established

SS: 1 cell,

NOTE: The CB message ID stored on the SIM shall be known for this test (parameter for CBS PDU's). The CBS data type shall be allocated and activated in the UE.

Related ICS/IXIT Statement(s)

ICS: CBS message support - YES/No

IXIT: CBS-Data 1: Bitstring of N*8 (where N≥1 and less than 1246)

NOTE: For CB-Data 1 IXIT, the manufacturer shall define CBS data as Bitstring together with the CB message ID used for transmitting this CB data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on the UE side (e.g. certain CBS traffic information)

Test procedure

a) The UE in RRC CELL_PCH is triggered to wait for the next system information. The UE is activated to receive expected CBS messages as described by the manufacturer,

b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS

c) The SS sends the CBS message containing an activated CBS message type according to CB-Data 1 to the UE; this shall be repeated for ”CPREP” times (indicated by parameter ”repetition period” in the schedule information)

d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB data contents)

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - CBS DRX Level 1 information (optional) - optional: Period of CTCH allocation on S-CCPCH - optional: CBS frame offset
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CBS data
3		←	BMC CBS Message	Activated CBS message with CB Data 1 message content as described by the manufacturer. This message shall be repeated ”CPREP” times, Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1,
4				After having received the BMC CBS message the UE shall indicate the reception of CB Data 1 in a clear way.

Specific Message Contents

SYSTEM INFORMATION TYPE 6

The contents of SYSTEM INFORMATION TYPE 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
PRACH system information	(see RRC default test settings)
Secondary CCPCH system	
- Secondary CCPCH information	1
- TFCS	(see RRC default test settings)
- FACH/PCH information	1
- TFS	(see RRC default test settings)
- CTCH indicator	TRUE
- PICH info	(see RRC default test settings)

BMC CBS Message

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041] according to the transmitted CB-Data 1 content.
Serial Number	[see TS 23.041]
- Geographic Scope Indicator (2 bit)	11 (Normal Cell wide)
- Message Code (10 bit)	in accordance with the Message ID
- Update Number (4 bit)	for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Bitstring (N*8), [see IXIT value: CB-Data 1]

7.4.1.2.5 Test requirements

The UE shall store and decode a received activated CBS message.

7.4.1.3 UE in RRC Connected mode, state URA_PCH

7.4.1.3.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS message contents carried with certain activated CB message types in a clear way on the UE side.

7.4.1.3.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages (...) in CELL_PCH and URA_PCH RRC-state of Connected mode.

Reference(s)

TS 25.324 sub-clause 9.1

7.4.1.3.3 Test purpose

To verify, that a BMC configuration for a UE is able to receive activated CBS messages when in RRC Connected mode, state URA_PCH.

7.4.1.3.4 Method of test

Initial conditions

UE is in Connected mode state URA_PCH; BMC entity is established

SS: 1 cell,

NOTE: The CB message ID stored on the SIM shall be known for this test (parameter for CBS PDU's). The CBS data type shall be allocated and activated in the UE.

Related ICS/IXIT Statement(s)

ICS: CBS message support - YES/No

IXIT: CBS-Data 1: Bitstring of N*8 (where N≥1 and less than 1246)

NOTE: For CB-Data 1 IXIT, the manufacturer shall define CBS data as Bitstring together with the CB message ID used for transmitting this CB data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on the UE side (e.g. certain CBS traffic information)

Test procedure

a) The UE in RRC URA_PCH is triggered to wait for the next system information. The UE is activated to receive expected CBS messages as described by the manufacturer,

b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS

c) The SS sends the CBS message containing an activated CBS message type according to CB-Data 1 to the UE, this shall be repeated for "CPREP" times (indicated by parameter "repetition period" in the schedule information)

d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB data contents)

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - CBS DRX Level 1 information (optional) - optional: Period of CTCH allocation on S-CCPCH - optional: CBS frame offset
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CBS data
3		←	BMC CBS Message	Activated CBS message with CB Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1,
4				After having received the BMC CBS message the UE shall indicate the reception of CB Data 1 in a clear way.

Specific Message Contents

SYSTEM INFORMATION TYPE 6

The contents of SYSTEM INFORMATION TYPE 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
PRACH system information	(see RRC default test settings)
Secondary CCPCH system	
- Secondary CCPCH information	1
- TFCS	(see RRC default test settings)
- FACH/PCH information	1
- TFS	(see RRC default test settings)
- CTCH indicator	TRUE
- PICH info	(see RRC default test settings)

BMC CBS Message

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041] according to the transmitted CB-Data 1 content.
Serial Number - Geographic Scope Indicator (2 bit) - Message Code (10 bit) - Update Number (4 bit)	[see TS 23.041] 11 (Normal Cell wide) in accordance with the Message ID for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Bitstring (N*8), [see IXIT value: CB-Data 1]

7.4.1.3.5 Test requirements

The UE shall store and decode a received activated CBS message.

7.4.1.4 UE in RRC Idle mode (ANSI-41 CB data)

7.4.1.4.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) for ANSI-41 CB data as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS41 message contents carried with certain activated CB41 message types in a clear way on the UE side.

7.4.1.4.2 Conformance requirement

A UE supporting Cell Broadcast Services shall be capable to receive BMC messages in RRC Idle mode. (…)BMC messages are identified: (…), CBS41 Message

Reference(s)

TS 25.324 sub-clause 9.1

7.4.1.4.3 Test purpose

To verify, that a BMC configuration for a UE is able to receive activated CBS41 messages when in RRC Idle mode.

7.4.1.4.4 Method of test

Initial conditions

UE is in RRC Idle mode; BMC entity is established

SS: 1 cell,

NOTE: The CB message ID stored on the SIM shall be known for this test (parameter for CBS41 PDU's). The CBS41 data type shall be allocated and activated in the UE.

Related ICS/IXIT Statement(s)

ICS: CBS41 message support - YES/No

IXIT: CB41-Data 1: Bitstring of N*8 (where N≥1 and less than 1246)

NOTE: For CB41-Data 1 IXIT, the manufacturer shall define CBS data as Bitstring together with the CB message ID used for transmitting this CB41 data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on the UE side (e.g. certain CBS41 traffic information)

Test procedure

a) The UE in RRC Idle mode is triggered to wait for the next system information. The UE is activated to receive expected CBS41 messages as described by the manufacturer,

b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS

c) The SS sends the CBS41 message containing an activated CBS41 message type according to CB41-Data 1 to the UE; this shall be repeated for ”CPREP” times (indicated by parameter ”repetition period” in the schedule information)

d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB41 data contents)

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - CBS DRX Level 1 information (optional) - optional: Period of CTCH allocation on S-CCPCH - optional: CBS frame offset In addition, the MIB and SIB 16 are sent as described below for setup the ANSI-41 parameters
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CB41 data
3		←	BMC CBS41 Message	Activated CBS message with CB41 Data 1 message content as described by the manufacturer. This message shall be repeated ”CPREP” times, Parameter: - Message_type, - Broadcast Address - CB41-Data 1
4				After having received the BMC CBS message the UE shall indicate the reception of CB41 Data 1 in a clear way.

Specific Message Contents

MASTER INFORMATION BLOCK (MIB)

The contents of MASTER INFORMATION BLOCK Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
ANSI-41 Core Network information	Present

SYSTEM INFORMATION TYPE 5

The contents of SYSTEM INFORMATION TYPE 5 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
PRACH system information	(see RRC default test settings)
Secondary CCPCH system	
- Secondary CCPCH information	1
- TFCS	(see RRC default test settings)
- FACH/PCH information	1
- TFS	(see RRC default test settings)
- CTCH indicator	TRUE
- PICH info	(see RRC default test settings)

SYSTEM INFORMATION TYPE 13

The contents of SYSTEM INFORMATION TYPE 13 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE CN Type	ANSI-41
- CN domain specific NAS information	
- NAS (ANSI-41) system information	T.B.D

BMC CBS41 Message

Information Element	Value/remark
Message Type	3 (CBS41 Message)
Broadcast Address	Bitstring (40) Address Information of higher layer
CB Data41	Bitstring (N*8), [see IXIT value: CB41-Data 1] (ANSI-41)

7.4.1.4.5 Test requirements

The UE shall store and decode a received activated CBS41 message.

7.4.1.5 UE in RRC Connected mode, state CELL_PCH (ANSI-41 CB data)

7.4.1.5.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) for ANSI-41 CB data as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS41 message contents carried with certain activated CB41 message types in a clear way on the UE side.

7.4.1.5.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages (...) in CELL_PCH RRC-state of Connected mode. (…)BMC messages are identified: (…), CBS41 Message

Reference(s)

TS 25.324 sub-clause 9.1

7.4.1.5.3 Test purpose

To verify, that a BMC configuration for a UE is able to receive activated CBS41 messages when in RRC Connected mode, state CELL_PCH.

7.4.1.5.4 Method of test

Initial conditions

UE is in Connected mode state CELL_PCH; BMC entity is established

SS: 1 cell,

NOTE: The CB41 message ID stored on the SIM shall be known for this test (parameter for CBS41 PDU's). The CBS41 data type shall be allocated and activated in the UE.

Related ICS/IXIT Statement(s)

ICS: CBS41 message support - YES/No

IXIT: CBS41-Data 1: Bitstring of N*8 (where N≥1 and less than 1246)

NOTE: For CB41-Data 1 IXIT, the manufacturer shall define CBS data as Bitstring together with the CB message ID used for transmitting this CB41 data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on the UE side (e.g. certain CBS41 traffic information)

Test procedure

a) The UE in RRC CELL_PCH is triggered to wait for the next system information. The UE is activated to receive expected CBS41 messages as described by the manufacturer,

b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB41 related system information, broadcasted by SS

c) The SS sends the CBS41 message containing an activated CBS41 message type according to CB41-Data 1 to the UE; this shall be repeated for "CPREP" times (indicated by parameter "repetition period" in the schedule information)

d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB41 data contents)

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - CBS DRX Level 1 information (optional) - optional: Period of CTCH allocation on S-CCPCH - optional: CBS frame offset In addition, the MIB and SIB 16 are sent as described below for setup the ANSI-41 parameters
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CB41 data
3		←	BMC CBS Message	Activated CBS message with CB41 Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_type, - Broadcast Address - CB41-Data 1
4				After having received the BMC CBS message the UE shall indicate the reception of CB41 Data 1 in a clear way.

Specific Message Contents

MASTER INFORMATION BLOCK (MIB)

The contents of MASTER INFORMATION BLOCK Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
ANSI-41 Core Network information	Present

SYSTEM INFORMATION TYPE 6

The contents of SYSTEM INFORMATION TYPE 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
PRACH system information	(see RRC default test settings)
Secondary CCPCH system	
- Secondary CCPCH information	1
- TFCS	(see RRC default test settings)
- FACH/PCH information	1
- TFS	(see RRC default test settings)
- CTCH indicator	TRUE
- PICH info	(see RRC default test settings)

SYSTEM INFORMATION TYPE 13

The contents of SYSTEM INFORMATION TYPE 13 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE CN Type	ANSI-41
- CN domain specific NAS information	
- NAS (ANSI-41) system information	T.B.D

BMC CBS41 Message

Information Element	Value/remark
Message Type	3 (CBS41 Message)
Broadcast Address	Bitstring (40) Address Information of higher layer
CB Data41	Bitstring (N*8), [see IXIT value: CB41-Data 1] (ANSI-41)

7.4.1.5.5 Test requirements

The UE shall store and decode a received activated CBS41 message.

7.4.1.6 UE in RRC Connected mode, state URA_PCH (ANSI-41 CB data)

7.4.1.6.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) for ANSI-41 CB data as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS41 message contents carried with certain activated CB41 message types in a clear way on the UE side.

7.4.1.6.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages (...) in URA_PCH RRC-state of Connected mode. (…)BMC messages are identified: (…), CBS41 Message

Reference(s)

TS 25.324 sub-clause 9.1

7.4.1.6.3 Test purpose

To verify, that a BMC configuration for a UE is able to receive activated CBS41 messages when in RRC Connected mode, state URA_PCH.

7.4.1.3.4 Method of test

Initial conditions

UE is in Connected mode state URA_PCH; BMC entity is established

SS: 1 cell,

NOTE: The CB41 message ID stored on the SIM shall be known for this test (parameter for CBS41 PDU's). The CBS41 data type shall be allocated and activated in the UE.

Related ICS/IXIT Statement(s)

ICS: CBS41 message support - YES/No

IXIT: CBS41-Data 1: Bitstring of N*8 (where N≥1 and less than 1246)

NOTE: For CB41-Data 1 IXIT, the manufacturer shall define CBS data as Bitstring together with the CB message ID used for transmitting this CB41 data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on the UE side (e.g. certain CBS41 traffic information)

Test procedure

a) The UE in RRC URA_PCH is triggered to wait for the next system information. The UE is activated to receive expected CBS41 messages as described by the manufacturer,

b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS

c) The SS sends the CBS41 message containing an activated CBS41 message type according to CB41-Data 1 to the UE, this shall be repeated for ”CPREP” times (indicated by parameter ”repetition period” in the schedule information)

d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB41 data contents)

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - CBS DRX Level 1 information (optional) - optional: Period of CTCH allocation on S-CCPCH - optional: CBS frame offset In addition, the MIB and SIB 16 are sent as described below for setup the ANSI-41 parameters
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CB41 data
3		←	BMC CBS Message	Activated CBS message with CB41 Data 1 message content as described by the manufacturer. This message shall be repeated ”CPREP” times, Parameter: - Message_type, - Broadcast Address - CB41-Data 1
4				After having received the BMC CBS message the UE shall indicate the reception of CB41 Data 1 in a clear way.

Specific Message Contents

MASTER INFORMATION BLOCK (MIB)

The contents of MASTER INFORMATION BLOCK Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
ANSI-41 Core Network information	Present

SYSTEM INFORMATION TYPE 6

The contents of SYSTEM INFORMATION TYPE 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
PRACH system information	(see RRC default test settings)
Secondary CCPCH system	
- Secondary CCPCH information	1
- TFCS	(see RRC default test settings)
- FACH/PCH information	1
- TFS	(see RRC default test settings)
- CTCH indicator	TRUE
- PICH info	(see RRC default test settings)

SYSTEM INFORMATION TYPE 13

The contents of SYSTEM INFORMATION TYPE 13 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE CN Type	ANSI-41
- CN domain specific NAS information	
- NAS (ANSI-41) system information	T.B.D

BMC CBS41 Message

Information Element	Value/remark
Message Type	3 (CBS41 Message)
Broadcast Address	Bitstring (40) Address Information of higher layer
CB Data41	Bitstring (N*8), [see IXIT value: CB41-Data 1] (ANSI-41)

7.4.1.6.5 Test requirements

The UE shall store and decode a received activated CBS41 message.

7.4.2 BMC message reception procedure

7.4.2.1 Reception of certain CBS message types

7.4.2.1.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) as type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of two different CBS message contents carried with different activated CB message types in a clear way on the UE side.

It shall be possible to activate/deactivate the CBS message types used to receive CB Data 1 or 2.

7.4.2.1.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages in RRC Idle mode.

The BMC entity on the UE side evaluates received BMC Schedule Messages and takes decisions which BMC messages are received.

If not otherwise requested by upper layers, only those CB messages received in BMC CBS Messages should be delivered to upper layers for which the Serial Number associated with the CB message has changed. This implies that the BMC has to store the last received Serial Number of each CB message activated by upper layers.

Reference(s)

TS 25.324 sub-clause 9.1

TS 25.324 sub-clause 9.4

7.4.2.1.3 Test purpose

1. To verify, that a UE supporting CBS ignores a deactivated CBS message type which has been broadcasted by SS.

2. To verify, that a UE only stores Serial Numbers of a newly transmitted CBS messages. This shall be verified by indication of a received CBS message with changed Serial Number as indication for the storage of Serial Numbers.

7.4.2.1.4 Method of test

Initial conditions

UE is in RRC Idle mode,

SS: 1 cell,

NOTE: The CB message ID stored on the SIM shall be known for this test (as parameter for the CBS message PDU). The CBS data type shall be allocated and in the UE. It shall be possible to activate/deactivate such CBS data type.

Related ICS/IXIT Statement(s)

ICS: CBS message support - YES/No

IXIT: - CBS-Data 1: Bitstring of N*8 (where N≥1 and less than 1246), with used CB message ID for CB-Data 1

- CBS-Data 2: Bitstring of N*8 (where N≥1 and less than 1246), with used CB message ID for CB-Data 2 (CB message ID for CB-Data 1 shall be different to CB message ID for CB-Data 2)

NOTE: For CBS data IXIT's, the manufacturer shall define CBS data as Bitstring as described in the IXIT, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. The manufacturer shall describe the indication on the UE side for both CBS data types (e.g. certain CBS broadcast information shown in the display of the UE)

Test procedure

a) The UE in RRC Idle mode is triggered to wait for the next system information. The UE is activated to receive expected CBS messages (CBS data 1 and CBS data 2) as described by the manufacturer,

b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS

c) The SS sends the CBS message containing CBS data (CB-Data 1) as described by the manufacturer to the UE, this shall be repeated for ”CPREP” times (as indicated by the parameter ”repetition period” in the schedule information)

d) The UE indicates on an unambiguous way, that this CBS data message (CB-Data 1) has been received by the UE (e.g. a unique part of the CBS data contents shown in the display)

e) The SS sends a CBS Schedule message (inband schedule message) containing CB schedule parameter for the following CBS data message (CB-Data 2 as described by the manufacturer)

f) The SS sends the new CBS message containing CBS data (CB-Data 2) as described by the manufacturer to the UE, this shall be repeated for ”CPREP” times (as indicated by the parameter ”repetition period” in the schedule information))

g) The UE indicates on an unambiguous way, that this CBS data message (CB-Data 2) has been received by the UE (e.g. a unique part of the CBS data contents shown in the display)

h) The UE deactivates the CB Message type ID used for CB-Data 1,

i) The SS sends a CBS Schedule message (inband schedule message) containing schedule parameter for the next CBS data (CB-Data 1)

j) The SS sends the CBS message containing CBS data (CB-Data 1) as described by the manufacturer to the UE, this shall be repeated for ”CPREP” times (as indicated by the parameter ”repetition period” in the schedule information)

k) The UE ignores the newly received CBS data message (CB-Data 1), i.e. there is no indication as described in step d)

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit these messages as described below on the BCCH, in addition to the regular BCCH transmissions. Included are all CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - CBS DRX Level 1 information (optional) - Period of CTCH allocation on S-CCPCH (optional) - CBS frame offset (optional)
2				The SS waits for about 10 s to make sure, that the UE is configured to receive the CBS Data message
3		←	BMC CBS Message	Activated CBS message with certain CB data content (CBS data 1 as described by the manufacturer). This message shall be repeated "CPREP" times, Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1
4				After having received the BMC CBS message (CB-Data 1) the UE shall indicate the reception in a clear way.
5		←	BMC CBS Schedule	Inband CBS schedule message with schedule parameter for the next CBS data message (CB-Data 2).
6		←	BMC CBS Message	Activated CBS message with certain CBS data content (CB-Data 2 as described by the manufacturer). This message shall be repeated "CPREP" times, Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 2
7				After having received the BMC CBS message (CBS data 2) the UE shall indicate the reception in a clear way. This implies that the changed Serial Number of the CBS message has been stored on the UE.
8				The UE deactivates "CB message type ID" used for CB-Data 1
9		←	BMC CBS Schedule	Inband CBS schedule message with schedule parameter for the next CB data message (CB-Data 1)
10		←	BMC CBS Message	CBS message with certain CBS data content (CB-Data 1 as described by the manufacturer). This message shall be repeated "CPREP" times, Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1
11				After having received the BMC CBS message (CB-Data 1) the UE shall ignore the newly received CBS data 1 message, i.e. there is no indication as described by the manufacturer.

Specific Message Contents

SYSTEM INFORMATION TYPE 6

The contents of SYSTEM INFORMATION TYPE 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
PRACH system information	(see RRC default test settings)
Secondary CCPCH system	
- Secondary CCPCH information	1
- TFCS	(see RRC default test settings)
- FACH/PCH information	1
- TFS	(see RRC default test settings)
- CTCH indicator	TRUE
- PICH info	(see RRC default test settings)

BMC CBS Message (Step 3)

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041]
Serial Number	[see TS 23.041]
- Geographic Scope Indicator (2 bit)	11 (Normal Cell wide)
- Message Code (10 bit)	according with the Message ID
- Update Number (4 bit)	for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Bitstring (N*8), [see IXIT value: CB-Data 1]

BMC CBS Message (Step 6)

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041]
Serial Number	[see TS 23.041]
- Geographic Scope Indicator (2 bit)	11 (Normal Cell wide)
- Message Code (10 bit)	according with the Message ID
- Update Number (4 bit)	for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Bitstring (N*8), [see IXIT value: CB-Data 2]

BMC CBS Message (Step 10)

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041]
Serial Number	[see TS 23.041]
- Geographic Scope Indicator (2 bit)	11 (Normal Cell wide)
- Message Code (10 bit)	according with the Message ID
- Update Number (4 bit)	for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Bitstring (N*8), [see IXIT value: CB-Data 1]

BMC Schedule Message (Step 5 and Step 9)

The parameters for BMC Schedule Message (inband schedule message) in Step 5 are inserted for CB-Data 2 and in Step 8 for CB-Data 1.

Information Element	Value/remark
Message Type	2 (Schedule message)
Offset to begin CTCH BS index	calculated offset value of the BS (Integer: 0...255) as recommended in TR 25.925
Length of CBS Schedule Period	Number of consecutive CTCH BS of the next CBS Schedule Period, (Integer: 1...255) as recommended in TR 25.925
New Message Bitmap	Bitmap (N*8), N = Length of CBS Schedule Period as recommended in TR 25.925
Message Description	1 for new message (see TS 25.324, Table 11.9-3)
- Message Description Type	5 for old message (see TS 25.324, Table 11.9-3)
- Message ID	CB message ID used for the next CB data
- Offset to CTCH (BS index of first transmission)	for Message description type 1 or 5: CB message ID IE included (see TS 23.041)

7.4.2.1.5 Test requirements

After having received the CB-Data 1 message (step 3), the UE shall store the Serial Number of this message and indicate the reception of the CBS message as described by the manufacturer.

After having received the CB-Data 2 message (step 6), the UE shall store the Serial Number of this message and indicate the reception of the CBS message as described by the manufacturer.

After CB-Data 1 message was broadcasted and repeated ”CREP” times (step 9), the UE shall not indicate the reception for the deactivated CBS message (CB-Data 1).

8 Radio Resource Control RRC

8.1 RRC Connection Management Procedure

8.1.1 Paging

8.1.1.1 Paging for Connection in idle mode

8.1.1.1.1 Definition

8.1.1.1.2 Conformance requirement

In idle mode, UE monitors the paging occasions determined using parameters from SYSTEM INFORMATION BLOCK messages. When the UE receives a PAGING TYPE 1 message transmitted on PCCH during one of its assigned paging occasions, it should attempt to establish an RRC connection.

Reference

3GPP TS 25.331 clause 8.1.2, 3GPP TS 25.211 clause 5.3.3.7, 3GPP TS 25.304 clause 8.

8.1.1.1.3 Test purpose

To confirm that the UE establishes an RRC connection after it receives a PAGING TYPE 1 message which includes IE ”Paging Record”(UE identity) set to the IMSI of the UE.

8.1.1.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 with a CN UE identity (set to IMSI) ,depending on the CN domain(s) supported by the UE.

Test Procedure

SS transmits SYSTEM INFORMATION BLOCK TYPE 1 or 13 messages, depending on the CN type supported by the UE. The SS transmits a PAGING TYPE 1 message, which includes an unmatched CN UE identity for the UE in the idle state. The UE shall not change its state. The SS transmits a PAGING TYPE 1 message, which includes a matched CN UE identity for the UE in the idle state. During transmission of PAGING TYPE 1 messages, SS selects the correct paging indicator on the PICH in order to allow the UE to respond to paging. Then the UE transmits an RRC CONNECTION REQUEST to the SS, the SS transmits an RRC CONNECTION SETUP to the UE. When the UE receives this message, the UE establishes an RRC connection and transmits an RRC CONNECTION SETUP COMPLETE message on the uplink DCCH.

Notes: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		SYSTEM INFORMATION BLOCK TYPE 13 or SYSTEM INFORMATION BLOCK TYPE 1	Transmit these messages on the BCCH, in addition to the normal BCCH transmissions. See specific message contents.
2	←		PAGING TYPE 1	The SS transmits the message, which includes an unmatched identity (incorrect IMSI), and the UE does not change its state.
3	←		PAGING TYPE 1	The SS transmits the message, which includes a matched identity (test-SIM IMSI).
4	→		RRC CONNECTION REQUEST	
5	←		RRC CONNECTION SETUP	SS assigns DPCH resources to allow UE to establish an RRC connection.
6	→		RRC CONNECTION SETUP COMPLETE	

Specific Message Contents

SYSTEM INFORMATION BLOCK TYPE 1 (Step 1) – for UEs supporting GSM-MAP core networks

Information Element	Value/remark
CN common GSM-MAP NAS system information	Location Area Information (LAI)
CN domain system information list	
- CN domain system information	
- CN domain identity	Supported Domain (PS Domain or CS Domain)
- CHOICE CN Type	Supported CN type
- CN domain specific NAS system information	Default
- CN domain specific DRX cycle length coefficient	6
UE Timers and constants in idle mode	
- T300	6000 milliseconds
- N300	3
- T312	10 seconds
- N312	200

SYSTEM INFORMATION TYPE 13 (Step 1) – for UEs supporting ANSI-41 core networks

Information Element	Value/remark
CN domain system information list	Only 1 entry
CN domain system information	
- CN domain identity	Supported Domain (PS Domain or CS Domain)
- CHOICE CN Type	Supported CN type
- CN domain specific NAS system information	Default
- CN domain specific DRX cycle length coefficient	6
UE Timers and constants in idle mode	
- T300	6000 milliseconds
- N300	3
- T312	10 sec
- N312	200

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Paging record list Paging record CHOICE Used paging identity - Paging cause - CN domain identity - CHOICE UE Identity - IMSI	Only 1 entry CN identity Terminating Call with one of the supported services Supported Domain (PS Domain or CS Domain) IMSI Set to an arbitrary octet string of length 7 bytes which is different from the IMSI value stored in the USIM card.

PAGING TYPE 1 (Step 3)

Information Element	Value/remark
Paging record list Paging record CHOICE Used paging identity - Paging cause - CN domain identity - CHOICE UE Identity - IMSI	Only 1 entry CN identity Terminating Call with one of the supported services Supported Domain (PS Domain or CS Domain) IMSI Set to the same octet string as in the IMSI stored in the USIM card

RRC CONNECTION REQUEST (Step 4)

Information Element	**Value/remark**
Initial UE identity	Same as the IMSI stored in the USIM card, or the registered TMSI or P-TMSI
Establishment Cause	Check to see if it is set to the same value as “Paging Cause” IE in the PAGING TYPE 1 message transmitted on step 3.
Protocol Error Indicator	Check to see if it is set to FALSE
Measured results on RACH	Not checked.

8.1.1.1.5 Test requirement

After step 2 the UE shall not transmit on the uplink CCCH in order to establish a RRC connection.

After step 5 the UE shall have an RRC connection based on dedicated physical channel resources and transmit an RRC CONNECTION SETUP COMPLETE message on the uplink DCCH.

8.1.1.2 Paging for Connection in connected mode (CELL_PCH)

8.1.1.2.1 Definition

8.1.1.2.2 Conformance requirement

In CELL_PCH state, a UE can respond to a paging request from UTRAN. In this case, the UTRAN has requested to establish a connection with the UE. The UE should then attempt to perform a cell update procedure and move to CELL_FACH state in order to respond to the paging using uplink CCCH.

Reference

3GPP TS 25.331 clause 8.1.2

8.1.1.2.3 Test purpose

To confirm that the UE enters the CELL_FACH state after it receives a PAGING TYPE 1 message which indicates that the paging has originated from UTRAN. To verify that the UE performs cell update procedure after entering the CELL_FACH state.

8.1.1.2.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_PCH state (state 6-12) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE with a valid U-RNTI already assigned by the SS.

Test Procedure

SS transmits SYSTEM INFORMATION BLOCK TYPE 1 or 13 messages, depending on the CN type supported by the UE. The SS transmits a PAGING TYPE 1 message, which includes an unmatched U-RNTI in CELL_PCH state. The UE does not change its state. Then SS transmits a PAGING TYPE 1 message with a matched identifier but originates from the CN instead of UTRAN. The UE should not change state after receiving this message. The SS transmits a PAGING TYPE 1 message, which includes a matched U-RNTI in the connected state. Then the UE enters the CELL_FACH state and performs the cell updating procedure.

Notes: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	SYSTEM INFORMATION BLOCK TYPE 13 or SYSTEM INFORMATION BLOCK TYPE 1	Transmit these messages on the BCCH, in addition to the normal BCCH transmissions. See specific message contents
2		←	PAGING TYPE 1	The SS transmits a message including an unmatched identifier. UE shall not respond to the paging.
3		←	PAGING TYPE 1	The SS transmits a message includes a matched identifier but with the originator being the CN, UE shall not respond to the paging.
4		←	PAGING TYPE 1	The SS transmits the message with the UTRAN being the originator and including the UE's assigned U-RNTI
5		→	CELL UPDATE	The UE enters the CELL_FACH state. UE performs cell updating procedure. The CELL UPDATE message shall contain the value "Cell Update Cause" set to "paging response".
6		←	CELL UPDATE CONFIRM	Use the default message specified in Annex A.

Specific Message Contents

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	Only 1 entry UTRAN identity Set to an arbitrary 16-bit string which is different from the SRNC identity assigned. Set to an arbitrary 20-bit string which is different from the S-RNTI assigned.

PAGING TYPE 1 (Step 3)

Same as the PAGING TYPE 1 message as in Clause 8.1.1.1.4, with the exception that the "BCCH modification info" IE should be omitted in the message.

PAGING TYPE 1 (Step 4)

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	Only 1 entry UTRAN identity Set to the same SRNC identity as previously assigned. Set to the same S-RNTI as previously assigned.

SYSTEM INFORMATION BLOCK TYPE 13

Use the same SYSTEM INFORMATION BLOCK TYPE 13 message as specified in Clause 8.1.1.1.4.

SYSTEM INFORMATION BLOCK TYPE 1

Use the same SYSTEM INFORMATION BLOCK TYPE 1 message as specified in Clause 8.1.1.1.4.

8.1.1.2.5 Test requirement

After step 2 the UE shall not respond to the PAGING TYPE 1 message sent in step 2.

After step 3 the UE shall not respond to the PAGING TYPE 1 message sent in step 2.

After step 4 the UE shall enter the CELL FACH state and send a CELL UPDATE message with "Cell Update Cause" IE set to "paging response".

8.1.1.3 Paging for Connection in connected mode(URA_PCH)

8.1.1.3.1 Definition

8.1.1.3.2 Conformance requirement

This procedure is used to transmit a PAGING TYPE 1 message from the network to selected UEs in URA_PCH state using the paging control channel (PCCH). The UE listens to it and then enters the CELL_FACH state.

Reference

3GPP TS 25.331 clause 8.1.2

8.1.1.3.3 Test purpose

To confirm that the UE enters the CELL_FACH state after it receives a PAGING TYPE 1 message which includes IE "Paging Record"(U-RNTI) for the UE and which is set to "UTRAN originator" in IE "paging originator".

8.1.1.3.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: URA_PCH state (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE with a valid U-RNTI assigned by the SS.

Test Procedure

The SS transmits a PAGING TYPE 1 message, which includes an unmatched U-RNTI in URA_PCH state. The UE does not change its current state. The SS transmits a PAGING TYPE 1 message which includes a matched U-RNTI in the connected state. Then the UE listens to it and enters the CELL_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PAGING TYPE 1	The SS transmits the message that includes an unmatched identifier, then the UE does not change its state.
2		←	PAGING TYPE 1	The SS transmits the message that includes a matched identifier.
3		→	CELL UPDATE	The UE enters the CELL_FACH state.

Specific Message Contents

PAGING TYPE 1 (Step 1)

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	Only 1 entry UTRAN identity Set to an unused SRNC identity which is different from the SRNC identity assigned. Set to an arbitrary 20-bit string which is different from the S-RNTI assigned.

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	Set to the previously assigned SRNC identity
- S-RNTI	Set to previously assigned S-RNTI

8.1.1.3.5 Test requirement

After step 1 the UE shall not respond to the paging.

After step 2 the UE shall enter the CELL FACH state, and transmit CELL UPDATE message to initiate the cell updating procedure with the paging cause set to “paging response”.

8.1.1.4 Paging for Notification in idle mode

8.1.1.4.1 Definition

8.1.1.4.2 Conformance requirement

When a system information block on the BCCH is modified, the PAGING TYPE 1 message can be sent on the PCCH to inform the UE about the changes, which are currently taking place in the idle mode. The PAGING TYPE 1 message includes the IE ”BCCH Modification Information”. Upon receiving this notification from the UTRAN, the UE shall read the relevant MIB and/or SIB(s) subsequently during idle mode.

Reference

3GPP TS 25.331 clause 8.1.1.2

8.1.1.4.3 Test purpose

To confirm that the UE checks the new value tag of the master information block and reads the updated SYSTEM INFORMATION BLOCK messages after it receives a PAGING TYPE 1 message which includes the IE ”BCCH Modification Information”.

8.1.1.4.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 with a CN UE identity, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in the idle state before it starts to change the SYSTEM INFORMATION BLOCK TYPE 1 or 13 messages, depending on the CN type supported by the UE. The SS transmits a PAGING TYPE 1 message on the paging occasions assigned to the UE. The message shall include the IE “BCCH Modification Information” indicating the time when the first modified master information block is available. Before the starting time, SS continuously broadcast the original MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on the BCCH mapped to BCH transport channel. SS maintains this status until the SFN which corresponds to the starting time is reached. Then it transmits the new master information block followed by the new SYSTEM INFORMATION BLOCK TYPE 1 or 13 messages. In the new SIB TYPE 1 or 13 messages, the IE “DRX Cycle Length Coefficient” is altered when compared to the original SIB TYPE 1 or 13 messages. At the next paging occasion, SS transmits a new PAGING TYPE 1 message. The message addresses the UE using its IMSI and the “paging cause” IE set to a terminating call type that is

supported by the UE. The UE shall react to the PAGING TYPE 1 message and then send a RRC CONNECTION REQUEST message to SS.

Notes: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 1 or SYSTEM INFORMATION BLOCK TYPE 13	SS transmits information on BCCH in order for UE to listen to one of the S-CCPCH physical channel, which carries PAGING TYPE 1 or 13 messages on PCCH. Relevant paging parameters are also broadcasted.
2		←	PAGING TYPE 1	SS transmits the message includes the IE ”BCCH Modification Information”, with the “Value Tag” changed from the “MIB Value Tag” of the current Master Information Block. Also the modification time is set to 4088 radio frame from the current SFN. SS continuously broadcast the same MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on BCCH for a period stretching 4087 frames.
3		←	MASTER INFORMATION BLOCK	SS starts to transmit the MIB with the “MIB Value Tag” IE different from the original setting.
		←	SYSTEM INFORMATION BLOCK TYPE 1 or SYSTEM INFORMATION BLOCK TYPE 13	At the same time, SS starts to transmit the affected SIB TYPE 1 or TYPE 13 messages continuously. The value of IE “DRX Cycle Length Coefficient” is changed in this message. SS starts to monitor the uplink RACH after approximately 4087 frames from step 2.
4		←	PAGING TYPE 1	SS starts to transmit this message continuously on the PCCH according to the new value of “DRX Cycle Length Coefficient”, at the next paging occasion immediately following step 3.
5		→	RRC CONNECTION REQUEST	UE transmits a request due to answer to the PAGING TYPE 1 received in step 4. The IE “Establishment Cause” should be set to “Terminating Call” supported by the UE and the “Initial UE Identity” set to UE’s IMSI.
6		←	RRC CONNECTION REJECT	UE shall return to idle mode after receiving this message

Specific Message Contents

SYSTEM INFORMATION BLOCK TYPE 1 (Step 1) – for UEs supporting GSM-MAP core networks

Information Element	Value/remark
CN common GSM-MAP NAS system information	
CN domain system information list	Location Area Information (LAI)
- CN domain system information	Supports both CS and PS domains
- CN domain identity	
- CHOICE CN Type	CS domain
- CN domain specific NAS system information	GSM-MAP
	Set to the same octet string as in IE "CN common GSM
- CN domain specific DRX cycle length coefficient	MAP-NAS system information"
- CN domain system information	12
- CN domain identity	
- CHOICE CN Type	PS domain
- CN domain specific NAS system information	GSM-MAP
	Set to the same octet string as in IE "CN common GSM
- CN domain specific DRX cycle length coefficient	MAP-NAS system information"
UE Timers and constants in idle mode	12
- T300	
- N300	400 milliseconds
- T312	7
- N312	10 seconds
UE Timers and constants in connected mode	200
	Not Present

SYSTEM INFORMATION BLOCK TYPE 13 (Step 1) – for UEs supporting ANSI-41 core networks

Information Element	Value/remark
CN domain system information list	Supports both CS and PS domains
CN domain system information	
- CN domain identity	CS
- CHOICE CN Type	ANSI-41
- CN domain specific NAS system information	
- ANSI-41 NAS System Information	
- ANSI-41 NAS Parameter	Set to an ANSI-41 user zone information
- CN domain specific DRX cycle length coefficient	12
- CN domain identity	PS
- CHOICE CN Type	ANSI-41
- CN domain specific NAS system information	
- ANSI-41 NAS System Information	
- ANSI-41 NAS Parameter	Set to an ANSI-41 user zone information
- CN domain specific DRX cycle length coefficient	12
UE Capability update requirement	Not Present

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	CN identity
- Paging Cause	Terminating Call with one of the supported services
- CN Domain Identity	CS Domain
- CHOICE UE Identity	IMSI
- IMSI	Set to the same octet string as in the IMSI value stored
BCCH modification info	in the USIM card
MIB Value Tag	
BCCH Modification time	2
	4088

MASTER INFORMATION BLOCK (Step 3)

Information Element	Value/remark
MIB Value tag	2

SYSTEM INFORMATION BLOCK TYPE 1 (Step 3) – for UEs supporting GSM-MAP core networks

Information Element	Value/remark
References to other system information blocks	Not Present
CN common GSM-MAP NAS system information	Location Area Information (LAI)
CN domain system information list	Supports both CS and PS domains
- CN domain system information	
- CN domain identity	CS domain
- CHOICE CN Type	GSM-MAP
- CN domain specific NAS system information	Set to the same octet string as in IE "CN common GSM MAP-NAS system information"
- CN domain specific DRX cycle length coefficient	6
- CN domain system information	
- CN domain identity	PS domain
- CHOICE CN Type	GSM-MAP
- CN domain specific NAS system information	Set to the same octet string as in IE "CN common GSM MAP-NAS system information"
- CN domain specific DRX cycle length coefficient	6
UE Timers and constants in idle mode	
- T300	400 milliseconds
- N300	7
- T312	10 seconds
- N312	200
UE Timers and constants in connected mode	Not Present

SYSTEM INFORMATION BLOCK TYPE 13 (Step 3) – for UEs supporting ANSI-41 core networks

Information Element	Value/remark
References to other system information blocks	Not Present
CN domain system information list	Supports both CS and PS domains
CN domain system information	
- CN domain identity	CS domain
- CHOICE CN Type	ANSI-41
- CN domain specific NAS system information	
- ANSI-41 NAS system information	
- ANSI-41 NAS Parameter	Set to an ANSI-41 user zone information
- CN domain specific DRX cycle length coefficient	6
- CN domain identity	PS domain
- CHOICE CN Type	ANSI-41
- CN domain specific NAS system information	
- ANSI-41 NAS system information	
- ANSI-41 NAS Parameter	Set to an ANSI-41 user zone information
- CN domain specific DRX cycle length coefficient	6

PAGING TYPE 1 (Step 4)

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - Paging Cause - CN Domain Identity - CHOICE UE Identity - IMSI	Only 1 entry CN identity Terminating Call with one of the supported service CS Domain IMSI Set to the same octet string as in the IMSI value stored in the USIM card

RRC CONNECTION REJECT (Step 6)

Information Element	Value/remark
Initial UE identity - CHOICE UE id type - IMSI Rejection cause Wait time Redirection info	 IMSI Set to the same octet string as in the IMSI value stored in the USIM card Unspecified 0 Not Present

8.1.1.4.5 Test requirement

After step 5 the UE shall transmit RRC CONNECTION REQUEST message in response to the PAGING TYPE 1 messages sent in step 4.

8.1.1.5 Paging for Notification in connected mode (CELL_PCH)

8.1.1.5.1 Definition

8.1.1.5.2 Conformance requirement

When a system information block on the BCCH is modified, the message PAGING TYPE 1 can be sent on the PCCH to inform the UE about this change in the CELL_PCH state. This message includes the IE “BCCH Modification Information”. Upon receiving this notification from the UTRAN, the UE shall read the relevant MIB and/or SIB(s) subsequently while in CELL_PCH state.

Reference

3GPP TS 25.331 clause 8.1.1.2

8.1.1.5.3 Test purpose

To confirm that the UE enters the CELL_FACH state, checks the new value tag of the master information block, and read the SYSTEM INFORMATION messages after it receives a PAGING TYPE 1 message which includes the IE ”BCCH Modification Information”

8.1.1.5.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_PCH state (state 6-12) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE with valid a U-RNTI assigned to it.

Test Procedure

Identical test steps 1 to 4 in Clause 8.1.1.4 are applied to this test. However, the PAGING TYPE 1 messages used in step 2 and step 4 are altered. The changes are indicated in the specific message content paragraph under this clause. At step 5, UE shall send the CELL UPDATE message indicating the “cell update cause” to be “paging response”. SS then replies with a CELL UPDATE CONFIRM message to allow the UE to transit to CELL_FACH state.

Notes: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 1 or SYSTEM INFORMATION BLOCK TYPE 13	SS transmits information on BCCH in order for UE to listen to one of the S-CCPCH physical channel, which carries PAGING TYPE 1 or 13 messages on PCCH. Relevant paging parameters are also broadcasted.
2		←	PAGING TYPE 1	SS transmits the paging message which comprises IE "BCCH Modification Information", with the "Value Tag" changed from the "MIB Value Tag" of the current Master Information Block. Also the modification time is set to 4088 radio frame from the current SFN. SS continuously broadcast the same MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on BCCH for a period stretching 4087 frames.
3		← ←	MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 1 or SYSTEM INFORMATION BLOCK TYPE 13	SS starts to transmit the MIB with the "MIB Value Tag" IE different from the original setting. At the same time, SS starts to transmit the affected SIB TYPE 1 or TYPE 13 messages continuously. The value of IE "DRX Cycle Length Coefficient" is changed in this message. SS starts to monitor the uplink RACH after approximately 4087 SFN from step 2.
4		←	PAGING TYPE 1	SS transmits this message continuously on the PCCH according to the new value of "DRX Cycle Length Coefficient", at the next paging occasion immediately following step 3. This message shall page the UE with its U-RNTI and setting the UTRAN as the paging originator.
5		→	CELL UPDATE	The IE "Cell Update Cause" should be set to "Paging Response" and the IE "U-RNTI" shall be similar to the UE's U-RNTI value. The "Protocol Error Indicator" IE shall be set to FALSE.
6		←	CELL UPDATE CONFIRM	UE shall transit to CELL_FACH state after receiving this message.

Specific Message Contents

SYSTEM INFORMATION BLOCK TYPE 1 or TYPE 13 (Step 1)

The content of this message is the same in the message used in step 1 specified in Clause 8.1.1.4.4.

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	
- S-RNTI	
BCCH modification info	
- MIB Value Tag	2
- BCCH Modification time	4088

MASTER INFORMATION BLOCK (Step 3) and

SYSTEM INFORMATION BLOCK TYPE 1 or TYPE 13 (Step 3)

The content of these messages is the same in the message used in step 3 specified in Clause 8.1.1.4.4.

PAGING TYPE 1 (Step 4)

Information Element	Value/remark
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	Same as the current SRNC allocated
- S-RNTI	Same as the current S-RNTI allocated
BCCH modification info	Not Present

CELL UPDATE CONFIRM (Step 6)

Information Element	Value/remark
RRC State Indicator	CELL_FACH

8.1.1.5.5 Test requirement

After step 5 the UE shall transmit a CELL UPDATE message with “cell update cause” IE set to “paging response”. Upon receiving CELL UPDATE CONFIRM message, the UE shall enter the CELL_FACH state.

8.1.1.6 Paging for Notification in connected mode (URA_PCH)

8.1.1.6.1 Definition

8.1.1.6.2 Conformance requirement

When a system information block on the BCCH is modified, the UTRAN can send a PAGING TYPE 1 message on the PCCH to inform UE about the changes while the UE is in the URA_PCH state. This message includes the IE ”BCCH Modification Information”. When receiving this message in URA_PCH state, the UE shall read the relevant MIB and/or SIB(s).

Reference

3GPP TS 25.331 clause 8.1.1.2

8.1.1.6.3 Test purpose

To confirm that the UE enters the CELL_FACH state, checks the included new value tag of the master information block and reads the relevant SYSTEM INFORMATION block(s) after it receives a PAGING TYPE 1 message which includes the IE “BCCH Modification Information”.

8.1.1.6.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: URA_PCH state (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE with a valid U-RNTI assigned.

Test Procedure

The UE is in the URA_PCH state before the SS starts changing SYSTEM INFORMATION BLOCK messages. SS modifies its SYSTEM INFORMATION and updates the “value tag” of both the SYSTEM INFORMATION BLOCK TYPE 1 and of the MASTER INFORMATION BLOCK. After a while, the SS transmits a PAGING TYPE 1 message, which includes the IE “BCCH Modification Information”. The UE enters the CELL_FACH state and reads the modified SYSTEM INFORMATION BLOCK. The UE shall act according to the modified message. In this test case, the UE shall adjust it paging occasions and read the new PCCH blocks newly assigned to it under DRX mode.

Notes: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 1 or SYSTEM INFORMATION BLOCK TYPE 13	The SS changes the SYSTEM INFORMATION when the UE is in the connected state (URA_PCH).
2		←	PAGING TYPE 1	SS transmits the message includes the IE “BCCH Modification Information”.
3				The UE enters the CELL_FACH state and reads the SYSTEM INFORMATION and then the UE follows this message.

Specific Message Contents

None

8.1.1.6.5 Test requirement

After step 2 the UE shall enter the CELL_FACH state and read the SYSTEM INFORMATION message and follow it.

8.1.1.7 Paging for Connection in connected mode (CELL_DCH)

8.1.1.7.1 Definition

8.1.1.7.2 Conformance requirement

This procedure is used to transmit a PAGING TYPE 2 message from the network to selected UEs in CELL_DCH state using the dedicated control channel (DCCH). The UE listens to it and responds to this message accordingly.

Reference

3GPP TS 25.331 clause 8.1.11

8.1.1.7.3 Test purpose

To confirm that the UE responds this message after it receives a PAGING TYPE 2 message which includes IE ”Paging Record Type Identifier” for the UE.

8.1.1.7.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CELL_DCH state (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE, after executing a location registration or attach procedure followed by the release of the TMSI of P-TMSI allocated.

Test Procedure

The SS transmits a PAGING TYPE 2 message which includes an unmatched Paging Record Type Identifier in CELL_DCH state. The UE shall not respond to this message. SS pages the UE again, this time with a matched Paging Record Type Identifier but with the IE “paging cause” set to an invalid value which is not defined. UE shall respond by transmitting a RRC STATUS message on the DCCH using RLC-AM mode. Finally, SS transmits a PAGING TYPE 2 message, which includes a matched Paging Record Type Identifier. Then the UE shall responds to this message by the transmission of an upper layer message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PAGING TYPE 2	The SS transmits the message includes an unmatched identifier, then the UE does not respond.
2	←		PAGING TYPE 2	The SS transmits the message includes a matched identifier. In the paging message, IE “paging cause” is set to invalid value.
3	→		RRC STATUS	The UE shall respond by reporting the protocol error to the SS.
4	←		PAGING TYPE 2	SS pages the UE with a matched identifier and with a valid “paging cause” IE.
5	→		UPLINK DIRECT TRANSFER	The UE shall respond to the paging message sent in step 4.

Specific Message Contents

PAGING TYPE 2 (Step 1)

Information Element	Value/remark
Paging cause	Terminating Call supported by the UE
CN domain identity	Domain supported by the UE
Paging record type identifier	Set to “TMSI” or “P-TMSI” allocated during the execution of location registration or attach procedure respectively

PAGING TYPE 2 (Step 2)

Information Element	Value/remark
Paging cause	invalid value which is not defined

RRC STATUS (Step 3)

Information Element	Value/remark
Protocol error information	Checked to see if set to “Information element value not comprehended”

PAGING TYPE 2 (Step 4)

Information Element	Values/Remarks
Paging cause CN domain identity Paging record type identifier	Terminating Call supported by the UE Domain supported by the UE Set to “IMSI (GSM-MAP)” for UEs supporting GSM-MAP core network type or “IMSI (DS-41)” for UEs supporting ANSI-41 core network type.

UPLINK DIRECT TRANSFER (Step 5)

Only the message type IE for this message is checked.

8.1.1.7.5 Test requirement

After step 1 the UE shall not respond to the paging message on the DCCH.

After step 2 the UE shall respond to the paging message by transmitting RRC STATUS on the DCCH, stating the protocol error as “Information element value not comprehended”.

After step 4 the UE shall respond to the paging message by transmitting an UPLINK DIRECT TRANSFER message on the uplink DCCH.

8.1.1.8 Paging for Connection in connected mode (CELL_FACH)

8.1.1.8.1 Definition

8.1.1.8.2 Conformance requirement

This procedure is used to transmit a PAGING TYPE 2 message from the network to selected UEs in CELL_FACH state using the dedicated control channel (DCCH). The UE shall listen to it and responds to this message accordingly.

Reference

3GPP TS 25.331 clause 8.1.11

8.1.1.8.3 Test purpose

To confirm that the UE responds to a PAGING TYPE 2 message, which includes a matching value for IE ”Paging Record Type Identifier”.

8.1.1.8.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_FACH state (state 6-11) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The SS transmits a PAGING TYPE 2 message, which includes an unmatched Paging Record Type Identifier in CELL_FACH state. The UE shall not respond to this message. The SS transmits a PAGING TYPE 2 message, which includes a matched Paging Record Type Identifier. Then the UE shall respond by transmitting an upper layer message to answer this page.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PAGING TYPE 2	The SS transmits the message includes an unmatched identifier, then the UE does not respond.
2	←		PAGING TYPE 2	The SS transmits the message includes a matched identifier.
3	→		UPLINK DIRECT TRANSFER	The UE responds by sending an upper layer message.

Specific Message Content

PAGING TYPE 2 (Step 1)

Use the same message content as in step 1 from 8.1.1.7.4

PAGING TYPE 2 (Step 2)

Use the same message content as in step 4 from 8.1.1.7.4

8.1.1.8.5 Test requirement

After step 1 the UE shall not respond.

After step 2 the UE shall respond to the second PAGING TYPE 2 message by transmitting an UPLINK DIRECT TRANSFER message on the uplink DCCH.

8.1.2 RRC Connection Establishment

8.1.2.1 RRC Connection Establishment in CELL_DCH state: Success

8.1.2.1.1 Definition

8.1.2.1.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message. This message shall include the IE “Initial UE identity” and is to be transmitted on the uplink CCCH.

2. After the UE receives an RRC CONNECTION SETUP message which includes the same value of the IE “initial UE identity”, radio resource parameters (i.e. Signalling link type and multiplexing info) and U-RNTI, UE then configures the layer 2 and layer 1 processing so as to support the DCCH according to the radio resource parameters specified. The procedure successfully ends when the network receives an RRC CONNECTION SETUP COMPLETE message on the uplink DCCH.

Reference

3GPP TS 25.331 clause 8.1.3

8.1.2.1.3 Test purpose

To confirm that the UE leaves the Idle Mode and correctly establishes a signalling link on the DCCH.

8.1.2.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE

Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by attempting to make an outgoing call. After SS receives this message, it assigns the necessary radio resources and U-RNTI to be used by the UE. SS then transmits an RRC CONNECTION SETUP message containing an IE “Initial UE Identity” that does not match the IE “Initial UE Identity” in the most recent RRC CONNECTION REQUEST message sent by the UE. UE receives the RRC CONNECTION SETUP message within timer T300 but discards it due to the IE “Initial UE Identity” mismatch. UE shall wait for timer T300 to time out before re-transmitting a RRC CONNECTION REQUEST message to the SS. SS again assigns the necessary radio resources and U-RNTI. SS then follows by transmitting a RRC CONNECTION SETUP message containing an IE “Initial UE Identity” that matches the IE “Initial UE Identity” in the most recent RRC CONNECTION REQUEST sent by the UE. SS then waits for the UE to transmit an RRC CONNECTION SETUP COMPLETE message on the DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	→		RRC CONNECTION REQUEST	By outgoing call operation
2	←		RRC CONNECTION SETUP	This message is not addressed to the UE.
3	→		RRC CONNECTION REQUEST	UE shall re-transmit the request message again after a time out of T300 from step 1.
4	←		RRC CONNECTION SETUP	
5				The UE configures the layer 2 and layer 1.
6	→		RRC CONNECTION SETUP COMPLETE	

Specific Message Content

RRC CONNECTION SETUP (Step 2)

Information Element	Value/remark
Initial UE Identity CHOICE UE id type IMSI	 IMSI Set to an arbitrary octet string of length 7 which different from the IMSI value stored in the USIM card.

8.1.2.1.5 Test requirement

After step 2 the UE shall re-transmit the RRC CONNECTION REQUEST message again in order to continue the RRC connection establishment procedure.

After step 6 the UE shall establish an RRC connection and continue the procedure of the outgoing call on the DCCH.

8.1.2.2 RRC Connection Establishment: Success after T300 timeout

8.1.2.2.1 Definition

8.1.2.2.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode. The UE shall transmit an RRC CONNECTION REQUEST message which includes the IE “Initial UE identity”. This message shall be sent on the uplink CCCH.

When there are more than one PRACHs available, the UE shall select one PRACH randomly and transmit an RRC CONNECTION REQUEST message by use of selected PRACH.

2. In the case of a failure to establish the RRC connection at the expiry of timer T300 ,the UE retries to establish the RRC connection until V300 is greater than N300

When the UE receives a RRC CONNECTION SETUP message, which contains a protocol error and causing the internal variable PROTOCOL_ERROR_REJECT set to TRUE, it shall perform the appropriate error handling procedure.

Reference

3GPP TS 25.331 clause 8.1.3

8.1.2.2.3 Test purpose

To confirm that the UE retries to establish the RRC connection until V300 is greater than N300 after the expiry of timer T300 when the SS transmits no response for an RRC CONNECTION REQUEST message.

8.1.2.2.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE

Test Procedure

Before the test starts, an internal counter K in SS is initialized to a value = 0. Following this, the UE shall transmit an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by use of selected PRACH from the available PRACH No.1 and PRACH No.2, after the operator attempts to make an outgoing call. SS ignores this message, increments K every time such a message is received and waits for T300 timer to expire. This cycle is repeated until K reaches N300. When K is equal to N300, the SS transmits the RRC CONNECTION SETUP message specified in step 6 to the UE and wait until T300 expires. The UE shall send another RRC CONNECTION REQUEST message on the uplink CCCH. SS verifies that the UE does not access the radio resource allocated in step 6. After confirming this restriction is observed, SS replies with a valid RRC CONNECTION SETUP message. The UE shall then acknowledge the establishment of RRC connection by sending the RRC CONNECTION SETUP COMPLETE message on uplink DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		SYSTEM INFORMATION BLOCK TYPE 5	Transmit these messages on the BCCH. See specific message contents.
2				SS initializes counter K to 0. Operator is asked to make an outgoing call and SS starts to wait for RRC CONNECTION REQUEST on uplink CCCH.
3	→		RRC CONNECTION REQUEST	
4				SS checks to see if K is equal to N300. If so, goes to step 6. Else, continues to execute step 5.
5				SS increments K. The next step is step 3.
6	←		RRC CONNECTION SETUP	The message contains a protocol error, see specific message content. SS waits for T300 to expire again.
7	→		RRC CONNECTION REQUEST	UE shall not access the radio resource indicated in RRC CONNECTION SETUP message sent in step 6.
8	←		RRC CONNECTION SETUP	This is a legal message. See the clause 9 in TS 34.108 on default message content for RRC.
9				The UE configures the layer 1 and layer 2.
10	→		RRC CONNECTION SETUP COMPLETE	

Specific Message Contents

SYSTEM INFORMATION TYPE 5 (Step 1)

- PRACH system information	2PRACHs
- PRACH info (PRACH No.1)	
- CHOICE mode	FDD
- Available Signature	'0000 0000 1111 1111'B
- Available SF	Reference to clause 6.10 Parameter Set
- Preamble scrambling code number	0
- Puncturing Limit	Reference to clause 6.10 Parameter Set
- Available Sub Channel number	'1111 1111 1111'B
- Transport Channel Identity	15
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	(This IE is repeated for TFI number)
- RLC size	Reference to clause 6.10 Parameter Set
- Number of TB and TTI List	Reference to clause 6.10 Parameter Set
- Number of Transport blocks	Reference to clause 6.10 Parameter Set
- CHOICE Mode	FDD
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	Reference to clause 6.10 Parameter Set
- Type of channel coding	Reference to clause 6.10 Parameter Set
- Coding Rate	Reference to clause 6.10 Parameter Set
- Rate matching attribute	Reference to clause 6.10 Parameter Set
- CRC size	Reference to clause 6.10 Parameter Set
- RACH TFCS	(This IE is repeated for TFC number.)
- Normal	
- TFCI Field 1 information	
- CHOICE TFCS representation	Addition
- TFCS addition information	
- CHOICE CTFC Size	Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.
- CTFC information	Refer to clause 6.10 Parameter Set
- Power offset information	
- CHOICE Gain Factors	Signalled Gain Factor
- Gain factor ßc	0
- Gain factor ßd	0
- Reference TFC ID	Not Present
- Power offset Pp-m	0dB
- PRACH partitioning	
- Access Service Class	
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#0)
- Available signature End Index	7 (ASC#0)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#1)
- Available signature End Index	7 (ASC#1)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#2)
- Available signature End Index	7 (ASC#2)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#3)
- Available signature End Index	7 (ASC#3)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#4)

- Available signature End Index	7 (ASC#4)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#5)
- Available signature End Index	7 (ASC#5)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#6)
- Available signature End Index	7 (ASC#6)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#7)
- Available signature End Index	7 (ASC#7)
- Assigned Sub-channel Number	'1111'B
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
- Primary CPICH DL TX power	Reference to clause 6.10 Parameter Set
- Constant value	Reference to clause 6.10 Parameter Set
- PRACH power offset	
- Power Ramp Step	3dB
- Preamble Retrans Max	2
- RACH transmission parameters	
- Mmax	2
- NB01min	3 slot
- NB01max	10 slot
- AICH info	
- Channelisation code	SF-1(SF is reference to clause 6.10 Parameter Set)
- STTD indicator	FALSE
- AICH transmission timing	0
- PRACH info (PRACH No.2)	
- CHOICE mode	FDD
- Available Signature	'0000 0000 1111 1111'B
- Available SF	Reference to clause 6.10 Parameter Set
- Preamble scrambling code number	1
- Puncturing Limit	Reference to clause 6.10 Parameter Set
- Available Sub Channel number	'1111 1111 1111'B
- Transport Channel Identity	16
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	(This IE is repeated for TFI number)
- RLC size	Reference to clause 6.10 Parameter Set
- Number of TB and TTI List	Reference to clause 6.10 Parameter Set
- Number of Transport blocks	Reference to clause 6.10 Parameter Set
- CHOICE Mode	FDD
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	Reference to clause 6.10 Parameter Set
- Type of channel coding	Reference to clause 6.10 Parameter Set
- Coding Rate	Reference to clause 6.10 Parameter Set
- Rate matching attribute	Reference to clause 6.10 Parameter Set
- CRC size	Reference to clause 6.10 Parameter Set

- RACH TFCS	(This IE is repeated for TFC number.)
- Normal	
- TFCI Field 1 information	
- CHOICE TFCS representation	Addition
- TFCS addition information	
- CHOICE CTFC Size	Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.
- CTFC information	Refer to clause 6.10 Parameter Set
- Power offset information	
- CHOICE Gain Factors	Signalled Gain Factor
- Gain factor ßc	0
- Gain factor ßd	0
- Reference TFC ID	Not Present
- Power offset Pp-m	0dB
- PRACH partitioning	
- Access Service Class	
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#0)
- Available signature End Index	7 (ASC#0)
- Assigned Sub-channel Number	‘1111’B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#1)
- Available signature End Index	7 (ASC#1)
- Assigned Sub-channel Number	‘1111’B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#2)
- Available signature End Index	7 (ASC#2)
- Assigned Sub-channel Number	‘1111’B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#3)
- Available signature End Index	7 (ASC#3)
- Assigned Sub-channel Number	‘1111’B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#4)
- Available signature End Index	7 (ASC#4)
- Assigned Sub-channel Number	‘1111’B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#5)
- Available signature End Index	7 (ASC#5)
- Assigned Sub-channel Number	‘1111’B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#6)
- Available signature End Index	7 (ASC#6)
- Assigned Sub-channel Number	‘1111’B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#7)
- Available signature End Index	7 (ASC#7)
- Assigned Sub-channel Number	‘1111’B
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)

- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
- Primary CPICH DL TX power	Reference to clause 6.10 Parameter Set
- Constant value	Reference to clause 6.10 Parameter Set
- PRACH power offset	
- Power Ramp Step	3dB
- Preamble Retrans Max	2
- RACH transmission parameters	
- Mmax	2
- NB01min	3 slot
- NB01max	10 slot
- AICH info	
- Channelisation code	SF-1(SF is reference to clause 6.10 Parameter Set)
- STTD indicator	FALSE
- AICH transmission timing	0

RRC CONNECTION SETUP (Step 6)

Information Element	Value/remark
RRC State Indicator	Not Present

8.1.2.2.5 Test requirement

After step 2 the UE shall select either PRACH No.1 or PRACH No.2 and transmit an RRC CONNECTION REQUEST message.

After step 6 the UE shall re-send another RRC CONNECTION REQUEST message and not access any radio resources specified in RRC CONNECTION SETUP message sent in step 6.

After step 9 the UE shall transmit an RRC CONNECTION SETUP COMPLETE message and establish an RRC connection on the DCCH logical channel.

8.1.2.3 RRC Connection Establishment: Failure (V300 is greater than N300)

8.1.2.3.1 Definition

8.1.2.3.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message. This message shall include the IE “Initial UE identity” on the uplink CCCH.

2. In the case of a failure to establish the RRC connection after (N300+1) attempts, the UE goes back to idle mode.

Reference

3GPP TS 25.331 clause 8.1.3

8.1.2.3.3 Test purpose

To confirm that the UE stops retrying to establish the RRC connection if V300 is greater than N300 and goes back to idle mode.

8.1.2.3.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE

Test Procedure

Before the test starts, SS initializes an internal counter K to 0. The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by an outgoing call operation. SS shall not respond to any RRC CONNECTION REQUEST message, instead the counter K is increased by 1 every time such a message is received. To arrive at the verdict, the SS checks that a total of (N300+1) such messages are received.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS initializes counter K to 0 and then prompts the operator to make an outgoing call.
2	→		RRC CONNECTION REQUEST	
3				SS increments K by 1.
4				If K is greater than N300, goes to step 5 else proceed to step 2.
5				SS monitor the uplink CCCH for a time period enough for UE to goes back to normal service. The exact amount of time to wait shall be derived from TS related to cell selection. If any uplink transmission is detected, the test fails.

Specific Message Contents

None

8.1.2.3.5 Test requirement

After step 5, counter K shall be equal to (N300+1) and there shall be no uplink transmission in the monitoring period specified in step 5.

8.1.2.4 RRC Connection Establishment: Reject (“wait time” is not equal to 0)

8.1.2.4.1 Definition

8.1.2.4.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message . This message shall include the IE “Initial UE identity” and is to be sent on the uplink CCCH.

2. After the UE receives an RRC CONNECTION REJECT message which includes IE “wait time” not set to 0, and neither IE “frequency info” nor IE “system info” is present, the UE shall wait for a period specified in the IE “wait time”. Thereafter re-transmit an RRC CONNECTION REQUEST message to attempt to establish the RRC connection again. However, either IE “frequency info” or IE “system info” is available in the message, the UE shall attempt to perform cell reselection using these information.

Reference

3GPP TS 25.331 clause 8.1.3

8.1.2.4.3 Test purpose

To confirm that the UE retries to establish the RRC connection after the "wait time" if the UE receives an RRC CONNECTION REJECT message which includes the IE "wait time" not set to 0.

To confirm that the UE performs a cell reselection when receiving an RRC CONNECTION REJECT message, containing relevant frequency information of the target cell to be re-selected.

8.1.2.4.4 Method of test

Initial Condition

System Simulator: 2 cells – both cell 1 and cell 2 are active and suitable for camping, but cell 1 is transmitted using a larger power. Cell 1 and cell 2 are being transmitted from different 2 UARFCNs.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE

Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by an outgoing call operation in cell 1. SS rejects the first request by transmitting an RRC CONNECTION REJECT message which indicates a non-zero wait time. In this message, frequency information for cell 2 is available. SS then waits for RRC CONNECTION REQUEST message on the uplink CCCH of cell 2. SS will also monitor the uplink of cell 1 simultaneously to ensure that all transmission activities from cell 1 have ceased. When the UE has successfully camp onto cell 2, it shall send an RRC CONNECTION REQUEST with the same establishment cause as its previous attempt in cell 1. SS responds with an RRC CONNECTION REJECT message, indicating a non-zero "wait time" and omitting the IE "Redirection Info". The UE shall observe the wait time period indicated. After the wait time has elapsed, the UE shall re-transmit RRC CONNECTION REEQUEST again. Finally, SS transmits an RRC CONNECTION SETUP message to establish an RRC connection with the UE, and the UE replies with an RRC CONNECTION SETUP COMPLETE message and enters CELL_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		→	RRC CONNECTION REQUEST	SS prompts the operator to make an outgoing call in cell 1.
2		←	RRC CONNECTION REJECT	This message shall includes the IE "wait time" set to 15 seconds and IE "frequency info" set to the UARFCN of cell 2.
3				SS waits for a period of time sufficient for UE to reselect to cell 2. At the same time, it monitors the uplink of cell 1 to make sure that all transmissions have ceased.
4		→	RRC CONNECTION REQUEST	UE shall attempt to re-start an RRC connection establishment procedure in cell 2. The establishment cause shall remain unchanged.
5		←	RRC CONNECTION REJECT	This message shall include the IE "wait time" set to 15 seconds, but with IE "Redirection Info" absent.
6		→	RRC CONNECTION REQUEST	SS waits until the duration specified in IE "wait time" has elapsed and then listens to the uplink CCCH for a second RRC CONNECTION REQUEST message.
7		←	RRC CONNECTION SETUP	SS sends the message to UE, to setup an RRC connection with the UE.
8				The UE shall configure the layer 2 and layer 1 in order to access the uplink and downlink DCCH assigned.
9		→	RRC CONNECTION SETUP COMPLETE	

Specific Message Contents

RRC CONNECTION REQUEST (Step 1)

Information Element	Value/remark
Initial UE Identity	Must be equal to U-RNTI assigned previously
Initial UE Capability	Must be compatible with UE settings in TS25.926
Establishment Cause	Must be "Originating Call"

RRC CONNECTION REJECT (Step 2)

Information Element	Value/remark
Wait time	15 seconds
Redirection Info	
Frequency Info	
UARFCN uplink (Nu)	Set to a different UARFCN from uplink carrier of cell 1
UARFCN downlink (Nd)	Not present – assuming a duplex distance of 190MHz.

RRC CONNECTION REQUEST (Step 4 and step 6)

Same requirement as in step 1.

RRC CONNECTION REJECT (Step 5)

Information Element	Value/remark
Wait time	15 seconds
Redirection Info	Not present

8.1.2.4.5 Test requirement

After step 3 the UE shall have successfully re-selected to cell 2, using information transmitted in IE "frequency info" of RRC CONNECTION REJECT message. UE shall trigger the start of RRC connection establishment by transmitting RRC CONNECTION REQUEST. The establishment cause shall be similar to the message sent in step 1.

After step 5 the UE shall observe the period specified in IE "wait time" of an RRC CONNECTION REJECT message and not transmit an RRC CONNECTION REQUEST message in this period.

After step 7 the UE shall transmit an RRC CONNECTION SETUP COMPLETE message to SS on uplink DCCH and then establish an RRC connection.

8.1.2.5 RRC Connection Establishment: Reject ("wait time" is not equal to 0 and V300 is greater than N300)

8.1.2.5.1 Definition

8.1.2.5.2 Conformance requirement

The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message . This message shall include the IE "Initial UE identity" and is to be sent on the uplink CCCH.

After the UE receives an RRC CONNECTION REJECT message which includes IE "wait time" not set to 0, and neither IE "frequency info" nor IE "system info" is present, the UE shall wait for a period specified in the IE "wait time". Thereafter it re-transmits an RRC CONNECTION REQUEST message to attempt to establish the RRC connection again. In the case of a failure to establish the RRC connection after (N300+1) attempts, the UE goes back to idle mode.

Reference

3GPP TS 25.331 clause 8.1.3

8.1.2.5.3 Test purpose

To confirm that the UE retries to establish the RRC connection after the "wait time" if the UE receives an RRC CONNECTION REJECT message which specifies a non-zero IE "wait time".

To confirm that the UE stops retrying to establish the RRC connection if V300 is greater than N300 and goes back to idle mode.

8.1.2.5.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE

Test Procedure

Before the test starts, SS initializes an internal counter K to 0. The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH, triggered by an outgoing data call operation. SS rejects all requests by

transmitting an RRC CONNECTION REJECT message which indicates a non-zero wait time and the counter K is increased by 1 every time such a message is received. To arrive at the verdict, the SS checks that a total of (N300+1) such messages are received.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS initializes counter K to 0 and then prompts the operator to make an outgoing data call.
2	→		RRC CONNECTION REQUEST	Shall be sent on CCCH and contain the correct establishment cause.
3	←		RRC CONNECTION REJECT	This message includes the IE "wait time" set to 15 seconds.
4				SS increments K by 1.
5				If K is greater than N300, goes to step 6. Else SS waits for 15 sec before proceeding to step 2.
6				SS monitor the uplink CCCH for a time period enough for UE to goes back to normal service. The exact amount of time to wait shall be derived from TS related to cell selection. If any uplink transmission is detected, the test fails.

Specific Message Contents

RRC CONNECTION REQUEST (Step 2)

Information Element	Value/remark
Initial UE Identity	Must be equal to U-RNTI assigned previously
Initial UE Capability	Must be compatible with UE settings in TR25.926
Establishment Cause	Must be "Originating Call"

RRC CONNECTION REJECT (Step 3)

Information Element	Value/remark
Wait time	15 seconds

8.1.2.5.5 Test requirement

After step 6, counter K shall be equals to (N300+1) and there shall be no uplink transmission in the monitoring period specified in step 6.

8.1.2.6 RRC Connection Establishment: Reject ("wait time" is set to 0)

8.1.2.6.1 Definition

8.1.2.6.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode and transmits an RRC CONNECTION REQUEST message on the uplink CCCH.

2. In the case of a failure to establish the RRC connection by the reception of a RRC CONNECTION REJECT message which contains IE "wait time" equals to 0, the UE shall go back to idle mode immediately.

Reference

3GPP TS 25.331 clause 8.1.3

8.1.2.6.3 Test purpose

To confirm that the UE goes back to idle mode, if the SS transmits an RRC CONNECTION REJECT message which includes IE “wait time” set to 0. To confirm that the UE ignores an RRC CONNECT REJECT message not addressed to it. To confirm that the UE is capable of handling an erroneous RRC CONNECTION REJECT message correctly.

8.1.2.6.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE

Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by making an outgoing call. After the SS receives this message, it transmits an RRC CONNECTION REJECT message which is not addressed to the UE. The UE shall disregard this message and proceed to re-transmit RRC CONNECTION REQUES message upon T300 timer expiry. SS answers the second RRC CONNECTION REQUEST message by transmitting an RRC CONNECTION REJECT message with IE “wait time” set to 15 seconds, but without the mandatory IE “rejection cause”. The UE shall continue to send the third RRC CONNECTION REQUEST message after a 15 second lapse. Next, the SS sends a legal RRC CONNECTION REJECT message which is expected to cause the UE to move to idle mode spontaneously. To confirm that finally the UE goes back to idle mode immediately after receiving the reject message, SS shall monitor the uplink CCCH for the next 60 second and verify that there is no further transmission in the uplink direction.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	→		RRC CONNECTION REQUEST	Test operator is prompted to make an out-going call,
2	←		RRC CONNECTION REJECT	IE “Initial UE identity” contains an identity different from any of the UE identities available.
3	→		RRC CONNECTION REQUEST	UE shall continue to send this message after T300 time-out.
4	←		RRC CONNECTION REJECT	IE “Reject Cause” is omitted, IE “wait time” is set to 15 seconds (maximum).
5	→		RRC CONNECTION REQUEST	UE shall continue to send this message after the expiry of “wait time” IE indicated in RRC CONNECTION REJECT message in step 4.
6	←		RRC CONNECTION REJECT	IE “wait time” is set to 0.
7				The UE goes back to idle mode..

Specific Message Contents

RRC CONNECTION REQUEST (Step 1)

Information Element	Value/remark
Initial UE Identity	Checked to see if it is set to IMSI stored in the test USIM card.
Establishment Cause	Checked to see if set to one of the supported originating call types
Protocol Error Indicator	Checked to see if set to “FALSE”
Measured Results on RACH	Checked to see if it is absent

RRC CONNECTION REJECT (Step 2)

Information Element	Value/remark
Initial UE Identity	
IMSI	Set to an arbitrary octet string of length 7 bytes, which is different from the IMSI stored in USIM.
Wait time	15 seconds
Redirection Info	Not present

RRC CONNECTION REQUEST (Step 3)

Information Element	Value/remark
Initial UE Identity	Checked to see if it is set to IMSI stored in the test USIM card.
Establishment Cause	Checked to see if set to one of the supported originating call types
Protocol Error Indicator	Checked to see if set to “TRUE”
Measured Results on RACH	Checked to see if it is absent

RRC CONNECTION REJECT (Step 4)

Information Element	Value/remark
Initial UE Identity	
IMSI	Set to the identical octet string as the IMSI stored in the USIM card.
Reject Cause	Not Present
Wait time	15 seconds (Maximum)
Redirection Info	Not Present

RRC CONNECTION REQUEST (Step 5)

The contents of this message must be identical to those specified for the message in step 3.

RRC CONNECTION REJECT (Step 6)

Information Element	Value/remark
Initial UE Identity	
IMSI	Set to the identical octet string as the IMSI stored in the USIM card.
Reject Cause	Congestion
Wait time	0 second
Redirection Info	Not present

Note: T300 is set to 5 seconds and N300 is arbitrarily selected from 4 to 8 in SYSTEM INFORMATION BLOCK TYPE 1 message on BCCH.

8.1.2.6.5 Test requirement

After step 2 the UE shall transmit an RRC CONNECTION REQUEST message on uplink CCCH.

After step 4 the UE shall re-transmit an RRC CONNECTION REQUEST message on the uplink CCCH 15 seconds after the transmission of the second downlink RRC CONNECTION REJECT message. In this message, the "protocol error indicator" IE shall be set to "TRUE".

After step 6 the UE shall stop sending an RRC CONNECTION REQUEST message, go back to idle mode immediately and not transmit in the uplink direction again.

8.1.2.7 RRC Connection Establishment in CELL_FACH state: Success

8.1.2.7.1 Definition

8.1.2.7.2 Conformance requirement

During the RRC connection establishment, the UTRAN might assign common physical resource to the UE using an RRC CONNECTION SETUP message. When no information about the physical channels accessible is available from the message, the UE shall utilize the PRACH and S-CCPCH information transmitted on the BCCH and then enter the CELL_FACH. Subsequently, the UE shall establish the required signalling links with the UTRAN using common physical resources.

Reference

3GPP TS 25.331 clause 8.1.3

8.1.2.7.3 Test Purpose

To confirm that the UE is able to enter CELL_FACH state and setup signalling links using common physical channels.

8.1.2.7.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE

Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by attempting to make an outgoing call. After the SS receives this message, it assigns the necessary radio resources and U-RNTI to be used by the UE, and then transmits an RRC CONNECTION SETUP message to the UE within timer T300. SS then waits for the UE to transmit an RRC CONNECTION SETUP COMPLETE message on the DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	→		RRC CONNECTION REQUEST	Test operator is requested to make an outgoing call. The UE shall transmit this message, indicating the correct establishment cause.
2	←		RRC CONNECTION SETUP	SS omits both IE "Uplink DPCH Info" and IE "Downlink DPCH Info" from the message.
3				The UE shall configure the layer 2 and layer 1.
4	→		RRC CONNECTION SETUP COMPLETE	UE shall send this message on the DCCH, carried by the assigned PRACH resources.

Specific Message Content

RRC CONNECTION REQUEST

Information Element	Value/remark
Establishment Cause	Originating Interactive Call

RRC CONNECTION SETUP

For this message, the contents of the message to be used are basically identical to the message sub-type entitled "RRC CONNECTION SETUP message (Transition to CELL_FACH)" found in the default message content part. The following exceptions are applicable in this test:

Information Element	Value/remark
Uplink DPCH Info	Not Present
Downlink information common for all radio links	Not Present
Downlink information per radio link list	Not Present

RRC CONNECTION SETUP COMPLETE

Information Element	Value/remark
UE Radio Access Capability	Checked to see if compatible with the stated capability in PIXIT/PICS statements.

8.1.2.7.5 Test requirements

After step 3 the UE shall establish the RRC connection, and transmit RRC CONNECTION SETUP COMPLETE message on the DCCH using PRACH physical resource specified in system information block messages.

8.1.2.8 RRC Connection Establishment: Invalid system information message reception

8.1.2.8.1 Definition

8.1.2.8.2 Conformance requirement

The UE shall ignore the message and shall not select the cell, if the associated a SYSTEM INFORMATION message on the BCCH which includes an invalid value in the mandatory information element which in the master information block is broadcasting.

Reference

3GPP TS 25.331 clause 8.1.1 clause 16

8.1.2.8.3 Test purpose

To confirm that the UE does not select the cell if the transmitted SYSTEM INFORMATION message on the BCCH which includes an invalid value in the information element in the master information block is broadcasting

8.1.2.8.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Power off (state 1) as specified in clause 7.4 of TS 34.108

Test Procedure

The SS broadcasts the SYSEM INFORMATION message on the BCCH which includes the PLMN Type information element having an invalid value in the master information block. When the UE is supplied the power, it finds that the SYSTEM INFORMATION message on the BCCH includes the unknown value in the mandatory information element and the UE shall ignore this message. When an outgoing call is attempted, the test operator shall be informed that the UE is in a "No Service" state. The UE shall not transmit an RRC CONNECTION REQUEST message on the uplink CCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	SYSTEM INFORMATION	The SS broadcasts the SYSTEM INFORMATION message on the BCCH which includes an invalid value in the master information block.
2				The UE is supplied the power.
3				SS waits for 1 minute and then asks the test operator to attempt to make an outgoing call.
4				SS checks that no uplink transmission on CCCH is detected.

Specific Message Contents

SYSTEM INFORMATION (master information block)

The contents of a SYSTEM INFORMATION message in this test case is identical to the corresponding message found in the default contents of layer 3 messages for RRC tests, with the following exceptions:

Information Element	Value/remark
Supported PLMN Types	invalid value which is not defined

8.1.2.8.5 Test requirement

After step 3 the UE shall not transmit an RRC CONNECTION REQUEST message on the uplink CCCH.

8.1.2.9 RRC Connection Establishment: Success after Physical channel failure, Invalid message reception and Invalid configuration

8.1.2.9.1 Definition

8.1.2.9.2 Conformance requirement

1. The RRC connection establishment is initiated by the UE, which leaves the idle mode. The UE shall transmit an RRC CONNECTION REQUEST message which includes the IE “Initial UE identity”. This message shall be sent on the uplink CCCH.

2. In the case of a failure to establish the RRC connection at the physical channel failure after the UE receives an RRC CONNECTION SETUP message ,the UE retries to establish the RRC connection until V300 is greater than N300

3. In the case of an invalid RRC CONNECTION SETUP message is received by UE, the UE retries to establish the RRC connection until V300 is greater than N300

4. In the case of a RRC CONNECTION SETUP message is received by UE causes invalid configuration, the UE retries to establish the RRC connection until V300 is greater than N300

Reference

3GPP TS 25.331 clause 8.1.3

8.1.2.9.3 Test purpose

To confirm that the UE retries to establish the RRC connection until V300 is greater than N300 for the physical channel failure as the SS does not configure the physical channel which is specified in the transmitted RRC CONNECTION SETUP message. To confirm that the UE retries to establish the RRC connection until V300 is greater than N300 after the reception of invalid RRC CONNECTION SETUP message. To confirm that the UE retries to establish the RRC connection until V300 is greater than N300 when the transmitted RRC CONNECTION SETUP message causes invalid configuration in the UE.

8.1.2.9.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE

Test Procedure

Before the test starts, an internal counter K in SS is initialised to a value = 0. Following this, the UE shall transmit an RRC CONNECTION REQUEST message to the SS on the uplink CCCH, after the operator attempts to make an outgoing call. SS increments K every time such a message is received. Then SS transmit an invalid RRC CONNECTION SETUP message to UE. UE shall response to this message but transmitting an RRC CONNECTION REQUEST message to SS. When SS receives this message, SS shall send a RRC CONNECTION SETUP message that contain an invalid configuration. UE shall then send RRC CONNECTION REQUEST message to SS again. Next SS transmits an RRC CONNECTION SETUP message to make the UE configure the physical channel in order to communicate on the DCCH but SS does not configure the physical channel. Then the UE detects the physical channel failure and transmits an RRC CONNECTION REQUEST message. This cycle is repeated until K reaches N300. When K is equal to N300, the SS transmits the RRC CONNECTION SETUP message and configures the physical channel. The UE shall detect "in-sync" from physical layer and then acknowledge the establishment of RRC connection by sending the RRC CONNECTION SETUP COMPLETE message on uplink DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS initialises counter K to 0. Operator is asked to make an outgoing call and SS starts to wait for RRC CONNECTION REQUEST on uplink CCCH.
2	→		RRC CONNECTION REQUEST	SS increments K.
3				SS checks to see if K is equal to N300+1. If so, goes to step 6. Else, continues to execute step 4.
4	←		RRC CONNECTION SETUP	See message content below. When K>2, SS does not configure the physical channel.
5				SS increments K. The next step is step 2.
6	←		RRC CONNECTION SETUP	See the clause 9 in TS 34.108 on default message content for RRC. SS configures the physical channel.
7				The UE configures the layer 1 and layer 2.
8	→		RRC CONNECTION SETUP COMPLETE	

Specific Message Contents

RRC CONNECTION SETUP (Step 4 and K=1)

Use the same message sub-type found in Clause 9 of TS34.108, with the following exceptions:

Information Element	Value/remark
DRX cycle length coefficient	Invalid value

RRC CONNECTION SETUP (Step 4 and K=2)

Use the same message sub-type found in Clause 9 of TS34.108, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_DCH
Uplink DPCH info	Not present

RRC CONNECTION SETUP (Step 4 and K>2)

Use the same message sub-type found in Clause 9 of TS34.108.

RRC CONNECTION REQUEST (Step 2 and K>1)

Use the same message sub-type found in Clause 9 of TS34.108, with the following exceptions:

Information Element	Value/remark
Protocol error indicator	TRUE

8.1.2.9.5 Test requirement

After step 4 the UE shall re-send RRC CONNECTION REQUEST message.

After step 8 the UE shall transmit an RRC CONNECTION SETUP COMPLETE message and establish an RRC connection.

8.1.3 RRC Connection Release

8.1.3.1 RRC Connection Release in CELL_DCH state: Success

8.1.3.1.1 Definition

8.1.3.1.2 Conformance requirement

In case of an RRC connection release from CELL_DCH state, the UTRAN transmits an RRC CONNECTION RELEASE message to the UE using unacknowledged mode on the DCCH. The UE then responds by transmitting an RRC CONNECTION RELEASE COMPLETE message using unacknowledged mode to UTRAN for N308 times, each time at the expiry of T308 timer. Then the UE leaves the RRC connected mode and initiates release of the layer 2 signalling link. The RRC Connection Release procedure ends when all UE dedicated resources (such as radio resources and radio access bearers) associated with the RRC connection are released and the UE returns to idle mode.

Reference

3GPP TS 25.331 clause 8.1.4

8.1.3.1.3 Test purpose

To confirm that the UE releases the L2 signalling link and dedicated resources and goes back to the idle state after it receives an RRC CONNECTION RELEASE message from the SS and transmits an RRC CONNECTON RELEASE COMPLETE message to the SS for N308 times at the interval specified by the value of T308 timer.

8.1.3.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_DCH state (state 6-1 or state 6-3) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE

Test Procedure

The UE is brought to the CELL_DCH state by prompting the operator to initiate an outgoing call. After the DCCH is established, SS transmits an RRC CONNECTION RELEASE message to the UE to disconnect the connection. SS then waits for the UE to transmit an RRC CONNECTION RELEASE COMPLETE message using unacknowledged mode. SS checks to see if P such messages has been received at each expiry of T308 timer. P is equal to the value of IE “Number of RRC Message Transmissions” in an RRC CONNECTION RELEASE message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_DCH state after a successful RRC connection establishment by virtue of the operator making an outgoing call.
2	←		RRC CONNECTION RELEASE	SS disconnect the connection established. The value in IE "Number of RRC Message Transmissions" is arbitrarily chosen from 4 to 8 and denoted by P.
3	→		RRC CONNECTION RELEASE COMPLETE	SS waits for the arrival of N308 such message at the expiry of each T308 timer, using unacknowledged mode.
4				The UE releases L2 signalling link and dedicated resources. Then the UE goes to idle mode.

Specific Message Content

RRC CONNECTION RELEASE (Step 2)

Information Element	Value/remark
Number of RRC Message Transmission	Arbitrarily chosen between 4 and 8

8.1.3.1.5 Test requirement

After step 2 the UE shall start to transmit P times RRC CONNECTION RELEASE COMPLETE messages at the expiry of each T308 timer.

After step 3 the UE shall initiate the release L2 signalling link and dedicated resources, then it shall go to idle mode.

8.1.3.2 RRC Connection Release using on DCCH in CELL_FACH state: Success

8.1.3.2.1 Definition

8.1.3.2.2 Conformance requirement

In CELL_FACH state, the RRC layer entity in the network may issue an RRC CONNECTION RELEASE message using unacknowledged mode on the DCCH. Upon the reception of this message, the UE transmits an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to UTRAN on the DCCH and goes back to idle mode after it receives an RLC confirmation from the UTRAN.

Reference

3GPP TS 25.331 clause 8.1.4

8.1.3.2.3 Test purpose

To confirm that the UE releases the L2 signalling link and resources and goes back to the idle state after it receives an RRC CONNECTION RELEASE message on downlink DCCH from the SS. It shall transmit an RRC CONNECTON RELEASE COMPLETE message using acknowledged mode on uplink DCCH to the SS.

8.1.3.2.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108 ,depending on the CN domain(s) supported by the UE

Test Procedure

The UE is brought to an initial state of CELL_FACH. After the successful establishment of the RRC connection, the SS transmits an RRC CONNECTION RELEASE message to the UE to disconnect the radio link. When the UE receives this message the UE transmits an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to the SS. Finally, SS checks that the UE performs proper release of all radio resources and then goes back to idle mode.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_FACH state.
2	←		RRC CONNECTION RELEASE	SS sends this message using unacknowledged mode RLC operations on the uplink DCCH.
3	→		RRC CONNECTION RELEASE COMPLETE	The UE transmits this message using acknowledged mode.
4				The UE releases L2 signalling link and radio resources. Then the UE goes to idle mode.

Specific Message Contents

None.

8.1.3.2.5 Test requirement

After step 2 the UE shall transmit an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode then it shall receive a response for this message from the SS-RLC.

After step 3 the UE shall release its L2 signalling link and radio resources, then it shall go back to idle mode.

8.1.3.3 RRC Connection Release using on CCCH in CELL_FACH state: Success

8.1.3.3.1 Definition

8.1.3.3.2 Conformance requirement

In CELL_FACH state, the RRC layer entity in the network may issue an RRC CONNECTION RELEASE message using unacknowledged mode on the CCCH. Upon the reception of this message, the UE shall release the RRC connection immediately, without replying with a RRC CONNECTION RELEASE COMPLETE message on the uplink.

Reference

3GPP TS 25.331 clause 8.1.4

8.1.3.3.3 Test purpose

To confirm that the UE releases all its radio resources upon the reception of a RRC CONNECTION RELEASE message on the downlink CCCH, without transmitting RRC CONNECTION RELEASE COMPLETE message on the uplink.

8.1.3.3.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

The UE is brought to an initial state of CELL_FACH. After the successful establishment of the RRC connection, SS transmits RRC CONNECTION RELEASE message on the downlink CCCH. The UE shall terminate the RRC connection and release all radio resources allocated to it. SS monitors the uplink DCCH and CCCH to verify that no transmission is detected.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_FACH state.
2	←		RRC CONNECTION RELEASE	SS transmits this message with the contents identical to that found in TS 34.108 clause 9 on downlink CCCH.
3				SS waits for a period equivalent to (N308+1) times T308 timer expiry. The UE shall not send any response message on uplink direction during this period. It shall release the radio resources allocated and return to idle mode.

Specific Message Contents

None.

8.1.3.3.5 Test requirement

After step 2 the UE shall release all its radio resources, return to idle mode, without transmitting RRC CONNECTION RELEASE COMPLETE message on the uplink direction.

8.1.3.4 RRC Connection Release in CELL_FACH state: Failure

8.1.3.4.1 Definition

8.1.3.4.2 Conformance requirement

In case of RRC connection release from CELL_FACH state, the RRC layer entity in the network issues an RRC CONNECTION RELEASE message using unacknowledged mode on the DCCH. When the UE does not succeed to transmit the RRC CONNECTION RELEASE COMPLETE message using acknowledged mode, it shall release all its radio resources, enter idle mode and the procedure ends on the UE side.

Reference

3GPP TS 25.331 clause 8.1.4

8.1.3.4.3 Test purpose

To confirm that the UE releases all its radio resources and enters idle mode when the UE does not succeed in transmitting the RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to the SS (i.e. the UE-RLC cannot receive acknowledgement for the transmission of the RRC CONNECTION RELEASE COMPLETE message from SS.).

8.1.3.4.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

At the start of the test, the UE is brought to CELL_FACH state. When the RRC connection has been established, the SS transmits an RRC CONNECTION RELEASE message to the UE to disconnect the radio link. When the UE receives this message the UE transmits an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to the SS. The SS ignores the message and does not transmit a STATUS PDU of RLC for this message. SS checks to see that UE continues to release all its radio resources and then enters idle mode.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought into CELL_FACH state by asking the operator to perform an outgoing call attempt. clause
2	←		RRC CONNECTION RELEASE	SS ask to disconnect the radio link
3	→		RRC CONNECTION RELEASE COMPLETE	The UE transmits this message using acknowledged mode. The SS ignores this message and shall not transmit a STATUS PDU of RLC for this message.
4				SS checks to make sure that UE releases its all radio resources and enter idle mode.

Specific Message Contents

None

8.1.3.4.5 Test requirement

After step 3 the UE shall release its L2 signalling link and radio resources then it shall go to idle mode.

8.1.3.5 RRC Connection Release in CELL_FACH state: Invalid message

8.1.3.5.1 Definition

8.1.3.5.2 Conformance requirement

In CELL_FACH state, the RRC layer entity in UTRAN may issue an RRC CONNECTION RELEASE message using unacknowledged mode on the DCCH. If an invalid RRC CONNECTION RELEASE message is received by the UE, the UE shall activate the appropriate error-handling mechanism and report the error to the UTRAN. After this, the UE shall release the RRC connection.

Reference

3GPP TS 25.331 clause 8.1.4

8.1.3.5.3 Test purpose

When the UE receives an invalid RRC CONNECTION RELEASE message on the downlink DCCH, it shall transmit an RRC CONNECTON RELEASE COMPLETE message that includes the appropriate error cause on the uplink DCCH. Thereafter, it shall release the RRC connection.

8.1.3.5.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

The UE is brought to an initial state of CELL_FACH. SS transmits an RRC CONNECTION RELEASE message on the DCCH to request to disconnect the RRC connection. However, the message contains an invalid value in the IE ”Release cause”. As a result, the UE shall transmit an RRC CONNECTION RELEASE COMPLETE message on the uplink DCCH, which includes the IE “Error indication”. This IE shall contain “Failure cause” IE which is set to “Protocol error” and “Protocol error information” IE which is set to “Information element value not comprehended”. The UE shall release the RRC connection and go back to idle mode after transmitting the RRC CONNECTION RELEASE COMPLETE message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_FACH state.
2	←		RRC CONNECTION RELEASE	See specific message contents for this message
3	→		RRC CONNECTION RELEASE COMPLETE	The IE “Protocol error cause” found in IE “Protocol error information” shall be set to “Information element value not comprehended”.
4				The UE shall release the signalling link and radio resources, and then return to idle mode.

Specific Message Contents

RRC CONNECTION RELEASE (Step 2)

Information Element	Value/remark
Release cause	invalid value

RRC CONNECTION RELEASE COMPLETE

Information Element	Value/remark
Error Indication	
Failure cause	Protocol error
Protocol error information	
Protocol error cause	Information element value not comprehended

8.1.3.5.5 Test requirement

After step2 the UE shall transmit an RRC CONNECTION RELEASE COMPLETE message which includes the appropriate cause values in IE "Error Indication".

After step3 the UE shall release its L2 signalling link and radio resources, then it shall go back to idle mode.

8.1.4 Void

8.1.5 UE capability

8.1.5.1 UE Capability in CELL_DCH state: Success

8.1.5.1.1 Definition

8.1.5.1.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network that is supported by the UE or if the UTRAN needs an update of the UE's UMTS capability information or of its inter-system classmark.

When the UE receives a UE CAPABILITY ENQUIRY message, the UE transmits a UE CAPABILITY INFORMATION message on the uplink DCCH. Then the UTRAN transmits a UE CAPABILITY INFORMATION CONFIRM message.

If during the execution of UE capability update procedure, an invalid UE CAPABILITY INFORMATION CONFIRM is received, the UE shall respond with RRC STATUS message and decide whether to re-transmit UE CAPABILITY INFORMATION message by comparing its internal counter against N304.

Reference

3GPP TS 25.331 clause 8.1.6, 8.1.7

8.1.5.1.3 Test purpose

To confirm that the UE transmits a UE CAPABILITY INFORMATION message after it receives a UE CAPABILITY ENQUIRY message from the SS. To confirm that the UE indicate an invalid message reception when erroneous downlink UE CAPABILITY ENQUIRY and UE CAPABILITY INFORMATION CONFIRM messages are received. The UE shall transmit RRC STATUS message with the correct error cause value to SS.

8.1.5.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_DCH state (state 6-1 or state 6-3) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

The UE is brought to the CELL_DCH state after a successful outgoing call attempt. The SS transmits an erroneous UE CAPABILITY ENQUIRY message containing invalid value in the IE “Capability update requirement” as a correct message. After receiving such a message, the UE should report the error using RRC STATUS message with the appropriate error cause specified. Then SS transmits a UE CAPABILITY ENQUIRY message which includes the IE “Capability update requirement”, the UE receives this message and transmits a UE CAPABILITY INFORMATION message on the uplink DCCH which includes the “Inter-system message” IE. The SS transmits a UE CAPABILITY INFORMATION CONFIRM message to the UE to complete the test. Then SS initiates another UE capability update procedure by transmitting the same UE CAPABILITY ENQUIRY using as in step 4. The UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH. When SS receives this message, it transmit an erroneous UE CAPABILITY INFORMATION CONFIRM message. The content of this message is lack of a mandatory IE. The UE shall detect a protocol error and send RRC STATUS message to report this event. After receiving RLC acknowledgement for this message, the UE shall re-transmit UE CAPABILITY INFORMATION message on the uplink DCCH. SS completes this test by an error-free UE CAPABILITY INFORMATION CONFIRM message similar to the message sent in step 6.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state after an outgoing call has been established successfully.
2	←		UE CAPABILITY ENQUIRY	See specific message contents for this message
3	→		RRC STATUS	The IE "Protocol error cause" found in IE "Protocol error information" should be set to "Information element value not comprehended"
4	←		UE CAPABILITY ENQUIRY	Use default message.
5	→		UE CAPABILITY INFORMATION	The message shall include the IE "Inter-system message", which carries the GSM classmark information requested.
6	←		UE CAPABILITY INFORMATION CONFIRM	Use default message.
7	←		UE CAPABILITY ENQUIRY	Same as in step 4.
8	→		UE CAPABILITY INFORMATION	Shall be the same message content as in step 5.
9	←		UE CAPABILITY INFORMATION CONFIRM	See specific message contents for this message
10	→		RRC STATUS	UE shall detect an error and then transmit this message.
11	→		UE CAPABILITY INFORMATION	UE shall re-transmit this message after receiving acknowledgement from the SS for RRC STATUS message.
12	←		UE CAPABILITY INFORMATION CONFIRM	SS sends an error-free message to acknowledge the receipt of the uplink message.

Specific Message Contents

UE CAPABILITY ENQUIRY (Step 2)

Information Element	Value/remark
Capability update requirement - UE radio access FDD capability update requirement - UE radio access FDD capability update requirement - System specific capability update requirement list - System specific capability update requirement	 TRUE FALSE invalid value

RRC STATUS (Step 3)

Information Element	Value/remark
Protocol Error Information - Protocol Error Cause	 Checked to see if set to "Information element not comprehended"

UE CAPABILITY INFORMATION CONFIRM (Step 9)

Information Element	Value/remark
RRC transaction identifier	Not Present

RRC STATUS (Step 10)

Information Element	Value/remark
Protocol Error Information - Protocol Error Cause	Checked to see if set to “ASN.1 violation or encoding error”

8.1.5.1.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH, reporting the error with protocol error cause set to “Information element value not comprehended”.

After step 4 the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH to respond to the UE CAPABILITY ENQUIRY message.

After step 9, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to “ASN.1 violation or encoding error”.

After step 10, the UE shall re-transmit the UE CAPABILITY INFORMATION message with a similar content as in step 8.

8.1.5.2 UE Capability in CELL_DCH state: Success after T304 timeout

8.1.5.2.1 Definition

8.1.5.2.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network that is supported by the UE, if the UTRAN needs an update of the UE’s UMTS capability information or of its inter-system classmark.

2. After the UE receives a UE CAPABILITY ENQUIRY message, it transmits a UE CAPABILITY INFORMATION message on the uplink DCCH. If it fails to receive a UE CAPABILITY INFORMATION CONFIRM message, the UE re-transmits another UE CAPABILITY INFORMATION message until V304 is greater than N304.

Reference

3GPP TS 25.331 clause 8.1.6, 7

8.1.5.2.3 Test purpose

To confirm that the UE re-transmits a UE CAPABILITY INFORMATION message until V304 is greater than N304, after the expiry of timer T304 when the UE cannot receive a UE CAPABILITY INFORMATION CONFIRM message in response to a UE CAPABILITY INFORMATION message.

8.1.5.2.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_DCH state (state 6-1 or state 6-3) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

The UE is brought to CELL_DCH state. When the SS transmits a UE CACAPABILITY ENQUIRY message which includes the "Capability update requirement" IE, the UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH which includes the "Inter-system message" IE. The SS does not transmits a UE CAPABILITY INFORMATION CONFIRM message to the UE, resulting in the T304 timer to expire. SS shall observe that the UE attempts to transmit a UE CAPABILITY INFORMATION message again. The UE shall re-transmit N304 times, and SS transmits a UE CAPABILITY INFORMATION CONFIRM message to answer the last request and completes this test procedure.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state. SS sets internal counter K =0
2	←		UE CAPABILITY ENQUIRY	Including the IE "Capability update requirement".
3	→		UE CAPABILITY INFORMATION	Including the "Inter-system message" IE, which indicated the radio access network supported by the UE.
4				If K is equal to N304, then proceed to step 6.
5				The SS does not transmit a response and wait for T304 timer to expire. K=K+1 and goes to step 3.
6	←		UE CAPABILITY INFORMATION CONFIRM	Use default message contents

Specific Message Contents

None

8.1.5.2.5 Test requirement

After step 3 the UE shall re-transmits a UE CAPABILITY INFORMATION message on the uplink DCCH, after each expiry of timer T304. The UE CAPABILITY INFORMATION message shall contain IE "UE radio access capability" indicating the settings found in PIC/PIXIT statements. IE "UE system specific capability" shall carry relevant GSM classmark information. After (N304) re-transmissions, the UE shall receive a UE CAPABILITY INFORMATION CONFIRM message.

8.1.5.3 UE Capability in CELL_DCH state: Failure (After N304 re-transmissions)

8.1.5.3.1 Definition

8.1.5.3.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network that is supported by the UE if the UTRAN needs an update of the UE's UMTS capability information or of its inter-system classmark.

2. In the case of a failure to transmit a UE CAPABILITY INFORMATION in excess of N304 times, the UE initiates the cell update procedure.

Reference

3GPP TS 25.331 clause 8.1.6, 8.1.7

8.1.5.3.3 Test purpose

To confirm that the UE stops retrying to transmit a UE CAPABILITY INFORMATION message if V304 is greater than N304. It then initiates cell update procedure.

8.1.5.3.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_DCH state (state 6-1 or state 6-3) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to CELL_DCH state. When the SS transmits a UE CAPABILITY ENQUIRY message which includes the “Capability update requirement” IE, the UE receives this message and transmits a UE CAPABILITY INFORMATION message on the uplink DCCH which includes the “Inter-system message” IE. The SS does not respond with a UE CAPABILITY INFORMATION CONFIRM message but keeps a count on the number of messages received. When the T304 timer expires, the UE shall transmit a UE CAPABILITY INFORMATION message again. After sending (N304+1) messages, the UE shall stop sending UE CAPABILITY INFORMATION messages and initiates the cell update procedure. SS allows UE to return to “connected state” by issuing CELL UPDATE CONFIRM message on the downlink DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE starts from CELL_DCH state. SS sets counter K to 0
2	←		UE CAPABILITY ENQUIRY	Including the “Capability update requirement” IE.
3	→		UE CAPABILITY INFORMATION	Including the “Inter-system message” IE.
4				The SS does not transmit a response and allows T304 timer to expire. SS increments counter K If K is greater than N304, proceeds to step 5 else returns to 3.
5	→		CELL UPDATE	The UE assumes that radio link failure has occurred and transmits this message which includes IE “Cell update cause” set to “radio link failure”.
6	←		CELL UPDATE CONFIRM	

Specific Message Contents

None

8.1.5.3.5 Test requirement

After step 3 the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH. The UE shall re-transmit this message for N304 times. Thereafter, the UE shall initiate the cell update procedure.

8.1.5.4 UE Capability in CELL_FACH state: Success

8.1.5.4.1 Definition

8.1.5.4.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network(s) supported by the UE. UTRAN initiates this procedure when it needs an update of the UE's UMTS capability information or of its inter-system classmark.

2. When the UE receives a UE CAPABILITY ENQUIRY message, the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH.

3. If during the execution of UE capability update procedure, an invalid UE CAPABILITY INFORMATION CONFIRM is received, the UE shall respond with RRC STATUS message and decide whether to re-transmit UE CAPABILITY INFORMATION message by comparing its internal counter against N304.

Reference

3GPP TS 25.331 clause 8.1.6, 8.1.7

8.1.5.4.3 Test purpose

To confirm that the UE transmits an UE CAPABILITY INFORMATION message after it receives a UE CAPABILITY ENQUIRY message from the SS. To confirm that the UE indicates an invalid message reception when erroneous downlink UE CAPABILITY ENQUIRY and UE CAPABILITY INFORMATION CONFIRM messages are received. The UE shall transmit RRC STATUS message with the correct error cause value to SS.

8.1.5.4.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

The UE is brought to the CELL_FACH state after a successful outgoing call attempt. The SS transmits an erroneous UE CAPABILITY ENQUIRY message containing invalid value in the IE "Capability update requirement". After receiving such a message, the UE shall report an error using RRC STATUS message with the appropriate error cause specified. Then SS transmits a UE CAPABILITY ENQUIRY message which includes the IE "Capability update requirement" as a correct message, the UE receives this message and transmits a UE CAPABILITY INFORMATION message on the uplink DCCH, which includes the IE "Inter-system message". The SS transmits a UE CAPABILITY INFORMATION CONFIRM message to the UE to complete the UE capability enquiry procedure. Then SS initiates another UE capability enquiry procedure by transmitting the same UE CAPABILITY ENQUIRY message as in step 4. The UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH. When SS receives this message, it transmits an erroneous UE CAPABILITY INFORMATION CONFIRM message. The content of this message is lack of a mandatory IE. The UE shall detect a protocol error and send RRC STATUS message to report this event. After receiving the RLC layer acknowledgement PDU for this message, the UE shall re-transmit UE CAPABILITY INFORMATION message on the uplink DCCH. SS completes this test by sending an error-free UE CAPABILITY INFORMATION CONFIRM message similar to the message sent in step 6.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state after an outgoing call has been established successfully.
2	←		UE CAPABILITY ENQUIRY	See specific message contents for this message
3	→		RRC STATUS	The IE "Protocol error cause" found in IE "Protocol error information" should be set to "Information element value not comprehended"
4	←		UE CAPABILITY ENQUIRY	Use default message.
5	→		UE CAPABILITY INFORMATION	The message shall include the IE "Inter-system message", which carries the GSM classmark information requested.
6	←		UE CAPABILITY INFORMATION CONFIRM	Use default message.
7	←		UE CAPABILITY ENQUIRY	Same as in step 4.
8	→		UE CAPABILITY INFORMATION	The message content shall be the same as in step 5.
9	←		UE CAPABILITY INFORMATION CONFIRM	See specific message contents for this message
10	→		RRC STATUS	UE shall detect an error and then transmit this message on uplink DCCH.
11	→		UE CAPABILITY INFORMATION	UE shall re-transmit this message after receiving the RLC acknowledgement PDU for RRC STATUS message from SS.
12	←		UE CAPABILITY INFORMATION CONFIRM	SS sends an error-free message to acknowledge the receipt of the uplink message.

Specific Message Contents

UE CAPABILITY ENQUIRY (Step 2)

Information Element	Value/remark
Capability update requirement	
- UE radio access FDD capability update requirement	TRUE
- UE radio access FDD capability update requirement	FALSE
- System specific capability update requirement list	invalid value
- System specific capability update requirement	

RRC STATUS (Step 3)

Information Element	Value/remark
Protocol Error Information - Protocol Error Cause	Checked to see if set to “Information element not comprehended”

UE CAPABILITY INFORMATION CONFIRM (Step 9)

Information Element	Value/remark
RRC transaction identifier	Not Present

RRC STATUS (Step 3)

Information Element	Value/remark
Protocol Error Information - Protocol Error Cause	Checked to see if set to “ASN.1 violation or encoding error”

8.1.5.4.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH, reporting the error with protocol error cause set to “Information element value not comprehended”.

After step 4 the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH to respond to the downlink UE CAPABILITY ENQUIRY message.

After step 9, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to “ASN.1 violation or encoding error”.

After step 10, the UE shall re-transmit the UE CAPABILITY INFORMATION message with a similar content as in step 8.

8.1.5.5 UE Capability in CELL_FACH state: Success after T304 timeout

8.1.5.5.1 Definition

8.1.5.5.2 Conformance requirement

1. The UE CAPABILITY ENQUIRY message is sent by the UTRAN to request the UE to transmit its capability information related to any radio access network(s) supported by the UE. UTRAN initiates this action when it needs an update of the UE’s UMTS capability information or of its inter-system classmark.

2. After the UE receives a UE CAPABILITY ENQUIRY message, it transmits a UE CAPABILITY INFORMATION message on the uplink DCCH. If it fails to receive a UE CAPABILITY INFORMATION CONFIRM message, the UE re-transmits another UE CAPABILITY INFORMATION message until its internal counter V304 is greater than N304.

Reference

3GPP TS 25.331 clause 8.1.6, 7

8.1.5.5.3 Test purpose

To confirm that the UE re-transmits a UE CAPABILITY INFORMATION message until V304 is greater than N304, after the expiry of timer T304 when it fail to receive a downlink UE CAPABILITY INFORMATION CONFIRM message in response to the uplink UE CAPABILITY INFORMATION message sent.

8.1.5.5.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

The UE is brought to CELL_FACH state. When the SS transmits a UE CAPABILITY ENQUIRY message which includes the IE “Capability update requirement”, the UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH that contains the IE “Inter-system message”. The SS waits and does not transmit a UE CAPABILITY INFORMATION CONFIRM message to the UE, resulting in the T304 timer to expire. SS shall observe that the UE attempts to transmit a UE CAPABILITY INFORMATION message again. The UE shall re-transmit N304 times, and SS transmits a UE CAPABILITY INFORMATION CONFIRM message to answer the last request and completes this test procedure.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state. SS sets internal counter K =0
2	←		UE CAPABILITY ENQUIRY	Including the IE “Capability update requirement”.
3	→		UE CAPABILITY INFORMATION	Including the IE “Inter-system capability”, which indicated the radio access network supported by the UE.
4				If K equals N304,then proceeds to step 6. Else, continue with step 5.
5				The SS does not transmit a response and wait for T304 timer to expire. K=K+1 and goes to step 3.
6	←		UE CAPABILITY INFORMATION CONFIRM	Use default message contents

Specific Message Contents

None

8.1.5.5.5 Test requirement

After step 3 the UE shall re-transmit a UE CAPABILITY INFORMATION message on the uplink DCCH, after each expiry of timer T304. The UE CAPABILITY INFORMATION message shall contain IE ”UE radio access capability” with the value matching those stated in the ICS/IXIT statements. In the same message, IE ”UE system specific capability” shall be present and it carries relevant GSM classmark information. After (N304) re-transmissions, the UE shall receive a UE CAPABILITY INFORMATION CONFIRM message.

8.1.6 Direct Transfer

8.1.6.1 Direct Transfer in CELL DCH state (invalid message reception)

8.1.6.1.1 Definition

8.1.6.1.2 Conformance requirement

The UE shall transmit an RRC STATUS message stating the reason “protocol error” in IE “failure cause” and also set value “Information element value not comprehended” in IE “Protocol error cause“ when the UE receives a DOWNLINK DIRECT TRANFER message, which does not include the IE “NAS message”.

Reference

3GPP TS 25.331 clause 8.1.9

8.1.6.1.3 Test purpose

To confirm that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which does not include the IE “NAS message”

8.1.6.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_DCH (state 6-1 or state 6-3) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a DOWNLINK DIRECT TRANSFER message to the UE and does not include the IE “NAS message”. The UE shall transmit an RRC STATUS message on the DCCH using AM RLC, setting the value “protocol error” in IE “failure cause”. The error type “Information element value not comprehended” shall also be indicated in IE “Protocol error cause”.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	DOWNLINK DIRECT TRANSFER	
2		→	RRC STATUS	

Specific Message Contents

DOWNLINK DIRECT TRANSFER

The contents of DOWNLINK DIRECT TRANSFER message in this test case is identical to those in default contents of layer 3 messages for RRC tests with the following exceptions:.

Information Element	Value/remark
NAS message	Not Present

RRC STATUS

Information Element	Value/remark
Message Type	
Protocol error information	Information element value not comprehended
Other information element	Not checked

8.1.6.1.5 Test requirement

After step 1 the UE shall transmit an RRC STATUS message on the DCCH using AM RLC setting “protocol error” in IE “failure cause” and setting “Information element value not comprehended” in IE “Protocol error cause”.

8.1.6.2 Direct Transfer in CELL FACH state (invalid message reception and no signalling connection exists)

8.1.6.2.1 Definition

8.1.6.2.2 Conformance requirement

The UE shall transmit an RRC STATUS message stating the reason “protocol error” in IE “failure cause” and also set value “Information element value not comprehended” in IE “Protocol error cause” when the UE receives a DOWNLINK DIRECT TRANSFER message, which does not include the IE “NAS message”. The UE shall transmit an RRC STATUS message including the IE "Protocol error information" with the IE “Protocol error cause” set to “Message not compatible with receiver state” when the UE receives a DOWNLINK DIRECT TRANSFER message, with IE “CN domain identity” does not exist.

Reference

3GPP TS 25.331 clause 8.1.9

8.1.6.2.3 Test purpose

To confirm that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which does not include the IE “NAS message”. To confirm that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which include invalid IE “CN domain identity”.

8.1.6.2.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_FACH (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a DOWNLINK DIRECT TRANSFER message to the UE and does not include the IE “NAS message”. The UE shall transmit an RRC STATUS message on the DCCH using AM RLC, setting the value “protocol error” in IE “failure cause”. The error type “Information element value not comprehended” shall also be indicated in IE “Protocol error cause”. The SS transmits a DOWNLINK DIRECT TRANSFER message that contain invalid IE “CN domain identity” to the UE. The UE shall transmit an RRC STATUS message on the DCCH using AM RLC, setting the value “protocol error” in IE “failure cause”. The error type “Message not compatible with receiver state” shall also be indicated in IE “Protocol error cause”.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		DOWNLINK DIRECT TRANSFER	
2	→		RRC STATUS	
3	←		DOWNLINK DIRECT TRANSFER	
4	→		RRC STATUS	

Specific Message Contents

DOWNLINK DIRECT TRANSFER (Step 1)

The contents of DOWNLINK DIRECT TRANSFER message in this test case is identical to those in default contents of layer 3 messages for RRC tests with the following exceptions:.

Information Element	Value/remark
NAS message	Not Present

RRC STATUS (Step 2)

Information Element	Value/remark
Message Type	
Protocol error information	Information element value not comprehended
Other information element	Not checked

DOWNLINK DIRECT TRANSFER (Step 3)

The contents of DOWNLINK DIRECT TRANSFER message in this test case is identical to those in default contents of layer 3 messages for RRC tests with the following exceptions:.

Information Element	Value/remark
CN domain identity NAS message	Invalid value Arbitrary message.

RRC STATUS (Step 4)

Information Element	Value/remark
Message Type	
Protocol error information	Message not compatible with receiver state
Other information element	Not checked

8.1.6.2.5 Test requirement

After step 1 the UE shall transmit a n RRC STATUS message on the DCCH using AM RLC setting “protocol error” in IE “failure cause” and setting “Information element value not comprehended” in IE “Protocol error cause”.

After step 3 the UE shall transmit a n RRC STATUS message on the DCCH using AM RLC setting “protocol error” in IE “failure cause” and setting “Message not compatible with receiver state” in IE “Protocol error cause”.

8.1.7 Security mode control

8.1.7.1 Security mode control in CELL_DCH state

8.1.7.1.1 Definition

8.1.7.1.2 Conformance requirement

1. This procedure is used to trigger the stop or start of ciphering or to command the restart of ciphering with the new ciphering configuration. It is also used to start integrity protection or modify integrity protection configuration, both for the signalling links and any of radio bearers.

2. When the UE receives a SECURITY MODE COMMAND message from the UTRAN, which indicates the downlink activation time and new integrity protection configuration, the UE shall apply the old ciphering configuration before the stated downlink activation time. It shall start to decipher using the new ciphering configuration at the downlink activation time.

3. After the UE transmit the SECURITY MODE COMPLETE message using the new integrity protection configuration which includes uplink activation time, it starts to cipher transmission in the uplink using the new configuration at the uplink activation time.

Reference

3GPP TS 25.331 clause 8.1.12

8.1.7.1.3 Test purpose

To confirm that the UE correctly communicates to the UTRAN and activates the new ciphering configurations after the stated activation time. To confirm that after the UE receives a SECURITY MODE COMMAND message, it transmits a SECURITY MODE COMPLETE message to the UTRAN using the old ciphering configuration together with the application of the new integrity protection configuration. To confirm that UE send SECURITY MODE FAILURE message when SS transmits incompatible simultaneous SECURITY MODE COMMAND messages to UE.

8.1.7.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_DCH (state 6-1 or state 6-3) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

Test Procedure

The UE is in the RRC connected state CELL_DCH. The SS transmits a SECURITY MODE COMMAND message in which ciphering is requested to be activated, but the IE “Ciphering algorithm capability” is set to an unknown value. The UE shall not trigger any ciphering algorithm and it shall respond by sending SECURITY MODE FAILURE message on the DCCH. Next, SS transmits a valid SECURITY MODE COMMAND message which includes the “Downlink activation time” IE for RB2 and “Integrity check info” IE. Following that, SS immediately transmit another valid SECURITY MODE COMMAND message to UE. Then the UE shall check the integrity check info and shall start to configure ciphering in downlink according to the first valid SECURITY MODE COMMAND message. Upon the reception of the subsequent SECURITY MODE COMMAND message, the UE shall transmit SECURITY MODE FAILURE message to SS with IE “failure cause” set to “incompatible simultaneous reconfiguration”. Then UE shall transmit a SECURITY MODE COMPLETE message which contains the uplink activation time for RB1,RB2,RB 3 and RB 4 and also “Integrity check info” IE using the new integrity protection configuration. SS records the uplink ciphering activation time for RB 2. Next, SS transmits COUNTER CHECK message repeated on the downlink DCCH using RLC-AM mode. The UE shall respond to each downlink message with a COUNTER CHECK RESPONSE message on the uplink DCCH using RLC-AM. This cycle repeats itself until both the uplink and downlink ciphering activation time for RB 2 has elapsed. SS checks all uplink COUNTER CHECK RESPONSE messages are integrity-protected by UIA algorithm, and that the messages contain the correct values for “Integrity mode info” IE. After both the uplink and downlink ciphering activation time for RB 2 has passed, the UE shall be able to communicate with the SS. This can be verified in SS through the reception of a correctly ciphering and integrity-protected COUNTER CHECK RESPONSE message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				RRC connected state on DCCH
2	←		SECURITY MODE COMMAND	IE ”Ciphering Algorithm capability” is set to an invalid value
3	→		SECURITY MODE FAILURE	IE “Failure Cause” should be set to “Protocol Error” and IE “Protocol Error Information” should be set to “Information element value not comprehended”.
4	←		SECURITY MODE COMMAND	See specific message contents.
5	←		SECURITY MODE COMMAND	See specific message contents.
6	→		SECURITY MODE FAILURE	IE “Failure Cause” should be set to “Incompatible simultaneous reconfiguration” .
7	→		SECURITY MODE COMPLETE	SS verifies that this message is sent unciphered. SS records the uplink ciphering activation time for RB 2.
8	←		COUNTER CHECK	SS repeats step 6 and step 7 until its internal uplink and downlink RLC SN have both surpassed the uplink and downlink ciphering activation time specified for RB2. This message is sent on the downlink DCCH using RLC-AM. See specific message content.
9	→		COUNTER CHECK RESPONSE	UE shall send this message on the uplink DCCH using RLC-AM. See specific message content.
10				SS verifies that the last COUNTER CHECK RESPONSE message is both integrity-protected and ciphered correctly.

Specific Message Contents

SECURITY MODE COMMAND (Step 2)

See notes below for the value of Y.

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	0
Security Capability	
Ciphering algorithm capability	”1111111111111111”B
Integrity protection algorithm capability	”1111111111111111”B
Ciphering mode info	
Ciphering mode command	Start
Ciphering algorithm	Use one of the supported ciphering algorithms
Activation time for DPCH	Not Present
Radio bearer downlink ciphering activation time info	
RB Identity	2
RLC sequence number	Current RLC SN + Y
Integrity protection mode info	
Integrity protection mode command	Start
Downlink integrity protection activation info	Not Present
Integrity protection algorithm	If integrity is indicated to be active on IXIT statements in TS 34.123-2, use one of the supported integrity algorithms
Integrity protection initialisation number	0000 0000 0000 0000 H (FRESH)
CN domain identity	Supported domain

SECURITY MODE FAILURE (Step 3)

The same message found in Annex A shall be transmitted by the UE on the uplink DCCH, with the exception of the following IEs:

Information Element	Value/remark
Failure cause	
Failure cause	Protocol error
Protocol error information	
Protocol error cause	Information element value not comprehended

SECURITY MODE COMMAND (Step 4 and 5)

See notes below for the value of Y.

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	0
Security Capability	
Ciphering algorithm capability	If ciphering is indicated to be active on IXIT statements in TS 34.123-2, use one of the supported ciphering algorithms
Integrity protection algorithm capability	0000000000000010B(UIA1)
Ciphering mode info	
Ciphering mode command	Start
Ciphering algorithm	Use one of the supported ciphering algorithms
Activation time for DPCH	Not Present
Radio bearer downlink ciphering activation time info	
RB Identity	2
RLC sequence number	Current RLC SN + Y
Integrity protection mode info	Start
Integrity protection mode command	Not Present
Downlink integrity protection activation info	If integrity is indicated to be active on IXIT statements in TS 34.123-2, use one of the supported integrity algorithms
Integrity protection algorithm	0000 0000 0000 0000 H (FRESH)
Integrity protection initialisation number	Supported domain
CN domain identity	

SECURITY MODE FAILURE (Step 6)

The same message found in Annex A shall be transmitted by the UE on the uplink DCCH, with the exception of the following IEs:

Information Element	Value/remark
Failure cause Failure cause	 Incompatible simultaneous reconfiguration

SECURITY MODE COMPLETE (Step 7)

Information Element	Value/remark
RRC transaction identifier Integrity check info - Message Authentication code - RRC Message sequence number Uplink integrity protection activation info - RRC message sequence number list Radio bearer uplink ciphering activation info - RB Identity - RLC sequence number	0 Checked to see if present Checked to see if present Check to see if it the RRC SN for RB 0 to RB 4 are present 2 SS records this value. See step 8 in 'expected sequence'

COUNTER CHECK (Step 8)

Information Element	Value/remark
RRC transaction identifier Integrity check info RB COUNT-C MSB information - RB identity - COUNT-C MSB uplink - COUNT-C MSB downlink	0 Calculated value 2 Current COUNT-C MSB for RB#2 in uplink Current COUNT-C MSB for RB#2 in downlink

COUNTER CHECK RESPONSE (Step 9)

Information Element	Value/remark
RRC transaction identifier Integrity check info RB COUNT-C information	0 Checked to see if the MAC code match Check to if this IE is absent

Note: Y = 2 * (size of COUNTER CHECK message, after PER encoding). The unit of Y is the number of RLC-AM PDU.

8.1.7.1.5 Test requirement

After step 2 the UE shall transmit a SECURITY MODE FAILURE message to report the protocol error detected in the first SECURITY MODE COMMAND message. The UE shall be able to communicate normally with the SS, with all control data on the signalling radio bearers unciphered.

After step 5, UE shall transmit SECURITY MODE FAILURE to SS to indicate an error due to incompatible simultaneous reconfiguration.

After step 6 the UE shall RLC-acknowledge the receipt of the first valid SECRUITY MODE COMMAND message using unciphered mode and which includes calculated integrity check info. SS checks that the SECURITY MODE COMPLETE message is received unciphered and that the calculated "integrity check info" IE is correct.

After step 7 SS verifies that all uplink signalling messages on RB1, RB2, RB3 and RB4 are integrity protected with UIA1 algorithm.

After step 9 SS verifies that the last COUNTER CHECK RESPONSE message received is integrity protected with UIA algorithm and ciphered with the algorithm indicated in the second SECURITY MODE COMMAND (Step 4) message.

8.1.7.2 Security mode control in CELL_FACH state

8.1.7.2.1 Definition

8.1.7.2.2 Conformance requirement

1. This procedure is used to trigger the stop or start of ciphering, or to command the restart of ciphering with the new ciphering configuration. It is also used to start integrity protection or modify integrity protection configuration, both for signalling link(s) and any radio access bearer(s).

2. When the UE receives a SECURITY MODE COMMAND message from the UTRAN, which indicates the downlink activation time and new integrity protection configuration, the UE shall apply the old ciphering configuration before the stated downlink activation time. It shall start to decipher using the new ciphering configuration at the downlink activation time.

3. The UE shall transmit SECURITY MODE COMPLETE message using the new integrity protection configuration stated in the received SECURITY MODE COMMAND message. The SECURITY MODE COMPLETE message shall include the ciphering uplink activation time. The UE shall start to apply the new ciphering configuration on the uplink direction, after the uplink activation time has elapsed.

Reference

3GPP TS 25.331 clause 8.1.12

8.1.7.2.3 Test purpose

To confirm that after the UE receives a SECURITY MODE COMMAND message, it transmits a SECURITY MODE COMPLETE message to the UTRAN using the old ciphering configuration together with the application of the new integrity protection configuration. To confirm that the UE applies the old ciphering configuration in the downlink prior to the activation time; and uses the new ciphering configuration on and after the activation time. To confirm that the UE starts to cipher its uplink transmissions after the uplink activation time stated in SECURITY MODE COMPLETE message is reached. To confirm that UE aborts ciphering and integrity protection configuration when it reselect to a new cell and performs cell update procedure.

8.1.7.2.4 Method of test

Initial Condition

System Simulator: 2 cells - Cell 1 is active, with the downlink transmission power shown in column marked “T0” in Table 8.1.7.2, while cell 2 is inactive UE: CELL_FACH (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

The UE is in the CELL_FACH state, camping onto cell 1. SS starts to broadcast BCCH on the primary CCPCH in cell 2. The UE shall find cell 2 to be more suitable for service and hence perform a cell reselection. After the completion of cell reselection, the UE shall transmits a CELL UPDATE message to the SS on the uplink CCCH of cell 2 and set IE “Cell update cause” to “Cell Reselection”. After the SS receives this message, it transmits a CELL UPDATE

Test Procedure

Table 8.1.7.2

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.1.7.2 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Columns marked “T0” denote the initial conditions, while columns marked “T1” is to be applied subsequently.

The UE is in the RRC connected state CELL_FACH camping onto cell 1. The SS transmits a SECURITY MODE COMMAND message in which ciphering is requested to be activated, but the IE ”Ciphering algorithm capability” is set to an unknown value. The UE shall not trigger any ciphering algorithm and it shall respond by sending SECURITY MODE FAILURE message on the DCCH. Next, SS transmits a valid SECURITY MODE COMMAND message which includes IE “Downlink activation time” for RB2 and IE “Integrity check info”. The UE shall check the integrity check info. It shall start to configure ciphering in downlink. Then SS configures its downlink transmission power settings according to columns “T1” in Table 8.1.7.2. UE shall abort ongoing integrity and ciphering reconfiguration. UE shall re-select to cell 2 and transmit CELL UPDATE message to SS with IE “cell update cause” set to “cell reselection”. Then SS transmit a CELL UPDATE CONFIRM message to UE. UE shall not responds to this message. SS then transmits a SECURITY MODE COMMAND message to UE. The UE shall check the integrity check info. It shall start to configure ciphering in downlink and transmit a SECURITY MODE COMPLETE message, which contains the uplink activation time for RB2 using the new integrity protection configuration.. This message shall contain the IE “Integrity check info”. SS records the uplink ciphering activation time for RB 2. Next, SS transmits COUNTER CHECK message repeated on the downlink DCCH using RLC-AM mode. The UE shall respond to each downlink message with a COUNTER CHECK RESPONSE message on the uplink DCCH using RLC-AM. SS confirms that the uplink COUNTER CHECK RESPONSE messages are not ciphered. SS also checks all uplink messages are integrity-protected by UIA1 algorithm, and that the messages contain the correct values for “Integrity mode info” IE. This cycle repeats itself until both the uplink and downlink ciphering activation time for RB 2 have elapsed. After both the uplink and downlink ciphering activation time for RB 2 have passed, the UE shall be able to communicate with the SS using the new ciphering configurations. This can be verified in SS through the reception of a correctly ciphered and integrity-protected COUNTER CHECK RESPONSE message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				UE is initially in CELL_FACH state.
2	←		SECURITY MODE COMMAND	IE ”Ciphering Algorithm capability” is set to an invalid value
3	→		SECURITY MODE FAILURE	IE “Failure Cause” shall be set to “Protocol Error” and IE “Protocol Error Information” shall be set to “Information element value not comprehended”.
4	←		SECURITY MODE COMMAND	See specific message contents.
5				SS configures the downlink power transmission setting according to column “T1” in Table 8.1.7.2.
6	→		CELL UPDATE	UE re-selects to cell 2 and sends this message.
7	←		CELL UPDATE CONFIRM	
8	←		SECURITY MODE COMMAND	See specific message contents.
9	→		SECURITY MODE COMPLETE	SS verifies that this message is sent unciphered. SS records the uplink ciphering activation time for RB 2.
10	←		COUNTER CHECK	SS repeats step 6 and step 7 until its internal uplink and downlink RLC sequence numbers have both surpassed the uplink and downlink ciphering activation times specified for RB2. This message is sent on the downlink DCCH using RLC-AM. See specific message content.
11	→		COUNTER CHECK RESPONSE	UE shall send this message on the uplink DCCH using RLC-AM. See specific message content.
12				SS verifies that the last COUNTER CHECK RESPONSE message is both integrity-protected and ciphered correctly.

Specific Message Contents

SECURITY MODE COMMAND (Step 2)

See notes below for the value of Y.

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	0
Security Capability	
Ciphering algorithm capability	”1111111111111111”B ”1111111111111111”B
Integrity protection algorithm capability	
Ciphering mode info	
Ciphering mode command	Start
Ciphering algorithm	Use one of the supported ciphering algorithms
Activation time for DPCH	Not Present
Radio bearer downlink ciphering activation time info	
RB Identity	2
RLC sequence number	Current RLC SN + Y
Integrity protection mode info	
Integrity protection mode command	Start
Downlink integrity protection activation info	Not Present
Integrity protection algorithm	If integrity is indicated to be active on IXIT statements in TS 34.123-2, use one of the supported integrity algorithms
Integrity protection initialisation number	0000 0000 0000 0000 H (FRESH)
CN domain identity	Supported domain

SECURITY MODE COMMAND (Step 4 and 8)

See notes below for the value of Y.

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	0
Security Capability	
Ciphering algorithm capability	If ciphering is indicated to be active on IXIT statements in TS 34.123-2, use one of the supported ciphering algorithms
Integrity protection algorithm capability	0000000000000010B(UIA1)
Ciphering mode info	
Ciphering mode command	Start
Ciphering algorithm	Use one of the supported ciphering algorithms
Activation time for DPCH	Not Present
Radio bearer downlink ciphering activation time info	
RB Identity	2
RLC sequence number	Current RLC SN + Y
Integrity protection mode info	Start
Integrity protection mode command	Not Present
Downlink integrity protection activation info	If integrity is indicated to be active on IXIT statements in TS 34.123-2, use one of the supported integrity algorithms
Integrity protection algorithm	0000 0000 0000 0000 H (FRESH)
Integrity protection initialisation number	Supported domain
CN domain identity	

CELL UPDATE

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to ‘0000 0000 0001’
- S-RNTI	Check to see if set to ‘0000 0000 0000 0000 0001’.
Cell Update Cause	Check to see if set to ‘Cell Reselection’

CELL UPDATE CONFIRM (Step 4 and 18)

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_FACH

SECURITY MODE COMPLETE (Step 9)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
- Message Authentication code	Checked to see if present
- RRC Message sequence number	Checked to see if present
Uplink integrity protection activation info	
- RRC message sequence number list	Check to see if it the RRC SN for RB 0 to RB 4 are present
Radio bearer uplink ciphering activation info	
- RB Identity	2
- RLC sequence number	SS records this value. See step 8 in 'expected sequence'

COUNTER CHECK (Step 10)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	2
- COUNT-C MSB uplink	Current COUNT-C MSB for RB#2 in uplink
- COUNT-C MSB downlink	Current COUNT-C MSB for RB#2 in downlink

COUNTER CHECK RESPONSE (Step 11)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Checked to see if the MAC code match
RB COUNT-C information	Check to if this IE is absent

Note: Y = 2 * (size of COUNTER CHECK message, after PER encoding). The unit of Y is the number of RLC-AM PDU.

8.1.7.2.5 Test requirement

After step 2 the UE shall transmit a SECURITY MODE FAILURE message to report the protocol error detected in the first SECURITY MODE COMMAND message. The UE shall be able to communicate normally with the SS, with all control data on the signalling radio bearers unciphered.

After step 5, UE shall reselect to cell 2 and transmit CELL UPDATE message to SS with IE "cell update cause" set to "cell reselection".

After step 8 the UE shall RLC-acknowledge the receipt of the SECRUITY MODE COMMAND message using unciphered mode and which includes calculated integrity check info. SS checks that the SECURITY MODE COMPLETE message is received unciphered and that the calculated MAC-I values in "integrity check info" IE is correct.

After step 9 SS verifies that all uplink signalling messages on RB1, RB2, RB3 and RB4 are integrity protected with UIA1 algorithm.

After step 11 SS verifies that the last COUNTER CHECK RESPONSE message received is integrity protected with UIA1 algorithm and ciphered with the algorithm indicated in the second SECURITY MODE COMMAND (Step 4) message.

8.1.8 Counter check

8.1.8.1 Counter check in CELL_DCH state

8.1.8.1.1 Definition

8.1.8.1.2 Conformance requirement

When the UE receives a COUNTER CHECK message that includes matched COUNT-C MSB values, the UE shall transmit a COUNTER CHECK RESPONSE message on the uplink DCCH and omitting “RB COUNT-C information” IE in this message.

When the UE receives a COUNTER CHECK message that includes any mismatched COUNT-C MSB values, the UE shall transmit a COUNTER CHECK RESPONSE message on the uplink DCCH and specifies the current COUNT-C information of the RAB(s) with mismatched values.

Reference

3GPP TS 25.331 clause 8.1.15

8.1.8.1.3 Test purpose

To confirm that the UE transmits a COUNTER CHECK RESPONSE message after it receives a COUNTER CHECK message from the SS. To confirm that the UE responds to the reception of an invalid downlink COUNTER CHECK message by transmitting a RRC STATUS message on the uplink DCCH, stating the correct error cause value in message.

8.1.8.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_DCH state (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to the CELL_DCH state after a successful outgoing call attempt. The SS transmits an erroneous COUNTER CHECK message. The content of this message is lack of a mandatory IE. The UE shall detect a protocol error and send RRC STATUS message to report this event. Next, the SS transmits a COUNTER CHECK message that includes the current COUNT-C MSB information in each radio access bearer. The UE shall react by sending a COUNTER CHECK RESPONSE message on the uplink DCCH, which does not include “RB COUNT-C information” IE. The SS transmits a COUNTER CHECK message which includes the current COUNT-C MSB information reversed all the bits in each radio bearer. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for each radio access bearer established. The SS transmits a COUNTER CHECK message which includes a different radio bearer. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for each radio access bearer established.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state after an outgoing call has been established successfully.
2	←		COUNTER CHECK	See specific message contents for this message
3	→		RRC STATUS	UE shall detect a protocol error and then transmit this message.
4	←		COUNTER CHECK	See specific message content.
5	→		COUNTER CHECK RESPONSE	The message shall not include the IE “RB COUNT-C information”.
6	←		COUNTER CHECK	See specific message content.
7	→		COUNTER CHECK RESPONSE	The message shall include the IE “RB COUNT-C information”.
8	←		COUNTER CHECK	See specific message content.
9	→		COUNTER CHECK RESPONSE	The message shall include the IE “RB COUNT-C information”.

Specific Message Contents

COUNTER CHECK (Step 2)

Information Element	Value/remark
RRC transaction identifier	Not Present

RRC STATUS (Step 3)

Information Element	Value/remark
Protocol Error Information - Protocol Error Cause	 Checked to see if set to “ASN.1 violation or encoding error”

COUNTER CHECK (Step 4)

Information Element	Value/remark
RRC transaction identifier Integrity check info RB COUNT-C MSB information - RB identity - COUNT-C MSB uplink - COUNT-C MSB downlink	0 Calculated value 20 Current COUNT-C MSB for RB#20 in uplink Current COUNT-C MSB for RB#20 in downlink

COUNTER CHECK RESPONSE (Step 5)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	Check to if this IE is absent

COUNTER CHECK (Step 6)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	Check to see if set to 20
- COUNT-C MSB uplink	Toggle all bits of the current COUNT-C MSB in uplink for RB#20
- COUNT-C MSB downlink	Toggle all bits of the current COUNT-C MSB in downlink for RB#20

COUNTER CHECK RESPONSE (Step 7)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink

COUNTER CHECK (Step 8)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	Check to see if set to 25
- COUNT-C MSB uplink	Arbitrary COUNT-C MSB in uplink for RB#25
- COUNT-C MSB downlink	Arbitrary COUNT-C MSB in downlink for RB#25

COUNTER CHECK RESPONSE (Step 9)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink
- RB identity	Check to see if set to 25
- COUNT-C uplink	Check to see if COUNT-C MSB is set to COUNT-C MSG in uplink for RB#25 in step 8 and LSB is fill with '0'
- COUNT-C downlink	Check to see if COUNT-C MSB is set to COUNT-C MSG in downlink for RB#25 in step 8 and LSB is fill with '0'

8.1.8.1.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to “ASN.1 violation or encoding error”.

After step 4 the UE shall transmit a COUNTER CHECK RESPONSE message which does not includes the IE “RB COUNT-C information” to indicates that a matched comparison result is obtained.

After step 6, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE “RB COUNT-C information” to report that a mismatch in COUNT-C value is detected in RB#20.

After step 8, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE “RB COUNT-C information” to report that RB#25 is not found in variable ESTABLISHED_RABS and RB#20 is not found in IE “RB COUNT-C MSB information”.

8.1.8.2 Counter check in CELL_FACH state

8.1.8.2.1 Definition

8.1.8.2.2 Conformance requirement

When the UE receives a COUNTER CHECK message that includes matched COUNT-C MSB values, the UE shall transmit a COUNTER CHECK RESPONSE message on the uplink DCCH and omitting “RB COUNT-C information” IE in this message.

When the UE receives a COUNTER CHECK message that includes any mismatched COUNT-C MSB values, the UE shall transmit a COUNTER CHECK RESPONSE message on the uplink DCCH and specifies the current COUNT-C information of the RAB(s) with mismatched values.

Reference

3GPP TS 25.331 clause 8.1.15

8.1.8.2.3 Test purpose

To confirm that the UE transmits a COUNTER CHECK RESPONSE message after it receives a COUNTER CHECK message from the SS. To confirm that the UE responds to the reception of an invalid downlink COUNTER CHECK message by transmitting a RRC STATUS message on the uplink DCCH, stating the correct error cause value in message.

8.1.8.2.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_FACH state (state 6-11) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to the CELL_FACH state after a successful outgoing call attempt. The SS transmits an erroneous COUNTER CHECK message. The content of this message is lack of a mandatory IE. The UE shall detect a protocol error and send RRC STATUS message to report this event. Next, the SS transmits a COUNTER CHECK message that includes the current COUNT-C MSB information in each radio access bearer. The UE shall react by sending a COUNTER CHECK RESPONSE message on the uplink DCCH, which does not include “RB COUNT-C information” IE. The SS transmits a COUNTER CHECK message, which includes the current COUNT-C MSB information for each radio bearer but with all the bits reversed. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for each radio access bearer established.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state after an outgoing call has been established successfully.
2	←		COUNTER CHECK	See specific message contents for this message
3	→		RRC STATUS	UE shall detect a protocol error and then transmit this message.
4	←		COUNTER CHECK	See specific message content.
5	→		COUNTER CHECK RESPONSE	The message shall not include the IE “RB COUNT-C information”.
6	←		COUNTER CHECK	See specific message content.
7	→		COUNTER CHECK RESPONSE	The message shall include the IE ”RB COUNT-C information”.
8	←		COUNTER CHECK	See specific message content.
9	→		COUNTER CHECK RESPONSE	The message shall include the IE “RB COUNT-C information”.

Specific Message Contents

COUNTER CHECK (Step 2)

Information Element	Value/remark
RRC transaction identifier	Not Present

RRC STATUS (Step 3)

Information Element	Value/remark
Protocol Error Information - Protocol Error Cause	 Checked to see if set to “ASN.1 violation or encoding” or “conditional information element error”

COUNTER CHECK (Step 4)

Information Element	Value/remark
RRC transaction identifier Integrity check info RB COUNT-C MSB information - RB identity - COUNT-C MSB uplink - COUNT-C MSB downlink	0 Calculated value 20 Current COUNT-C MSB for RB#20 in uplink Current COUNT-C MSB for RB#20 in downlink

COUNTER CHECK RESPONSE (Step 5)

Information Element	Value/remark
RRC transaction identifier Integrity check info RB COUNT-C information	0 Not checked Check to if this IE is absent

COUNTER CHECK (Step 6)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	20
- COUNT-C MSB uplink	Toggle all bits of the current COUNT-C MSB in uplink for RB#20
- COUNT-C MSB downlink	Toggle all bits of the current COUNT-C MSB in downlink for RB#20

COUNTER CHECK RESPONSE (Step 7)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink

COUNTER CHECK (Step 8)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	Check to see if set to 25
- COUNT-C MSB uplink	Arbitrary COUNT-C MSB in uplink for RB#25
- COUNT-C MSB downlink	Arbitrary COUNT-C MSB in downlink for RB#25

COUNTER CHECK RESPONSE (Step 9)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink
- RB identity	Check to see if set to 25
- COUNT-C uplink	Check to see if COUNT-C MSB is set to COUNT-C MSG in uplink for RB#25 in step 8 and LSB is fill with '0'
- COUNT-C downlink	Check to see if COUNT-C MSB is set to COUNT-C MSG in downlink for RB#25 in step 8 and LSB is fill with '0'

8.1.8.2.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to "ASN.1 violation or encoding error".

After step 4 the UE shall transmit a COUNTER CHECK RESPONSE message which does not includes the IE "RB COUNT-C information" to indicates that a matched comparison result is obtained.

After step 6, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE "RB COUNT-C information" to report that a mismatch in COUNT-C value is detected in RB#20.

After step 8, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE “RB COUNT-C information” to report that RB#25 is not found in variable ESTABLISHED_RABS and RB#20 is not found in IE “RB COUNT-C MSB information”.

8.1.9 Signalling Connection Release Request

8.1.9.1 Definition

8.1.9.2 Conformance requirement

The UE shall initiate the signalling connection release procedure when the higher layer entities in the UE request to release one or more signalling session (one example of such case is location update failure). In this case, the UE shall transmit a SIGNALLING CONNECTION RELEASE REQUEST message, which includes the CN domain identity of the connection flow to be released.

Reference

3GPP TS 25.331 clause 8.1.14

8.1.9.3 Test purpose

To confirm that the UE transmits a SIGNALLING CONNECTION RELEASE REQUEST message after it fails to receive a response for the LOCATION UPDATING REQUEST message.

8.1.9.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: Switched off (state 1) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is turned on and it shall find a suitable cell to camp on. The UE shall initiate a location updating procedure. The UE shall establish an RRC connection and transmits a LOCATION UPDATING REQUEST message using the INITIAL DIRECT TRANSFER message. The SS does not respond to this message, and the UE shall send a SIGNALLING CONNECTION RELEASE REQUEST message which includes the CN domain identity with the same value as that in the INITIAL DIRECT TRANSFER message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is powered on.
2	→		RRC CONNECTION REQUEST	UE shall initiate the location updating procedure.
3	←		RRC CONNECTION SETUP	
4				The UE configures the layer 2 and layer 1.
5	→		RRC CONNECTION SETUP COMPLETE	
6	→		INITIAL DIRECT TRANSFER (LOCATION UPDATING REQUEST)	LOCATION UPDATE REQUEST is embedded in this message transmission.
7				The SS does not respond and waits until the timer for location update procedure expires.
8	→		SIGNALLING CONNECTION RELEASE REQUEST	

Specific Message Content

SIGNALLING CONNECTION RELEASE REQUEST (Step 8)

Information Element	Value/remark
CN domain identity	Check to see if this value is the as same as in the uplink INITIAL DIRECT TRANSFER message.

8.1.9.5 Test requirement

After step 1 the UE shall initiate the LOCATION UPDATING procedure and establish an RRC connection.

After step 7 the UE shall transmit a SIGNALLING CONNECTION RELEASE REQUEST message which includes the same CN domain identity as that found in the INITIAL DIRECT TRANSFER message.

8.2 Radio Bearer control procedure

8.2.1 Radio Bearer Establishment

8.2.1.1 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: Success (Data integrity protection algorithm is not applied)

8.2.1.1.1 Definition

8.2.1.1.2 Conformance requirement

The UE shall correctly set up a radio bearer according to a RADIO BEARER SETUP message and communicate with the UTRAN for its implementation.

(This is the case where data integrity protection algorithm is not applied.)

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.1.3 Test purpose

To confirm that the UE establishes a new radio bearer according to a RADIO BEARER SETUP message received from the SS.

8.2.1.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH_DCH (state 6-5) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state, after the test operator is prompted to make an out-going call. Before step 1, only signalling radio bearers have been established. The SS transmits a RADIO BEARER SETUP message to the UE after it sets up L1 including the start of tx/rx. This message requests the establishment of RABs for carrying the traffic of the speech call. After the UE receives this message, it configures them and establishes a radio bearer. Finally the UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC. Then the UE and the SS enters the communicating state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	This message do not contain IE "integrity check info" and "integrity protection mode info"
2	→		RADIO BEARER SETUP COMPLETE	This message do not contain "integrity check info" and "Uplink integrity activation info
3				To confirm the communication.

Specific Message Contents

For RADIO BEARER SETUP in step 1, using the message sub-type indicated as "Speech in CS" or "Non-speech in CS" found in Annex A.

8.2.1.1.5 Test requirement

After step 2 the UE shall communicate with the SS on the radio bearer for its implementation.

8.2.1.2 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: Success (Effected Data integrity protection algorithm)

8.2.1.2.1 Definition

8.2.1.2.2 Conformance requirement

The UE shall correctly set up a radio bearer according to a RADIO BEARER SETUP message, which applies data integrity function, and then communicate with the UTRAN for its implementation.

Reference

3GPP TS 25.331 clause 8.2.1, 8.5.11.

8.2.1.2.3 Test purpose

To confirm that the UE establishes a new radio bearer according to a RADIO BEARER SETUP message which contains IE “Integrity check info” and IE “Integrity protection mode info” received from the SS.

8.2.1.2.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH_DCH (state 6-5) as specified in clause 7.4 of TS 34.108 and data integrity algorithm is not applied

Test Procedure

The UE is in the CELL_DCH state, after the test operator is prompted to make an out-going data call. Before step 1, only signalling radio bearers have been established. The SS transmits a RADIO BEARER SETUP message which is including IE “integrity check info” and “integrity protection mode info” to the UE after it sets up L1 including the start of tx/rx. This message requests the establishment of RABs for carrying the traffic of the call. After the UE receives this message, it configures them and establishes a radio bearer. Finally the UE transmits a RADIO BEARER SETUP COMPLETE message which is including IE “integrity check info” using AM RLC. Then the UE and the SS enters the communicating state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	This message contain IE “integrity check info” and “integrity protection mode info”
2	→		RADIO BEARER SETUP COMPLETE	This message contain “integrity check info”
3				To confirm the communication.

Specific Message Contents

For RADIO BEARER SETUP in step 1, using the message sub-types indicated as “Speech in CS” or “Non-speech in CS” as found in Annex A.

RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is identical with the following exceptions:

Information Element	Value/remark
Integrity check info	
- Message authentication code	Bit string (32) MAC-I See TS 33.102
- RRC Message sequence number	0
Integrity protection mode info	Present
- Integrity protection mode command	“Start”
- Downlink integrity protection activation info	Not present (It is needed only when the IE “Integrity protection mode command" has the value “modify”.)
- integrity protection algorithm	UIA1
- integrity protection initialisation number	Bit string (32) FRESH See TS 33.102

RADIO BEARER SETUP COMPLETE

Information Element	Value/remark
Integrity check info	
- Message authentication code	Not checked(MAC-I See TS 33.102)
- RRC Message sequence number	Not checked
Uplink Integrity protection activation info	Not checked
Hyper Frame Number	Not checked

8.2.1.2.5 Test requirement

After step 2 the UE shall communicate with the SS on the radio bearer for its implementation. This can be verified by the correct reproduction of the u-plane data transmitted and received between the test operator and SS.

8.2.1.3 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: Failure (Unsupported configuration)

8.2.1.3.1 Definition

8.2.1.3.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a RADIO BEARER SETUP message which includes unsupported configuration parameters and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to “configuration unsupported” in IE “failure cause”.

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.3.3 Test purpose

To confirm that the UE keeps its configuration and transmits a RADIO BEARER SETUP FAILURE message in case of receiving a RADIO BEARER SETUP message which includes parameters of its unsupported configuration.

8.2.1.3.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH_DCH (state 6-5) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER SETUP message as the frequency cannot be supported by the UE. After the UE receives this message, it transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to “configuration unsupported” in IE “failure cause”.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	Including the unsupported configuration for the UE.
2	→		RADIO BEARER SETUP FAILURE	The UE does not change the configuration.

Specific Message Contents

RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is indicated as “Speech in CS” or “Non-speech in CS“ as found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	 16383. Not Present.

RADIO BEARER SETUP FAILURE

Information Element	Value/remark
Message Type Failure cause Other information element	 Configuration unsupported Not checked

8.2.1.3.5 Test requirement

After step 1 the UE shall keep its configuration and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to “configuration unsupported” in IE “failure cause”.

8.2.1.4 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: Failure (Physical channel Failure and successful reversion to old configuration)

8.2.1.4.1 Definition

8.2.1.4.2 Conformance requirement

The UE shall revert to the old configuration when the UE fails to configure the new radio bearer by the T312 expiry and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to “physical channel failure” in IE “failure cause”.

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.4.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a RADIO BEARER SETUP FAILURE message when the UE fails to configure the new radio bearer following detection of physical channel failure after T312 expiry.

8.2.1.4.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH_DCH (state 6-5) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER SETUP message to the UE and does not configure the new radio bearer. Then after T312 expiry, the UE reverts to the old configuration and transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	The SS does not configure the new radio bearer stated in the message.
2				The UE does not configure the new radio bearer and reverts to the old configuration.
3	→		RADIO BEARER SETUP FAILURE	UE shall transmit this message using the old RRC signalling bearer operating in RLC-AM mode.

Specific Message Contents

RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is indicated as "Speech in CS" or "Non-speech in CS" as found in Annex A.

RADIO BEARER SETUP FAILURE

Information Element	Value/remark
Message Type	
Failure cause	Physical channel failure
Other information element	Not checked

8.2.1.4.5 Test requirement

After step 2 the UE shall revert to the old configuration and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

8.2.1.5 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: Failure (Physical channel Failure and reversion failure)

8.2.1.5.1 Definition

8.2.1.5.2 Conformance requirement

The UE shall perform a cell update procedure when the UE fails to revert to the old configuration after the detection of physical channel failure in the radio bearer establishment procedure. After the UE complete cell update procedure, the UE transmit RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.5.3 Test purpose

To confirm that UE transmits RADIO BEARER SETUP FAILURE message after it completes a cell update procedure.

8.2.1.5.4 Method of test

Initial Condition

System Simulator: 1cell

UE: CS-DCCH_DCH (state 6-5) as specified in clause 7.4 of TS 34.108 in cell No.1.

Test Procedure

The UE is in the CELL_DCH state in cell 1. SS transmits a RADIO BEARER SETUP message to the UE. After transmitting the RADIO BEARER SETUP message, the SS shall not configure L1 in accordance to the settings in the message. The UE recognize that it cannot configure the new radio bearer and wants to revert to the old configuration, but the UE cannot revert to the old configuration because the SS shall not use the old configuration. The UE transmit CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "radio link failure". The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC and subsequently transmits RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value of IE "failure cause" to " physical channel failure".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	
2				The SS does not configure the dedicated physical channel in accordance with the RADIO BEARER SETUP message and shall not use old configuration.
3	→		CELL UPDATE	The value "radio link failure" shall be set in IE "Cell update cause".
4	←		CELL UPDATE CONFIRM	This message include IE "Physical channel information elements".
5				The SS configure the dedicated physical channel according to the IE "Physical channel information elements" included in the CELL UPDATE CONFIRM message.
6	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
7	→		RADIO BEARER SETUP FAILURE	The IE "failure cause" shall be set to "physical channel failure"

Specific Message Contents

RADIO BEARER SETUP (Step 1)

The contents of RADIO BEARER SETUP message in this test case is indicated as "Speech in CS" or "Non-speech in CS" as found in Annex A

CELL UPDATE (Step 3)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	"radio link failure"

CELL UPDATE CONFIRM (Step 4)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 3
RRC State indicator	CELL_DCH
Frequency info	
- UARFCN uplink(Nu)	Reference to TS34.108 clause 5.1 Test frequencies
- UARFCN downlink(Nd)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	33dBm
CHOICE Mode	FDD
Downlink information for each radio links	
- Primary CPICH info	
- Primary scrambling code	100
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0 chips
- Power offset $P_{Pilot-DPDCH}$	TBD
- Secondary CPICH info	Not Present
- DL channelisation code	
- Secondary scrambling code	2
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change	No change
- TPC combination index	0
- SSDT Cell Identity	-a
- Closed loop timing adjustment mode	Not Present
- Secondary CCPCH info	Not Present
- TFCS	Not Present
- FACH/PCH information	Not Present
- References to system information blocks	Not Present

RADIO BEARER SETUP FAILURE (Step 7)

Information Element	Value/remark
Message Type	"RADIO BEARER SETUP FAILURE"
Failure cause	"physical channel failure"
Other information element	Not checked

8.2.1.5.5 Test requirement

After step 2 the UE shall transmit CELL UPDATE message on the CCCH with IE "Cell update cause" set to "radio link failure"..

After step 5 the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to " physical channel failure".

8.2.1.6 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: Failure (Incompatible simultaneous reconfiguration)

8.2.1.6.1 Definition

8.2.1.6.2 Conformance requirement

If the UE receives a RADIO BEARER SETUP message whilst reconfiguring due to a radio bearer message other than RADIO BEARER SETUP, then it shall keep its configuration as if the RADIO BEARER SETUP message had not been received.

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.6.3 Test purpose

To confirm that if the UE receives a RADIO BEARER SETUP message whilst reconfiguring due to a radio bearer message other than RADIO BEARER SETUP, it shall keep its configuration as if the RADIO BEARER SETUP message had not been received and complete the reconfiguration according to the previously received message.

8.2.1.6.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH+DTCH_DCH (state 6-9) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a RADIO BEARER SETUP message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the RADIO BEARER SETUP message, the UE shall keep the configuration as if it had not received the RADIO BEARER SETUP message and shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS receives the RADIO BEARER SETUP FAILURE message, the UE reconfigures the new physical channel parameters and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	Including IE "Uplink DPCH info"
2	←		RADIO BEARER SETUP	The SS send this message before the expiry of activation time specified in the message of step 1.
3	→		RADIO BEARER SETUP FAILURE	The UE does not change the configuration because of receiving the RADIO BEARER SETUP message.
4	→		RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.

Specific Message Contents

For RADIO BEARER RECONFIGURATION in step 1, use the message sub-type indicated as "Speech in CS" found in Annex A, with the exception of the following Information Elements:

RADIO BEARER RECONFIGURATION (Step 1)

Information Element	Value/remark
Activation Time	[256+Current CFN-[current CFN mod 8 + 8]]MOD 256

RADIO BEARER SETUP (Step 2)

The contents of RADIO BEARER SETUP message in this test case is indicated as “Speech in CS” or “Non-speech in CS” as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time	Not Present

RADIO BEARER SETUP FAILURE

Information Element	Value/remark
Message Type	
Failure case	Incompatible simultaneous reconfiguration
Other information element	Not checked

8.2.1.6.5 Test requirement

After step 1 The SS transmits a RADIO BEARER SETUP message before the expiry of the activation time specified in the message of step 1.

After step 2 the UE shall keep its configuration as if the UE had not received the RADIO BEARER SETUP message and shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE “failure cause” set to “Incompatible simultaneous reconfiguration”.

After step 4 the UE communicates with the SS on the DCCH and DTCH using the new physical channel parameters reconfigured as a result of the RADIO BEARER RECONFIGURATION message.

8.2.1.7 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: Failure (Invalid message reception and Invalid configuration)

8.2.1.7.1 Definition

8.2.1.7.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a RADIO BEARER SETUP message, which includes the undefined value in the mandatory IE “UTRAN cycle length coefficient” and criticality is defined as “Reject”. Then it transmits a RADIO BEARER SETUP FAILURE message which is set to “protocol error” in IE “failure cause” and is set to “Information element value not comprehended” in IE “Protocol error cause”. The UE shall keep existing configuration before reception of a RADIO BEARER SETUP message which includes some IEs set to invalid value, and then the UE shall transmit RADIO BEARER SETUP FAILURE including IE “failure cause“ set to “invalid configuration”.

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.7.3 Test purpose

To confirm that the UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER SETUP message which indicates the undefined value in the mandatory IE "UTRAN DRX cycle length coefficient" whose criticality is defined as "Reject".

To confirm that the UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER SETUP message including some IEs set to invalid value.

8.2.1.7.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH_DCH (state 6-5) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER SETUP message to the UE which indicates a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient" whose criticality is defined as "Reject". The UE keeps the old configuration and transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "protocol error" in IE "failure cause", and is set to "Information element value not comprehended" in IE "Protocol error cause". The UE keeps initial configuration when SS transmits RADIO BEARER SETUP message including some IEs set to invalid value. The UE transmit RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value " invalid configuration" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	
2	→		RADIO BEARER SETUP FAILURE	The UE does not change the configuration.
3	←		RADIO BEARER SETUP	This message includes IE set to invalid value.
4				The UE does not change the configuration.
5	→		RADIO BEARER SETUP FAILURE	The IE "failure cause" shall be set to "invalid configuration"

Specific Message Contents

RADIO BEARER SETUP (Step 1)

The contents of RADIO BEARER SETUP message in this test case is identical as "Speech in CS" or "Non-speech in CS" as found in Annex A with the following exceptions:

Information Element	Value/remark
UTRAN DRX cycle length coefficient	Undefined value

RADIO BEARER SETUP FAILURE (Step 2)

Information Element	Value/remark
Message Type	
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Information element value not comprehended
Other information element	Not checked

RADIO BEARER SETUP (Step 3)

The contents of RADIO BEARER SETUP message in this test case is identical as “Speech in CS” or “Non-speech in CS” as found in Annex A with the following exceptions:

Information Element	Value/remark
Added or Reconfigured UL TrCH information - Transport channel identity - TFS - Dynamic Transport format information - RLC size - CHOICE Logical Channel list - Explicit List - RB identity	 1 (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set 2

RADIO BEARER SETUP FAILURE (Step 5)

Information Element	Value/remark
Message Type Failure cause Other information element	 Invalid configuration Not checked

8.2.1.7.5 Test requirement

After step 1 the UE shall keep its old configuration and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to “protocol error” in IE “failure cause” and set to “Information element value not comprehended” in IE “Protocol error cause”.

After step 3 the UE shall keep its old configuration

After step 4 the UE shall transmit RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value ” invalid configuration” to IE “failure cause”.

8.2.1.8 Radio Bearer Establishment for transition from CELL_DCH to CELL_FACH: Success

8.2.1.8.1 Definition

8.2.1.8.2 Conformance requirement

The UE shall correctly set up a radio bearer according to a RADIO BEARER SETUP message and communicate with the UTRAN for its implementation.

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.8.3 Test purpose

To confirm that the UE establishes a new radio bearer according to a RADIO BEARER SETUP message received from the SS.

8.2.1.8.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH_DCH (state 6-7) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state, after the test operator is asked to initiate a packet-switched data call. The SS transmits a RADIO BEARER SETUP message to the UE after it sets up L1. After the UE receives this message, it configures them and establishes a radio bearer. Finally the UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC. Then the UE and the SS enters the communicating state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	SS requests test operator to make an outgoing packet-switched data call.
2				The UE select PRACH and S-CCPCH using SIB5 or SIB6 after entering CELL FACH state.
3	→		RADIO BEARER SETUP COMPLETE	
4				To confirm the communication between UE and SS, based on the exchange of packets.

Specific Message Contents

For RADIO BEARER SETUP message in step 1, use the message sub-type indicated as “Packet to CELL_FACH from CELL_DCH in PS” found in Annex A.

8.2.1.8.5 Test requirement

After step 3 the UE shall communicate with the SS on the radio bearer for its implementation.

8.2.1.9 Radio Bearer Establishment for transition from CELL_DCH to CELL_FACH: Success (Cell re-selection)

8.2.1.9.1 Definition

8.2.1.9.2 Conformance requirement

The UE shall initiate the cell update procedure when the UE performs cell reselection during a radio bearer establishment procedure. After the UE completes cell update procedure, the UE shall continue to perform the radio bearer establishment procedure and correctly establish the radio bearer.

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.9.3 Test purpose

To confirm that the UE transmit RADIO BEARER SETUP COMPLETE message in cell 2 after it completes a cell update procedure.

8.2.1.9.4 Method of test

Initial Condition

System Simulator: 2 cells- Cell 1 is active, Cell 2 is inactive

UE: PS-DCCH_DCH (state 6-7) as specified in clause 7.4 of TS 34.108

Test Procedure

Table 8.2.1.9

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.1.9 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in the CELL_DCH state in cell 1. The SS configures its downlink transmission power settings according to columns "T1" in Table 8.2.1.9 and broadcast BCCH on the primary CCPCH in cell 2. The SS transmits a RADIO BEARER SETUP message as the transition occurs from CELL_DCH to CELL_FACH, and then the UE shall initiate the cell update procedure in cell 2. The UE transmit CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and subsequently transmit RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.1.9.
2			BCCH	The SS starts to broadcast BCCH on the primary CCPCH in cell 2.
3	←		RADIO BEARER SETUP	Assigned the transition from CELL_DCH to CELL_FACH
4	→		CELL UPDATE	The value "cell reselection" set in IE "Cell update cause".
5	←		CELL UPDATE CONFIRM	This message include IE "new U-RNTI" and IE "new C-RNTI"". In the CELL_FACH state
6	→		UTRAN MOBILITY INFORMATION CONFIRM	
7	→		RADIO BEARER SETUP COMPLETE	

Specific Message Contents

RADIO BEARER SETUP (Step 3)

The contents of RADIO BEARER SETUP message in this test case is identical as "Packet to CELL_FACH from CELL_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CPICH info - Primary scrambling code	 150

CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Assigned previously in cell 1 Assigned previously in cell 1 "cell reselection"

CELL UPDATE CONFIRM (Step 5)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI New U-RNTI - SRNC Identity - S-RNTI New C-RNTI	Same as CELL UPDATE message in step 4 '0000 0000 0000 0001' Different from previous S-RNTI Different from previous C-RNTI

8.2.1.9.5 Test requirement

After step 3 the UE shall transmit CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection"..

After step 5 the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

After step 7 the UE communicate with the SS on the DCCH and DTCH, using the common physical channel.

8.2.1.10 Radio Bearer Establishment for transition from CELL_FACH to CELL_DCH: Success

8.2.1.10.1 Definition

8.2.1.10.2 Conformance requirement

The UE shall correctly set up a radio bearer according to a RADIO BEARER SETUP message and communicate with the UTRAN for its implementation.

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.10.3 Test purpose

To confirm that the UE establishes a new radio bearer according to a RADIO BEARER SETUP message received from the SS.

8.2.1.10.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH_FACH (state 6-8) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state, after SS prompts the test operator to initiate a packet-switched data call. The SS transmits a RADIO BEARER SETUP message to the UE after it sets up L1 including the start of tx/rx. After the UE receives this message, it configures them and establishes the required radio bearers. Finally the UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC. Then the UE and the SS enters the communicating state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	
2	→		RADIO BEARER SETUP COMPLETE	
3				To confirm the communication

Specific Message Contents

RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is identical the message sub-type indicated by "Packet to CELL_DCH from CELL_FACH in PS" in Annex A.

8.2.1.10.5 Test requirement

After step2 the UE shall communicate with the SS using the radio bearer indicated in RADIO BEARER SETUP message. Particularly, SS should be able to receive packet data using a terminal equipment (TE) attached to the UE.

8.2.1.11 Radio Bearer Establishment for transition from CELL_FACH to CELL_DCH: Failure (Unsupported configuration)

8.2.1.11.1 Definition

8.2.1.11.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a RADIO BEARER SETUP message which includes an unsupported configuration and then transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, which sets value "configuration unsupported" in IE "failure cause".

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.11.3 Test purpose

To confirm that the UE keeps its configuration and transmits a RADIO BEARER SETUP FAILURE message in case of it receiving a RADIO BEARER SETUP message, which includes parameters of an unsupported configuration.

8.2.1.11.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH_FACH (state 6-6) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER SETUP message with a stated frequency that cannot be supported by the UE. After the UE receives this message, it shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC setting value “configuration unsupported” in IE ”failure cause”.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	This message includes an unsupported configuration for the UE.
2	→		RADIO BEARER SETUP FAILURE	The UE shall transmit this message using RLC-AM mode and do not change the current configuration.

Specific Message Contents

RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is identical as “Packet to CELL_DCH from CELL_FACH in PS” as found in Annex A:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	 0 Not Present

RADIO BEARER SETUP FAILURE

Information Element	Value/remark
Message Type Failure cause Other information element	 Configuration unsupported Not checked

8.2.1.11.5 Test requirement

After step 1 the UE shall keep its configuration and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to “configuration unsupported” in IE “failure cause”.

8.2.1.12 Radio Bearer Establishment for transition from CELL_FACH to CELL_DCH: Failure (Physical channel Failure and successful reversion to old configuration)

8.2.1.12.1 Definition

8.2.1.12.2 Conformance requirement

The UE shall attempt to revert to the old configuration when the UE fails to configure the new radio bearer by the T312 expiry. It shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC containing value "physical channel failure" in IE "failure cause".

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.12.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a RADIO BEARER SETUP FAILURE message when the UE fails to configure the new radio bearer when it detects physical channel failure, followed by the T312 expiry.

8.2.1.12.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH_FACH (state 6-8) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER SETUP message to the UE and does not configure the new radio bearer. After T312 expiry, the UE shall revert to the old configuration and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC. The content of the message shall indicate "physical channel failure" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	The SS does not configure a new radio bearer.
2				The UE does not configure a new radio bearer but reverts to the old configuration.
3		→	RADIO BEARER SETUP FAILURE	

Specific Message Contents

RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is identical the message sub-type indicated by "Packet to CELL_DCH from CELL_FACH in PS" in Annex A.

RADIO BEARER SETUP FAILURE

Information Element	Value/remark
Message Type	
Failure cause	Physical channel failure
Other information element	Not checked

8.2.1.12.5 Test requirement

After step 2 the UE shall revert to the old configuration and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

8.2.1.13 Radio Bearer Establishment for transition from CELL_FACH to CELL_DCH: Failure (Physical channel Failure and reversion failure)

8.2.1.13.1 Definition

8.2.1.13.2 Conformance requirement

The UE shall perform a cell update procedure when the UE selects another cell after the detection of physical channel failure in the radio bearer establishment procedure. After the UE completes cell update procedure, the UE transmits RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which set value to IE "failure cause" to "physical channel failure".

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.13.3 Test purpose

To confirm that the UE transmit RADIO BEARER SETUP FAILURE message after it completes a cell update procedure.

8.2.1.13.4 Method of test

Initial Condition

System Simulator: 2 cells- Cell 1 is active, Cell 2 is inactive

UE: PS-DCCH_FACH(state 6-8) as specified in clause 7.4 of TS 34.108 in cell 1.

Test Procedure

Table 8.2.1.13

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.1.13 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in the CELL_FACH state in cell 1. The SS transmits a RADIO BEARER SETUP message to the UE. After transmitting the RADIO BEARER SETUP message, the SS shall not configure L1 in accordance to the settings in the message. At the same time, the SS configures its downlink transmission power settings according to columns "T1" in Table 8.2.1.13 and begins to broadcast the BCCH on the primary CCPCH in a cell 2. The UE recognize that it cannot configure the new radio bearer and wants to revert to the old configuration. The UE perform cell re-selection and transmit CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and subsequently transmit RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value " physical channel failure" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	
2				The SS does not configure the new radio bearer in accordance with the settings in the message and applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.1.13.
3	←		BCCH	The SS starts to transmit the BCCH on the primary CCPCH in cell 2.
4				The UE select the cell 2.
5	→		CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
6	←		CELL UPDATE CONFIRM	This message include IE "new U-RNTI" and IE "new C-RNTI"".
7	→		UTRAN MOBILITY INFORMATION CONFIRM	
8	→		RADIO BEARER SETUP FAILURE	The IE "failure cause" shall be set to "physical channel failure"

Specific Message Contents

RADIO BEARER SETUP (Step 1)

The contents of RADIO BEARER SETUP message in this test case is identical to the message sub-type "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A.

CELL UPDATE (Step 5)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Assigned previously in cell 1
- S-RNTI	Assigned previously in cell 1
Cell Update Cause	"cell reselection"

CELL UPDATE CONFIRM (Step 7)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 5
New U-RNTI	
- SRNC Identity	'0000 0000 0000 0001'
- S-RNTI	Different from previous S-RNTI
New C-RNTI	Different from previous C-RNTI

RADIO BEARER SETUP FAILURE (Step 8)

Information Element	Value/remark
Message Type	"RADIO BEARER RECONFIGURATION FAILURE"
Failure cause	"physical channel failure"
Other information element	Not checked

8.2.1.13.5 Test requirement

After step 4 the UE shall transmit CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".

After step 8 the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 7 the UE shall transmit RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to " physical channel failure".

8.2.1.14 Radio Bearer Establishment for transition from CELL_FACH to CELL_DCH: Failure (Incompatible simultaneous reconfiguration)

8.2.1.14.1 Definition

8.2.1.14.2 Conformance requirement

If the UE receives a RADIO BEARER SETUP message whilst reconfiguring due to a radio bearer message other than RADIO BEARER SETUP, it shall keep its configuration as if the RADIO BEARER SETUP message had not been received.

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.14.3 Test purpose

To confirm that if the UE receives a RADIO BEARER SETUP message whilst reconfiguring due to a radio bearer message other than RADIO BEARER SETUP, it shall keep its configuration as if the RADIO BEARER SETUP message had not been received and complete the reconfiguration according to the previously received message.

8.2.1.14.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCT+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a RADIO BEARER SETUP message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the RADIO BEARER SETUP message, the UE shall keep the configuration as if it had not received the RADIO BEARER SETUP message and shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS receives the RADIO BEARER SETUP FAILURE message, the UE reconfigures the new physical channel parameters and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	Including IE "Uplink DPCH info"
2	←		RADIO BEARER SETUP	The SS send this message before the expiry of activation time specified in the message of step 1.
3	→		RADIO BEAER SETUP FAILURE	The UE does not change the configuration because of receiving the RADIO BEARER SETUP message, and transmit this message on its uplink DCCH using the same RLC-AM mode radio bearer before step 1.
4	→		RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

The contents of RADIO BEARER RECONFIGURATION message in this test case are identical as "Packet to CELL_DCH from CELL_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8]

RADIO BEARER SETUP (for Step 2)

For this message, use the message sub-type entitled "Packet to CELL_DCH from CELL_FACH in PS" in the default message content. Information element(s) to be changed are listed below:

Information Element	Value/remark
Activation Time	Not present

RADIO BEARER SETUP FAILURE

Information Element	Value/remark
Message Type	
Failure cause	Incompatible simultaneous reconfiguration
Other information element	Not checked

8.2.1.14.5 Test requirement

After step 1 The SS transmits a RADIO BEARER SETUP message before the expiry of the activation time specified in the message of step 1.

After step 2 the UE shall keep its configuration as if the UE had not received the RADIO BEARER SETUP message and shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 4 the UE communicates with the SS on the DCCH and DTCH using the new physical channel parameters reconfigured as a result of the RADIO BEARER RECONFIGURATION message.

8.2.1.15 Radio Bearer Establishment for transition from CELL_FACH to CELL_DCH: Failure (Invalid message reception and Invalid configuration)

8.2.1.15.1 Definition

8.2.1.15.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a RADIO BEARER SETUP message, which includes undefined value in the mandatory IE "UTRAN DRX cycle length coefficient" having criticality defined as "Reject". It shall transmit a RADIO BEARER SETUP FAILURE message which set value "protocol error" in IE "failure cause" and also value "Information element value not comprehended" in IE " Protocol error cause". The UE shall keep existing configuration before reception of a RADIO BEARER SETUP message when the RADIO BEARER SETUP message include some IEs set to invalid value, and then the UE shall transmit RADIO BEARER SETUP FAILURE including IE "failure cause" set to "invalid configuration".

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.15.3 Test purpose

To confirm that the UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER SETUP message, with an undefined value in the mandatory IE "UTRAN DRX cycle length coefficient" and having criticality defined as "Reject".

To confirm that the UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER SETUP message including some IEs set to invalid value.

8.2.1.15.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH_FACH (state 6-8) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in CELL_FACH state. The SS transmits a RADIO BEARER SETUP message to the UE which includes an undefined value in the mandatory IE "UTRAN DRX cycle length coefficient" with criticality defined as "Reject". The UE keeps the old configuration and transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC. This message shall specify "protocol error" in IE "failure cause" and also set the value "Information element value not comprehended" in IE "Protocol error cause". The UE keeps initial configuration when SS transmits RADIO BEARER SETUP message including some IEs set to invalid value. The UE transmit RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value " invalid configuration" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	
2	→		RADIO BEARER SETUP FAILURE	The UE does not change the configuration.
3	←		RADIO BEARER SETUP	This message includes IE set to invalid value.
4				The UE does not change the configuration.
5	→		RADIO BEARER SETUP FAILURE	The IE "failure cause" shall be set to "invalid configuration

Specific Message Contents

RADIO BEARER SETUP (Step 1)

The contents of RADIO BEARER SETUP message in this test case is identical as "Packet to CELL_DCH from CELL_FACH in PS" as found in Annex with the following exceptions:

Information Element	Value/remark
UTRAN DRX cycle length coefficient	Undefined value

RADIO BEARER SETUP FAILURE (Step 2)

Information Element	Value/remark
Message Type	
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Information element value not comprehended
Other information element	Not checked

RADIO BEARER SETUP (Step 3)

The contents of RADIO BEARER SETUP message in this test case is identical as "Packet to CELL_DCH from CELL_FACH in PS" as found in Annex with the following exceptions:

Added or Reconfigured UL TrCH information	
- Transport channel identity	1
- TFS	
- Dynamic Transport format information	(This IE is repeated for TFI number)
- RLC size	Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list	
- Explicit List	
- RB identity	2

RADIO BEARER SETUP FAILURE (Step 5)

Information Element	Value/remark
Message Type	
Failure cause	Invalid configuration
Other information element	Not checked

8.2.1.15.5 Test requirement

After step 1 the UE shall keep its old configuration and transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC. The message shall indicate the reason of failure as "protocol error" in IE "failure cause" and set the value "Information element value not comprehended" in IE "Protocol error cause".

After step 3 the UE shall keep its old configuration

After step 4 the UE shall transmit RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value of IE "failure cause" to "invalid configuration".

8.2.1.16 Radio Bearer Establishment for transition from CELL_FACH to CELL_FACH: Success

8.2.1.16.1 Definition

8.2.1.16.2 Conformance requirement

The UE shall correctly set up a radio bearer according to a RADIO BEARER SETUP message and communicate with the UTRAN for its implementation.

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.16.3 Test purpose

To confirm that the UE establishes a new radio bearer according to a RADIO BEARER SETUP message received from the SS.

8.2.1.16.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH_FACH (state 6-8) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state, after the test operator is being prompted to make an outgoing packet-switched call. The SS transmits a RADIO BEARER SETUP message to the UE after it sets up L1 including the start of tx/rx. After the UE receives this message, it configures them and establishes a radio bearer. Finally the UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC. Then the UE and the SS enters the communicating state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	
2				The UE select PRACH and S-CCPCH using SIB5 or SIB6.
3	→		RADIO BEARER SETUP COMPLETE	
4				To confirm the proper establishment of the new radio bearer by checking the packet data exchanged between the SS and a TE attached to the UE.

Specific Message Contents

RADIO BEARER SETUP

For this message, use the message sub-type entitled “Packet to CELL_FACH from CELL_FACH in PS” in Annex A.

8.2.1.16.5 Test requirement

After step 3 the UE shall communicate with the SS using the new radio bearer , this can be confirmed by the exchange of packet data between a terminal equipment (TE) attached to the UE and the SS.

8.2.1.17 Radio Bearer Establishment for transition from CELL_DCH to CELL_DCH: success (Subsequently received)

8.2.1.17.1 Definition

8.2.1.17.2 Conformance requirement

If the UE receives a RADIO BEARER SETUP message before the UE configures the radio bearer according to the previous RADIO BEARER SETUP message, the UE shall ignore the new RADIO BEARER SETUP message and configure according to the previous RADIO BEARER SETUP message. Finally, the UE shall transmit RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.17.3 Test purpose

To confirm that if the UE receives a new RADIO BEARER SETUP message before the UE configures the radio bearer according to a previous RADIO BEARER SETUP message, it ignore the new RADIO BEARER SETUP message and configures according to the previous RADIO BEARER SETUP message received.

8.2.1.17.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH_DCH (state 6-5) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. SS transmits a RADIO BEARER SETUP message to the UE before the UE configures the radio bearer according to the RADIO BEARER SETUP message prior to this new message. The UE ignores the new RADIO BEARER SETUP message and configures according to the former RADIO BEARER SETUP message. On completion of radio bearer configuration, the UE shall transmit RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	Including IE "Uplink DPCH info"
2	←		RADIO BEARER SETUP	SS send this message before the expiry of activation time specified in RADIO BEARER SETUP message of step 1.
3	→		RADIO BEARER SETUP COMPLETE	The UE ignores the RADIO BEARER SETUP message in step 2 and confirms configuration according to the RADIO BEARER SETUP message in step 1.

Specific Message Contents

For RADIO BEARER SETUP in step 1, use the message sub-type indicated as "The other of speech in CS" found in Annex A, with the exception of the following Information Elements:

RADIO BEARER SETUP (Step 1)

Information Element	Value/remark
Activation Time	[256+Current CFN-[current CFN mod 8 + 8]]MOD 256

RADIO BEARER SETUP (Step 2)

For RADIO BEARER SETUP in step 2, use the message sub-type indicated as "The other of speech in CS" found in Annex A, with the exception of the following

Information Element	Value/remark
Activation Time	Not Present

8.2.1.17.5 Test requirement

After step 3 the UE shall communicate with the SS on the radio bearer specified in the RADIO BEARER SETUP message in step 1.

8.2.1.18 Radio Bearer Establishment for transition from CELL_FACH to CELL_DCH: Success (Subsequently received)

8.2.1.18.1 Definition

8.2.1.18.2 Conformance requirement

If the UE receives a RADIO BEARER SETUP message before the UE configures the radio bearer according to the previous RADIO BEARER SETUP message, the UE shall ignore the new RADIO BEARER SETUP message and configure according to the previous RADIO BEARER SETUP message. Finally, the UE shall transmit RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.1

8.2.1.18.3 Test purpose

To confirm that if the UE receives a new RADIO BEARER SETUP message before the UE configures the radio bearer according to a previous RADIO BEARER SETUP message, it ignore the new RADIO BEARER SETUP message and configures according to the previous RADIO BEARER SETUP message received.

8.2.1.18.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH_FACH (state 6-8) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER SETUP message, requesting the UE to setup radio bearers using DPCH physical channels. The activation time of this event is specified to be 255 frames from the SS's current CFN. However, SS sends another RADIO BEARER SETUP message before 255 frames has lapsed. The UE ignores the new RADIO BEARER SETUP message and configures according to the former RADIO BEARER SETUP message. On completion of radio bearer configuration, the UE shall transmit RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	Including IE "Uplink DPCH info"
2	←		RADIO BEARER SETUP	SS send this message before the expiry of activation time specified in RADIO BEARER SETUP message of step 1.
3	→		RADIO BEAER SETUP COMPLETE	The UE ignores the RADIO BEARER SETUP message in step 2 and confirms configuration according to the RADIO BEARER SETUP message in step 1.

Specific Message Contents

RADIO BEARER SETUP (Step 1)

For this message, use the message sub-type entitled "Packet to CELL_DCH from CELL_FACH in PS" in Annex A

RADIO BEARER SETUP (for Step 2)

For this message, use the message sub-type entitled "Packet to CELL_DCH from CELL_FACH in PS" in Annex A. Information element(s) to be changed are listed below:

Information Element	Value/remark
Activation Time	[256+Current CFN-[current CFN mod 8 + 8]]MOD 256

8.2.1.18.5 Test requirement

After step 2 the UE shall keep its configuration and transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

After step 3 the UE shall communicate with the SS on the radio bearer specified in the RADIO BEARER SETUP message in step 1.

8.2.1.19 Radio Bearer Establishment from CELL_DCH to CELL_PCH: Success

8.2.1.19.1 Definition

8.2.1.19.2 Conformance requirement

The UE shall configure radio bearers and transition from CELL_DCH state to CELL_PCH state according to the received RADIO BEARER SETUP message.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.1.19.3 Test purpose

To conform that the UE transmits a RADIO BEARER SETUP COMPLETE message and enters CELL_PCH state after it received a RADIO BEARER SETUP message from SS and configured new radio bearers.

8.2.1.19.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH_DCH (state 6-7) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER SETUP message. The UE transmits RADIO BEARER SETUP COMPLETE message to the UE using AM RLC and enters into CELL_PCH state. The SS transmits a PAGING TYPE 1 message, causing the UE to enter CELL_FACH state and the UE shall transmit CELL UPDATE message on uplink CCCH with IE “Cell update cause“ set to “paging response”.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	
2		→	RADIO BEARER SETUP COMPLETE	
3				Configuration of Radio Bearer after state transition.
4		←	PAGING TYPE 1	The SS transmits this message included a matched identity.
5		→	CELL UPDATE	The UE is in CELL_FACH state.

Specific Message Contents

RADIO BEARER SETUP (Step 1)

Use the same message sub-type titled “Packet to CELL_FACH from CELL_DCH in PS“ in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL PCH

PAGING TYPE 1 (Step 4)

Use the same message sub-type titled “TM (SMS in PS)“ in Annex A with following exceptions:

Information Element	Value/remark
Paging record list	
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	Previously assigned SRNC identity in Initial Condition
- S-RNTI	Previously assigned S-RNTI in Initial Condition

8.2.1.19.5 Test requirement

After step 1, the UE transmits RADIO BEARER SETUP COMPLETE message to the UE on uplink DCCH using AM RLC.

After step 4, the UE shall transmit CELL UPDATE message on the CCCH.

8.2.1.20 Radio Bearer Establishment from CELL_DCH to URA_PCH: Success

8.2.1.20.1 Definition

8.2.1.20.2 Conformance requirement

The UE shall configure radio bearers and transition from CELL_DCH state to URA_PCH state according to receiving RADIO BEARER SETUP message.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.1.20.3 Test purpose

To conform that the UE transmit a RADIO BEARER SETUP COMPLETE message and enters URA_PCH state after it received a RADIO BEARER SETUP message from SS and configured the new radio bearers.

8.2.1.20.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH_DCH (state 6-7) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER SETUP message. The UE transmits RADIO BEARER SETUP COMPLETE message to the UE using AM RLC and enters URA_PCH state. The SS transmits a PAGING TYPE 1 message, causing the UE to enter CELL_FACH state and the UE shall transmit CELL UPDATE message on uplink CCCH with IE “Cell update cause“ set to “paging response”.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	
2	→		RADIO BEARER SETUP COMPLETE	
3				Configuration of Radio Bearer after state transition.
4	←		PAGING TYPE 1	The SS transmits this message included a matched identity.
5	→		CELL UPDATE	The UE is in CELL_FACH state.

Specific Message Contents

RADIO BEARER SETUP (Step 1)

Use the same message sub-type titled "Packet to CELL_FACH from CELL_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA PCH

PAGING TYPE 1 (Step 4)

Use the same message sub-type titled "TM (SMS in PS)" in Annex A with following exceptions:

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	 UTRAN identity Previously assigned SRNC identity in Initial Condition Previously assigned S-RNTI in Initial Condition

8.2.1.20.5 Test requirement

After step 1, the UE transmits RADIO BEARER SETUP COMPLETE message to the UE on uplink DCCH using AM RLC.

After step 3, the UE shall transmit CELL UPDATE message on the CCCH.

8.2.2 Radio Bearer Reconfiguration

8.2.2.1 Radio Bearer Reconfiguration (Hard handover) from CELL_DCH to CELL_DCH: Success

8.2.2.1.1 Definition

8.2.2.1.2 Conformance requirement

The UE shall correctly reconfigure a radio bearer and L1 according to the RADIO BEARER RECONFIGURATION message, which specifies a hard handover to another radio frequency. After executing the reconfiguration, the UE shall be able to communicate with the UTRAN on the newly configured radio bearer.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.1.3 Test purpose

To confirm that the UE reconfigures a new radio bearer by following a RADIO BEARER RECONFIGURATION message, which indicates a hard handover to another radio frequency.

8.2.2.1.4 Method of test

Initial Condition

System Simulator: 2 cells Cell 1 is active, Cell 6 is inactive

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108 in cell 1.

Test Procedure

Table 8.2.2.1

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.2.1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in the CELL_DCH state in cell 1. The SS configures its downlink transmission power settings according to columns "T1" in Table 8.2.2.1 and broadcast BCCH on the primary CCPCH in cell 6. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE, which commands that hard handover to cell 6 be performed. The UE reconfigures the new physical channel parameters and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.2.1.
2			BCCH	The SS starts to broadcast BCCH on the primary CCPCH in cell 6.
3	←		RADIO BEARER RECONFIGURATION	Hard handover to cell 6,
4				The UE shall stop all uplink transmissions to cell 1 and shall commence the reconfiguration of the affected physical channel parameters to that of cell 6.
5	→		RADIO BEARER RECONFIGURATION COMPLETE	

Specific Message Contents

RADIO BEARER RECONFIGURATION

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical to the message sub-type titled "Packet to CELL_DCH from CELL_DCH in PS" in Annex A, with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN uplink(Nu)	Same uplink UARFCN as used for cell 6
- UARFCN downlink(Nd)	Same downlink UARFCN as used for cell 6
Downlink information for each radio links	Same downlink UARFCN as used for cell 6
- Primary CPICH info	
- Primary Scrambling Code	350
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing Indicator	Initialise

8.2.2.1.5 Test requirement

After step 4 the UE shall transmit RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.After step 5 the UE shall change its physical channel configuration and communicate with the SS on the DCCH and DTCH using the dedicated physical channel in cell 6.

8.2.2.2 Radio Bearer Reconfiguration from CELL_DCH to CELL_DCH: Failure (Unsupported configuration)

8.2.2.2.1 Definition

8.2.2.2.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a RADIO BEARER RECONFIGURATION message which includes unsupported configuration parameters and transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set to "configuration unsupported" in IE "failure cause

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.2.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC if the received RADIO BEARER RECONFIGURATION message includes unsupported configuration parameters.

8.2.2.2.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE, which includes unsupported configuration parameters for the UE. The UE shall transmit a RADIO BEARER

RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set to "configuration unsupported" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	Including unsupported configuration by the UE
2	→		RADIO BEARER RECONFIGURATION FAILURE	The UE does not change the radio bearer.

Specific Message Contents

RADIO BEARER RECONFIGURATION

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL_DCH from CELL_DCH in PS" as found in Annex with the following exceptions:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	 63984. Not Present

RADIO BEARER RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type Failure cause Other information element	"RADIO BEARER RECONFIGURATION FAILURE" Configuration unsupported Not checked

8.2.2.2.5 Test requirement

After step 2 the UE shall keep its old configuration and transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC with the value "configuration unsupported" set in IE "failure cause".

8.2.2.3 Radio Bearer Reconfiguration from CELL_DCH to CELL_DCH: Failure (Physical channel failure and reversion to old configuration)

8.2.2.3.1 Definition

8.2.2.3.2 Conformance requirement

The UE shall revert to the old configuration when the UE fails to reconfigure the new physical channel by received RADIO BEARER RECONFIGURATION message and transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.3.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC if the UE fails to reconfigure the new radio bearer according to the RADIO BEARER RECONFIGURATION message received previously.

8.2.2.3.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE which includes the new radio bearer parameters but it does not reconfigure L1 according to the settings found in the message. The UE shall revert to the old configuration. Then the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting value "physical channel failure" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	
2				SS does not reconfigure L1 parameters to reflect the radio bearer reconfigurations specified in the message.
3	→		RADIO BEARER RECONFIGURATION FAILURE	The UE shall detect a failure to reconfigure the new radio bearer, and send this message using the old radio bearer configuration.

Specific Message Contents

RADIO BEARER RECONFIGURATION

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL_DCH from CELL_DCH in PS" as found in Annex A.

RADIO BEARER RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type	"RADIO BEARER RECONFIGURATION FAILURE"
Failure cause	Physical channel failure
Other information element	Not checked

8.2.2.3.5 Test requirement

After step 2 the UE shall revert to the old configuration and transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC setting value "physical channel failure" in IE "failure cause".

8.2.2.4 Radio Bearer Reconfiguration from CELL_DCH to CELL_DCH: Failure (Physical channel failure and reversion failure)

8.2.2.4.1 Definition

8.2.2.4.2 Conformance requirement

The UE shall perform a cell update when the UE fails to revert to the old configuration after the detection of physical channel failure in the radio bearer reconfiguration procedure. After the UE completes cell update procedure, the UE transmit RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set IE "failure cause" to "physical channel failure".

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.4.3 Test purpose

To confirm that the UE transmits RADIO BEARER SETUP FAILURE message after it completes a cell update procedure when the UE cannot reconfigure the new radio bearer and a subsequent failure to revert to the old configuration.

8.2.2.4.4 Method of test

Initial Condition

System Simulator: 2 cells

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108 in cell 1.

Test Procedure

The UE is in the CELL_DCH state in a cell 1. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE, which includes the new radio bearer parameters. After transmitting the RADIO BEARER RECONFIGURATION message, the SS shall not reconfigure L1 in accordance to the settings in the message. The UE discovers that it cannot reconfigure the new radio bearer and wants to revert to the old configuration, but the UE cannot revert to the old configuration because the SS shall not revert to old configuration. The UE transmits CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "radio link failure". The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC and subsequently transmits RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value " physical channel failure" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	
2				The SS does not reconfigure the dedicated physical channel in accordance with the RADIO BEARER RECONFIGURATION message and shall not use the old configuration.
3	→		CELL UPDATE	The value "radio link failure" shall be set in IE "Cell update cause".
4	←		CELL UPDATE CONFIRM	This message include IE "Physical channel information elements".
5				The SS configure the dedicated physical channel according to the IE "Physical channel information elements" included in the CELL UPDATE CONFIRM message.
6	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
7	→		RADIO BEARER RECONFIGURATION FAILURE	The IE "failure cause" shall be set to "physical channel failure"

Specific Message Contents

RADIO BEARER RECONFIGURATION message (Step 1)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL_DCH from CELL_DCH in PS" as found in Annex.

CELL UPDATE (Step 3)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0000 0001' "radio link failure"

CELL UPDATE CONFIRM (Step 4)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 3
Frequency info	
- UARFCN uplink(Nu)	Reference to TS34.108 clause 5.1 Test frequencies
- UARFCN downlink(Nd)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	33dBm
CHOICE Mode	FDD
Downlink information for each radio links	
- Primary CPICH info	
- Primary scrambling code	100
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0 chips
- Power offset $P_{Pilot-DPDCH}$	TBD
- Secondary CPICH info	Not Present
- DL channelisation code	
- Secondary scrambling code	2
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change	No change
- TPC combination index	0
- SSDT Cell Identity	-a
- Closed loop timing adjustment mode	Not Present
- Secondary CCPCH info	Not Present
- TFCS	Not Present
- FACH/PCH information	Not Present
- References to system information blocks	Not Present

RADIO BEARER RECONFIGURATION FAILURE (Step 7)

Information Element	Value/remark
Message Type	"RADIO BEARER RECONFIGURATION FAILURE"
Failure cause	"physical channel failure"
Other information element	Not checked

8.2.2.4.5 Test requirement

After step 2 the UE shall transmit CELL UPDATE message on the CCCH with IE "Cell update cause" set to "radio link failure".

After step 5 the UE transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to " physical channel failure".

8.2.2.5 Radio Bearer Reconfiguration from CELL_DCH to CELL_DCH: Failure (Incompatible simultaneous reconfiguration)

8.2.2.5.1 Definition

8.2.2.5.2 Conformance requirement

If the UE receives a RADIO BEARER RECONFIGURATION message whilst reconfiguring due to a radio bearer message other than RADIO BEARER RECONFIGURATION, it shall keep its configuration as if the RADIO RECONFIGURATION SETUP message had not been received.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.5.3 Test purpose

To confirm that if the UE receives a RADIO BEARER RECONFIGURATION message whilst reconfiguring due to a radio bearer message other than RADIO BEARER RECONFIGURATION, it shall keep its configuration as if the RADIO BEARER RECONFIGURATION message had not been received and complete the reconfiguration according to the previously received message.

8.2.2.5.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER SETUP message to the UE. The SS transmits a RADIO BEARER RECONFIGURATION message before the "activation time" indicated in the RADIO BEARER SETUP message expires. When the UE receives the RADIO BEARER RECONFIGURATION message, the UE shall keep the configuration as if it had not received the RADIO BEARER RECONFIGURATION message and shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS receives the RADIO BEARER SETUP FAILURE message, the UE reconfigures the new physical channel parameters and transmits a RADIO BEARER SETUP COMPLETE message on DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	Including IE "Uplink DPCH info"
2	←		RADIO BEARER RECONFIGURATION	Sent before the "activation time" in step 1 has elapsed
3	→		RADIO BEARER RECONFIGURATION FAILURE	The UE does not change the configuration because of receiving the RADIO BEARER RECONFIGURATION message..
4	→		RADIO BEARER SETUP COMPLETE	This message is on DCCH using AM RLC.

Specific Message Contents

RADIO BEARER SETUP (Step 1)

For RADIO BEARER SETUP in step 1, use the message sub-type indicated as "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A.

RADIO BEARER RECONFIGURATION (Step 2)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical to those in the default contents of layer 3 messages for RRC tests with the following exceptions as "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A with following exceptions:

Information Element	Value/remark
Activation Time	Not Present.

RADIO BEARER RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type	”RADIO BEARER RECONFIGURATION FAILURE”
Failure cause	Incompatible simultaneous reconfiguration
Other information element	Not checked

8.2.2.5.5 Test requirement

After step 1 The SS transmits a RADIO BEARER RECONFIGURATION message before the expiry of the activation time specified in the message of step 1.

After step 2 the UE shall keep its configuration as if the UE had not received the RADIO BEARER SETUP message and shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE “failure cause” set to “Incompatible simultaneous reconfiguration”.

After step 4 the UE communicates with the SS on the DCCH and DTCH using the new physical channel parameters configured as a result of the RADIO BEARER SETUP message

8.2.2.6 Radio Bearer Reconfiguration from CELL_DCH to CELL_DCH: Failure (Invalid message reception and Invalid configuration)

8.2.2.6.1 Definition

8.2.2.6.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a RADIO BEARER RECONFIGURATION message, which includes the undefined value in the mandatory IE “UTRAN DRX cycle length coefficient” having criticality defined as “Reject”. The UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message which is set to “protocol error” in IE “ failure cause” and is set to “Information element value not comprehended” in IE “Protocol error cause”. The UE shall keep existing configuration before reception of a RADIO BEARER RECONFIGURATION message when the RADIO BEARER RECONFIGURATION message include some IEs set to invalid value, and then the UE shall transmit RADIO BEARER RECONFIGURATION FAILURE including IE “failure cause“ set to “invalid configuration”.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.6.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RECONFIGRATION FAILURE message on the DCCH using AM RLC, if it receives a RADIO BEARER RECONFIGURATION message containing a undefined value in the mandatory IE “UTRAN DRX cycle length coefficient” with criticality defined as “Reject”.

To confirm that the UE transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER RECONFIGURATION message including some IEs set to invalid value.

8.2.2.6.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE which includes the undefined value in the mandatory IE "UTRAN DRX cycle length coefficient" which criticality is defined as "Reject". The UE keeps the old configuration and transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set to "protocol error" in IE "failure cause" and is set to "Information element value not comprehended" in IE "Protocol error cause". The UE keeps initial configuration and SS transmits RADIO BEARER RECONFIGURATION message including some IEs set to invalid value. The UE transmit RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value " invalid configuration" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	The message contains an illegal error in a mandatory IE.
2	→		RADIO BEARER RECONFIGRATION FAILURE	The UE does not change the configuration.
3	←		RADIO BEARER RECONFIGURATION	This message includes IE set to invalid value
4				The UE does not change the configuration.
5	→		RADIO BEARER RECONFIGRATION FAILURE	The IE "failure cause" shall be set to "invalid configuration

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

The contents of RADIO BEARER RECONFIGRATION message in this test case is identical as "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A with following exceptions, with the following exceptions:

Information Element	Value/remark
UTRAN DRX cycle length coefficient	Undefined value

RADIO BEARER RECONFIGURATION FAILURE (Step 2)

Information Element	Value/remark
Message Type	"RADIO BEARER RECONFIGURATION FAILURE"
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Information element value not comprehended
Other information element	Not checked

RADIO BEARER RECONFIGURATION (Step 3)

The contents of RADIO BEARER RECONFIGRATION message in this test case is identical as "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A with following exceptions, with the following exceptions:

Information Element	Value/remark
Added or Reconfigured UL TrCH information - Transport channel identity - TFS - Dynamic Transport format information - RLC size - CHOICE Logical Channel list - Explicit List - RB identity	 1 (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set 2

RADIO BEARER RECONFIGURATION FAILURE (Step 5)

Information Element	Value/remark
Message Type Failure cause Other information element	 Invalid configuration Not checked

8.2.2.6.5 Test requirement

After step 1 the UE shall keep its old configuration and transmit a RADIO BEARER RECONFIGRATION FAILURE message on the DCCH using AM RLC stating the reason “protocol error” in IE “failure cause”. The message shall contain the value “Information element value not comprehended” in IE “Protocol error cause”.

After step 3 the UE shall keep its old configuration

After step 4 the UE shall transmit RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value ” invalid configuration” to IE “failure cause”.

8.2.2.7 Radio Bearer Reconfiguration from CELL_DCH to CELL_DCH: Success (Continue and stop)

8.2.2.7.1 Definition

8.2.2.7.2 Conformance requirement

The UE shall continue or stop the uplink transmission when the UTRAN indicate stop or continue uplink transmission in radio bearer reconfiguration procedure.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.7.3 Test purpose

To confirm that the UE reconfigures new radio bearer and have the uplink transmission according to a RADIO BEARER RECONFIGURATIO message which indicates that uplink transmission is continued.

To confirm that the UE reconfigures new radio bearer and don’t transmit data according to a RADIO BEARER RECONFIGURATION message which indicates that uplink transmission is stopped.

8.2.2.7.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message including IE" RB stop/continue" set to "continue". The UE reconfigures new radio bearer and transmit RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC. The UE communicate with the SS after transmission the RADIO BEARER RECONFIGURATION COMPLETE message. Then, SS transmit a RADIO BEARER RECONFIGURATION message including IE" RB stop/continue" set to "stop". The UE reconfigures new radio bearer and transmit RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC. The UE don't transmit any uplink data without Signalling message after transmission the RADIO BEARER RECONFIGURATION COMPLETE message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	This message include IE" RB stop/continue ".
2	→		RADIO BEARER RECONFIGURATION COMPLETE	
3				The SS Shall communicate with the UE.
4			RADIO BEARER RECONFIGURATION	This message include IE" RB stop/continue ".
5			RADIO BEARER RECONFIGURATION COMPLETE	
6				The SS shall not receive any data from the UE without Signalling message.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RB information to reconfigure list RB information to reconfigure -RB identity -RB stop/continue	 5 "continue"

RADIO BEARER RECONFIGURATION (Step 4)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL_DCH from CELL_DCH in PS" as found in Annex with the following exceptions:

Information Element	Value/remark
RB information to reconfigure list RB information to reconfigure -RB identity -RB stop/continue	 5 "stop"

8.2.2.7.5 Test requirement

After step 2 the UE shall communicate with the SS using new configuration.

After step 5 the UE shall communicate with the SS using new configuration, but shall not transmit any data to the SS without signalling message.

8.2.2.8 Radio Bearer Reconfiguration from CELL_DCH to CELL_FACH: Success

8.2.2.8.1 Definition

8.2.2.8.2 Conformance requirement

The UE shall correctly reconfigure a radio bearer according to a RADIO BEARER RECONFIGURATION message which is communicate with the UTRAN on the new radio bearer in case of a transition from CELL_DCH to CELL_FACH in the same cell.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.8.3 Test purpose

To confirm that the UE establishes the reconfigured radio bearer(s) using common physical channel, after a RADIO BEARER RECONFIGURATION message has been received from the SS.

8.2.2.8.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE, which includes the new radio bearer parameters and sets up L1 including the start of tx/rx. The UE reconfigures the new radio bearer and transmits a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	
2				The UE select PRACH and S-CCPCH using SIB5 and SIB6 after entering CELL FACH state.
3	→		RADIO BEARER RECONFIGURATION COMPLETE	

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

Use the same message sub-type titled “Packet to CELL_DCH from CELL_FACH in PS” in Annex A.

8.2.2.8.5 Test requirement

After step 1 the UE shall reconfigure the radio links with the SS.

After step 3 the UE shall change its radio bearer configuration and communicate with the SS on the DCCH and DTCH, using the common physical channel.

8.2.2.9 Radio Bearer Reconfiguration from CELL_DCH to CELL_FACH: Success (Cell re-selection)

8.2.2.9.1 Definition

8.2.2.9.2 Conformance requirement

The UE shall initiate cell update procedure when the UE performs cell reselection during radio bearer reconfiguration procedure. After the UE completes cell update procedure, the UE shall continue to perform a radio bearer reconfiguration procedure and correctly reconfigure the radio bearer.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.9.3 Test purpose

To confirm that the UE transmits RADIO BEARER RECONFIGURE COMPLETE message in cell2 after it completes a cell update procedure.

8.2.2.9.4 Method of test

Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 2 is inactive

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

Table 8.2.2.9

Parameter	**Unit**	**Cell 1**		**Cell 2**	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.2.9 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns “T0” to “T1”, whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in the CELL_DCH state in cell 1. The SS configures its downlink transmission power settings according to columns “T1” in Table 8.2.2.9 and begins to broadcast the BCCH on the primary CCPCH in a cell 2.The SS transmits a RADIO BEARER RECONFIGURATION message to the UE as the transition occurs from CELL_DCH to CELL_FACH with cell reselection. The UE transmits CELL UPDATE message on uplink CCCH with IE “Cell update cause“ set to “cell reselection”. The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and transmit RADIO BEARER RECONFIGURE COMPLETE message on the DCCH using AM RLC, setting the value ” cell reselection” to IE “failure cause”.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.2.9.
2	←		BCCH	The SS transmit the BCCH on the primary CCPCH in the cell2.
3	←		RADIO BEARER RECONFIGURATION	This message include IE" Primary CPICH info"
4	→		CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
5	←		CELL UPDATE CONFIRM	This message include IE "new U-RNTI" and IE "new C-RNTI"".
6	→		UTRAN MOBILITY INFORMATION CONFIRM	
7	→		RADIO BEARER RECONFIGURATION COMPLETE	

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 3)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL_FACH from CELL_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CPICH info - Primary scrambling code	 150

CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Assigned previously in cell 1 Assigned previously in cell 1 "radio link failure"

CELL UPDATE CONFIRM (Step 5)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI New U-RNTI - SRNC Identity - S-RNTI New C-RNTI	Same as CELL UPDATE message in step 4 '0000 0000 0000 0001' Different from previous S-RNTI Different from previous C-RNTI

8.2.2.9.5 Test requirement

After step 3, the UE shall transmit CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".

After step 5 UE transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 6, the UE shall transmit RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC, setting IE “failure cause” to ”cell reselection”.

After step 7 the UE communicate with the SS on the DCCH and DTCH in cell2, using the common physical channel.

8.2.2.10 Radio Bearer Reconfiguration: from CELL_FACH to CELL_DCH: Success

8.2.2.10.1 Definition

8.2.2.10.2 Conformance requirement

The UE shall correctly reconfigure a radio bearer according to a RADIO BEARER RECONFIGURATION message which is communicate with the UTRAN on the new radio bearer in case of a transition from CELL_FACH to CELL_DCH in the same cell.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.10.3 Test purpose

To confirm that the UE establishes a new radio bearer by following a RADIO BEARER RECONFIGURATION message received from the SS.

8.2.2.10.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE which includes the new radio bearer parameters and sets up L1 including the start of tx/rx. The UE reconfigures the new radio bearer and transmits a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	This message includes IE “Uplink DPCH Info”
2				Reconfiguration of radio bearer
3	→		RADIO BEARER RECONFIGURATION COMPLETE	

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

Use the same message sub-type titled “Packet to CELL_DCH from CELL_FACH in PS“ in Annex A.

8.2.2.10.5 Test requirement

After step 2 the UE shall change its radio bearer configuration and communicate with the SS on the DCCH and DTCH which are being carried by the DPCH physical channel resources.

8.2.2.11 Radio Bearer Reconfiguration from CELL_FACH to CELL_DCH: Failure (Unsupported configuration)

8.2.2.11.1 Definition

8.2.2.11.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a RADIO BEARER RECONFIGURATION message which includes unsupported configuration parameters and transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set to "configuration unsupported" in IE "failure cause

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.11.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC if the RADIO BEARER RECONFIGURATION message received includes unsupported configuration parameters.

8.2.2.15.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE which includes unsupported configuration parameters of the UE. The UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC and set "configuration unsupported" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	The message includes an unsupported configuration for the UE
2	→		RADIO BEARER RECONFIGURATION FAILURE	The UE does not change the radio bearer.

Specific Message Contents

RADIO BEARER RECONFIGURATION

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	 63984 Not Present

RADIO BEARER RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type Failure cause Other information element	 Configuration unsupported Not checked

8.2.2.11.5 Test requirement

After step1 the UE shall keep its old configuration and transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC stating "configuration unsupported" in IE " failure cause".

8.2.2.12 Radio Bearer Reconfiguration from CELL_FACH to CELL_DCH: Failure (Physical channel failure and reversion to old configuration)

8.2.2.12.1 Definition

8.2.2.12.2 Conformance requirement

The UE shall revert to the old configuration when the UE fails to reconfigure the new physical channel by received RADIO BEARER RECONFIGURATION message and transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE " failure cause".

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.12.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC if the UE fails to reconfigure the new radio bearer according to a RADIO BEARER RECONFIGURATION message.

8.2.2.12.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE, which includes the new radio bearer parameters and does not reconfigure L1. Therefore, the UE cannot reconfigure the new radio bearer and shall attempt to revert to the old configuration. Then the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, with the value "physical channel failure" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	
2				The SS does not reconfigures L1 including the start of tx/rx
3	→		RADIO BEARER RECONFIGURATION FAILURE	The UE fails to reconfigure a new radio bearer.

Specific Message Contents

RADIO BEARER RECONFIGURATION

Use the same message sub-type titled “Packet to CELL_DCH from CELL_FACH in PS” in Annex A.

RADIO BEARER RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type	
Failure cause	Physical channel failure
Other information element	Not checked

8.2.2.12.5 Test requirement

After step 2 the UE shall revert to the old configuration and transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting “physical channel failure” in IE “failure cause”.

8.2.2.13 Radio Bearer Reconfiguration from CELL_FACH to CELL_DCH: Failure (Physical channel failure and reversion failure)

8.2.2.13.1 Definition

8.2.2.13.2 Conformance requirement

The UE shall perform a cell update procedure when the UE selects another cell after the detection of physical channel failure in the radio bearer reconfiguration procedure. After the UE completes cell update procedure, the UE transmits RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC which set IE “failure cause” to “physical channel failure”.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.13.3 Test purpose

To confirm that the UE transmits RADIO BEARER RECONFIGURATION FAILURE message after it completes a cell update procedure.

8.2.2.13.4 Method of test

Initial Condition

System Simulator: 2 cells - Cell 1 is active, Cell 2 is inactive

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108 in cell 1.

Test Procedure

Table 8.2.2.13

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.2.13 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in the CELL_FACH state in cell 1. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE, which includes the new radio bearer parameters but SS does not reconfigure L1 such as catered to the new radio bearer settings. At the same time, the SS configures its downlink transmission power settings according to columns "T1" in Table 8.2.2.13 and begins to broadcast the BCCH on the primary CCPCH in a cell 2. Then the UE finds a new cell 2 and transmits CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and subsequently transmit RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value " physical channel failure" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	
2				The SS does not reconfigure the dedicated physical channel in accordance with the RADIO BEARER RECONFIGRATION message and delete the old configuration.
3				The SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.2.13.
4	←		BCCH	The SS starts to transmit the BCCH in cell 2 on the primary CCPCH.
5	→		CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
6	←		CELL UPDATE CONFIRM	This message include IE "new U-RNTI" and IE "new C-RNTI"".
7	→		UTRAN MOBILITY INFORMATION CONFIRM	
8	→		RADIO BEARER RECONFIGURATION FAILURE	The IE "failure cause" shall be set to "physical channel failure"

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

Use the same message sub-type titled "Packet to CELL_DCH from CELL_FACH in PS" in Annex A.

CELL UPDATE (Step 5)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Assigned previously in cell 1
- S-RNTI	Assigned previously in cell 1
Cell Update Cause	"cell reselection"

CELL UPDATE CONFIRM (Step 9)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 4
New U-RNTI	
- SRNC Identity	'0000 0000 0000 0001'
- S-RNTI	Different from previous S-RNTI
New C-RNTI	Different from previous C-RNTI

RADIO BEARER RECONFIGURATION FAILURE (Step 9)

Information Element	Value/remark
Message Type	"RADIO BEARER RECONFIGURATION FAILURE"
Failure cause	"physical channel failure"
Other information element	Not checked

8.2.2.13.5 Test requirement

After step 4 the UE shall transmit CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".

After step 8 the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 7 the UE shall transmit RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to " physical channel failure".

8.2.2.14 Radio Bearer Reconfigure from CELL_FACH to CELL_DCH: Failure (Incompatible simultaneous reconfiguration)

8.2.2.14.1 Definition

8.2.2.14.2 Conformance requirement

If the UE receives a RADIO BEARER RECONFIGURATION message whilst reconfiguring due to a radio bearer message other than RADIO BEARER RECONFIGURATION, it shall keep its configuration as if the RADIO BEARER RECONFIGURATION message had not been received.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.14.3 Test purpose

To confirm that if the UE receives a RADIO BEARER RECONFIGURATION message whilst reconfiguring due to a radio bearer message other than RADIO BEARER RECONFIGURATION, it shall keep its configuration as if the RADIO BEARER RECONFIGURATION message had not been received and complete the reconfiguration according to the previously received message.

8.2.2.14.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER SETUP message to the UE. The SS transmits a RADIO BEARER RECONFIGURATION message before the "activation time" indicated in the RADIO BEARER SETUP message expires. When the UE receives the RADIO BEARER RECONFIGUTARION message, the UE shall keep the configuration as if it had not received the RADIO BEARER RECONFIGURATION message and shall transmit a RADIO RECONFIGURATION SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS receives the RADIO BEARER SETUP FAILURE message, the UE reconfigures the new physical channel parameters and transmits a RADIO BEARER SETUP COMPLETE message on DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	Including IE "Uplink DPCH info"
2	←		RADIO BEARER RECONFIGURATION	Sent before the elapse of the "Activation Time" indicated in the previous message.
3	→		RADIO BEARER RECONFIGURATION FAILURE	The UE does not change the configuration because of receiving the RADIO BEARER RECONFIGURATION message.
4	→		RADIO BEARER SETUP COMPLETE	This message is on DCCH using AM RLC

Specific Message Contents

RADIO BEARER SETUP (Step 1)

For RADIO BEARER SETUP in step 1, use the message sub-type indicated as "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A.

RADIO BEARER RECONFIGURATION (Step 2)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8]

RADIO BEARER RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type	"RADIO BEARER RECONFIGURATION FAILURE"
Failure cause	Incompatible simultaneous reconfiguration
Other information element	Not checked

8.2.2.14.5 Test requirement

After step 1, SS transmits a RADIO BEARER RECONFIGURATION message before the expiry of the activation time specified in the message of step 1.

After step 2 the UE shall keep its configuration as if the UE had not received the RADIO BEARER SETUP message and shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 4 the UE communicates with the SS on the DCCH and DTCH using the new physical channel parameters reconfigured as a result of the RADIO BEARER SETUP message.

8.2.2.15 Radio Bearer Reconfiguration from CELL_FACH to CELL_DCH: Failure (Invalid message reception and Invalid configuration)

8.2.2.15.1 Definition

8.2.2.15.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a RADIO BEARER RECONFIGURATION message, which includes undefined value in the mandatory IE "UTRAN DRX cycle length coefficient" with criticality defined as "Reject". Then it shall transmit a RADIO BEARER RECONFIGURATION FAILURE message setting "protocol error" in IE "failure cause" and also setting "Information element value not comprehended" in IE "Protocol error cause". The UE shall keep existing configuration before reception of a RADIO BEARER RECONFIGURATION message when the RADIO BEARER RECONFIGURATION message include some IEs set to invalid value, and then the UE shall transmit RADIO BEARER RECONFIGURATION FAILURE including IE "failure cause" set to "invalid configuration".

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.15.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER RECONFIGURATION message which includes undefined value in the mandatory IE "UTRAN DRX cycle length coefficient", with criticality defined as "Reject".

To confirm that the UE transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER RECONFIGURATION message including some IEs set to invalid value.

8.2.2.15.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE which includes undefined value in the mandatory IE "UTRAN DRX cycle length coefficient". The UE shall keep the old configuration and transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC indicating "protocol error" in IE "failure cause" and also set "Information element value not comprehended" in IE "Protocol error cause". The UE keeps initial configuration when SS transmits RADIO BEARER RECONFIGURATION message including some IEs set to invalid value. The UE transmit RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value " invalid configuration" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	
2	→		RADIO BEARER RECONFIGRATION FAILURE	The UE does not change the configuration.
3	←		RADIO BEARER RECONFIGURATION	This message includes IE set to invalid value
4				The UE does not change the configuration
5	→		RADIO BEARER RECONFIGRATION FAILURE	The IE "failure cause" shall be set to "invalid configuration

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

The contents of RADIO BEARER RECONFIGRATION message in this test case is identical as "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	**Value/remark**
UTRAN DRX cycle length coefficient	Undefined value

RADIO BEARER RECONFIGURATION FAILURE (Step 2)

Information Element	**Value/remark**
Message Type	"RADIO BEARER RECONFIGURATION FAILURE"
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Information element value not comprehended
Other information element	Not checked

RADIO BEARER RECONFIGURATION (Step 3)

The contents of RADIO BEARER RECONFIGRATION message in this test case is identical as "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Added or Reconfigured UL TrCH information	
- Transport channel identity	2
- TFS	
- Dynamic Transport format information	(This IE is repeated for TFI number)
- RLC size	Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list	
- Explicit List	
- RB identity	2

RADIO BEARER RECONFIGURATION FAILURE (Step 5)

Information Element	Value/remark
Message Type	
Failure cause	Invalid configuration
Other information element	Not checked

8.2.2.15.5 Test requirement

After step1 the UE shall keep its old configuration and transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, which contain the cause “protocol error” in IE “failure cause” and “Information element value not comprehended” in IE “Protocol error cause”.

After step 3 the UE shall keep its old configuration.

After step 4 the UE shall transmit RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value ” invalid configuration” to IE “failure cause”.

8.2.2.16 Radio Bearer Reconfiguration from CELL_FACH to CELL_ FACH: Success (Continue and Stop)

8.2.2.16.1 Definition

8.2.2.16.2 Conformance requirement

The UE shall continue or stop the uplink transmission when the UTRAN indicate stop or continue uplink transmission in radio bearer reconfiguration procedure.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.16.3 Test purpose

To confirm that the UE reconfigures new radio bearer and have the uplink transmission according to a RADIO BEARER RECONFIGURATIO message which indicates that uplink transmission is continued.

To confirm that the UE reconfigures new radio bearer and don’t transmit data according to a RADIO BEARER RECONFIGURATIO message which indicates that uplink transmission is stopped.

8.2.2.16.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE, which includes IE” RB stop/continue” set to “continue”. The UE reconfigures new radio bearer and transmit RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC. The UE communicates with the SS after transmission the RADIO BEARER RECONFIGURATION COMPLETE message. Then, SS transmits a RADIO BEARER RECONFIGURATION message including IE” RB stop/continue” set to “stop”. The UE reconfigures new radio bearer and transmits RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC. The UE shall not transmit any uplink data without Signalling message after transmission the RADIO BEARER RECONFIGURATION COMPLETE message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	The message includes IE "RB stop/continue" for one of the signalling radio bearer.
2				The UE select PRACH and S-CCPCH, using SIB5 or SIB6.
3	→		RADIO BEARER RECONFIGURATION COMPLETE	
4				The SS Shall communicate with the UE.
5	←		RADIO BEARER RECONFIGURATION	This message include IE" RB stop/continue ".
6				The UE select PRACH and S-CCPCH, using SIB5 or SIB6.
7	→		RADIO BEARER RECONFIGURATION COMPLETE	
8				The SS shall not receive any data from the UE without Signalling message.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RB information to reconfigure list RB information to reconfigure -RB identity -RB stop/continue	 5 Set to "continue"

RADIO BEARER RECONFIGURATION FAILURE

Information Element	Value/remark
RB information to reconfigure list RB information to reconfigure -RB identity -RB stop/continue	 5 Set to "continue"

8.2.2.16.5 Test requirement

After step 3 the UE shall communicate with the SS using new configuration.

After step 7 the UE shall communicate with the SS using new configuration, but shall not transmit any data to the SS without signalling message.

8.2.2.17 Radio Bearer Reconfiguration from CELL_FACH to CELL_FACH: Success

8.2.2.17.1 Definition

8.2.2.17.2 Conformance requirement

The UE shall correctly reconfigure a radio bearer according to a RADIO BEARER RECONFIGURATION message which is communicate with the UTRAN on the new radio bearer and a transition from CELL_FACH to CELL_FACH in the another cell.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.17.3 Test purpose

To confirm that the UE establishes a new radio bearer by following a RADIO BEARER RECONFIGURATION message received from the SS.

8.2.2.17.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE which includes the new transport channel parameter reconfigure for transit. The UE reconfigures the new transport cannel and transmits a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	
2				The UE select PRACH and S-CCPCH using SIB5 or SIB6.
3	→		RADIO BEARER RECONFIGURATION COMPLETE	

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 2)

Use the same message sub-type titled “Packet to CELL_FACH from CELL_FACH in PS“ in Annex A.

8.2.2.17.5 Test requirement

After step 3 the UE shall change its radio bearer configuration and be in CELL_FACH

After step 4 the UE shall communicate with the SS on the DCCH and DTCH, using the common physical channel.

8.2.2.18 Radio Bearer Reconfiguration from CELL_FACH to CELL_FACH: Success (Cell re-selection)

8.2.2.18.1 Definition

8.2.2.18.2 Conformance requirement

The UE shall initiate the cell reselection procedure when the UE performs cell reselection during radio bearer establishment procedure. After the UE completes cell update procedure, the UE shall continue to perform a radio bearer reconfiguration procedure and correctly reconfigure the radio bearer.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.18.3 Test purpose

To confirm that the UE transmit RADIO BEARER RECONFIGURATION CPMLLETE message in cell2 after complete a cell update procedure.

8.2.2.18.4 Method of test

Initial Condition

System Simulator: 2 cells Cell 1 is active, Cell 2 is inactive

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

Table 8.2.2.18

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.2.18 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns “T0” to “T1”, whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in the CELL_FACH state in cell 1. On transmitting a RADIO BEARER RECONFIGURATION message to the UE, the SS configures its downlink transmission power settings according to columns “T1” in Table 8.2.2.18 and begins to broadcast the BCCH on the primary CCPCH in a cell 2. The UE transmits CELL UPDATE message on uplink CCCH with IE “Cell update cause“ set to “cell reselection”. The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and transmit RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC, setting the value ” cell reselection” to IE “failure cause”.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	This message include IE" Primary CPICH info"
2				The SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.1.9.
3	←		BCCH	The SS transmit the BCCH on the primary CCPCH in the cell 2.
4	→		CELL UPDATE	The value "cell reselection" shall be set in IE "cell update cause".
5	←		CELL UPDATE CONFIRM	This message include IE "new U-RNTI" and IE "new C-RNTI"".
6	→		UTRAN MOBILITY INFORMATION CONFIRM	
7	→		RADIO BEARER RECONFIGURATION COMPLETE	The IE "failure cause" shall be set to "cell reselection"

Specific Message Contents

RADIO BEARER SETUP (Step 1)

Use the same message sub-type titled "Packet to CELL_FACH from CELL_FACH in PS" in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CPICH info - Primary scrambling code	 150

CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Assigned previously in cell 1 Assigned previously in cell 1 "cell reselection"

CELL UPDATE CONFIRM (Step 5)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI New U-RNTI - SRNC Identity - S-RNTI New C-RNTI	Same as CELL UPDATE message in step 7 '0000 0000 0000 0001' Different from previous S-RNTI Different from previous C-RNTI

8.2.18.5 Test requirement

After step 3 the UE shall transmit CELL UPDATE message on the CCCH with IE "cell update cause" set to "cell reselection"..

After step 5 UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 6 UE transmits RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC

After step 7 the UE communicate with the SS on the DCCH and DTCH, using the common physical channel.

8.2.2.19 Radio Bearer Reconfiguration from CELL_DCH to CELL_DCH: Success (Subsequently received)

8.2.2.19.1 Definition

8.2.2.19.2 Conformance requirement

If the UE receives a RADIO BEARER RECONFIGURATION message before the UE configures the radio bearer according to the previous RADIO BEARER RECONFIGURATION message, the UE shall ignore the new RADIO BEARER RECONFIGURATION message and configure according to the previous RADIO BEARER RECONFIGURATION message. Finally, the UE shall transmit RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.19.3 Test purpose

If the UE receives another RADIO BEARER RECONFIGURATION message before the UE configures the radio bearer according to a previous RADIO BEARER RECONFIGURATION message, the UE shall ignore the new RADIO BEARER RECONFIGURATION message and configure according to the previous RADIO BEARER RECONFIGURATION message. Finally, the UE shall transmit RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

8.2.2.19.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. SS transmits a RADIO BEARER RECONFIGURATION message to the UE before the UE configures the radio bearer according to the RADIO BEARER RECONFIGURATION message prior to this new message. The UE ignores the new RADIO BEARER RECONFIGURATION message and configures according to the former RADIO BEARER RECONFIGURATION message. On completion of radio bearer configuration, the UE shall transmit RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	Including IE "Uplink DPCH info"
2	←		RADIO BEARER RECONFIGURATION	Sent before the "activation time" in step 1 has elapsed
3	→		RADIO BEARER RECONFIGURATION COMPLETE	The UE ignores the RADIO BEARER RECONFIGURATION message in step 2 and confirms configuration according to the RADIO BEARER RECONFIGURATION message in step 1.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time	[256+Current CFN-[current CFN mod 8 + 8]]MOD 256

8.2.2.19.5 Test requirement

After step 3 the UE shall communicate with the SS on the radio bearer specified in the RADIO BEARER RECONFIGURATION message in step 1.

8.2.2.20 Radio Bearer Reconfigure from CELL_FACH to CELL_DCH: Success (Subsequently received)

8.2.2.20.1 Definition

8.2.2.20.2 Conformance requirement

If the UE receives a RADIO BEARER RECONFIGURATION message before the UE configures the radio bearer according to the previous RADIO BEARER RECONFIGURATION message, the UE shall ignore the new RADIO BEARER RECONFIGURATION message and configure according to the previous RADIO BEARER RECONFIGURATION message. Finally, the UE shall transmit RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.20.3 Test purpose

To confirm that if the UE receives another RADIO BEARER RECONFIGURATION message before the UE configures the radio bearer according to a previous RADIO BEARER RECONFIGURATION message, the UE shall ignore the new RADIO BEARER RECONFIGURATION message and configure according to the previous RADIO BEARER RECONFIGURATION message. Finally, the UE shall transmit RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

8.2.2.20.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH(state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. SS transmits a RADIO BEARER RECONFIGURATION message to the UE before the UE configures the radio bearer according to the RADIO BEARER RECONFIGURATION message prior to this new message. The UE ignores the new RADIO BEARER RECONFIGURATION message and configures according to the former RADIO BEARER RECONFIGURATION message. On completion of radio bearer configuration, the UE shall transmit RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	Including IE "Uplink DPCH info"
2	←		RADIO BEARER RECONFIGURATION	SS send this message before the expiry of activation time specified in RADIO BEARER SETUP message of step 1.
3	→		RADIO BEARER RECONFIGURATION COMPLETE	The UE ignores the RADIO BEARER RECONFIGURATION message in step 2 and confirms configuration according to the RADIO BEARER RECONFIGURATION message in step 1.

Specific Message Contents

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL_FACH from CELL_DCH in PS" found in Annex A with the following exceptions:

RADIO BEARER RECONFIGURATION (step 1)

Information Element	Value/remark
Activation Time	[256+Current CFN-[current CFN mod 8 + 8]]MOD 256

8.2.2.20.5 Test requirement

After step 3 the UE shall communicate with the SS on the radio bearer specified in the RADIO BEARER RECONFIGURATION message in step 1.

8.2.2.21 Radio Bearer Reconfiguration from CELL_DCH to CELL_PCH: Success

8.2.2.21.1 Definition

8.2.2.21.2 Conformance requirement

The UE shall transmit RADIO BEARER RECONFIGURATION COMPLETE message and transit from CELL_DCH to CELL_PCH when receives a RADIO BEARER RECONFIGURATION message. And then, the UE shall reconfigure radio bearers according to the RADIO BEARER RECONFIGURATION message.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.21.3 Test purpose

To confirm that the UE transmit RADIO BEARER RECONFIGURATION COMPLETE before entering CELL_PCH state after it received a RADIO BEARER RECONFIGURATION message and reconfigured its radio bearers. The UE is in CELL_PCH state of the same cell.

8.2.2.21.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH(state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message. The UE transmits RADIO BEARER RECONFIGURATION COMPLETE message to the UE using AM RLC and enters into CELL_PCH state. The SS transmits a PAGING TYPE 1 message and the UE accepts it and enters the CELL_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	
2	→		RADIO BEARER RECONFIGURATION COMPLETE	The UE sends this message before state transition.
3				Reconfiguration of Radio Bearer after state transition.
4	←		PAGING TYPE 1	The SS transmits this message included a matched identity.
5	→		CELL UPDATE	The UE is in CELL_FACH state.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

Use the same message sub-type titled “Packet to CELL_FACH from CELL_DCH in PS“ in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH

PAGING TYPE 1 (Step 4)

Use the same message sub-type titled “TM (SMS in PS)“ in Annex A with following exceptions:

Information Element	Value/remark
Paging record list	
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	Previously assigned SRNC identity
- S-RNTI	Previously assigned S-RNTI

8.2.2.21.5 Test requirement

After step 1 the UE transmits RADIO BEARER RECONFIGURATION COMPLETE message to the UE on uplink DCCH using AM RLC.

After step 3 the UE shall transit from CELL_DCH to CELL_PCH.

8.2.2.22 Radio Bearer Reconfiguration from CELL_DCH to URA_PCH: Success

8.2.2.22.1 Definition

8.2.2.22.2 Conformance requirement

The UE shall transmit RADIO BEARER RECONFIGURATION COMPLETE message and transit from CELL_DCH to URA_PCH when receives a RADIO BEARER RECONFIGURATION message. And then, the UE shall reconfigure a radio bearer according to the RADIO BEARER RECONFIGURATION message.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.22.3 Test purpose

To confirm that the UE transmit RADIO BEARER RECONFIGURATION COMPLETE before entering URA_PCH state after it received a RADIO BEARER RECONFIGURATION message and reconfigured its radio bearers. The UE is in URA_PCH state of the same cell.

8.2.2.22.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH(state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the URA_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message. The UE transmits RADIO BEARER RECONFIGURATION COMPLETE message to the UE using AM RLC and enters into URA_PCH state. The SS transmits a PAGING TYPE 1 message and the UE accepts it and enters the CELL_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	
2	→		RADIO BEARER RECONFIGURATION COMPLETE	The UE sends this message before state transition.
3				Reconfiguration of Radio Bearer after state transition.
4	←		PAGING TYPE 1	The SS transmits this message included a matched identity.
5	→		CELL UPDATE	The UE is in CELL_FACH state.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

Use the same message sub-type titled “Packet to CELL_FACH from CELL_DCH in PS“ in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH

PAGING TYPE 1 (Step 4)

Use the same message sub-type titled “TM (SMS in PS)“ in Annex A with following exceptions:

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	 UTRAN identity Previously assigned SRNC identity Previously assigned S-RNTI

8.2.2.22.5 Test requirement

After step 1 the UE transmits RADIO BEARER RECONFIGURATION COMPLETE message to the UE on uplink DCCH using AM RLC.

After step 3 the UE shall transits from CELL_DCH to URA_PCH.

8.2.2.23 Radio Bearer Reconfiguration from CELL_FACH to CELL_PCH: Success

8.2.2.23.1 Definition

8.2.2.23.2 Conformance requirement

The UE shall transmit RADIO BEARER RECONFIGURATION COMPLETE message and transit from CELL_FACH to CELL_PCH when receive a RADIO BEARER RECONFIGURATION message. And then, the UE shall reconfigure radio bearers according to the RADIO BEARER RECONFIGURATION message.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.23.3 Test purpose

To confirm that the UE transmits RADIO BEARER RECONFIGURATION COMPLETE before entering CELL_PCH state after it received a RADIO BEARER RECONFIGURATION message and reconfigured its radio bearers. The UE is in CELL_PCH state of the same cell.

8.2.2.33.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH(state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message. The UE transmits RADIO BEARER RECONFIGURATION COMPLETE message to the UE using AM RLC and enters into CELL_PCH state. The SS transmits a PAGING TYPE 1 message and the UE accepts it and enters the CELL_FACH state again.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	
2	→		RADIO BEARER RECONFIGURATION COMPLETE	The UE sends this message before state transition.
3				Reconfiguration of Radio Bearer after state transition.
4	←		PAGING TYPE 1	The SS transmits this message included a matched identity.
5	→		CELL UPDATE	The UE is in CELL_FACH state.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

Use the same message sub-type titled “Packet to CELL_FACH from CELL_FACH in PS“ in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH

PAGING TYPE 1 (Step 4)

Use the same message sub-type titled “TM (SMS in PS)“ in Annex A with following exceptions:

Information Element	Value/remark
Paging record list	
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	Previously assigned SRNC identity
- S-RNTI	Previously assigned S-RNTI

8.2.2.23.5 Test requirement

After step 1 the UE transmits RADIO BEARER RECONFIGURATION COMPLETE message to the UE on uplink DCCH using AM RLC.

After step 3 the UE shall transit from CELL_DCH to CELL_PCH.

8.2.2.24 Radio Bearer Reconfiguration from CELL_FACH to URA_PCH: Success

8.2.2.24.1 Definition

8.2.2.24.2 Conformance requirement

The UE shall transmit RADIO BEARER RECONFIGURATION COMPLETE message and transit from CELL_FACH to URA_PCH when receive a RADIO BEARER RECONFIGURATION message. And the UE shall reconfigure radio bearers according to the RADIO BEARER RECONFIGURATION message.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.2.24.3 Test purpose

To confirm that the UE transmits RADIO BEARER RECONFIGURATION COMPLETE before entering URA_PCH state after it received a RADIO BEARER RECONFIGURATION message and reconfigured its radio bearers. The UE is in URA_PCH state in the same cell.

8.2.2.24.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message. The UE transmits RADIO BEARER RECONFIGURATION COMPLETE message to the UE using AM RLC and enters into URA_PCH state. The SS transmits a PAGING TYPE 1 message and the UE accepts it and enters the CELL_FACH state again.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	
2	→		RADIO BEARER RECONFIGURATION COMPLETE	The UE sends this message before state transition.
3				Reconfiguration of Radio Bearer after state transition.
4	←		PAGING TYPE 1	The SS transmits this message included a matched identity.
5	→		CELL UPDATE	The UE is in CELL_FACH state.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

Use the same message sub-type titled “Packet to CELL_FACH from CELL_FACH in PS“ in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH

PAGING TYPE 1 (Step 4)

Use the same message sub-type titled “TM (SMS in PS)“ in Annex A with following exceptions:

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	 UTRAN identity Previously assigned SRNC identity Previously assigned S-RNTI

8.2.2.24.5 Test requirement

After step 1 the UE transmits RADIO BEARER RECONFIGURATION COMPLETE message to the UE on uplink DCCH using AM RLC.

After step 3 the UE shall transit from CELL_FACH to URA_PCH.

8.2.3 Radio Bearer Release

8.2.3.1 Radio Bearer Release for transition from CELL_DCH to CELL_DCH: Success

8.2.3.1.1 Definition

8.2.3.1.2 Conformance requirement

The UE shall correctly release a radio bearer according to a RADIO BEARER RELEASE message.

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.1.3 Test purpose

To confirm that the UE release the existing radio bearer according to a RADIO BEARER RELEASE message received from the SS.

8.2.3.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH+DTCH_DCH (state 6-9) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RELEASE message to the UE. The UE release the radio bearer and transmits a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	
2				Release the radio bearer
3	→		RADIO BEARER RELEASE COMPLETE	

Specific Message Contents

RADIO BEARER RELEASE

The contents of RADIO BEARER RELEASE message are indicated as “Speech in CS” found in default message content clause 9 of TS 34.108.

8.2.3.1.5 Test requirement

After step 1 the UE shall release its radio bearers.

After step 3 the UE shall stop communicating on the released radio bearers, no uplink transmission shall be observed originating from the released link. The remaining radio bearers shall continue to be operational.

8.2.3.2 Radio Bearer Release for transition from CELL_DCH to CELL_DCH: Failure (Unsupported configuration)

8.2.3.2.1 Definition

8.2.3.2.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a RADIO BEARER RELEASE message which includes unsupported configuration parameters and transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting value “configuration unsupported” in IE “ failure cause”.

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.2.3 Test purpose

To confirm that the UE keeps its current configuration and transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, if the received RADIO BEARER RELEASE message indicates an unsupported configuration parameters for the UE.

8.2.3.2.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH+DTCH_DCH (state 6-9) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RELAESE message to the UE specifying a frequency which is not supported by the UE. The UE transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC indicating "configuration unsupported" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	Including unsupported configuration by the UE
2	→		RADIO BEARER RELAESE FAILURE	The UE does not change the radio bearer.

Specific Message Contents

RADIO BEARER RELEASE

The contents of RADIO BEARER RELEASE message in this test case is identical as "Speech in CS" found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	 63984 Not Present

RADIO BEARER RELEASE FAILURE

Information Element	Value/remark
Message Type Failure cause Other information element	 Configuration unsupported Not checked

8.2.3.2.5 Test requirement

After step 1 the UE shall keep its old configuration and transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC with the IE "failure cause" set to "configuration unsupported". The UE shall able to continue receiving and sending user data.

8.2.3.3 Radio Bearer Release for transition from CELL_DCH to CELL_DCH: Failure (Physical channel failure and reversion to old configuration)

8.2.3.3.1 Definition

8.2.3.3.2 Conformance requirement

The UE shall revert to the old configuration when the UE fails to configure the new radio bearer by timer T312 expiry and transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE " failure cause".

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.3.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC if the UE fails to release the radio bearer according to a RADIO BEARER RELEASE message by timer T312 expiry.

8.2.3.3.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH+DTCH_DCH (state 6-9) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RELEASE message but it does not configure L1 correspondingly. This causes the UE to fail to release the radio bearer, and after T312 expiry the UE reverts to the old configuration. The UE then transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC which specifies "physical channel failure" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	
2				The SS does not configure L1 to reflect the release of the indicated bearer.
3	→		RADIO BEARER RELEASE FAILURE	After T312 expiry, the UE finds that it fails to release a radio bearer and reverts to the old configuration.

Specific Message Contents

RADIO BEARER RELEASE

The contents of RADIO BEARER RELEASE message in this test case is identical as "Speech in CS" found in Annex A.

RADIO BEARER RELEASE FAILURE

Information Element	Value/remark
Message Type	
Failure cause	Physical channel failure
Other information element	Not checked

8.2.3.3.5 Test requirement

After step 2 the UE shall revert to the old configuration and transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC which includes the value "physical channel failure" in IE "failure cause".

8.2.3.4 Radio Bearer Release for transition from CELL_DCH to CELL_DCH: Failure(Physical channel failure and reversion failure)

8.2.3.4.1 Definition

8.2.3.4.2 Conformance requirement

The UE shall perform a cell update procedure when the UE fails to revert to the old configuration after the detection of physical channel failure in the radio bearer release procedure. After the UE completes cell update procedure, the UE transmits RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC which set IE “failure cause” to “physical channel failure”.

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.4.3 Test purpose

To confirm that the UE transmits RADIO BEARER RELEASE FAILURE message after completes a cell update procedure when the UE cannot revert to the old configuration after encountering a physical channel failure during the execution of a radio bearer release procedure.

8.2.3.4.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH+DTCH_DCH (state 6-9) as specified in clause 7.4 of TS 34.108 in cell 1

Test Procedure

The UE is in the CELL_DCH state in cell 1. The SS transmits a RADIO BEARER RELAESE message to the UE but does not configure L1 in accordance with the settings in the message. As a result, the UE recognize that it cannot reconfigure the radio bearer and wants to revert to the old configuration, but the UE cannot revert to the old configuration because the SS shall not revert to old configuration and the UE transmits CELL UPDATE message on uplink CCCH with IE “Cell update cause“ set to “radio link failure”. The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC and subsequently transmits RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting IE “failure cause” to ” physical channel failure”.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	
2				The SS does not configure the dedicated physical channel in accordance with The RADIO BEARER RELEASE message and shall not use old configuration.
3	→		CELL UPDATE	This message include the value “radio link failure” set in IE ”Cell update cause”.
4	←		CELL UPDATE CONFIRM	This message include IE ”Physical channel information elements”.
5				The SS configure the dedicated physical channel according to the IE “Physical channel information elements” included in the CELL UPDATE CONFIRM message.
6	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
7	→		RADIO BEARER RELEASE FAILURE	The IE “failure cause” shall be set to “physical channel failure”

Specific Message Contents

RADIO BEARER RELEASE

The contents of RADIO BEARER RELEASE message in this test case are identical as “Speech in CS” found in default message content clause 9 of TS 34.108.

CELL UPDATE (Step 3)

The contents of CELL UPDATE message is identical as “Contents of CELL UPDATE message“ as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to ‘0000 0000 0001’ Check to see if set to ‘0000 0000 0000 0000 0000 0001’ “radio link failure”

CELL UPDATE CONFIRM (Step)

The contents of CELL UPDATE CONFIRM message is identical as “CELL UPDATE CONFIRM message“ as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 3
RRC State indicator	CELL_DCH
Frequency info	
- UARFCN uplink(Nu)	Reference to TS34.108 clause 5.1 Test frequencies
- UARFCN downlink(Nd)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	33dBm
CHOICE Mode	FDD
Downlink information for each radio links	
- Primary CPICH info	
- Primary scrambling code	100
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0 chips
- Power offset $P_{Pilot-DPDCH}$	TBD
- Secondary CPICH info	Not Present
- DL channelisation code	
- Secondary scrambling code	2
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change	No change
- TPC combination index	0
- SSDT Cell Identity	-a
- Closed loop timing adjustment mode	Not Present
- Secondary CCPCH info	Not Present
- TFCS	Not Present
- FACH/PCH information	Not Present
- References to system information blocks	Not Present

RADIO BEARER RELEASE FAILURE (Step 7)

Information Element	Value/remark
Message Type	“RADIO BEARER RELEASE FAILURE”
Failure cause	“physical channel failure”
Other information element	Not checked

8.2.3.4.5 Test requirement

After step 2 the UE shall transmit CELL UPDATE message on the uplink CCCH with IE “Cell update cause“ set to “radio link failure”..

After step 5 the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 9 the UE shall transmit RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting the IE “failure cause” to ” physical channel failure”.

8.2.3.5 Radio Bearer Release for transition from CELL_DCH to CELL_DCH: Failure (Incompatible simultaneous reconfiguration)

8.2.3.5.1 Definition

8.2.3.5.2 Conformance requirement

If the UE receives a RADIO BEARER RELAESE message whilst reconfiguring due to a radio bearer message other than RADIO RELEASE SETUP, it shall keep its configuration as if the RADIO BEARER SETUP message had not been received.

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.5.3 Test purpose

To confirm that if the UE receives a RADIO BEARER RELEASE message whilst reconfiguring due to a radio bearer message other than RADIO BEARER RELEASE, it shall keep its configuration as if the RADIO BEARER RELEASE message had not been received and complete the reconfiguration according to the previously received message.

8.2.3.5.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER SETUP message to the UE. The SS transmits a RADIO BEARER SETUP message before the "activation time" indicated in the RADIO BEARER SETUP message expires. When the UE receives the RADIO BEARER SETUP message, the UE shall keep the configuration as if it had not received the RADIO BEARER RELEASE message and shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS receives the RADIO BEARER RELEASE FAILURE message, the UE reconfigures the new physical channel parameters and transmits a RADIO BEARER SETUP COMPLETE message on DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	
2	←		RADIO BEARER RELEASE	Message sent before the "Activation time" indicated in the message of step 1 has elapsed.
3	→		RADIO BEARER RELEASE FAILURE	The UE does not change the configuration due to the reception of RADIO BEARER RELEASE message.
4	→		RADIO BEARER SETUP COMPLETE	This message is on DCCH using AM RLC.

Specific Message Contents

RADIO BEARER SETUP (Step 1)

The contents of RADIO SETUP RELEASE message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A, with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8]

RADIO BEARER RELEASE (Step 2)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A. Information element(s) to be changed are listed below:

RADIO BEARER RELEASE FAILURE

Information Element	Value/remark
Message Type	
Failure cause	Incompatible simultaneous reconfiguration
Other information element	Not checked

8.2.3.5.5 Test requirement

After step 1, SS transmits a RADIO BEARER RELEASE message before the expiry of the activation time specified in the message of step 1.

After step 2 the UE shall keep its configuration as if the UE had not received the RADIO BEARER RELEASE message and shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 4 the UE communicates with the SS on the DCCH and DTCH using the new physical channel parameters reconfigured as a result of the RADIO BEARER SETUP message.

8.2.3.6 Radio Bearer Release for transition from CELL_DCH to CELL_DCH: Failure (Invalid message reception and Invalid configuration)

8.2.3.6.1 Definition

8.2.3.6.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a RADIO BEARER RELEASE message which includes undefined value in the mandatory IE "UTRAN DRX cycle length coefficient". It shall transmit a RADIO BEARER RELEASE FAILURE message which contains value "protocol error" in IE " failure cause" and value "Information element value not comprehended" in IE " Protocol error cause". The UE shall keep existing configuration before reception of a RADIO BEARER RELEASE message when the RADIO BEARER RELEASE message include some IEs set to invalid value, and then the UE shall transmit RADIO BEARER RELEASE FAILURE including IE "failure cause" set to "invalid configuration".

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.6.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER RELEASE message, which uses a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient".

To confirm that the UE transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER RELEASE message including some IEs set to invalid value.

8.2.3.6.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-DCCH+DTCH_DCH (state 6-9) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RELAESE message to the UE which includes undefined value in the mandatory IE "UTRAN DRX cycle length coefficient". The UE keeps the old configuration and transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC. This message shall indicate "protocol error" in IE "failure cause" and also "Information element value not comprehended" in IE "Protocol error cause". The UE keeps initial configuration and SS transmits RADIO BEARER RELEASE message including some IEs set to invalid value. The UE transmits RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to " invalid configuration".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	
2	→		RADIO BEARER RELEASE FAILURE	The UE shall not change the configuration.
3	←		RADIO BEARER RELEASE	This message includes IE set to invalid value
4				The UE does not change the configuration
5	→		RADIO BEARER RELEASE FAILURE	The IE "failure cause" shall be set to "invalid configuration

Specific Message Contents

RADIO BEARER RELEASE (Step1)

The contents of RADIO BEARER RELEASE message in this test case is identical as "Speech in CS" found in Annex A with the following exceptions:

Information Element	Value/remark
UTRAN DRX cycle length coefficient	Undefined value

RADIO BEARER RELEASE FAILURE (Step 2)

Information Element	Value/remark
Message Type	
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Information element value not comprehended
Other information element	Not checked

RADIO BEARER RELEASE (Step 3)

The contents of RADIO BEARER RELEASE message in this test case is identical as "Speech in CS" found in Annex A with the following exceptions:

Added or Reconfigured UL TrCH information	
- Transport channel identity	1
- TFS	
- Dynamic Transport format information	(This IE is repeated for TFI number)
- RLC size	Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list	
- Explicit List	
- RB identity	2

RADIO BEARER RELEASE FAILURE (Step 5)

Information Element	Value/remark
Message Type	
Failure cause	Invalid configuration
Other information element	Not checked

8.2.3.6.5 Test requirement

After step 1 the UE shall keep its old configuration and transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, which is set to "protocol error" in IE "failure cause" and is set to "Information element value not comprehended" in IE "Protocol error cause".

After step 3 the UE shall keep its old configuration.

After step 4 the UE shall transmit RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting the value " invalid configuration" to IE "failure cause".

8.2.3.7 Radio Bearer Release for transition from CELL_DCH to CELL_FACH: Success

8.2.3.7.1 Definition

8.2.3.7.2 Conformance requirement

The UE shall correctly release a radio bearer according to a RADIO BEARER RELEASE message, when the common physical channel are requested to be used for the remaining radio bearers.

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.7.3 Test purpose

To confirm that the UE release the existing the radio bearer according to a RADIO BEARER RELEASE message received from the SS.

8.2.3.7.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DTCH+DCCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RELEASE message to the UE. The UE release the radio bearer and transmits a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	SS releases the radio bearer in the fashion specified in the message and allocate common channel resources to carry the remaining radio bearers.
2				The UE select PRACH and S-CCPCH using SIB5 and SIB6 after entering CELL FACH state. The UE shall release radio bearers on dedicated transport channels, and reconfigure the remaining radio bearers using the selected common control channel.
3	→		RADIO BEARER RELEASE COMPLETE	UE shall be able to continue communication over the remaining radio bearers using the common control channels.

Specific Message Contents

RADIO BEARER RELEASE (Step 1)

Use the same message sub-type titled “Packet to CELL_FACH from CELL_DCH in PS” in Annex A.

8.2.3.7.5 Test requirement

After step 3 the UE shall release the specified radio bearer(s) and cease any further uplink transmission from these radio bearer(s)..

8.2.3.8 Radio Bearer Release for transition from CELL_DCH to CELL_FACH: Success (Cell re-selection)

8.2.3.8.1 Definition

8.2.3.8.2 Conformance requirement

The UE shall initiate the cell update procedure when the UE performs cell reselection during a radio bearer release procedure. After the UE completes cell update procedure, the UE shall continue to perform the radio bearer release procedure and correctly release the radio bearer.

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.8.3 Test purpose

To confirm that the UE transmits RADIO BEARER RELEASE FAILURE message after the UE completes a cell update procedure.

8.2.3.8.4 Method of test

Initial Condition

System Simulator: 2 cells – No.1 is active, No.2 is inactive –

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

Table 8.2.3.8

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.3.8 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in the CELL_DCH state in cell No.1. The SS configures its downlink transmission power settings according to columns "T1" in Table 8.2.3.8 and broadcast BCCH on the primary CCPCH in cell 2 . The SS transmit a RADIO BEARER RELEASE message as the transition from CELL_DCH to CELL_FACH. The UE reselects cell 2 and initiates the cell update procedure. The UE transmits CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and transmits RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.3.8
2	←		BCCH	The SS starts to broadcast BCCH on the primary CCPCH in cell2.
3	←		RADIO BEARER RELEASE	Assigned the transition from CELL_DCH to CELL_FACH
4	→		CELL UPDATE	The value "cell reselection" shall be set in IE "cell update cause".
5	←		CELL UPDATE CONFIRM	This message include IE "new U-RNTI" and IE "new C-RNTI"".
6	→		UTRAN MOBILITY INFORMATION CONFIRM	
7	→		RADIO BEARER RELEASE COMPLETE	

Specific Message Contents

RADIO BEARER RELEASE (Step 3)

Use the same message sub-type titled "Packet to CELL_FACH from CELL_DCH in PS" in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CPICH info - Primary scrambling code	 150

CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Assigned previously in cell 1 Assigned previously in cell 1 "cell reselection"

CELL UPDATE CONFIRM (Step 5)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI New U-RNTI - SRNC Identity - S-RNTI New C-RNTI	Same as CELL UPDATE message in step 7 '0000 0000 0000 0001' Different from previous S-RNTI Different from previous C-RNTI

8.2.3.8.5 Test requirement

After step 3 the UE shall transmit CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".

After step 5 UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 6 UE shall transmit RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC.

8.2.3.9 Radio Bearer Release for transition from CELL_FACH to CELL_DCH: Success

8.2.3.9.1 Definition

8.2.3.9.2 Conformance requirement

The UE shall correctly release a radio bearer according to a RADIO BEARER RELEASE message.

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.9.3 Test purpose

To confirm that an UE, in state CELL_FACH, releases the radio access bearers on RACH and FACH transport channels. After the release, it shall access the affected radio bearers on the newly allocated DCH transport channel.

8.2.3.9.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER RELEASE message to the UE. In this message, SS commands the UE to release radio bearers on RACH and FACH. At the same time, SS allocates DCH to support the affected radio bearers. The UE shall release the indicated radio bearer and transmits a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	
2				UE shall release the radio access bearers carried by RACH and FACH transport channels.
3	→		RADIO BEARER RELEASE COMPLETE	

Specific Message Contents

RADIO BEARER RELEASE (Step 1)

Use the same message sub-type titled “Packet to CELL_DCH from CELL_FACH in PS” in Annex A.

8.2.3.9.5 Test requirement

After step3 the UE shall stop communicating on the released radio bearers, and resume all stopped radio bearer using the dedicated physical channel allocated.

8.2.3.10 Radio Bearer Release for transition from CELL_FACH to CELL_DCH: Failure (Unsupported configuration)

8.2.3.10.1 Definition

8.2.3.10.2 Conformance requirement

The UE shall keep its old configuration when it receives a RADIO BEARER RELEASE message which specifies unsupported configuration parameters for the UE. Then the UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC which, setting value “configuration unsupported” in IE “failure cause”.

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.10.3 Test purpose

To confirm that the UE keeps its configuration and transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC if the received RADIO BEARER RELEASE message requests for unsupported configuration parameters for the UE.

8.2.3.10.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER RELAESE message to the UE, referring to a frequency which cannot be supported by the UE. The UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC and set "configuration unsupported" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	The message contains a configuration not supported by the UE
2	→		RADIO BEARER RELAESE FAILURE	The UE shall not change the radio bearer configuration.

Specific Message Contents

RADIO BEARER RELEASE

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	 63984 Not Present

RADIO BEARER RELEASE FAILURE

Information Element	Value/remark
Message Type Failure cause Other information element	 Configuration unsupported Not checked

8.2.3.10.5 Test requirement

After step 2 the UE shall keep its old configuration and transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, stating the reason "configuration unsupported" in IE "failure cause".

8.2.3.11 Radio Bearer Release for transition from CELL_FACH to CELL_DCH: Failure (Physical channel failure and reversion to old configuration)

8.2.3.11.1 Definition

8.2.3.11.2 Conformance requirement

The UE shall revert to the old configuration when the UE fails to configure the new radio bearer before T312 timer expiry. Then it shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting the value "physical channel failure" in IE "failure cause".

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.11.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC if the UE fails to release the radio bearer in accordance the specified settings in RADIO BEARER RELEASE message by T312 timer expiry.

8.2.3.11.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER RELEASE message and does not configure L1. The UE is expected to encounter a failure while releasing the radio bearer. After T312 timer expiry, the UE shall revert to the old radio bearer configuration, so the UE transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	
2				The SS does not configure L1.
3	→		RADIO BEARER RELEASE FAILURE	After T312 expiry the UE fails to release a radio bearer and reverts to the old configuration.

Specific Message Contents

RADIO BEARER RELEASE

Use the message sub-type titled "Packet to CELL_DCH from CELL_FACH in PS" in Annex A.

RADIO BEARER RELEASE FAILURE

Information Element	Value/remark
Message Type	
Failure cause	Physical channel failure
Other information element	Not checked

8.2.3.11.5 Test requirement

After step 2 the UE shall revert to the old configuration and transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting the value "physical channel failure" in IE "failure cause".

8.2.3.12 Radio Bearer Release for transition from CELL_FACH to CELL_DCH: Failure (Physical channel failure and reversion failure)

8.2.3.12.1 Definition

8.2.3.12.2 Conformance requirement

The UE shall perform a cell update procedure when the UE selects another cell after the detection of physical channel failure in the radio bearer release procedure. After the UE completes cell update procedure, the UE transmits RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC which set IE "failure cause" to "physical channel failure".

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.12.3 Test purpose

To confirm that the UE transmits RADIO BEARER RELEASE FAILURE message after it completes a cell update procedure following a physical channel failure during the radio bearer release.

8.2.3.12.4 Method of test

Initial Condition

System Simulator: 2 cells - Cell.1 is active, Cell 2 is inactive

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108 in cell No.1

Test Procedure

Table 8.2.3.12

Parameter	**Unit**	**Cell 1**		**Cell 2**	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.3.12 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in the CELL_FACH state in cell 1. The SS transmits a RADIO BEARER RELAESE message to the UE, but it does not configure L1 in accordance to the settings in the message. This is expected to cause the UE to experience a failure to release the radio bearer and it subsequently tries to revert to the old configuration. The SS configures its downlink transmission power settings according to columns "T1" in Table 8.2.3.12 and begins to broadcast the BCCH on the primary CCPCH in a cell 2. The UE shall find cell 2 and transmits CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "radio link failure". The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and subsequently transmits RADIO RELEASE FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to "cell reselection".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	
2				The SS does not configure L1 in accordance with the settings in the message and applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.3.12.
3	←		BCCH	The SS starts to transmit the BCCH on the primary CCPCH in cell 2.
4	→		CELL UPDATE	The UE finds a new cell 2 and enter CELL_FACH state. This message include the value "cell reselection" set in IE "Cell update cause".
5	←		CELL UPDATE CONFIRM	This message include IE "new U-RNTI" and IE "new C-RNTI"".
6	→		UTRAN MOBILITY INFORMATION CONFIRM	
7	→		RADIO BEARER RELEASE FAILURE	The IE "failure cause" shall be set to "physical channel failure"

Specific Message Contents

RADIO BEARER RELEASE (Step 1)

Use the message sub-type titled "Packet to CELL_DCH from CELL_FACH in PS" in Annex A.

CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Assigned previously in cell 1
- S-RNTI	Assigned previously in cell 1
Cell Update Cause	"cell reselection"

CELL UPDATE CONFIRM (Step 5)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 4
New U-RNTI	
- SRNC Identity	'0000 0000 0000 0001'
- S-RNTI	Different from previous S-RNTI
New C-RNTI	Different from previous C-RNTI

RADIO BEARER RELEASE FAILURE (Step 7)

Information Element	Value/remark
Message Type	"RADIO BEARER RELEASE FAILURE"
Failure cause	"physical channel failure"
Other information element	Not checked

8.2.3.12.5 Test requirement

After step 3 the UE shall transmit a CELL UPDATE message on the uplink CCCH with IE "Cell update cause" set to "cell reselection".

After step 5 the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to " physical channel failure".

8.2.3.13 Radio Bearer Release for transition from CELL_FACH to CELL_DCH: Failure (Incompatible simultaneous reconfiguration)

8.2.3.13.1 Definition

8.2.3.13.2 Conformance requirement

If the UE receives a RADIO BEARER RELEASE message whilst reconfiguring due to a radio bearer message other than RADIO BEARER RELEASE, it shall keep its configuration as if the RADIO BEARER RELEASE message had not been received.

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.13.3 Test purpose

To confirm that if the UE receives a RADIO BEARER RELEASE message whilst reconfiguring due to a radio bearer message other than RADIO BEARER RELEASE, it shall keep its configuration as if the RADIO BEARER RELEASE message had not been received and complete the reconfiguration according to the previously received message.

8.2.3.13.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER SETUP message to the UE. The SS transmits a RADIO BEARER RELEASE message before the "activation time" indicated in the RADIO BEARER SETUP message expires. When the UE receives the RADIO BEARER SETUP message, the UE shall keep the configuration as if it had not received the RADIO BEARER SETUP message and shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS receives the RADIO BEARER SETUP FAILURE message, the UE reconfigures the new physical channel parameters and transmits a RADIO BEARER SETUP COMPLETE message on DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	The UE receive any message other than RADIO BEARER RELEASE. (e.g. RADIO BEARER SETUP)
2	←		RADIO BEARER SETUP	Sent before the expiry stated in IE "Activation Time" of message in step 1.
3	→		RADIO BEARER RELEASE FAILURE	The UE does not change the configuration due to the reception of RADIO BEARER SETUP message..
4	→		RADIO BEARER SETUP COMPLETE	This message is on DCCH using AM RLC.

Specific Message Contents

RADIO BEARER SETUP (Step 1)

The contents of RADIO BEARER SETUP message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A. Information element(s) to be changed are listed below:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8]

RADIO BEARER RELEASE (Step 2)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Info	Current CFN-[current CFN mod 8 + 8]

RADIO BEARER RELEASE FAILURE

Information Element	Value/remark
Message Type	
Failure cause	Incompatible simultaneous reconfiguration
Other information element	Not checked

8.2.3.13.5 Test requirement

After step 1, SS transmits a RADIO BEARER RELEASE message before the expiry of the activation time specified in the message of step 1.

After step 2 the UE shall keep its configuration as if the UE had not received the RADIO BEARER RELEASE message and shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 4 the UE communicates with the SS on the DCCH and DTCH using the new physical channel parameters reconfigured as a result of the RADIO SETUP message.

8.2.3.14 Radio Bearer Release for transition from CELL_FACH to CELL_DCH: Failure (Invalid message reception and Invalid configuration)

8.2.3.14.1 Definition

8.2.3.14.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a RADIO BEARER RELEASE message which uses a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient". It shall transmit a RADIO BEARER RELEASE FAILURE message which indicate the value "protocol error" in IE "failure cause" and setting "Information element value not comprehended" in IE "Protocol error cause". The UE shall keep existing configuration before reception of a RADIO BEARER RELEASE message when the RADIO BEARER RELEASE message include some IEs set to invalid value, and then the UE shall transmit RADIO BEARER RELEASE FAILURE including IE "failure cause" set to "invalid configuration".

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.14.3 Test purpose

To confirm that the UE transmits RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER RELEASE message which uses a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient".

To confirm that the UE transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER RELEASE message including some IEs set to invalid value.

8.2.3.14.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS_DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER RELAESE message to the UE containing a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient". The UE keeps the old configuration and transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, which shall indicate the reason "protocol error" in IE "failure cause" and also "Information element value not comprehended" in IE "Protocol error cause". The UE keeps initial configuration and SS transmits RADIO BEARER RELEASE message including some IEs set to invalid value. The UE transmit RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting the value " invalid configuration" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	
2	→		RADIO BEARER RELEASE FAILURE	The UE shall not change its current configuration.
3	←		RADIO BEARER RELEASE	This message includes IE set to invalid value
4				The UE does not change the configuration
5	→		RADIO BEARER RELEASE FAILURE	The IE "failure cause" shall be set to "invalid configuration

Specific Message Contents

RADIO BEARER RELEASE (Step 3)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
UTRAN DRX Indicator	Undefined value

RADIO BEARER RELEASE FAILURE (Step 2)

Information Element	Value/remark
Message Type	
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Information element value not comprehended
Other information element	Not checked

RADIO BEARER RELEASE (Step 3)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Added or Reconfigured UL TrCH information	
- Transport channel identity	1
- TFS	
- Dynamic Transport format information	(This IE is repeated for TFI number)
- RLC size	Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list	
- Explicit List	
- RB identity	4

RADIO BEARER RELEASE FAILURE (Step 5)

Information Element	Value/remark
Message Type	
Failure cause	Invalid configuration
Other information element	Not checked

8.2.3.14.5 Test requirement

After step 1 the UE shall keep its old configuration and transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting "protocol error" in IE "failure cause" and also indicating "Information element value not comprehended" in IE "Protocol error cause".

After step 3 the UE shall keep its old configuration.

After step 4 the UE shall transmit RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to " invalid configuration".

8.2.3.15 Radio Bearer Release for transition from CELL_FACH to CELL_FACH: Success

8.2.3.15.1 Definition

8.2.3.15.2 Conformance requirement

The UE shall correctly release a radio bearer according to the RADIO BEARER RELEASE message received.

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.15.3 Test purpose

To confirm that the UE release the existing the radio bearer(s) according to the RADIO BEARER RELEASE message received from the SS.

8.2.3.15.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a RADIO BEARER RELEASE message to the UE. The UE release the radio bearer and transmits a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	
2				The UE select PRACH and S-CCPCH using SIB5 and SIB6. The UE shall release the requested radio bearer(s), and stop transmitting using these radio bearer(s).
3	→		RADIO BEARER RELEASE COMPLETE	

Specific Message Contents

RADIO BEARER RELEASE

Use the same message sub-type titled “Packet to CELL_FACH from CELL_FACH in PS” in Annex A.

8.2.3.15.5 Test requirement

After step 1 the UE shall cease the transmission and reception of the affected radio bearers.

After step 3 the UE shall stop communicating on radio bearers to be released.

8.2.3.16 Radio Bearer Release for transition from CELL_DCH to CELL_DCH: Success (Subsequently received)

8.2.3.16.1 Definition

8.2.3.16.2 Conformance requirement

If the UE receives a RADIO BEARER RELEASE message before the UE releases the radio bearer according to the previous RADIO BEARER RELEASE message, the UE shall ignore the new RADIO BEARER RELEASE message and releases according to the previous RADIO BEARER RELEASE message. Finally, the UE shall transmit RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.16.3 Test purpose

To confirm that if the UE receives a new RADIO BEARER RELEASE message before the UE releases the radio bearer according to a previous RADIO BEARER RELEASE message it ignore the new RADIO BEARER RELEASE message and configures according to the previous RADIO BEARER RELEASE message received.

8.2.3.16.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. When the SS transmits a RADIO BEARER RELEASE message to the UE before the UE releases the radio bearer, the UE ignores the second RADIO BEARER RELEASE message and releases according to the previous RADIO BEARER RELEASE message received. Finally, the UE shall transmit RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	
2	←		RADIO BEARER RELEASE	Message sent before. the expiry of "activation time" specified in message of step 1.
3	→		RADIO BEARER RELEASE COMPLETE	The UE ignores the RADIO BEARER RELEASE message in step 2 and confirms release according to the RADIO BEARER RELEASE message in step 1.

Specific Message Contents

RADIO BEARER RELEASE (Step 1)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A, with the following exceptions:

Information Element	Value/remark
Activation Time	[256+Current CFN-[current CFN mod 8 + 8]]MOD 256

RADIO BEARER RELEASE (Step 2)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A.

8.2.3.16.5 Test requirement

After step 2 the UE shall releases the radio bearer specified in the first RADIO BEARER RELEASE message and transmit an RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC.

8.2.3.17 Radio Bearer Release for transition from CELL_FACH to CELL_DCH: Success (Subsequently received)

8.2.3.17.1 Definition

8.2.3.17.2 Conformance requirement

If the UE receives a RADIO BEARER RELEASE message before the UE releases the radio bearer according to the previous RADIO BEARER RELEASE message, the UE shall ignore the new RADIO BEARER RELEASE message and releases according to the previous RADIO BEARER RELEASE message. Finally, the UE shall transmit RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.3

8.2.3.17.3 Test purpose

To confirm that if the UE receives a new RADIO BEARER RELEASE message before the UE releases the radio bearer according to a previous RADIO BEARER RELEASE message it ignore the new RADIO BEARER RELEASE message and configures according to the previous RADIO BEARER RELEASE message received.

8.2.3.17.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The UE is in the CELL_DCH state. When the SS transmits a RADIO BEARER RELEASE message to the UE before the UE releases the radio bearer, the UE ignores the second RADIO BEARER RELEASE message and releases according to the previous RADIO BEARER RELEASE message received. Finally, the UE shall transmit RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	
2	←		RADIO BEARER RELEASE	Sent before the expiry stated in IE "Activation Time" of RADIO BEARER RELEASE message in step 1.
3	→		RADIO BEARER RELEASE COMPLETE	The UE ignores the RADIO BEARER RELEASE message in step 2 and confirms release according to the RADIO BEARER RELEASE message in step 1.

Specific Message Contents

RADIO BEARER RELEASE

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

(Step 1)

Information Element	Value/remark
Activation Time Info	[256+Current CFN-[current CFN mod 8 + 8]]MOD 256

8.2.3.17.5 Test requirement

After step 2 the UE shall releases the radio bearer specified in the first RADIO BEARER RELEASE message and transmit an RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC.

8.2.3.18 Radio Bearer Release from CELL_DCH to CELL_PCH: Success

8.2.3.18.1 Definition

8.2.3.18.2 Conformance requirement

The UE shall transmit RADIO BEARER RELEASE COMPLETE message before completes transition from CELL_DCH to CELL_PCH when receives a RADIO BEARER RELEASE message. And then, the UE shall release radio bearers according to the RADIO BEARER Release message.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.3.18.3 Test purpose

To confirm that the UE transmits RADIO BEARER RELEASE COMPLETE before entering CELL_PCH state after it received a RADIO BEARER RELEASE message and released its radio bearers. The UE is in CELL_PCH state of the same cell.

8.2.3.18.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RELEASE message. The UE transmits RADIO BEARER RELEASE COMPLETE message to the UE using AM RLC and enters into CELL_PCH state. The SS transmits a PAGING TYPE 1 message and the UE accepts it and enters the CELL_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RELEASE	
2		→	RADIO BEARER RELEASE COMPLETE	The UE sends this message before completes state transition.
3		←	PAGING TYPE 1	The SS transmits this message included a matched identity.
4		→	CELL UPDATE	The UE is in CELL_FACH state.

Specific Message Contents

RADIO BEARER RELEASE (Step 1)

Use the same message sub-type titled “Packet to CELL_FACH from CELL_DCH in PS“ in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH

PAGING TYPE 1 (Step 3)

Use the same message sub-type titled “TM (SMS in PS)“ in Annex A with following exceptions:

Information Element	Value/remark
Paging record list	
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	Previously assigned SRNC identity
- S-RNTI	Previously assigned S-RNTI

8.2.3.18.5 Test requirement

After step 1 the UE transmits RADIO BEARER RELEASE COMPLETE message to the UE on uplink DCCH using AM RLC before completes state transition.

8.2.3.19 Radio Bearer Release from CELL_DCH to URA_PCH: Success

8.2.3.19.1 Definition

8.2.3.19.2 Conformance requirement

The UE shall transmit RADIO BEARER RELEASE COMPLETE message before completes transition from CELL_DCH to CELL_PCH when receives a RADIO BEARER RELEASE message. And then, the UE shall release radio bearers according to the RADIO BEARER Release message.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.3.19.3 Test purpose

To confirm that the UE transmits RADIO BEARER RELEASE COMPLETE before entering CELL_PCH state after it received a RADIO BEARER RELEASE message and released its radio bearers. The UE is in CELL_PCH state of the same cell.

8.2.3.19.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH(state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RELEASE message. The UE transmit RADIO BEARER RELEASE COMPLETE message to the UE using AM RLC and enters into CELL_PCH state. The SS transmits a PAGING TYPE 1 message and the UE accepts it and enters the CELL_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RELEASE	
2	→		RADIO BEARER RELEASE COMPLETE	The UE sends this message before completes state transition.
3	←		PAGING TYPE 1	The SS transmits this message included a matched identity.
4	→		CELL UPDATE	The UE is in CELL_FACH state.

Specific Message Contents

RADIO BEARER RELEASE (Step 1)

Use the same message sub-type titled “Packet to CELL_FACH from CELL_DCH in PS“ in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH

PAGING TYPE 1 (Step 3)

Use the same message sub-type titled "TM (SMS in PS)" in Annex A with following exceptions:

Information Element	Value/remark
Paging record list	
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	Previously assigned SRNC identity
- S-RNTI	Previously assigned S-RNTI

8.2.3.19.5 Test requirement

After step 1 the UE transmits RADIO BEARER RELEASE COMPLETE message to the UE on uplink DCCH using AM RLC before completes state transition.

8.2.4 Transport channel reconfiguration

8.2.4.1 Transport channel reconfiguration from CELL_DCH to CELL_DCH (Hard handover to same radio frequency): Success with no transport channel type switching

8.2.4.1.1 Definition

8.2.4.1.2 Conformance requirement

The UE shall correctly reconfigure a radio bearer according to the TRANSPORT CHANNEL RECONFIGURATION message, which specifies a hard handover to another cell. After the completion of this procedure, the UE shall be able to communicate with the SS on the new transport channel.

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.1.3 Test purpose

To confirm that the UE reconfigures a new transport channel according to a TRANSPORT CHANNEL RECONFIGURATION message, which also specifies that a hard handover to another cell be performed simultaneously.

8.2.4.1.4 Method of test

Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 2 is inactive

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108 in cell 1

Test Procedure

Table 8.2.4.1

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.4.1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in the CELL_DCH state in cell 1. The SS configures its downlink transmission power settings according to columns "T1" in Table 8.2.4.1 and broadcast BCCH on the primary CCPCH in cell 2. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE, which includes new transport channel parameters to be applied in cell 2. The UE shall reconfigure the new transport channel and then transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH of cell 2 using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.4.1
2	←		BCCH	The SS starts to broadcast BCCH on the primary CCPCH in cell2.
3	←		TRANSPORT CHANNEL RECONGURATION	Hard handover to cell 2. Including UE information elements("TFS"I)
4				UE shall stop all uplink transmissions and reconfigure itself to use the new transport channel parameters
5	→		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled "Packet to CELL_DCH from CELL_DCH in PS" in Annex A, with the following exceptions:

Information Element	Value/remark
TrCH Information Elements -Uplink transport Channels -Added or Reconfigured TrCH information list -Downlink transport Channels -Added or Reconfigured TrCH information list Downlink information for each radio links - Primary CPICH info - Primary Scrambling Code Downlink information common for all radio links - Downlink DPCH info common for all RL - Timing Indicator	 Number of Transport blocks = 2 Number of Transport blocks = 2 Same downlink UARFCN as used for cell 2 150 Initialise

8.2.4.1.5 Test requirement

After step 3 the UE shall reconfigure the radio links affected by the changes for uplink and downlink DCH. The UE shall stop transmitting on the uplink of cell 1.

After step 5 the UE shall continue to communicate with the SS on the DCCH and DTCH in cell 2, using the new Transport Format Set (TFS) applicable on the existing transport channel.

8.2.4.2 Transport channel reconfiguration from CELL_DCH to CELL_DCH: Failure (Unsupported configuration)

8.2.4.2.1 Definition

8.2.4.2.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a TRANSPORT CHANNEL RECONFIGURATION message which includes unsupported configuration parameters and transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set to “configuration unsupported” in IE “failure cause

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.2.3 Test purpose

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if the received TRANSPORT CHANNEL RECONFIGURATION message specifies unsupported configuration parameters.

8.2.4.2.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE, which includes unsupported configuration parameters of the UE. The UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, reporting the event “configuration unsupported” in IE “failure cause”.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONGURATION	Including unsupported configuration by the UE
2	→		TRANSPORT CHANNEL RECONFIGURATION FAILURE	The UE shall not change the settings used by the transport channel.

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
TrCH Information Elements -Uplink transport Channels -Added or Reconfigured TrCH information list -Downlink transport Channels -Added or Reconfigured TrCH information list	 Number of Transport blocks = 4096 Selected value as the UE can not support. Number of Transport blocks = 4096

TRANSPORT CHANNEL RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type Failure cause Other information element	"TRANSPORT CHANNEL RECONFIGURATION FAILURE" Configuration unsupported Not checked

8.2.4.2.5 Test requirement

After step 1 the UE shall keep its old configuration and transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, indicating "configuration unsupported" in IE "failure cause".

8.2.4.3 Transport channel reconfiguration from CELL_DCH to CELL_DCH: Failure (Physical channel failure and reversion to old configuration)

8.2.4.3.1 Definition

8.2.4.3.2 Conformance requirement

The UE shall revert to the old configuration when the UE fails to reconfigure the new physical channel by received TRANSPORT CHANNEL RECONFIGURATION message and transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.3.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, if the UE fails to reconfigure the new transport channel according to a TRANSPORT CHANNEL RECONFIGURATION message.

8.2.4.3.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE, which includes new transport channel parameters but it does not reconfigure the new transport channel. Therefore, the UE cannot reconfigure them and have to revert to the old configuration. Then the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting "physical channel failure" in IE " failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONGURATION	Specifies a change in the TFS of the dedicated transport channel used.
2				The SS does not reconfigure the transport channel, leading to the UE unable to reconfigure the new transport channel.
3	→		TRANSPORT CHANNEL RECONFIGURATION FAILURE	The UE reverts to the old configuration and transmits this message.

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION

Use the message sub-type titled "Packet to CELL_DCH from CELL_DCH in PS" in Annex A.

TRANSPORT CHANNEL RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type	"TRANSPORT CHANNEL RECONFIGURATION FAILURE"
Failure cause	Physical channel failure
Other information element	Not checked

8.2.4.3.5 Test requirement

After step 2 the UE shall revert to the old configuration and transmit a TRANPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, and it shall set the value "physical channel failure" in IE "failure cause".

8.2.4.4 Transport channel reconfiguration from CELL_DCH to CELL_DCH: Failure (Physical channel failure and reversion failure)

8.2.4.4.1 Definition

8.2.4.4.2 Conformance requirement

The UE shall perform a cell update upon failure of reconfiguration for a transport channel because of physical channel failure and reversion. After the UE completes cell update procedure, the UE transmits TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC which set IE “failure cause” to “physical channel failure”.

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.4.3 Test purpose

To confirm that the UE transmits RADIO TRANSPORT CHANNEL RECONFIGURATION FAILURE message after it completes a cell update procedure when the UE cannot reconfigure the new transport channel due to a failure of L1 configuration and subsequently fail to revert to the old configuration.

8.2.4.4.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108 in cell 1

Test Procedure

The UE is in the CELL_DCH state in cell 1.The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE. The message specifies a new set of transport channel parameters but the SS does not reconfigure L1 correspondingly. The UE cannot reconfigure the new transport channel and shall attempt to revert to the old configuration. But SS shall not revert to old configuration. The UE cannot revert to the old configuration and then transmit a CELL UPDATE message on uplink CCCH with IE “Cell update cause“ set to “radio link failure”. The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC and subsequently transmit TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE “failure cause” to ” physical channel failure”.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONGURATION	Specifies the use of a new setting for transport channel.
2				The SS does not reconfigure L1 in accordance with TRANSPORT CHANNEL RECONFIGURTION message and shall not use old configuration.
3	→		CELL UPDATE	This message includes the value “radio link failure” set in IE ”Cell update cause”.
4	←		CELL UPDATE CONFIRM	This message include IE ”Physical channel information elements”.
5				The SS change physical channel configuration according to the IE “Physical channel information elements” included in the CELL UPDATE CONFIRM message.
6	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
7	→		TRANSPORT CHANNEL RECONGURATION FAILURE	The IE “failure cause” shall be set to “physical channel failure”

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled “Packet to CELL_DCH from CELL_DCH in PS” in Annex A.

CELL UPDATE (Step 3)

The contents of CELL UPDATE message is identical as “Contents of CELL UPDATE message“ as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to ‘0000 0000 0001’ Check to see if set to ‘0000 0000 0000 0000 0000 0001’ “radio link failure”

CELL UPDATE CONFIRM (Step 4)

The contents of CELL UPDATE CONFIRM message is identical as “CELL UPDATE CONFIRM message“ as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 7
Frequency info	
- UARFCN uplink(Nu)	Reference to TS34.108 clause 5.1 Test frequencies
- UARFCN downlink(Nd)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	33dBm
CHOICE Mode	FDD
Downlink information for each radio links	
- Primary CPICH info	
- Primary scrambling code	100
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0 chips
- Power offset $P_{Pilot-DPDCH}$	TBD
- Secondary CPICH info	Not Present
- DL channelisation code	
- Secondary scrambling code	2
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change	No change
- TPC combination index	0
- SSDT Cell Identity	-a
- Closed loop timing adjustment mode	Not Present
- Secondary CCPCH info	Not Present
- TFCS	Not Present
- FACH/PCH information	Not Present
- References to system information blocks	Not Present

TRANSPORT CHANNELRECONGURATION FAILURE (Step 7)

Information Element	Value/remark
Message Type	“TRANSPORT CHANNEL RECONGURATION”
Failure cause	“physical channel failure”
Other information element	Not checked

8.2.4.4.5 Test requirement

After step 2 the UE shall transmit a CELL UPDATE message on the uplink CCCH with IE “Cell update cause“ set to “radio link failure”.

After step 5 the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the IE “failure cause” to ” physical channel failure”.

8.2.4.5 Transport Channel Reconfiguration from CELL_DCH to CELL_DCH: Failure (Incompatible simultaneous reconfiguration)

8.2.4.5.1 Definition

8.2.4.5.2 Conformance requirement

If the UE receives a TRANSPORT CHANNEL RECONFIGURATION message whilst reconfiguring due to a radio bearer message other than TRANSPORT CHANNEL RECONFIGURATION, it shall keep its configuration as if the TRANSPORT CHANNEL RECONFIGURATION message had not been received.

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.5.3 Test purpose

To confirm that if the UE receives a TRANSPORT CHANNEL RECONFIGURATION message whilst reconfiguring due to a radio bearer message other than TRANSPORT CHANNEL RECONFIGURATION, it shall keep its configuration as if the TRANSPORT CHANNEL RECONFIGURATION message had not been received and complete the reconfiguration according to the previously received message.

8.2.4.5.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the TRANSPORT CHANNEL RECONFIGURATION message, the UE shall keep the configuration as if it had not received the TRANSPORT CHANNEL RECONFIGURATION message and shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS receives the TRANSPORT CHANNEL RECONFIGURATION FAILURE message, the UE reconfigures the new physical channel parameters and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	Including IE "Uplink DPCH info"
2	←		TRANSPORT CHANNEL RECONFIGURATION	Sent before the time specified in IE "Activation Time Info" of message in step 1 has elapsed.
3	→		TRANSPORT CHANNEL RECONFIGURATION FAILURE	The UE shall not change the configuration due to the reception of TRANSPORT CHANNEL RECONFIGURATION message.
4	→		RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

For RADIO BEARER RECONFIGURATION in step 1, use the message sub-type indicated as "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A.

TRANSPORT CHANNEL RECONFIGURATION (Step 2)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the corresponding message found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8]

TRANSPORT CHANNEL RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type	"TRANSPORT CHANNEL RECONFIGURATION FAILURE"
Failure cause	Incompatible simultaneous reconfiguration
Other information element	Not checked

8.2.4.5.5 Test requirement

After step 1, SS transmits a TRANSPORT CHANNEL RECONFIGURATION message before the expiry of the activation time specified in the message of step 1.

After step 2 the UE shall keep its configuration as if the UE had not received the RADIO BEARER SETUP message and shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 4 the UE communicates with the SS on the DCCH and DTCH using the new physical channel parameters reconfigured as a result of the RADIO BEARER RECONFIGURATION message.

8.2.4.6 Transport channel reconfiguration from CELL_DCH to CELL_DCH: Failure (Invalid message reception and Invalid configuration)

8.2.4.6.1 Definition

8.2.4.6.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a TRANSPORT CHANNEL RECONFIGURATION message which makes use of a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient". Then it shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message with the value "protocol error" set in IE "failure cause" and also "Information element value not comprehended" in IE "Protocol error cause". The UE shall keep existing configuration before reception of a TRANSPORT CHANNEL RECONFIGURATION message when the TRANSPORT CHANNEL RECONFIGURATION message include some IEs set to invalid value, and then the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION FAILURE including IE "failure cause" set to "invalid configuration".

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.6.3 Test purpose

To confirm that the UE transmits TRANSPORT CHANNEL RECONFIGRATION FAILURE message on the DCCH using AM RLC, if the received TRANSPORT CHANNEL RECONFIGURATION message comprises an undefined value in the mandatory IE "UTRAN DRX cycle length coefficient".

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives a TRANSPORT CHANNEL RECONFIGURATION message including some IEs set to invalid value.

8.2.4.6.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE, which includes a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient". The UE shall keep the old configuration and transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, specifying "protocol error" in IE "failure cause" and also indicating "Information element value not comprehended" in IE "Protocol error cause". The UE keeps initial configuration and SS transmits TRANSPORT CHANNEL RECONFIGURATION message including some IEs set to invalid value. The UE transmits TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value " invalid configuration" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONFIGURATION	Contains an illegal value for a mandatory IE
2	→		TRANSPORT CHANNEL RECONFIGRATION FAILURE	The UE does not change the configuration.
3	←		TRANSPORT CHANNEL RECONFIGURATION	This message includes IE set to invalid value
4				The UE does not change the configuration
5	→		TRANSPORT CHANNEL RECONFIGRATION FAILURE	The IE "failure cause" shall be set to "invalid configuration

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION (Step 1)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical in Annex A for RRC tests with the following exceptions:

Information Element	Value/remark
UTRAN DRX cycle length coefficient	Undefined value

TRANSPORT CHANNEL RECONFIGURATION FAILURE (Step 2)

Information Element	Value/remark
Message Type	" TRANSPORT CHANNEL RECONFIGURATION FAILURE"
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Information element value not comprehended
Other information element	Not checked

TRANSPORT CHANNEL RECONFIGURATION (Step 3)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical in Annex A for RRC tests with the following exceptions:

Information Element	Value/remark
Added or Reconfigured UL TrCH information - Transport channel identity - TFS - Dynamic Transport format information - RLC size - CHOICE Logical Channel list - Explicit List - RB identity	 1 (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set 2

TRANSPORT CHANNEL RECONFIGURATION FAILURE (Step 5)

Information Element	Value/remark
Message Type Failure cause Other information element	 Invalid configuration Not checked

8.2.4.6.5 Test requirement

After step 1 the UE shall keep its old configuration and transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC. The message shall specify “protocol error” in IE “failure cause” and set value “Information element value not comprehended” in IE “Protocol error cause”.

After step 3 the UE shall keep its old configuration.

After step 4 the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE “failure cause” to ” invalid configuration”.

8.2.4.7 Transport channel reconfiguration from CELL_DCH to CELL_FACH: Success

8.2.4.7.1 Definition

8.2.4.7.2 Conformance requirement

The UE shall correctly reconfigure the transport channels according to TRANSPORT CHANNEL RECONFIGURATION message, after it is requested to perform a transition from CELL_DCH to CELL_FACH in the same cell in conjunction with the transport channel reconfiguration.

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.7.3 Test purpose

To confirm that the UE reconfigures a new Transport channel according to a TRANSPORT CHANNEL RECONFIGURATION message received from the SS.

8.2.4.7.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits TRANSPORT CHANNEL RECONFIGURATION message to the UE and the UE performs a state transition from CELL_DCH to CELL_FACH in the same cell. The UE then reconfigures the new transport channel according to this message and reconfigure the new physical channel according to the system information messages. Finally, the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONFIGURATION	IE "Uplink DPCH Info" and IE "Downlink DPCH Info" are not specified.
2				UE shall perform the reconfiguration of transport channel
3	→		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION

Use the message sub-type titled "Packet to CELL_FACH from CELL_DCH in PS" in Annex A.

8.2.4.7.5 Test requirement

After step 3 the UE shall transit from CELL_DCH to CELL_FACH in the same cell, and then continue to communicate with SS on the new transport channel and common physical channels.

8.2.4.8 Void

8.2.4.9 Transport channel reconfiguration from CELL_DCH to CELL_FACH: Success (Cell re-selection)

8.2.4.9.1 Definition

8.2.4.9.2 Conformance requirement

The UE shall initiate a cell update procedure when the UE performs cell reselection during a transport channel reconfiguration procedure. After the UE completes cell update procedure, the UE shall continue to perform the transport channel reconfiguration procedure and correctly reconfigure the transport channel.

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.9.3 Test purpose

To confirm that the UE transmits TRANSPORT CHANNEL RECONFIGURATION FAILURE message after it completes a cell update procedure.

8.2.4.9.4 Method of test

Initial Condition

System Simulator: 2 cells - Cell 1 is active, Cell 2 is inactive

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108 in cell 1

Test Procedure

Table 8.2.4.9

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.4.9 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in the CELL_DCH state in cell 1. The SS configures its downlink transmission power settings according to columns "T1" in Table 8.2.4.9 and broadcast BCCH on the primary CCPCH in cell 2. Then, the SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE. The UE shall select cell 2 by performing cell re-selection and transmits CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and transmit TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.4.9.
2	←		BCCH	The SS starts to broadcast BCCH on the primary CCPCH in cell2.
1	←		TRANSPORT CHANNEL RECONGURATION	This message include IE" Primary CPICH info".
2				
3				
4	→		CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
5	←		CELL UPDATE CONFIRM	This message include IE "new U-RNTI" and IE "new C-RNTI"".
6	→		UTRAN MOBILITY INFORMATION CONFIRM	
7	→		TRANSPORT CHANNEL COMPLETE	

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled “Packet to CELL_FACH from CELL_DCH in PS” in Annex A with the following exceptions:

CELL_DCH in PS“ as found in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CPICH info - Primary scrambling code	 150

CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as “Contents of CELL UPDATE message“ as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Assigned previously in cell 1 Assigned previously in cell 1 “radio link failure”

CELL UPDATE CONFIRM (Step 5)

The contents of CELL UPDATE CONFIRM message is identical as “CELL UPDATE CONFIRM message“ as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI New U-RNTI - SRNC Identity - S-RNTI New C-RNTI	Same as CELL UPDATE message in step 4 ‘0000 0000 0000 0001’ Different from previous S-RNTI Different from previous C-RNTI

8.2.4.9.5 Test requirement

After step 3 the UE shall transmit CELL UPDATE message on the CCCH with IE “Cell update cause“ set to “cell reselection”.

After step 5 UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 6 UE shall transmit TRANSPORT CHANNEL COMPLETE message on the DCCH using AM.

After step 7 the UE communicate with the SS on the DCCH and DTCH, using the common physical channel.

8.2.4.10 Transport channel reconfiguration from CELL_FACH to CELL_DCH: Success

8.2.4.10.1 Definition

8.2.4.10.2 Conformance requirement

The UE shall correctly reconfigure the transport channels according to TRANSPORT CHANNEL RECONFIGURATION message, which trigger a state transition from CELL_FACH to CELL_DCH in the same cell.

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.10.3 Test purpose

To confirm that the UE reconfigures a new transport channel using dedicated physical channel according to a TRANSPORT CHANNEL RECONFIGURATION message received from the SS.

8.2.4.10.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE, which includes IE "Uplink DPCH info" and IE "Downlink DPCH info" leading to a state transition from CELL_FACH to CELL_DCH in the same cell. The UE shall reconfigure the new transport channel according to this message and then reconfigure the new physical channel according to the system information message. Finally, the UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONFIGURATION	Includes both IE "Uplink DPCH Info" and IE "Downlink DPCH Info" in the message.
2				Reconfiguration of transport channel
3	→		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION

Use the message sub-type titled "Packet to CELL_DCH from CELL_FACH in PS" in Annex A.

8.2.4.10.5 Test requirement

After step 3 the UE shall transit from CELL_FACH to CELL_DCH in the same cell, and continue to communicate with SS using the new transport channel configuration based on DPCH physical channels.

8.2.4.11 Transport channel reconfiguration from CELL_FACH to CELL_DCH: Failure (Unsupported configuration)

8.2.4.11.1 Definition

8.2.4.11.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a TRANSPORT CHANNEL RECONFIGURATION message which includes unsupported configuration parameters and transmit a TRANSPORT CHANNEL

RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set to “configuration unsupported” in IE “failure cause

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.11.3 Test purpose

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC when it receives a TRANSPORT CHANNEL RECONFIGURATION message which includes unsupported configuration parameters.

8.2.4.14.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE, which includes unsupported configuration parameters for the UE. The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting “configuration unsupported” in IE ”failure cause”.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONGURATION	The message includes unsupported configuration by the UE
2	→		TRANSPORT CHANNEL RECONFIGURATION FAILURE	The UE shall not change the transport channel.

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title “Packet to CELL_DCH from CELL_FACH in PS” found in Annex A with the following exceptions:

Information Element	Value/remark
TrCH Information Elements -Uplink transport Channels -Added or Reconfigured TrCH information list -Downlink transport Channels -Added or Reconfigured TrCH information list	 Number of transport channels = 4096 Number of transport channels = 4096

TRANSPORT CHANNEL RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type	"TRANSPORT CHANNEL RECONFIGURATION FAILURE"
Failure cause	Configuration unsupported
Other information element	Not checked

8.2.4.11.5 Test requirement

After step1 the UE shall keep its old configuration and transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC. The UE shall set "configuration unsupported" in IE "failure cause" of the message.

8.2.4.12 Transport channel reconfiguration from CELL_FACH to CELL_DCH: Failure (Physical channel failure and reversion to old channel)

8.2.4.12.1 Definition

8.2.4.12.2 Conformance requirement

The UE shall revert to the old configuration when the UE has failed to reconfigure the new transport channel requested, and then transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message to UTRAN.

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.12.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, if the UE fails to reconfigure the new transport channel according to a TRANSPORT CHANNEL RECONFIGURATION message.

8.2.4.12.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE, which includes the new transport channel parameters. However, SS does not reconfigure the new transport channel accordingly. Hence, the UE shall experience a failure in the reconfiguration process. After T312 expiry, the UE shall revert to the old channel configuration. Then the UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, stating the reason "physical channel failure" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONGURATION	Message includes IE "Downlink DPCH Info" and IE "Uplink DPCH Info"
2				SS does not reconfigure the transport channel causing the UE to detect a physical channel failure.
3	→		TRANSPORT CHANNEL RECONFIGURATION FAILURE	After T312 expiry the UE shall revert to the old configuration and transmit this message.

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION

Use the message sub-type titled "Packet to CELL_DCH from CELL_FACH in PS" in Annex A.

TRANSPORT CHANNEL RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type	TRANSPORT CHANNEL RECONFIGURATION FAILURE
Failure cause	Physical channel failure
Other information element	Not checked

8.2.4.12.5 Test requirement

After step 2 the UE shall revert to the old configuration and transmit a TRANPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value "physical channel failure" in IE "failure cause".

8.2.4.13 Transport channel reconfiguration from CELL_FACH to CELL_DCH: Failure (Physical channel failure and reversion failure)

8.2.4.13.1 Definition

8.2.4.13.2 Conformance requirement

The UE shall initiate a cell update procedure when it selects another cell, following a physical channel failure in the transport channel reconfiguration procedure. After the UE completes cell update procedure, the UE transmit TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.13.3 Test purpose

To confirm that the UE transmits RADIO TRANSPORT CHANNEL RECONFIGURATION FAILURE message after it completes a cell update procedure, when the UE cannot reconfigure the new transport channel for the failure of L1 configuration.

8.2.4.13.4 Method of test

Initial Condition

System Simulator: 2 cells - Cell 1 is active, Cell 2 is inactive

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108 in cell 1

Test Procedure

Table 8.2.4.13

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.4.13 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns “T0” to “T1”, whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in the CELL_FACH state in a cell 1. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE in cell 1. The message includes a new set of transport channel parameters. However, the SS does not reconfigure L1 and the new transport channel accordingly. At the same time, the SS configures its downlink transmission power settings according to columns “T1” in Table 8.2.4.13 and begins to broadcast the BCCH on the primary CCPCH in a cell 2. As a result, the UE cannot reconfigure the new transport channel. The UE find that cell 2 is available, camp onto it, and transmits CELL UPDATE message on uplink CCCH with IE “Cell update cause“ set to “cell reselection”. The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and subsequently transmits TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value ” physical channel failure” to IE “failure cause”.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONGURATION	
2				The SS does not reconfigure L1 and transport channel in accordance with the settings in the message, and applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.4.13.
3	←		BCCH	The SS starts to transmit the BCCH on the primary CCPCH in cell 2.
4				The UE shall find cell 2, camp onto it,
5	→		CELL UPDATE	This message include the value "cell reselection" set in IE "Cell update cause".
6	←		CELL UPDATE CONFIRM	This message include IE "new U-RNTI" and IE "new C-RNTI"".
7	→		UTRAN MOBILITY INFORMATION CONFIRM	
8	→		TRANSPORT CHANNEL RECONGURATION FAILURE	The IE "failure cause" shall be set to "physical channel failure"

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled "Packet to CELL_DCH from CELL_FACH in PS" in Annex A.

CELL UPDATE (Step 5)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Assigned previously in cell 1
- S-RNTI	Assigned previously in cell 1
Cell Update Cause	"cell reselection"

CELL UPDATE CONFIRM (Step 6)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 5
New U-RNTI	
- SRNC Identity	'0000 0000 0000 0001'
- S-RNTI	Different from previous S-RNTI
New C-RNTI	Different from previous C-RNTI

TRANSPORT CHANNELRECONGURATION FAILURE (Step 8)

Information Element	Value/remark
Message Type	"TRANSPORT CHANNEL RECONGURATION"
Failure cause	"physical channel failure"
Other information element	Not checked

8.2.4.13.5 Test requirement

After step 4 the UE shall transmit CELL UPDATE message on the uplink CCCH with IE "Cell update cause" set to "cell reselection" in cell 2.

After step 6 the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 7 the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to "physical channel failure".

8.2.4.14 Transport Channel Reconfiguration from CELL_FACH to CELL_DCH: Failure (Incompatible simultaneous reconfiguration)

8.2.4.14.1 Definition

8.2.4.14.2 Conformance requirement

If the UE receives a TRANSPORT CHANNEL RECONFIGURATION message whilst reconfiguring due to a radio bearer message other than TRANSPORT CHANNEL RECONFIGURATION, it shall keep its configuration as if the TRANSPORT CHANNEL RECONFIGURATION message had not been received.

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.14.3 Test purpose

To confirm that if the UE receives a TRANSPORT CHANNEL RECONFIGURATION message whilst reconfiguring due to a radio bearer message other than TRANSPORT CHANNEL RECONFIGURATION, it shall keep its configuration as if the TRANSPORT CHANNEL RECONFIGURATION message had not been received and complete the reconfiguration according to the previously received message.

8.2.4.14.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the TRANSPORT CHANNEL RECONFIGURATION message, the UE shall keep the configuration as if it had not received the TRANSPORT CHANNEL RECONFIGURATION message and shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS receives the RADIO TRANSPORT CHANNEL RECONFIGURATION FAILURE message, the UE reconfigures the new physical channel parameters and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	Includes the IE "Uplink DPCH info"
2	←		TRANSPORT CHANNEL RECONFIGURATION	Sent before the elapse of the Activation time specified in step 1.
3	→		TRANSPORT CHANNEL RECONFIGURATION FAILURE	The UE does not change the configuration due to the reception of RADIO BEARER SETUP message...
4	→		RADIO BEARER RECONFIGURATION FAILURE	This message is on DCCH using AM RLC.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

For RADIO BEARER RECONFIGURATION in step 1, use the message sub-type indicated as "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A.

TRANSPORT CHANNEL RECONFIGURATION (Step 2)

For TRANSPORT CHANNEL RECONFIGURATION in step 2, use the message sub-type indicated as "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A.

Information Element	Value/remark
Activation Time Info	Current CFN-[current CFN mod 8 + 8]

TRANSPORT CHANNEL RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type	"TRANSPORT CHANNEL RECONFIGURATION FAILURE"
Failure cause	Incompatible simultaneous reconfiguration
Other information element	Not checked

8.2.4.14.5 Test requirement

After step 1, SS transmits a TRANSPORT CHANNEL RECONFIGURATION message before the expiry of the activation time specified in the message of step 1.

After step 2 the UE shall keep its configuration as if the UE had not received the RADIO BEARER SETUP message and shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 4 the UE communicates with the SS on the DCCH and DTCH using the new physical channel parameters reconfigured as a result of the RADIO BEARER RECONFIGURATION message.

8.2.4.15 Transport channel reconfiguration from CELL_FACH to CELL_DCH: Failure (Invalid message reception and Invalid configuration)

8.2.4.15.1 Definition

8.2.4.15.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a TRANSPORT CHANNEL RECONFIGURATION message which includes a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient". The UE shall then transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message, specifying "protocol error" in IE "failure cause" and also "Information element value not comprehended" in IE "Protocol error cause". The UE shall keep existing configuration before reception of a TRANSPORT CHANNEL RECONFIGURATION message when the TRANSPORT CHANNEL RECONFIGURATION message include some IEs set to invalid value, and then the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION FAILURE including IE "failure cause" set to "invalid configuration".

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.15.3 Test purpose

To confirm that the UE transmits TRANSPORT CHANNEL RECONFIGRATION FAILURE message on the DCCH using AM RLC, if it receives a TRANSPORT CHANNEL RECONFIGURATION message which uses a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient".

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives a TRANSPORT CHANNEL RECONFIGURATION message including some IEs set to invalid value.

8.2.4.15.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE, which includes a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient". The UE shall keep the old configuration and then transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC. This message shall contain the value "protocol error" in IE "failure cause" and also "Information element value not comprehended" in IE "Protocol error cause". The UE keeps initial configuration and SS transmits TRANSPORT CHANNEL RECONFIGURATION message including some IEs set to invalid value. The UE transmit TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to " invalid configuration".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONFIGURATION	Contains an error in one of the mandatory IE in the message.
2	→		TRANSPORT CHANNEL RECONFIGRATION FAILURE	The UE does not change the configuration.
3	←		TRANSPORT CHANNEL RECONFIGURATION	This message includes IE set to invalid value
4				The UE does not change the configuration
5	→		TRANSPORT CHANNEL RECONFIGRATION FAILURE	The IE "failure cause" shall be set to "invalid configuration

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION (Step 1)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
UTRAN DRX cycle length coefficient	Undefined value

TRANSPORT CHANNEL RECONFIGURATION FAILURE (Step 2)

Information Element	Value/remark
Message Type	" TRANSPORT CHANNEL RECONFIGURATION FAILURE"
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Information element value not comprehended
Other information element	Not checked

TRANSPORT CHANNEL RECONFIGURATION (Step 3)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Added or Reconfigured UL TrCH information	
- Transport channel identity	1
- TFS	
- Dynamic Transport format information	(This IE is repeated for TFI number)
- RLC size	Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list	
- Explicit List	
- RB identity	2

TRANSPORT CHANNEL RECONFIGURATION FAILURE (Step 5)

Information Element	Value/remark
Message Type	
Failure cause	Invalid configuration
Other information element	Not checked

8.2.4.15.5 Test requirement

After step 1 the UE shall keep its old configuration and transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC. The content of the message shall specify "protocol error" in IE "failure cause" and also "Information element value not comprehended" in IE "Protocol error cause".

After step 3 the UE shall keep its old configuration.

After step 4 the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to " invalid configuration".

8.2.4.16 Transport channel reconfiguration from CELL_FACH to CELL_FACH: Success with no transport channel type switching

8.2.4.16.1 Definition

8.2.4.16.2 Conformance requirement

The UE shall remain in CELL_FACH state and transition from CELL_FACH to CELL_FACH in the another cell requested in the received TRANSPORT CHANNEL RECONFIGURATION message.

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.16.3 Test purpose

To confirm that the UE reconfigures a new transport channel according to a TRANSPORT CHANNEL RECONFIGURATION message received from the SS.

8.2.4.16.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE, which includes new transport channel parameters. The UE reconfigures the new transport channel and the new physical channel according to the system information messages. The UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONGURATION	
2				Reconfiguration of a new transport channel
3	→		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION

Use the message sub-type titled “Packet to CELL_FACH from CELL_FACH in PS” in Annex A.

8.2.4.16.5 Test requirement

After step3 the UE shall transit from CELL_FACH to CELL_FACH and continue to communicate with the SS on the DCCH using the existing transport channel.

8.2.4.17 Transport channel reconfiguration from CELL_FACH to CELL_FACH: Success (Cell re-selection)

8.2.4.17.1 Definition

8.2.4.17.2 Conformance requirement

The UE shall initiate the cell update procedure when the UE performs cell reselection during a transport channel reconfiguration procedure. After the UE complete cell update procedure, the UE shall continue to perform the transport channel reconfiguration procedure and correctly reconfigure the transport channel.

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.17.3 Test purpose

To confirm that the UE transmit TRANSPORT CHANNEL RECONFIGURATION FAILURE message after UE completes a cell update procedure.

8.2.4.17.4 Method of test

Initial Condition

System Simulator: 2 cells Cell 1 is active, Cell 2 is inactive

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

Table 8.2.4.17

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.4.17 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns “T0” to “T1”, whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in the CELL_FACH state in cell 1. On transmitting a TRANSPORT CHANNEL RECONFIGURATION message, the SS configures its downlink transmission power settings according to columns “T1” in Table 8.2.4.17 and broadcast BCCH on the primary CCPCH in cell 2. After the UE successfully camp onto cell 2, it shall initiate the cell update procedure.. The UE transmit CELL UPDATE message on uplink CCCH with IE “Cell update cause“ set to “cell reselection”. The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and transmit TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONFIGURATION	This message include IE" Primary CPICH info"
2				The SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.4.17.
3	←		BCCH	The SS starts to broadcast BCCH on the primary CCPCH in cell2.
4	→		CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
5	←		CELL UPDATE CONFIRM	This message include IE "new U-RNTI" and IE "new C-RNTI".
6	→		UTRAN MOBILITY INFORMATION CONFIRM	
7	→		TRANSPORT CHANNELRECONFIGURATION COMPLETE	

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled "Packet to CELL_FACH from CELL_FACH in PS" in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CPICH info - Primary scrambling code	 150

CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Assigned previously in cell 1 Assigned previously in cell 1 "cell reselection"

CELL UPDATE CONFIRM (Step 5)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI New U-RNTI - SRNC Identity - S-RNTI New C-RNTI	Same as CELL UPDATE message in step 4 '0000 0000 0000 0001' Different from previous S-RNTI Different from previous C-RNTI

8.2.4.17.5 Test requirement

After step 3 the UE shall transmit CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".

After step 5 UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 6 UE shall transmit TRANSPORT CHANNEL FAILURE message on the DCCH using AM RLC.

After step 7 the UE communicate with the SS on the DCCH and DTCH, using the common physical channel.

8.2.4.18 Transport Channel Reconfiguration from CELL_DCH to CELL_DCH: Success (Subsequently received)

8.2.4.18.1 Definition

8.2.4.18.2 Conformance requirement

If the UE receives a TRANSPORT CHANNEL RECONFIGURATION message before the UE configures the radio bearer according to the previous TRANSPORT CHANNEL RECONFIGURATION message, the UE shall ignore the new TRANSPORT CHANNEL RECONFIGURATION message and configure according to the first TRANSPORT CHANNEL RECONFIGURATION message received. Finally, the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.18.3 Test purpose

To confirm that if the UE receives a TRANSPORT CHANNEL RECONFIGURATION message before the UE configures the radio bearer according to the previous TRANSPORT CHANNEL RECONFIGURATION message it ignores the second TRANSPORT CHANNEL RECONFIGURATION message and configures according to the previous TRANSPORT CHANNEL RECONFIGURATION message.

8.2.4.18.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. When the SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE before the UE configures the radio bearer, the UE ignores the new TRANSPORT CHANNEL RECONFIGURATION message and configures according to the previous TRANSPORT CHANNEL RECONFIGURATION message. Finally, the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONFIGURATION	Including IE "Uplink DPCH info"
2	←		TRANSPORT CHANNEL RECONFIGURATION	SS send this message before the expiry of "activation time" specified in TRANSPORT CHANNEL SETUP message of step 1.
3	→		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	The UE ignores the TRANSPORT CHANNEL RECONFIGURATION message in step 2 and confirms configuration according to the TRANSPORT CHANNEL RECONFIGURATION message in step 1.

Specific Message Contents

The contents of TRANSPORT CHANNEL RECONFIGURATION messages in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A with the following exceptions:

TRANSPORT CHANNEL RECONFIGURATION (Step 1)

Information Element	Value/remark
Activation Time	[256+Current CFN-[current CFN mod 8 + 8]]MOD 256

8.2.4.18.5 Test requirement

After step 3 the UE shall communicate with the SS on the radio bearer specified in the TRANSPORT CHANNEL RECONFIGURATION message in step 1.

8.2.4.19 Transport Channel Reconfiguration from CELL_FACH to CELL_DCH: Success (Subsequently received)

8.2.4.19.1 Definition

8.2.4.19.2 Conformance requirement

If the UE receives a TRANSPORT CHANNEL RECONFIGURATION message before the UE configures the radio bearer according to the previous TRANSPORT CHANNEL RECONFIGURATION message, the UE shall ignore the new TRANSPORT CHANNEL RECONFIGURATION message and configure according to the first TRANSPORT CHANNEL RECONFIGURATION message received. Finally, the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.4

8.2.4.19.3 Test purpose

To confirm that if the UE receives a TRANSPORT CHANNEL RECONFIGURATION message before the UE configures the radio bearer according to the previous TRANSPORT CHANNEL RECONFIGURATION message it

ignores the second TRANSPORT CHANNEL RECONFIGURATION message and configures according to the previous TRANSPORT CHANNEL RECONFIGURATION message.

8.2.4.19.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. When the SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE before the UE configures the radio bearer, the UE ignores the new TRANSPORT CHANNEL RECONFIGURATION message and configures according to the previous TRANSPORT CHANNEL RECONFIGURATION message. Finally, the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONFIGURATION	Includes the IE "Uplink DPCH info"
2	←		TRANSPORT CHANNEL RECONFIGURATION	Sent before the elapse of the activation time specified in step 1.
3	→		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	The UE ignores the TRANSPORT CHANNEL RECONFIGURATION message in step 2 and confirms configuration according to the TRANSPORT CHANNEL RECONFIGURATION message in step 1.

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION (Step 1)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Info	[256+Current CFN-[current CFN mod 8 + 8]]MOD 256

8.2.4.19.5 Test requirement

After step 3 the UE shall communicate with the SS on the radio bearer specified in the TRANSPORT CHANNEL RECONFIGURATION message in step 1.

8.2.4.20 Transport Channel Reconfiguration from CELL_DCH to CELL_PCH: Success

8.2.4.20.1 Definition

8.2.4.20.2 Conformance requirement

The UE shall transmits TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using and transits from CELL_DCH to CELL_PCH when receives a TRANSPORT CHANNEL RECONFIGURATION message. And then, the UE shall reconfigure a radio bearer according to the TRANSPORT CHANNEL RECONFIGURATION message.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.4.20.3 Test purpose

To confirm that the UE transmits TRANSPORT CHANNEL RECONFIGURATION COMPLETE message before entering CELL_PCH state after it received a TRANSPORT CHANNEL RECONFIGURATION message and reconfigured its radio bearers. The UE is in CELL_PCH state of the same cell.

8.2.4.20.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH(state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message. The UE transmits TRANSPORT CHANNEL RECONFIGURATION COMPLETE message to the UE using AM RLC and enters into CELL_PCH state. The SS transmits a PAGING TYPE 1 message and the UE accepts it and enters the CELL_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONFIGURATION	
2	→		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	The UE sends this message before start state transition.
3				Reconfiguration of Transport channel after state transition.
4	←		PAGING TYPE 1	The SS transmits this message included a matched identity.
5	→		CELL UPDATE	The UE is in CELL_FACH state.

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION (Step 1)

Use the same message sub-type titled “Packet to CELL_FACH from CELL_DCH in PS“ in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH

PAGING TYPE 1 (Step 4)

Use the same message sub-type titled “TM (SMS in PS)“ in Annex A with following exceptions:

Information Element	Value/remark
Paging record list	
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	Previously assigned SRNC identity
- S-RNTI	Previously assigned S-RNTI

8.2.4.20.5 Test requirement

After step 1 the UE transmits TRANSPORT CHANNEL RECONFIGURATION COMPLETE message to the UE on uplink DCCH using AM RLC.

After step 3 the UE shall transit from CELL_DCH to CELL_PCH.

8.2.4.21 Transport Channel Reconfiguration from CELL_DCH to URA_PCH: Success

8.2.4.21.1 Definition

8.2.4.21.2 Conformance requirement

The UE shall transmits TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using and transits from CELL_DCH to URA_PCH when receives a TRANSPORT CHANNEL RECONFIGURATION message. And then, the UE shall reconfigure radio bearers according to the TRANSPORT CHANNEL RECONFIGURATION message.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.4.21.3 Test purpose

To confirm that the UE transmits TRANSPORT CHANNEL RECONFIGURATION COMPLETE message before entering URA_PCH state after it received a TRANSPORT CHANNEL RECONFIGURATION message and reconfigured its radio bearers. The UE is in URA_PCH state of the same cell.

8.2.4.21.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH(state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message. The UE transmits TRANSPORT CHANNEL RECONFIGURATION COMPLETE message to the UE using AM RLC and enters into URA_PCH state. The SS transmits a PAGING TYPE 1 message and the UE accepts it and enters the CELL_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		TRANSPORT CHANNEL RECONFIGURATION	
2	→		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	The UE sends this message before start state transition.
3				Reconfiguration of Transport channel after state transition.
4	←		PAGING TYPE 1	The SS transmits this message included a matched identity.
5	→		Cell UPDATE	The UE is in CELL_FACH state.

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION (Step 1)

Use the same message sub-type titled “Packet to CELL_FACH from CELL_DCH in PS“ in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH

PAGING TYPE 1 (Step 4)

Use the same message sub-type titled “TM (SMS in PS)“ in Annex A with following exceptions:

Information Element	Value/remark
Paging record list	
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	Previously assigned SRNC identity
- S-RNTI	Previously assigned S-RNTI

8.2.4.21.5 Test requirement

After step 1 the UE transmits TRANSPORT CHANNEL RECONFIGURATION COMPLETE message to the UE on uplink DCCH using AM RLC.

After step 3 the UE shall transit from CELL_DCH to URA_PCH.

8.2.4.22 Void

8.2.4.23 Void

8.2.5 Transport format combination control

8.2.5.1 Transport format combination control in CELL_DCH: restriction

8.2.5.1.1 Definition

8.2.5.1.2 Conformance requirement

The UE shall change the subset of allowed transport format combination of uplink when the UE receives TRANSPORT FORMAT COMBINATION CONTROL message.

Reference

3GPP TS 25.331 clause 8.2.5

8.2.5.1.3 Test purpose

To confirm that the UE do not transmit data on the DTCH in the uplink direction, following the reception of TRANSPORT FORMAT COMBINATION CONTROL message sent from the SS, which is set to the value in IE "Allowed Transport format combination index".

8.2.5.1.4 Method of test

Initial Condition

System Simulator: 1cell

UE: DCCH+DTCH_DCH (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE establishes a radio access bearer on the DCH for a communication. The SS transmits a TRANSPORT FORMAT COMBINATION CONTROL message, which indicates that only TFC_0 is allowed on the uplink for DCH transport channel. The UE shall reconfigure the TFCS, stop any transmission on DTCH logical channel and then continues the communication on DCCH only.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				UE s in CELL_DCH state with a DTCH logical channel allocated for communication between UE and SS
2	←		TRANSPORT FORMAT COMBINATION CONTROL	The UE shall use the TFC Subset as defined in value IE " Allowed Transport format combination index".
3				The UE shall not transmit any data on the DTCH.

Specific Message Contents

TRANSPORT FORMAT COMBINATION CONTROL

Information Element	Value/remark
TrCH information elements -Allowed Transport format combination list	
- Allowed transport format combination - Allowed transport format combination	0 and 3(If initial state is "state 6-9") 0 and 5(If initial state is "state 6-10")

8.2.5.1.5 Test requirement

After step 2 the UE shall stop transmitting data on the DTCH in the uplink.

8.2.5.2 Transport format combination control in CELL_DCH: release a restriction

8.2.5.2.1 Definition

8.2.5.2.2 Conformance requirement

The UE shall change the subset of allowed transport format combination of uplink when it receives TRANSPORT FORMAT COMBINATION CONTROL message, specifying that an existing restriction for the usage of TFCS be removed.

Reference

3GPP TS 25.331 clause 8.2.5

8.2.5.2.3 Test purpose

To confirm that the UE resume transmission of data on the DTCH on the uplink, following the reception of TRANSPORT FORMAT COMBINATION CONTROL message which include IE “Minimum allowed transport format combination set”.

8.2.5.2.4 Method of test

Initial Condition

System Simulator: 1cell

UE: DCCH+DTCH_DCH (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in CELL_DCH state with DTCH allocated but fully restricted. The UE cannot transmit the data on the DTCH, as a result of the restriction on the transport format combination. Next, the SS transmits a TRANSPORT FORMAT COMBINATION CONTROL message which include “Minimum allowed transport format combination set”

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				No data transmission on the DTCH with a restriction in the uplink direction, following the execution of test 8. 2.5.1.
2	←		TRANSPORT FORMAT COMBINATION CONTROL	Use the TFCS according to IE “Minimum allowed Transport format combination index”.
3				The UE begins to transmit the data on the DTCH.

Specific Message Contents

TRANSPORT FORMAT COMBINATION CONTROL

Information Element	Value/remark
TrCH information elements -Minimum allowed transport format combination set	5(If initial state is “state 6-9”)
-Minimum allowed transport format combination set	6(If initial state is “state 6-10”)

8.2.5.2.5 Test requirement

After step 2 the UE shall begin to transmit the data on the DTCH in the uplink.

8.2.5.3 Transport format combination control in CELL_DCH: Failure (Incompatible simultaneous reconfiguration)

8.2.5.3.1 Definition

8.2.5.3.2 Conformance requirement

The UE shall keep its old configuration when the UE receives another TRANSPORT FORMAT COMBINATION CONTROL message before the UE reconfigures the transport channel completely according to a similar message received earlier. The UE shall transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC indicating “incompatible simultaneous reconfiguration” in IE “failure cause”.

Reference

3GPP TS 25.331 clause 8.2.5

8.2.5.3.3 Test purpose

To confirm that after the UE receives TRANSPORT FORMAT COMBINATION CONTROL message, it transmits TRANSPORT FORMAT COMBINATION CONTROL FAILURE message and keeps the TFC subset as before the TRANSPORT FORMAT COMBINATION CONTROL message is received.

8.2.5.3.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE establishes a radio access bearer on the DCH for to be used for user-data exchange. SS sends a TRANSPORT CHANNEL RECONFIGURATION message on the downlink DCCH, to request that the channel coding scheme for a DCH be changed. After this message has been acknowledged by the UE RLC-AM entity, the SS transmits a TRANSPORT FORMAT COMBINATION CONTROL message, which includes a full restriction of the TFCS used in the uplink. The UE shall detect a failure to reconfigure the TFCS, then it transmits TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the uplink DCCH. After the activation time specified in the TRANSPORT CHANNEL RECONFIGURATION message has elapsed, the UE shall send TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH. SS verifies that reconfiguration is completed by checking that the user-data exchange is resumed on DTCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				UE is in CELL_DCH connected state, with a DTCH logical channel for user-data communication
2	←		TRANSPORT CHANNEL RECONFIGURATION	Requesting for a change in semi-static transport format for DCH carrying the DTCH. The dynamic part remains unchanged.
3	←		TRANSPORT FORMAT COMBINATION CONTROL	Requesting for a full restriction on TFCS for the DCH carrying DTCH.
4	→		TRANSPORT FORMAT COMBINATION CONTROL FAILURE	The UE shall keep the TFC subset as before the TRANSPORT FORMAT COMBINATION CONTROL message was received
5				The UE does not change the configuration of TFC and the UE continues reconfigure the affected transport channel.
6			TRANSPORT CHANNEL RECONFIGURATION COMPLETE	UE shall resume exchange of data over the DTCH logical channel.

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
TrCH Information Elements - Uplink transport channels - Added or reconfigured TrCH information list - Transport channel identity - Semi-Static Transport Format Information - Type of channel coding	 2 Select a different coding scheme from default message content

TRANSPORT FORMAT COMBINATION CONTROL

Information Element	Value/remark
DPCH TFCS in Uplink - Subset Representation - Allowed TFIs	Restricted TrCH information Not Present (All TFCs are restricted)

TRANSPORT FORMAT COMBINATION CONTROL FAILURE

Information Element	Value/remark
Message Type	"TRNSPORT FORMAT COMBINATION CNTROL FAILURE"
RRC transaction identifier	0
Failure cause	Incompatible simultaneous reconfiguration
Other information element	Not checked

8.2.5.3.5 Test requirement

After step 3 the UE continue the transport channel reconfiguration as if no TRANSPORT FORMAT COMBINATION CONTROL message was received. Then it shall transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC, stating the reason "Incompatible simultaneous reconfiguration" in IE "Failure cause".

After step 6 the UE shall resume communication with SS on DTCH using the requested channel coding scheme on the transport blocks.

8.2.5.4 Transport format combination control in CELL_DCH: Failure (Invalid message reception and Invalid configuration)

8.2.5.4.1 Definition

8.2.5.4.2 Conformance requirement

The UE shall keep old configuration when it receives a TRANSPORT FORMAT COMBINATION CONTROL message which using a undefined value in the mandatory IE "Minimum allowed Transport format combination index". It shall then transmits a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message, indicating "protocol error" in IE "failure cause" and "Information element value not comprehended" in IE "Protocol error cause". The UE shall keep existing configuration before reception of a TRANSPORT FORMAT COMBINATION CONTROL message when the TRANSPORT CHANNEL RECONFIGURATION message include some IEs set to invalid value, and then the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION FAILURE including IE "failure cause" set to "invalid configuration".

Reference

3GPP TS 25.331 clause 8.2.5

8.2.5.4.3 Test purpose

To confirm after the UE receives an invalid TRANSPORT FORMAT COMBINATION CONTROL message, it transmits TRANSPORT FORMAT COMBINATION CONTROL FAILURE message and keep the TFC subset as if no TRANSPORT FORMAT COMBINATION CONTROL message has been received.

To confirm that the UE transmits a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC if it receives a TRANSPORT FORMAT COMBINATION CONTROL message including some IEs set to invalid value.

8.2.5.4.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: DCCH+DTCH_DCH (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE establishes a radio access bearer on the DCH for a communication. The SS transmits a TRANSPORT FORMAT COMBINATION CONTROL message, which uses a undefined value in the mandatory IE "Minimum allowed Transport format combination index". The UE shall then transmit TRANSPORT FORMAT COMBINATION CONTROL FAILURE message and continues the communication using the radio access bearer. The UE keeps initial configuration and SS transmits TRANSPORT FORMAT COMBINATION CONTROL message including some IEs set

to invalid value. The UE transmit TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC, setting the value " invalid configuration" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				RRC connected state on the DTCH for a communication
2	←		TRANSPORT FORMAT COMBINATION CONTROL	Contains an error in a mandatory IE.
3	→		TRANSPORT FORMAT COMBINATION CONTROL FAILURE	The UE shall not change the configuration
4	←		TRANSPORT FORMAT COMBINATION CONTROL	This message includes IE set to invalid value
5				The UE does not change the configuration
6	→		TRANSPORT FORMAT COMBINATION CONTROL FAILURE	The IE "failure cause" shall be set to "invalid configuration

Specific Message Contents

TRANSPORT FORMAT COMBINATION CONTROL (Step 2)

Information Element	Value/remark
DPCH TFCS in uplink - Minimum allowed Transport format combination index	Set to the value "MaxTFCValue"

TRANSPORT FORMAT COMBINATION CONTROL FAILURE (Step 3)

Information Element	Value/remark
Message Type	"TRNSPORT FORMAT COMBINATION CNTROL FAILURE"
Failure cause	"protocol error"
Protocol error information	
-Protocol error case	Information element value not comprehended
Other information element	Not checked

TRANSPORT FORMAT COMBINATION CONTROL(Step 4)

Information Element	Value/remark
TrCH information elements - Allowed Transport format combination list - Allowed transport format combination	 10

TRANSPORT FORMAT COMBINATION CONTROL FAILURE (Step 6)

Information Element	Value/remark
Message Type	
Failure cause	Invalid configuration
Other information element	Not checked

8.2.5.4.5 Test requirement

After step 3 the UE shall keep its configuration before the TRANSPORT FORMAT COMBINATION CONTROL message was received and transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC. The UE shall set the value “protocol error” in IE “Failure cause” and the value “information element not comprehended” in IE “protocol error information”. The UE shall continue communicate with SS using the radio access bearer.

After step 4 the UE shall keep its old configuration.

After step 5 the UE shall transmit TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC, setting IE “failure cause” to ”invalid configuration”.

8.2.6 Physical channel reconfiguration

8.2.6.1 Physical channel reconfiguration for transition from CELL_DCH to CELL_DCH (Hard handover to another frequency): Success

8.2.6.1.1 Definition

8.2.6.1.2 Conformance requirement

The UE shall correctly reconfigure a physical channel according to the PHYSICAL CHANNEL RECONFIGURATION message received, which is used for hard handover purposes. It shall be able to communicate with the UTRAN on the new frequency subsequently.

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.1.3 Test purpose

To confirm that the UE reconfigures the physical channel parameters according to a PHYSICAL CHANNEL RECONFIGURATION message received from the SS. After the reconfiguration, the UE shall resume normal transmission and reception operations.

8.2.6.1.4 Method of test

Initial Condition

System Simulator: 2 cells Cell 1 is active, Cell 2 is inactive

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108 in cell 1

Test Procedure

Table 8.2.6.1

Parameter	**Unit**	**Cell 1**		**Cell 6**	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.6.1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in the CELL_DCH state in cell 1. The SS configures its downlink transmission power settings according to columns "T1" in Table 8.2.6.1 and broadcast BCCH on the primary CCPCH in cell 6. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE, which includes a new physical channel parameter specified in the "Frequency Info" IE. The UE shall reconfigure itself and tune to the new physical channel and transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH of cell 6 using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.6.1.
2	←		BCCH	The SS starts to broadcast BCCH on the primary CCPCH in cell 6.
3	←		PHYSICAL CHANNEL RECONFIGURATION	Including new frequency information.
4				UE shall stop uplink activities to cell 1 and begin to reconfigure the physical channel parameters.
5	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	

Specific Message Contents

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled "Packet to CELL_DCH from CELL_DCH in PS" in Annex A, with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN uplink(Nu)	Same uplink UARFCN as used for cell 6
- UARFCN downlink(Nd)	Same downlink UARFCN as used for cell 6
Downlink information for each radio links	Same downlink UARFCN as used for cell 6
- Primary CPICH info	
- Primary Scrambling Code	350
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing Indicator	Initialise

8.2.6.1.5 Test requirement

After step 4 the UE shall send PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC in cell 6.

After step 5 the UE communicate with SS, using DTCH and DCCH on the new dedicated physical channel in cell 6.

8.2.6.2 Physical channel reconfiguration for transition from CELL_DCH to CELL_DCH (Hard handover to another frequency): Failure (Unsupported configuration)

8.2.6.2.1 Definition

8.2.6.2.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a PHYSICAL CHANNEL RECONFIGURATION message which includes an unsupported configuration and transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, with the reason "configuration unsupported" in IE "failure cause".

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.2.3 Test purpose

To confirm that the UE keeps its configuration and transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if the received PHYSICAL CHANNEL RECONFIGURATION message includes unsupported configuration parameters for the UE.

8.2.6.2.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE which includes unsupported configuration parameters as the frequency cannot be supported by the UE. The UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set to "configuration unsupported" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	Includes an unsupported configuration as the frequency cannot be supported by the UE
2	→		PHYISICAL CHANNEL RECONFIGURATION FAILURE	The UE shall not change the physical channel and continue to communicate using the old configuration.

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN uplink(Nu)	63984
- UARFCN downlink(Nd)	Not Present

PHYSICAL CHANNEL RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type	
Failure cause	Configuration unsupported
Other information element	Not checked

8.2.6.2.5 Test requirement

After step 1 the UE shall keep its old configuration and transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC and set "configuration unsupported" in IE "failure cause".

8.2.6.3 Physical channel reconfiguration for transition from CELL_DCH to CELL_DCH (Hard handover to another frequency): Failure (Physical channel failure and reversion to old channel)

8.2.6.3.1 Definition

8.2.6.3.2 Conformance requirement

The UE shall revert to the old configuration when the UE fails to reconfigure the new physical channel by the expiry of timer T312, and then transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC indicating "physical channel failure" in IE " failure cause".

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.3.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if the UE fails to reconfigure the new physical channel according to the received PHYSICAL CHANNEL RECONFIGURATION message by timer T312 expiry.

8.2.6.3.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE which includes new frequency parameters. However, the SS does not reconfigure the new physical channel. The UE is expected to encounter a failure to reconfigure the new physical channel and after T312 timer expiry the UE shall revert to the old configuration. Finally, the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC specifies "physical channel failure" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	Including a new frequency information
2				The SS does not reconfigure the physical channel so that the UE fails to reconfigure to the new physical channel.
3	→		PHYSICAL CHANNEL RECONFIGURATION FAILURE	After T312 expiry, the UE shall revert to the old configuration and transmits this message.

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION

Use the message sub-type titled “Packet to CELL_DCH from CELL_DCH in PS” in Annex A.

PHYSICAL CHANNEL RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type	
Failure cause	Physical channel failure
Other information element	Not checked

8.2.6.3.5 Test requirement

After step 2 the UE shall revert to the old configuration and transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, with the value “physical channel failure” in IE “failure cause”.

8.2.6.4 Physical channel reconfiguration for transition from CELL_DCH to CELL_DCH (Hard handover to another frequency): Failure (Physical channel failure and reversion failure)

8.2.6.4.1 Definition

8.2.6.4.2 Conformance requirement

The UE shall perform a cell update procedure when the UE fails to revert to the old configuration, after the detection of physical channel failure during the course of executing a physical channel reconfiguration procedure. After the UE completes cell update procedure, the UE transmits PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC which set IE “failure cause” to “physical channel failure”.

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.4.3 Test purpose

To confirm that the UE transmits PHYSICAL CHANNEL RECONFIGURATION FAILURE message after UE completes a cell update procedure when the UE cannot reconfigure the new physical channel for the failure of L1 configuration and for the failure of the reversion to the old configuration.

8.2.6.4.4 Method of test

Initial Condition

System Simulator: 2 cells- Cell 1 is active, Cell 2 is inactive

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108 in cell 1

Test Procedure

Table 8.2.6.4

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.6.4 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in the CELL_DCH state in cell 1. The SS configures its downlink transmission power settings according to columns "T1" in Table 8.2.6.4 and broadcast BCCH on the primary CCPCH in cell 2.The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE, which includes new uplink and downlink frequency parameters of cell 6, but the SS does not configure any dedicated physical channel in cell 6. The UE is expected to fail to reconfigure the new dedicated physical channel and tries to revert to the old configuration. But the SS already deleted the old physical channel configuration and the UE cannot revert old configuration. The UE transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "radio link failure". The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and subsequently transmits PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value " physical channel failure" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.6.4.
2	←		BCCH	The SS starts to broadcast BCCH on the primary CCPCH in cell 6.
1	←		PHYSICAL CHANNEL RECONFIGURATION	The message includes new frequency information
2				SS does not configure any dedicated physical channel in cell 6, at the same time, it deletes the old configuration so the UE cannot reconfigure the new physical channel and cannot revert to the old configuration.
3	→		CELL UPDATE	This message includes the value "radio link failure" set in IE "Cell update cause".
4	←		CELL UPDATE CONFIRM	This message include IE "Physical channel information elements".
5				The SS configure the dedicated physical channel according to the IE "Physical channel information elements" included in the CELL UPDATE CONFIRM message.
6	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
7	→		PHYSICAL CHANNELRECONGURATION FAILURE	The IE "failure cause" shall be set to "physical channel failure"

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled "Packet to CELL_DCH from CELL_DCH in PS" in Annex A.

CELL UPDATE (Step 3)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0000 0001' "radio link failure"

CELL UPDATE CONFIRM (Step 4)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 4
RRC State indicator	CELL_DCH
Frequency info	
- UARFCN uplink(Nu)	Reference to TS34.108 clause 5.1 Test frequencies
- UARFCN downlink(Nd)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	33dBm
CHOICE Mode	FDD
Downlink information for each radio links	
- Primary CPICH info	
- Primary scrambling code	100
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0 chips
- Power offset $P_{Pilot-DPDCH}$	TBD
- Secondary CPICH info	Not Present
- DL channelisation code	
- Secondary scrambling code	2
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change	No change
- TPC combination index	0
- SSDT Cell Identity	-a
- Closed loop timing adjustment mode	Not Present
- Secondary CCPCH info	Not Present
- TFCS	Not Present
- FACH/PCH information	Not Present
- References to system information blocks	Not Present

PHYSICAL CHANNEL RECONGURATION FAILURE (Step 7)

Information Element	Value/remark
Message Type	"PHYSICAL CHANNEL RECONGURATION FAILURE"
Failure cause	"physical channel failure"
Other information element	Not checked

8.2.6.4.5 Test requirement

After step 2 the UE shall transmits CELL UPDATE message using RLC-TM mode on the uplink CCCH with IE "Cell update cause" set to "radio link failure" in cell 1.

After step 5 the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to " physical channel failure".

8.2.6.5 Physical channel reconfiguration for transition from CELL_DCH to CELL_DCH (Hard handover to another frequency): Failure (Incompatible simultaneous reconfiguration)

8.2.6.5.1 Definition

8.2.6.5.2 Conformance requirement

If the UE receives a PHYSICAL CHANNEL RECONFIGURATION message whilst reconfiguring due to a radio bearer message other than PHYSICAL CHANNEL RECONFIGURATION SETUP, it shall keep its configuration as if the PHYSICAL CHANNEL RECONFIGURATION SETUP message had not been received.

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.5.3 Test purpose

To confirm that if the UE receives a PHYSICAL CHANNEL RECONFIGURATION message whilst reconfiguring due to a radio bearer message other than PHYSICAL CHANNEL RECONFIGURATION, it shall keep its configuration as if the PHYSICAL CHANNEL RECONFIGURATION message had not been received and complete the reconfiguration according to the previously received message.

8.2.6.5.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the PHYSICAL CHANNEL RECONFIGURATION message, the UE shall keep the configuration as if it had not received the PHYSICAL CHANNEL RECONFIGURATION message and shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS receives the PHYSICAL CHANNEL RECONFIGURATION FAILURE message, the UE reconfigures the new physical channel parameters and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	
2	←		PHYSICAL CHANNEL RECONFIGURATION	Sent before the "Activation Time Info" specified in the message in step 1 has elapsed.
3	→		PHYSICAL CHANNEL RECONFIGURATION FAILURE	The UE does not change the configuration due to the reception of PHYSICAL CHANNEL RECONFIGURATION FAILURE message.
4	→		RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

For RADIO BEARER RECONFIGURATION in step 1, use the message sub-type indicated as "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A.

PHYSICAL CHANNEL RECONFIGURATION (Step 2)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Info	Current CFN-[current CFN mod 8 + 8]

PHYSICAL CHANNEL RECONFIGURATION FAILURE (step 3)

Information Element	Value/remark
Message Type	
Failure cause	Incompatible simultaneous reconfiguration
Other information element	Not checked

8.2.6.5.5 Test requirement

After step 1, SS transmits a PHYSICAL CHANNEL RECONFIGURATION message before the expiry of the activation time specified in the message of step 1.

After step 2 the UE shall keep its configuration as if the UE had not received the PHYSICAL CHANNEL RECONFIGURATION message and shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 4 the UE communicates with the SS on the DCCH and DTCH using the new physical channel parameters reconfigured as a result of the RADIO BEARER RECONFIGURATION message.

8.2.6.6 Physical channel reconfiguration for transition from CELL_DCH to CELL_DCH (Hard handover to another frequency): Failure (Invalid message reception and Invalid configuration)

8.2.6.6.1 Definition

8.2.6.6.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a PHYSICAL CHANNEL RECONFIGURATION message, which includes undefined value in the mandatory IE "UTRAN DRX cycle length coefficient". It shall then transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message which contains the value "protocol error" in IE "failure cause" and also "Information element value not comprehended" in IE "Protocol error cause". The UE shall keep existing configuration before reception of a TRANSPORT CHANNEL RECONFIGURATION message when the TRANSPORT CHANNEL RECONFIGURATION message include some IEs set to invalid value, and then the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION FAILURE including IE "failure cause" set to "invalid configuration".

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.6.3 Test purpose

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives a PHYSICAL CHANNEL RECONFIGURATION message which uses a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient".

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives a PHYSICAL CHANNEL RECONFIGURATION message including some IEs set to invalid value.

8.2.6.6.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE, with a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient". The UE keeps the old configuration and transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, with a value "protocol error" in IE "failure cause" and also a value "Information element value not comprehended" in IE "Protocol error cause". The UE keeps initial configuration and SS transmits PHYSICAL CHANNEL RECONFIGURATION message including some IEs set to invalid value. The UE transmit PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value " invalid configuration" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	This message contains an error in one of the mandatory IEs.
2	→		PHYSICAL CHANNEL RECONFIGURATION FAILURE	The UE does not change the configuration.
4	←		PHYSICAL CHANNEL RECONFIGURATION	This message includes IE set to invalid value
5				The UE does not change the configuration
6	→		PHYSICAL CHANNEL RECONFIGURATION FAILURE	The IE "failure cause" shall be set to "invalid configuration

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION (Step 1)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
UTRAN DRX cycle length coefficient	Undefined value

PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 2)

Information Element	Value/remark
Message Type	
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Information element value not comprehended
Other information element	Not checked

PHYSICAL CHANNEL RECONFIGURATION (Step 3)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL_FACH from CELL_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links	
- Primary CPICH info	
- Primary scrambling code	100
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0 chips
- Power offset $P_{Pilot-DPDCH}$	TBD
- Secondary CPICH info	Not Present
- DL channelisation code	
- Secondary scrambling code	1
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change	No change
- TPC combination index	0
- SSDT Cell Identity	-a
- Closed loop timing adjustment mode	Not Present
- Secondary CCPCH info	Not Present
- TFCS	Not Present
- FACH/PCH information	Not Present
- References to system information blocks	Not Present
- Scheduling information	

PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 5)

Information Element	Value/remark
Message Type	
Failure cause	Invalid configuration
Other information element	Not checked

8.2.6.6.5 Test requirement

After step 1 the UE shall keep its old configuration and transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting value "protocol error" in IE "failure cause" and also setting value "Information element value not comprehended" in IE "Protocol error cause".

After step 3 the UE shall keep its old configuration.

After step 4 the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to " invalid configuration".

8.2.6.7 Physical channel reconfiguration for transition from CELL_DCH to CELL_FACH: Success

8.2.6.7.1 Definition

8.2.6.7.2 Conformance requirement

The UE shall correctly reconfigure a physical channel according to a PHYSICAL CHANNEL RECONFIGURATION message when asked to perform a transition from CELL_DCH to CELL_FACH.

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.7.3 Test purpose

To confirm that the UE reconfigures a new physical channel according to the PHYSICAL CHANNEL RECONFIGURATION message received from the SS.

8.2.6.7.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE. The UE shall then reconfigure the new physical channel according to this message and the system information messages. Following this, it shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC on the RACH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	
2				Reconfiguration of physical channel
3	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION

Use the message sub-type titled “Packet to CELL_FACH from CELL_DCH in PS” in Annex A.

8.2.6.7.5 Test requirement

After step 3 the UE shall transit from CELL_DCH to CELL_FACH and continue to communicate with SS on the common physical channel.

8.2.6.8 Physical channel reconfiguration for transition from CELL_DCH to CELL_FACH: Success (Cell re-selection)

8.2.6.8.1 Definition

8.2.6.8.2 Conformance requirement

The UE shall initiate the cell update procedure when the UE performs cell reselection during a physical channel reconfiguration procedure. After the UE completes cell update procedure, the UE shall continue to perform the physical channel reconfiguration procedure and correctly reconfigure the physical channel.

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.8.3 Test purpose

To confirm that the UE transmits PHYSICAL CHANNEL RECONFIGURATION FAILURE message after the UE completes a cell reselection and cell update procedure.

8.2.6.8.4 Method of test

Initial Condition

System Simulator: 2 cells Cell 1 is active, Cell 2 is inactive

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

Table 8.2.6.8

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.6.8 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in the CELL_DCH state in cell 1. The SS configures its downlink transmission power settings according to columns "T1" in Table 8.2.6.8 and broadcast BCCH on the primary CCPCH in cell 2.The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message, as the transition occurs from CELL_DCH to CELL_FACH with cell reselection. After the UE successfully camp onto cell 2, it shall initiate the cell update procedure in cell 2. The UE transmits CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.6.8.
2		←	BCCH	The SS starts to broadcast BCCH on the primary CCPCH in cell 2.
3		←	PHYSICAL CHANNEL RECONFIGURATION	This message include IE" Primary CPICH info".
				The SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.6.8.
4		→	CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
5		←	CELL UPDATE CONFIRM	This message include IE "new U-RNTI" and IE "new C-RNTI".
6		→	UTRAN MOBILITY INFORMATION CONFIRM	
7		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION (Step 3)

Use the message sub-type titled "Packet to CELL_FACH from CELL_DCH in PS" in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CPICH info - Primary scrambling code	 150

CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Assigned previously in cell 1 Assigned previously in cell 1 "cell reselection"

CELL UPDATE CONFIRM (Step 5)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 4
New U-RNTI	
- SRNC Identity	'0000 0000 0000 0001'
- S-RNTI	Different from previous S-RNTI
New C-RNTI	Different from previous C-RNTI

8.2.6.8.5 Test requirement

After step 3 the UE shall transmit CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection". After step 5 UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 6 UE shall transmit PHYSICAL CHANNEL COMPLETE message on the DCCH using AMRLC.

After step 7 the UE communicate with the SS on the DCCH and DTCH, using the common physical channel.

8.2.6.9 Physical channel reconfiguration for transition from CELL_FACH to CELL_DCH: Success

8.2.6.9.1 Definition

8.2.6.9.2 Conformance requirement

The UE shall correctly reconfigure a physical channel according to a PHYSICAL CHANNEL RECONFIGURATION message, which triggers a transition from CELL_FACH to CELL_DCH.

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.9.3 Test purpose

To confirm that the UE reconfigures a new physical channel according to a PHYSICAL CHANNEL RECONFIGURATION message received from the UTRAN, in the case of an assignment of dedicated physical resource from the common physical channels used previously by the UE.

8.2.6.9.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE to start a transition from CELL_FACH to CELL_DCH. The UE shall reconfigure the new physical channel correctly according to this message. To complete this procedure, the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	
2				The UE shall reconfigure the physical channel in order to start using the dedicated channels allocated.
3	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION

Use the message sub-type titled “Packet to CELL_DCH from CELL_FACH in PS” in Annex A.

8.2.6.9.5 Test requirement

After step 3 the UE shall transit from CELL_FACH to CELL_DCH and continue to communicate with SS on the dedicated physical channel.

8.2.6.10 Physical channel reconfiguration for transition from CELL_FACH to CELL_DCH: Failure (Unsupported configuration)

8.2.6.10.1 Definition

8.2.6.10.2 Conformance requirement

The UE shall keep its old configuration when the it receives a PHYSICAL CHANNEL RECONFIGURATION message, which specifies unsupported configuration parameters for the UE. It shall then transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, reporting the cause “configuration unsupported” in IE “ failure cause”.

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.10.3 Test purpose

To confirm that the UE keeps its configuration and transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, if the received PHYSICAL CHANNEL RECONFIGURATION message includes unsupported configuration parameters.

8.2.6.10.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE, which includes unsupported frequencies for the UE. The PHYSICAL CHANNEL RECONFIGURATION is

structured in such a manner as to trigger a transition from CELL_FACH to CELL_DCH in the UE. The UE shall responds with a PHYSICAL CHANNEL RECONFIGURATION FAILURE message sent on the DCCH using AM RLC, setting "configuration unsupported" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	Includes unsupported frequencies for the UE
2	→		PHYISICAL CHANNEL RECONFIGURATION FAILURE	The UE shall not change the physical channel configuration, this message shall be sent using the original allocated physical resource.

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	 63984 Not Present

PHYSICAL CHANNEL RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type Failure cause Other information element	 Configuration unsupported Not checked

8.2.6.10.5 Test requirement

After step 1 the UE shall keep its old configuration and transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, the IE "failure cause" shall be set to "configuration unsupported".

8.2.6.11 Physical channel reconfiguration for transition from CELL_FACH to CELL_DCH: Failure (Physical channel failure and reversion to old configuration)

8.2.6.11.1 Definition

8.2.6.11.2 Conformance requirement

The UE shall revert to the old configuration when the UE fails to reconfigure the new physical channel by timer T312 expiry. It shall report the failure by transmitting a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, indicating "physical channel failure" in IE " failure cause".

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.11.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if the UE fails to reconfigure the new physical channel according to a PHYSICAL CHANNEL RECONFIGURATION message by the T312 expiry.

8.2.6.11.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE, requesting it to transit from CELL_FACH to CELL_DCH due to a switch in physical resource reallocation. However, it does not reconfigure the new physical channel accordingly but continue to use the old configuration. Consequently, the UE shall fail to reconfigure the new physical channel, and after T312 expiry the UE attempt to revert to the old configuration. Then the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC which reports "physical channel failure" in IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	
2				The SS does not reconfigure the physical channel, hence the UE shall detect a failure to reconfigure to the new physical channel.
3	→		PHYSICAL CHANNEL RECONFIGURATION FAILURE	After T312 expiry the UE reverts to the old configuration and transmits this message.

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION

Use the message sub-type titled "Packet to CELL_DCH from CELL_FACH in PS" in Annex A.

PHYSICAL CHANNEL RECONFIGURATION FAILURE

Information Element	Value/remark
Message Type	
Failure cause	Physical channel failure
Other information element	Not checked

8.2.6.11.5 Test requirement

After step 2 the UE shall revert to the old configuration and transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, specifying "physical channel failure" in IE "failure cause".

8.2.6.12 Physical channel reconfiguration for transition from CELL_FACH to CELL_DCH: Failure (Physical channel failure and reversion failure)

8.2.6.12.1 Definition

8.2.6.12.2 Conformance requirement

The UE shall perform a cell update procedure when the UE selects another cell after the detection of physical channel failure in the physical channel reconfiguration procedure. After the UE completes cell update procedure, the UE transmit PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC which set IE “failure cause” to “physical channel failure”.

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.12.3 Test purpose

To confirm that the UE initiates a cell update procedure after it fails to reconfigure the new physical channel and selects another cell..

To confirm that UE transmits PHYSICAL CHANNEL RECONFIGURATION FAILURE message after UE completes cell update procedure.

8.2.6.12.4 Method of test

Initial Condition

System Simulator: 2 cells- Cell 1 is active, Cell 2 is inactive

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108 in cell 1

Test Procedure

Table 8.2.6.12

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.6.12 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns “T0” to “T1”, whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in the CELL_FACH state in cell 1. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE, but the SS does not reconfigure L1 accordingly. The SS configures its downlink transmission power settings according to columns “T1”in Table 8.2.6.12. As a result, the UE fail to reconfigure new physical channel and reselect to cell 2 and then the UE sends a CELL UPDATE message on uplink CCCH with IE “Cell update cause“ set to “radio link failure”. The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and subsequently transmits PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE “failure cause” to ”physical channel failure”.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	
2				The SS does not configure the new dedicated physical channel in accordance with the settings in the message and applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.2.6.12.
3	←		BCCH	The SS starts to transmit the BCCH on the primary CCPCH in cell 2.
4	→		CELL UPDATE	This message includes the value "cell reselection " set in IE "Cell update cause".
5	←		CELL UPDATE CONFIRM	This message includes IE "new U-RNTI" and IE "new C-RNTI"".
6	→		UTRAN MOBILITY INFORMATION CONFIRM	UE shall send this message in the cell 2.
7	→		PHYSICAL CHANNEL RECONGURATION FAILURE	

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled "Packet to CELL_DCH from CELL_FACH in PS" in Annex A.

CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Assigned previously in cell 1
- S-RNTI	Assigned previously in cell 1
Cell Update Cause	"cell reselection"

CELL UPDATE CONFIRM (Step 5)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 4
New U-RNTI	
- SRNC Identity	'0000 0000 0000 0001'
- S-RNTI	Different from previous S-RNTI
New C-RNTI	Different from previous C-RNTI

PHYSICAL CHANNEL RECONGURATION FAILURE (Step 7)

Information Element	Value/remark
Message Type	"PHYSICAL CHANNEL RECONGURATION FAILURE"
Failure cause	"physical channel failure"
Other information element	Not checked

8.2.6.12.5 Test requirement

After step 3 the UE shall transmit a CELL UPDATE message using RLC-TM mode on the uplink CCCH with IE "Cell update cause" set to "cell reselection"..

After step 6 the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 7 the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to "physical channel failure".

8.2.6.13 Physical channel reconfiguration for transition from CELL_FACH to CELL_DCH: Failure (Incompatible simultaneous reconfiguration)

8.2.6.13.1 Definition

8.2.6.13.2 Conformance requirement

If the UE receives a PHYSICAL CHANNEL RECONFIGURATION message whilst reconfiguring due to a radio bearer message other than PHYSICAL CHANNEL RECONFIGURATION, it shall keep its configuration as if the PHYSICAL CHANNEL RECONFIGURATION message had not been received.

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.13.3 Test purpose

To confirm that if the UE receives a PHYSICAL CHANNEL RECONFIGURATION message whilst reconfiguring due to a radio bearer message other than PHYSICAL CHANNEL RECONFIGURATION, it shall keep its configuration as if the PHYSICAL CHANNEL RECONFIGURATION message had not been received and complete the reconfiguration according to the previously received message.

8.2.6.13.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the PHYSICAL CHANNEL RECONFIGURATION message, the UE shall keep the configuration as if it had not received the PHYSICAL CHANNEL RECONFIGURATION message and shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS receives the PHYSICAL CHANNEL RECONFIGURATION FAILURE message, the

UE reconfigures the new physical channel parameters and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER RECONFIGURATION	
2	←		PHYSICAL CHANNEL RECONFIGURATION	Sent before the elapse of the frame number specified in IE "Activation time info" of the message dispatched in step 1.
3	→		PHYSICAL CHANNEL RECONFIGURATION FAILURE	The UE does not change the configuration due to the reception of PHYSICAL CHANNEL RECONFIGURATION message.
4	→		RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1)

For RADIO BEARER RECONFIGURATION in step 1, use the message sub-type indicated as "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A.

PHYSICAL CHANNEL RECONFIGURATION (Step 2)

For PHYSICAL CHANNEL RECONFIGURATION in step 2, use the message sub-type indicated as "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Info	Current CFN-[current CFN mod 8 + 8]

PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 3)

Information Element	Value/remark
Message Type	
Failure cause	Incompatible simultaneous reconfiguration
Other information element	Not checked

8.2.6.13.5 Test requirement

After step 1, SS transmits a PHYSICAL CHANNEL RECONFIGURATION message before the expiry of the activation time specified in the message of step 1.

After step 2 the UE shall keep its configuration as if the UE had not received the PHYSICAL CHANNEL RECONFIGURATION message and shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 4 the UE communicates with the SS on the DCCH and DTCH using the new physical channel parameters reconfigured as a result of the RADIO BEARER RECONFIGURATION message.

8.2.6.14 Physical channel reconfiguration for transition from CELL_FACH to CELL_DCH: Failure (Invalid message reception and Invalid configuration)

8.2.6.14.1 Definition

8.2.6.14.2 Conformance requirement

The UE shall keep its old configuration when the UE receives a PHYSICAL CHANNEL RECONFIGURATION message containing a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient". It shall then transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message, set "protocol error" in IE "failure cause" and also set "Information element value not comprehended" in IE "Protocol error cause". The UE shall keep existing configuration before reception of a TRANSPORT CHANNEL RECONFIGURATION message when the TRANSPORT CHANNEL RECONFIGURATION message include some IEs set to invalid value, and then the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION FAILURE including IE "failure cause" set to "invalid configuration"

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.14.3 Test purpose

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if the received message uses a undefined value in the mandatory IE "UTRAN DRX cycle length coefficient".

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives a PHYSICAL CHANNEL RECONFIGURATION message including some IEs set to invalid value.

8.2.6.14.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE which comprises a defined value in the mandatory IE "UTRAN DRX cycle length coefficient". The UE keeps the old configuration and transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting "protocol error" in IE "failure cause" and also setting "Information element value not comprehended" in IE "Protocol error cause". The UE keeps initial configuration and SS transmits PHYSICAL CHANNEL RECONFIGURATION message including some IEs set to invalid value. The UE transmit PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to " invalid configuration".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	Contains a mandatory error due to illegal use of undefined value
2	→		PHYSICAL CHANNEL RECONFIGURATION FAILURE	The UE does not change the configuration.
3	←		PHYSICAL CHANNEL RECONFIGURATION	This message includes IE set to invalid value
4				The UE does not change the configuration
5	→		PHYSICAL CHANNEL RECONFIGURATION FAILURE	The IE "failure cause" shall be set to "invalid configuration

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION (Step 1)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
UTRAN DRX cycle length coefficient	Undefined value

PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 2)

Information Element	Value/remark
Message Type	
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Information element value not comprehended
Other information element	Not checked

PHYSICAL CHANNEL RECONFIGURATION (Step 3)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Uplink DPCH info	Not present

PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 5)

Information Element	Value/remark
Message Type	
Failure cause	Invalid configuration
Other information element	Not checked

8.2.6.14.5 Test requirement

After step 1 the UE shall keep its old configuration, transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with "protocol error" in IE "failure cause" and also "Information element value not comprehended" in IE "Protocol error cause".

After step 3 the UE shall keep its old configuration.

After step 4 the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to " invalid configuration".

8.2.6.15 Physical channel reconfiguration for transition from CELL_FACH to CELL_FACH (Hard handover to another frequency): Success

8.2.6.15.1 Definition

8.2.6.15.2 Conformance requirement

The UE shall correctly reconfigure a physical channel according to a PHYSICAL CHANNEL RECONFIGURATION message when asked to perform a transition from CELL_FACH to CELL_FACH.

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.15.3 Test purpose

To confirm that the UE reconfigures a new physical channel according to the PHYSICAL CHANNEL RECONFIGURATION message received from the SS.

8.2.6.15.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE. The UE shall then reconfigure the new physical channel according to this message and the system information messages. Following this, it shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC on the RACH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	
2				Reconfiguration of physical channel
3	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION

Use the message sub-type titled “Packet to CELL_FACH from CELL_FACH in PS” in Annex A.

8.2.6.15.5 Test requirement

After step 3 the UE shall be in CELL_FACH state and continue to communicate with SS on the common physical channel.

8.2.6.16 Physical channel reconfiguration for transition from CELL_FACH to CELL_FACH: Failure (Cell re-selection)

8.2.6.16.1 Definition

8.2.6.16.2 Conformance requirement

The UE shall initiate the cell reselection procedure when the UE performs cell reselection during a physical channel reconfiguration procedure. After the UE completes cell update procedure, the UE shall continue to perform the physical channel reconfiguration procedure and correctly reconfigure the physical channel..

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.16.3 Test purpose

To confirm that the UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message after the UE completes a cell reselection and cell update procedure.

8.2.6.16.4 Method of test

Initial Condition

System Simulator: 2 cells Cell 1 is active, Cell 2 is inactive

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

Table 8.2.6.16

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.7	-78.8	switched off	-72.7

Table 8.2.6.16 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns “T0” to “T1”, whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in the CELL_FACH state in cell 1. On transmitting a PHYSICAL CHANNEL RECONFIGURATION message, the SS configures its downlink transmission power settings according to columns “T1” in Table 8.2.1.9 and broadcast BCCH on the primary CCPCH in cell 2. The UE shall initiate the cell update procedure and transmits CELL UPDATE message on uplink CCCH with IE “Cell update cause“ set to “cell reselection”. The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	This message include IE" Primary CPICH info".
2				The UE shall detect a failure to transmission power settings, according to the values in columns "T1" of Table 8.2.6.16.
3	←		BCCH	The SS starts to broadcast BCCH on the primary CCPCH in cell2.
4	→		CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
5	←		CELL UPDATE CONFIRM	This message include IE "new U-RNTI" and IE "new C-RNTI".
6	→		UTRAN MOBILITY INFORMATION CONFIRM	
7	→		PHYSICAL CHANNELRECONFIGURATION COMPLETE	

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled "Packet to CELL_FACH from CELL_FACH in PS" in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CPICH info - Primary scrambling code	 150

CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Assigned previously in cell 1 Assigned previously in cell 1 "cell reselection"

CELL UPDATE CONFIRM (Step 5)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex with the following exceptions:

Information Element	Value/remark
U-RNTI New U-RNTI - SRNC Identity - S-RNTI New C-RNTI	Same as CELL UPDATE message in step 7 '0000 0000 0000 0001' Different from previous S-RNTI Different from previous C-RNTI

8.2.6.16.5 Test requirement

After step 3 the UE shall transmit CELL UPDATE message on the CCCH with IE “Cell update cause“ set to “cell reselection”.

After step 5 the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit PHYSICAL CHANNEL COMPLETE message on the DCCH using AM RLC.

After step 7 the UE communicate with the SS on the DCCH and DTCH, using the common physical channel.

8.2.6.17 Physical channel reconfiguration for transition from CELL_DCH to CELL_DCH (Hard handover to another frequency): Success (Subsequently received)

8.2.6.17.1 Definition

8.2.6.17.2 Conformance requirement

If the UE receives a PHYSICAL CHANNEL RECONFIGURATION message before the UE reconfigures the radio bearer according to the previous PHYSICAL CHANNEL RECONFIGURATION message, the UE shall ignore the new PHYSICAL CHANNEL RECONFIGURATION message and reconfigure according to the previous PHYSICAL CHANNEL RECONFIGURATION message received. Finally, the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.17.3 Test purpose

To confirm that if the UE receives a PHYSICAL CHANNEL RECONFIGURATION message before the UE reconfigures the radio bearer according to the previous PHYSICAL CHANNEL RECONFIGURATION message it ignores the new PHYSICAL CHANNEL RECONFIGURATION message and reconfigures according to the previous PHYSICAL CHANNEL RECONFIGURATION message.

8.2.6.17.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. When the SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE before the UE reconfigures the radio bearer, the UE ignores the new PHYSICAL CHANNEL RECONFIGURATION message and reconfigures according to the previous PHYSICAL CHANNEL RECONFIGURATION message received. Finally, the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	
2	←		PHYSICAL CHANNEL RECONFIGURATION	SS send this message before the expiry of "activation time" specified in PHYSICAL CHANNEL RECONFIGURATION message of step 1.
3	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE ignores the PHYSICAL CHANNEL RECONFIGURATION message in step 2 and confirms configuration according to the PHYSICAL CHANNEL RECONFIGURATION message in step 1.

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Info	[256+Current CFN-[current CFN mod 8 + 8]]MOD 256

8.2.6.17.5 Test requirement

After step 3 the UE shall communicate with the SS on the radio bearer specified in the PHYSICAL CHANNEL RECONFIGURATION message in step 1.

8.2.6.18 Physical channel reconfiguration for transition from CELL_FACH to CELL_DCH: Success (Subsequently received)

8.2.6.18.1 Definition

8.2.6.18.2 Conformance requirement

If the UE receives a PHYSICAL CHANNEL RECONFIGURATION message before the UE reconfigures the radio bearer according to the previous PHYSICAL CHANNEL RECONFIGURATION message, the UE shall ignore the new PHYSICAL CHANNEL RECONFIGURATION message and reconfigure according to the previous PHYSICAL CHANNEL RECONFIGURATION message received. Finally, the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.6

8.2.6.18.3 Test purpose

To confirm that if the UE receives a PHYSICAL CHANNEL RECONFIGURATION message before the UE reconfigures the radio bearer according to the previous PHYSICAL CHANNEL RECONFIGURATION message it ignores the new PHYSICAL CHANNEL RECONFIGURATION message and reconfigures according to the previous PHYSICAL CHANNEL RECONFIGURATION message.

8.2.6.18.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_FACH state. When the SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE before the UE reconfigures the radio bearer, the UE ignores the new PHYSICAL CHANNEL RECONFIGURATION message and reconfigures according to the previous PHYSICAL CHANNEL RECONFIGURATION message received. Finally, the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	
2	←		PHYSICAL CHANNEL RECONFIGURATION	SS send this message before the expiry of "activation time" specified in PHYSICAL CHANNEL RECONFIGURATION message of step 1.
3	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE ignores the PHYSICAL CHANNEL RECONFIGURATION message in step 2 and confirms configuration according to the PHYSICAL CHANNEL RECONFIGURATION message in step 1.

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL_DCH from CELL_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Info	[256+Current CFN-[current CFN mod 8 + 8]]MOD 256

8.2.6.18.5 Test requirement

After step 3 the UE shall communicate with the SS on the radio bearer specified in the PHYSICAL CHANNEL RECONFIGURATION message in step 1.

8.2.6.19 Physical Channel Reconfiguration from CELL_DCH to CELL_PCH: Success

8.2.6.19.1 Definition

8.2.6.19.2 Conformance requirement

The UE shall transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using and transits from CELL_DCH to CELL_PCH when receives a PHYSICAL CHANNEL RECONFIGURATION message. And then, the

UE shall reconfigure radio bearers according to the PHYSICAL CHANNEL RECONFIGURATION message.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.6.19.3 Test purpose

To confirm that the UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message before entering CELL_PCH state after it received a PHYSICAL CHANNEL RECONFIGURATION message and reconfigured its radio bearers. The UE is in CELL_PCH state in the same cell.

8.2.6.19.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH(state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message. The UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the UE using AM RLC and enters into CELL_PCH state. The SS transmits a PAGING TYPE 1 message and the UE accepts it and enters the CELL_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	
2	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE sends this message before start state transition.
3				Reconfiguration of Physical Channel after state transition.
4	←		PAGING TYPE 1	The SS transmits this message included a matched identity.
5	→		CELL UPDATE	The UE is in CELL_FACH state.

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the same message sub-type titled “Packet to CELL_FACH from CELL_DCH in PS“ in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH

PAGING TYPE 1 (Step 4)

Use the same message sub-type titled “TM (SMS in PS)“ in Annex A with following exceptions:

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	 UTRAN identity Previously assigned SRNC identity Previously assigned S-RNTI

8.2.6.19.5 Test requirement

After step 1 the UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the UE on uplink DCCH using AM RLC.

After step 3 the UE shall transit from CELL_DCH to CELL_PCH.

8.2.6.20 Physical Channel Reconfiguration from CELL_DCH to URA_PCH: Success

8.2.6.20.1 Definition

8.2.6.20.2 Conformance requirement

The UE shall transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using and transits from CELL_DCH to URA_PCH when receives a PHYSICAL CHANNEL RECONFIGURATION message. And then, the UE shall reconfigure radio bearers according to the PHYSICAL CHANNEL RECONFIGURATION message.

Reference

3GPP TS 25.331 clause 8.2.2

8.2.6.20.3 Test purpose

To confirm that the UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message before entering URA_PCH state after it received a PHYSICAL CHANNEL RECONFIGURATION message and reconfigured its radio bearers. The UE is in CELL_PCH state.

8.2.6.20.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH_DCH(state 6-10) as specified in clause 7.4 of TS 34.108

Test Procedure

The UE is in the CELL_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message. The UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the UE using AM RLC and enters into URA_PCH state. The SS transmits a PAGING TYPE 1 message and the UE accepts it and enters the CELL_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PHYSICAL CHANNEL RECONFIGURATION	
2	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE sends this message before start state transition.
3				Reconfiguration of Physical Channel after state transition.
4	←		PAGING TYPE 1	The SS transmits this message included a matched identity.
5	→		CELL UPDATE	The UE is in CELL_FACH state.

Specific Message Contents

PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the same message sub-type titled “Packet to CELL_FACH from CELL_DCH in PS“ in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH

PAGING TYPE 1 (Step 4)

Use the same message sub-type titled “TM (SMS in PS)“ in Annex A with following exceptions:

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	 UTRAN identity Previously assigned SRNC identity Previously assigned S-RNTI

8.2.6.20.5 Test requirement

After step 1 the UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the UE on uplink DCCH using AM RLC.

After step 3 the UE shall transit from CELL_DCH to URA_PCH.

8.2.6.21 Void

8.2.6.22 Void

8.2.7 Physical Shared Channel Allocation [TDD only]

[Editor’s note: This message is not included in Release99 so this is FFS.]

8.2.8 PUSCH capacity request [TDD only]

[Editor’s note: This message is not included in Release99 so this is FFS.]

8.2.9 Void

8.3 RRC connection mobility procedure

8.3.1 Cell Update

8.3.1.1 Cell Update: cell reselection in CELL_FACH

8.3.1.1.1 Definition

8.3.1.1.2 Conformance requirement

This procedure is used to update UTRAN with the current cell of the UE after it has performed a cell reselection in CELL_FACH state.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.1.3 Test purpose

To confirm that the UE executes a cell update procedure after the successful reselection of another UTRA cell. To confirm that the UE sends the correct uplink response message when executing cell update procedure due to cell reselection.

8.3.1.1.4 Method of test

Initial Condition

System Simulator: 2 cells - Cell 1 is active, with the downlink transmission power shown in column marked “T0” in Table 8.3.1.1-1, while cell 2 is inactive

UE: CS-CELL_FACH_Initial (state 6-2) or PS-CELL_FACH_Initial (state 6-4) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE

Test Procedure

Table 8.3.1.1-1

Parameter	Unit	Cell 1			Cell 2		
		T0	T1	T2	T0	T1	T2
UTRA RF Channel Number		Ch. 1			Ch. 1		
					Cell 2 is switched off		
CPICH RSCP	dBm	-72.7	-78.8	-72.7		-72.7	-78.8

Table 8.3.1.1-1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Columns marked “T0” denote the initial conditions, while columns marked “T1” and “T2” are to be applied subsequently. SS switches the power settings repeatedly between columns “T1” and “T2”, whenever the description below specifies that the transmission power settings for cell 1 and cell 2 are reversed.

The UE is in the CELL_FACH state, camping onto cell 1. SS configures its downlink transmission power settings according to columns “T1” in Table 8.3.1.1-1. SS starts to broadcast BCCH on the primary CCPCH in cell 2. The UE shall find cell 2 to be more suitable for service and hence perform a cell reselection. After the completion of cell reselection, the UE shall transmits a CELL UPDATE message to the SS on the uplink CCCH of cell 2 and set IE “Cell update cause” to “Cell Reselection”. After the SS receives this message, it transmits a CELL UPDATE CONFIRM message, which includes the IE “RRC State Indicator” set to “CELL_FACH”, to the UE on the downlink DCCH. SS verifies that the UE does not send any response to this message. UE shall stay in CELL_FACH state. SS then reverses the transmission power of cell 1 and cell 2. The UE shall send a CELL UPDATE message on the uplink CCCH of cell 1. SS replies with CELL UPDATE CONFIRM message and allocates new C-RNTI and U-RNTI identities to the UE. The IE “RRC State Indicator” is set to “CELL_FACH” in this message. The UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message. Following this, SS reverses the transmission power settings for cell 1 and cell 2 again. The UE shall initiate a cell update procedure by transmitting a CELL UPDATE message and stating the cause as ‘cell re-selection’. SS replies with a CELL UPDATE CONFIRM message which contains IE “Physical channel information elements”. The UE shall send PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to acknowledge the change in physical resources. Then, SS reverses the transmission power settings for cell 1 and cell 2 again. The UE shall send a CELL UPDATE message on the uplink CCCH of cell 1. SS replies with a CELL UPDATE CONFIRM message which contains IE “Transport channel information elements”. The UE shall send TRANSPORT CHANNEL RECONFIGURATION COMPLETE message. Following this, SS reverses the transmission power settings for cell 1 and cell 2 again. The UE shall send a CELL UPDATE message on the uplink CCCH of cell 2. SS replies with a CELL UPDATE CONFIRM message which contains IE “RB information to be affected list”. The UE shall send RADIO BEARER RECONFIGURATION COMPLETE message. Then, SS reverses the transmission power settings for cell 1 and cell 2 once again. The UE shall send a CELL UPDATE message on the uplink CCCH of cell 1. SS replies with a CELL UPDATE CONFIRM message which contains IE “RB information to release list”. The UE shall send RADIO BEARER RELEASE COMPLETE message. Finally, the SS reverses the transmission power settings for cell 1 and cell 2. The UE shall send a CELL UPDATE message on the uplink CCCH of cell 2. SS shall not respond to this message but reverses the transmission power settings for cell 1 and cell 2. UE shall send a CELL UPDATE message on the uplink CCCH of cell 1. SS shall then send CELL UPDATE CONFIRM message to UE.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_FACH state in cell 1
2	←		BCCH	SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.3.1.1-1. The SS starts to broadcast BCCH on the primary CCPCH in cell 2 with a power level that is higher than that in cell 1. The UE shall find that the cell 2 is better for service and perform a reselection. SS waits for the maximum duration required for the UE to camp to cell 2.
3	→		CELL UPDATE	Value "cell reselection" should be indicated in IE "Cell update cause"
4	←		CELL UPDATE CONFIRM	IE "RRC State Indicator" is set to "CELL_FACH". SS set k=0.
5				SS checks the uplink PRACH channel to verify that no response is sent by UE.
6				SS reverses the transmission power level of cell 1 and cell 2.
7	→		CELL UPDATE	
8	←		CELL UPDATE CONFIRM	IE "RRC State Indicator" is set to "CELL_FACH". If k ≥ 0, new C-RNTI and U-RNTI identities are assigned to the UE. If k>0, IE "Physical channel information elements" is included in this message. If k>1, IE "Transport channel information elements" is included in this message. If k>2, IE "RB information to be affected list" is included in this message. If k>5, IE "RB information to release list" is included in this message. Increment k by 1.
9	→		UTRAN MOBILITY INFORMATION CONFIRM	If k=1 when SS received this message, go to step 6. Else test fails. If this message is not received, proceed to next step.
10	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	If k=2 when SS received this message, go to step 6. Else test fails. If this message is not received, proceed to next step.
11	→		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	If k=3 when SS received this message, go to step 6. Else test fails. If this message is not received, proceed to next step.
12	→		RADIO BEARER RECONFIGURATION COMPLETE	If k=4 when SS received this message, go to step 6. Else test fails. If this message is not received, proceed to next step.
13	→		RADIO BEARER RELEASE COMPLETE	If k=5 when SS received this message, test ends. Else test fails. If this message is not received, test fails.

14			SS reverses the transmission power level of cell 1 and cell 2.
15	→	CELL UPDATE	
16			SS reverses the transmission power level of cell 1 and cell 2.
17	→	CELL UPDATE	
18	←	CELL UPDATE CONFIRM	

Specific Message Contents

CELL UPDATE

The same message found in Annex A shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI	 Check to see if set to '0000 0000 0001' In step 3, check to see if set to '0000 0000 0000 0000 0001'. In step 7 and when k<1, check to see if set to '0000 0000 0000 0000 0001'. In step 7 and when k>0, check to see if set to same string in IE "S-RNTI" in IE "New U-RNTI" of CELL UPDATE CONFIRM message in previous step 8. In step 15 and 17, check to see if set to same string in IE "S-RNTI" in IE "New U-RNTI" of CELL UPDATE CONFIRM message in previous step 8.
Cell Update Cause	Check to see if set to 'Cell Re-selection'

CELL UPDATE CONFIRM (Step 4 and 18)

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_FACH

CELL UPDATE CONFIRM (Step 8 and k = 0)

Use the same message sub-type found in step 4, with the following exceptions:

Information Element	Value/remark
New U-RNTI - SRNC Identity - S-RNTI New C-RNTI	 '0000 0000 0001' An arbitrary 20-bits string which is different from original S-RNTI An arbitrary 16-bits string which is different from original C-RNTI assigned in RRC connection establishment procedure.

CELL UPDATE CONFIRM (Step 8 and k=1)

Use the same message sub-type found in step 8 and k=0, with the following exceptions:

Information Element	Value/remark
Maximum allowed uplink TX power	3 dB below the follow value: Minimum of { 33 dBm, maximum uplink power allowed under the UE power class }

CELL UPDATE CONFIRM (Step 8 and k=2)

Use the same message sub-type found in step 8 and k=1, with the following exceptions:

Added or Reconfigured uplink TrCH information	
-Transport channel identity	1
-TFS	
-Dynamic Transport format information	(This IE is repeated for TFI number)
-Number of Transport blocks	Reference to TS34.108 clause 6.10 Parameter Set
-RLC size	Reference to TS34.108 clause 6.10 Parameter Set
-Semi-static Transport Format information	
-Transmission time interval	Reference to TS34.108 clause 6.10 Parameter Set
-Type of channel coding	Reference to TS34.108 clause 6.10 Parameter Set
-Coding Rate	Reference to TS34.108 clause 6.10 Parameter Set
-Rate matching attribute	Reference to TS34.108 clause 6.10 Parameter Set
-CRC size	Reference to TS34.108 clause 6.10 Parameter Set

CELL UPDATE CONFIRM (Step 8 and k=3)

Use the same message sub-type found in step 8 and k=2, with the following exceptions:

RB information to be affected	(UM DCCH for RRC)
-RB identity	1
-RB mapping info	
-Information for each multiplexing option	
-Number of uplink RLC logical channels	1
-Uplink transport channel type	RACH
-uplink Transport channel identity	1
-Logical channel identity	1
-CHOICE RLC size list	Explicit list
- RLC size index	Reference to TS34.108 clause 6.10 Parameter Set
-MAC logical channel priority	2
-Number of downlink RLC logical channels	1
-Downlink transport channel type	FACH
-Logical channel identity	1

CELL UPDATE CONFIRM (Step 8 and k=4)

Use the same message sub-type found in step 8 and k=3, with the following exceptions:

RB information to release	
-RB identity	4

8.3.1.1.5 Test requirement

After step 2 the UE shall reselect to cell 2 and then it shall transmit a CELL UPDATE message which, sets the value "cell reselection" in IE "Cell update cause".

After step 4 the UE shall not transmit any uplink message in response to the CELL UPDATE CONFIRMATION message received in step 4.

After step 6 the UE shall sent CELL UPDATE message to cell with stronger transmitting power, in order to indicate that a cell reselection has taken place.

After step 8, if k=1, the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message to acknowledge that it has started to use the new RNTI identities allocated.

If k=2, the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the new physical channel assigned.

If k=3, the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION COMPLETE message to acknowledge that it has reconfigured the transport channels.

If k=4, the UE shall transmit RADIO BEARER RECONFIGURATION COMPLETE message to acknowledge that it has reconfigured the radio bearers.

If k=5, the UE shall transmit RADIO BEARER RELEASE COMPLETE message to acknowledge that it has release its radio bearers.

After step 14 the UE shall sent CELL UPDATE message to cell with stronger transmitting power, in order to indicate that a cell reselection has taken place.

After step 16 the UE shall sent CELL UPDATE message to cell with stronger transmitting power, in order to indicate that a cell reselection has taken place.

8.3.1.2 Cell Update: cell reselection in CELL_PCH

8.3.1.2.1 Definition

8.3.1.2.2 Conformance requirement

This procedure is to update UTRAN with information of the current cell, after a cell reselection has occurred in CELL_PCH state.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.2.3 Test purpose

To confirm that the UE, in CELL_PCH state, executes a cell update procedure after the successful reselection of another UTRA cell. To confirm that the UE replies with an appropriate uplink message after receiving CELL UPDATE CONFIRM message during the cell update procedure.

8.3.1.2.4 Method of test

Initial Condition

System Simulator: 2 cells – Cell 1 is active with the downlink transmission power shown in column marked “T0” in Table 8.3.1.1-1, while cell 2 is inactive

UE: CELL_PCH (state 6-12) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to CELL_PCH state and is camped onto cell 1. The SS starts to broadcast system information on the BCCH on the primary CCPCH in cell 2. SS configures its downlink transmission power settings according to columns “T1” in Table 8.3.1.1-1. When the UE detects the presence of cell 2, it moves to CELL_FACH state and transmits a CELL UPDATE message on the uplink CCCH. The value “cell reselection” shall be set in IE “ Cell update cause” in CELL UPDATE message. Upon reception of CELL_UPDATE message, SS replies with a CELL UPDATE CONFIRM message with the IE “RRC State Indicator” set to “CELL_PCH”. After receiving this message, the UE returns to CELL_PCH state without transmitting any uplink message. Next, SS reverses the transmission strengths of cell 1 and cell 2 again. This will cause the UE to send CELL UPDATE message on the uplink CCCH of cell 1. SS then sends CELL UPDATE CONFIRM message with the assignment of new C-RNTI and U-RNTI identities. The UE shall

transmit UTRAN MOBILITY INFORMATION CONFIRM message as a response. Following this, SS reverses the transmission power settings for cell 1 and cell 2 again. The UE shall initiate a cell update procedure by transmitting a CELL UPDATE message on the uplink CCCH of cell 2 and stating the cause as 'cell re-selection'. SS replies with a CELL UPDATE CONFIRM message which contains "Physical channel information elements". The UE shall send PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to acknowledge the change in physical resources. Then, SS reverses the transmission power settings for cell 1 and cell 2 again. The UE shall send a CELL UPDATE message on the uplink CCCH of cell 1. SS replies with a CELL UPDATE CONFIRM message which contains "Physical channel information elements" and "Transport channel information elements". The UE shall send TRANSPORT CHANNEL RECONFIGURATION COMPLETE message. Following this, SS reverses the transmission power settings for cell 1 and cell 2 again. The UE shall send a CELL UPDATE message on the uplink CCCH of cell 2. SS replies with a CELL UPDATE CONFIRM message which contains "Physical channel information elements", "Transport channel information elements" and IE "RB information to be affected list". The UE shall send RADIO BEARER RECONFIGURATION COMPLETE message. Finally, SS reverses the transmission power settings for cell 1 and cell 2 once again. The UE shall send a CELL UPDATE message on the uplink CCCH of cell 1. SS replies with a CELL UPDATE CONFIRM message which contains "Physical channel information elements", "Transport channel information elements", IE "RB information to reconfigure list" and IE "RB information to release list". The UE shall send RADIO BEARER RELEASE COMPLETE message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_PCH state in cell 1
2	←		BCCH	The SS starts to broadcast system information message on BCCH on the primary CCPCH from cell 2. SS reverse the transmission level of cell 2 and cell 1. The UE shall find that the cell 2 is better and attempt to perform a cell reselection.
3	→		CELL UPDATE	The UE moves to CELL_FACH state and transmits this message with the IE " Cell update cause" set to "cell reselection"
4	←		CELL UPDATE CONFIRM	IE "RRC State Indicator" is set to "CELL_PCH". SS set k=0.
5				SS swaps the transmission power of cell 1 and cell 2, making cell 1 the stronger cell.
6	→		CELL UPDATE	UE move from CELL_PCH to CELL_FACH to transmit this message.
7	←		CELL UPDATE CONFIRM	IE "RRC State Indicator" is set to "CELL_PCH". If $k \geq 0$, new C-RNTI and U-RNTI identities are assigned to the UE. If k>0, IE "Physical channel information elements" is included in this message. If k>1, IE "Transport channel information elements" is included in this message. If k>2, IE "RB information to be affected list" is included in this message. If k>3, IE "RB information to release list" is included in this message. Increment k by 1.
8	→		UTRAN MOBILITY INFORMATION CONFIRM	If k=1 when SS received this message, go to step 5. Else test fails. If this message is not received, proceed to next step.
9	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	If k=2 when SS received this message, go to step 6. Else test fails. If this message is not received, proceed to next step.
10	→		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	If k=3 when SS received this message, go to step 6. Else test fails. If this message is not received, proceed to next step.
11	→		RADIO BEARER RECONFIGURATION COMPLETE	If k=4 when SS received this message, go to step 6. Else test fails. If this message is not received, proceed to next step.
12	→		RADIO BEARER RELEASE COMPLETE	If k=5 when SS received this message, test ends. Else test fails. If this message is not received, test fails.

Specific Message Contents

CELL UPDATE (Steps 3 and 6)

Use the same message sub-type found in Annex A, with the following exception.

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' when k<1 or when in step 3. Check to see if set to same string in IE "S-RNTI" in IE "New U-RNTI" of CELL UPDATE CONFIRM message in previous step 7 when k>0. Check to see if set to 'Cell Re-selection'

CELL UPDATE CONFIRM (Step 4)

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH

CELL UPDATE CONFIRM (Step 7 and k=0)

Use the same message sub-type found in step 4, with the following exceptions:

Information Element	Value/remark
New U-RNTI - SRNC Identity - S-RNTI New C-RNTI	 '0000 0000 0001' An arbitrary 20-bits string which is different from original S-RNTI An arbitrary 16-bits string which is different from original C-RNTI.

CELL UPDATE CONFIRM (Step 7 and k=1)

Use the same message sub-type found in step 7 with k=0, with the following exceptions:

Information Element	Value/remark
Maximum allowed uplink TX power	3 dB below the follow value: Minimum of { 33 dBm, maximum uplink power allowed under the UE power class }

CELL UPDATE CONFIRM (Step 7 and k=2)

Use the same message sub-type found in step 7 with k=1, with the following exceptions:

Information Element	Value/remark
Added or Reconfigured uplink TrCH information	
-Transport channel identity	1
-TFS	
-Dynamic Transport format information	(This IE is repeated for TFI number)
-Number of Transport blocks	Reference to TS34.108 clause 6.10 Parameter Set
-RLC size	Reference to TS34.108 clause 6.10 Parameter Set
-Semi-static Transport Format information	
-Transmission time interval	Reference to TS34.108 clause 6.10 Parameter Set
-Type of channel coding	Reference to TS34.108 clause 6.10 Parameter Set
-Coding Rate	Reference to TS34.108 clause 6.10 Parameter Set
-Rate matching attribute	Reference to TS34.108 clause 6.10 Parameter Set
-CRC size	Reference to TS34.108 clause 6.10 Parameter Set

CELL UPDATE CONFIRM (Step 7 and k=3)

Use the same message sub-type found in step 7 with k=2, with the following exceptions:

Information Element	Value/remark
RB information to be affected	(UM DCCH for RRC)
-RB identity	1
-RB mapping info	
-Information for each multiplexing option	
-Number of uplink RLC logical channels	1
-Uplink transport channel type	RACH
-uplink Transport channel identity	1
-Logical channel identity	1
-CHOICE RLC size list	
-MAC logical channel priority	2
-Number of downlink RLC logical channels	1
-Downlink transport channel type	FACH
-Logical channel identity	1

CELL UPDATE CONFIRM (Step 7 and k=4)

Use the same message sub-type found in step 7 with k=3, with the following exceptions:

Information Element	Value/remark
RB information to release	
-RB identity	4

8.3.1.2.5 Test requirement

After step 2 the UE shall reselect to cell 2 and transmit a CELL UPDATE message, containing the IE “Cell update cause” set to “cell reselection”.

After step 5 the UE shall reselect to stronger transmitting cell and transmit a CELL UPDATE message, containing the IE ”Cell update cause” set to “cell reselection”.

After step 7, if k=1, the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH.

If k=2, the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH.

If k=3, the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION COMPLETE message to acknowledge that it has reconfigured the transport channels.

If k=4, the UE shall transmit RADIO BEARER RECONFIGURATION COMPLETE message to acknowledge that it has reconfigured the radio bearers.

If k=5, the UE shall transmit RADIO BEARER RELEASE COMPLETE message to acknowledge that it has release its radio bearers.

8.3.1.3 Cell Update: periodical cell update in CELL_FACH

8.3.1.3.1 Definition

8.3.1.3.2 Conformance requirement

This procedure is to update UTRAN with the current cell information, after the UE has remained in the service area in the CELL_FACH state for a period exceeding the timer value T305.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.3.3 Test purpose

To confirm that the UE executes a periodic cell update procedure following the expiry of timer T305. To confirm that the UE sends a correct response to the CELL UPDATE CONFIRM message. To confirm that the UE listens to the system information messages and then responds to a change in the setting for timer T305.

8.3.1.3.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-CELL_FACH_Initial (state 6-2) or PS-CELL_FACH_Initial (state 6-4) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE

Test Procedure

The UE is in CELL_FACH state. When the UE detects the expiry of timer T305 according to the settings in system information, the UE transmits a CELL UPDATE message to the SS on the uplink CCCH with a cause indicating periodical cell updating. SS replies with a CELL UPDATE CONFIRM message, and IE “RRC State Indicator” is set to “CELL_FACH”. SS verifies that the UE does not transmit any uplink message. SS then waits for T305 to expire again. The UE shall send another CELL UPDATE message to report periodic cell updating. After the SS receives this message, it transmits a CELL UPDATE CONFIRM message which includes the IEs ”new C-RNTI”, “new U-RNTI” to the UE on the downlink DCCH. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH to acknowledge the receipt of the new UE identities. Next, the content of the SYSTEM INFORMATION BLOCK TYPE 1 is changed to disable periodic cell updating. SS then monitors the uplink CCCH for a period up to the maximum possible value for timer T305 (720minutes) and verifies that no CELL_UPDATE message is received. After this, the SS changes the timer T305 value to 5 minutes. UE shall resume periodic cell updating procedure and transmit CELL_UPDATE message 5 minutes after this modification.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_FACH state. SS waits until T305 has expired.
2	→		CELL UPDATE	IE “Cell update cause” shall be set to “periodical cell updating”
3	←		CELL UPDATE CONFIRM	No RNTI identities are given. No information on PRACH and S-CCPCH are provided.
4				SS verifies that no uplink message is received from UE. SS waits for another period to allow T305 to expire.
5	→		CELL UPDATE	Set to “periodical cell update” in IE “Cell update cause” upon the expiry of timer T305.
6	←		CELL UPDATE CONFIRM	Including IEs ”new C-RNTI” , “new U-RNTI” and IE “RRC State Indicator” is set to ”CELL_FACH”
7	→		UTRAN MOBILITY INFORMATION CONFIRM	
8	←		MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 1	SS changes the contents of MASTER INFORMATION BLOCK and SYSTEM INFORMATION BLOCK (see specific message contents). It waits for 720 minutes and checks that no CELL UPDATE message is transmitted on uplink PRACH channel.
9	←		MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 1	SS modified the contents of MASTER INFORMATION BLOCK and SYSTEM INFORMATION BLOCK (see specific message contents) again.
10	→		CELL UPDATE	UE shall transmit this message 5 minutes after step 9, with “cell update cause” set to “periodical cell updating”
11	←		CELL UPDATE CONFIRM	

Specific Message Contents

CELL UPDATE (Step 2 and 5)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to ‘0000 0000 0001’ Check to see if set to ‘0000 0000 0000 0000 0001’ Check to see if set to ‘periodical cell updating’

CELL UPDATE CONFIRM (Step 3)

Use the same message sub-type found in Annex A.

CELL UPDATE CONFIRM (Step 6 and 11)

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
New U-RNTI - SRNC Identity - S-RNTI	 Set to '0000 0000 0001' Set to an arbitrary string different from '0000 0000 0000 0000 0001'

CELL UPDATE (Step 14)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to same bit string as in IE "S-RNTI" in IE "U-RNTI" of the CELL UPDATE CONFIRM message sent in step 6. Check to see if set to 'periodical cell updating'

MASTER INFORMATION BLOCK (Step 8)

Information Element	Value/remark
MIB Tag	2

SYSTEM INFORMATION BLOCK TYPE 1 (Step 8)

Information Element	Value/remark
UE Timers and constants in connected mode T305	 Infinity

MASTER INFORMATION BLOCK (Step 9)

Information Element	Value/remark
MIB Tag	1

SYSTEM INFORMATION BLOCK TYPE 1 (Step 9)

Information Element	Value/remark
UE Timers and constants in connected mode T305	 5 minutes

8.3.1.3.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305 then transmits a CELL UPDATE message setting value "periodical cell update" into IE "Cell update cause".

After step 3 the UE shall not send any uplink message as a response to CELL UPDATE CONFIRM message sent in step 3.

After step 4 the UE shall send CELL UPDATE message, specifying the cell updating cause to be "periodical cell update".

After step 6 the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH.

Between step 8 and step 9 the UE shall cease periodic cell updating activity and not transmit any CELL UPDATE messages.

After step 9 the UE shall transmit a CELL UPDATE message stating the cell update cause to be periodic updating, 5 minutes after the UE has re-read the modified system information.

8.3.1.4 Cell Update: periodical cell update in CELL_PCH and multiple cell update causes

8.3.1.4.1 Definition

8.3.1.4.2 Conformance requirement

This procedure is to update UTRAN with the information of the current cell when the UE detects that it is still in the service area, while residing in the CELL_PCH state, after the expiry of timer T305.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.4.3 Test purpose

To confirm that the UE, in CELL_PCH state, executes a cell update procedure after the expiry of timer T305. To confirm that the UE sends an appropriate response message after receiving the CELL UPDATE CONFIRM message.

8.3.1.4.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_PCH (state 6-12) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE starts from CELL_PCH state. When the UE detects the expiry of periodic cell updating timer T305 according to the system information, the UE moves to CELL_FACH state. It shall transmit a CELL UPDATE message on the uplink CCCH and set the value “periodical cell update” into IE “Cell update cause”. SS answers with a CELL UPDATE CONFIRM message, with IE “RRC State Indicator” set to “CELL_PCH” and includes the IEs ”new C-RNTI” and “new U-RNTI”. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH and before entering CELL_PCH state. Next, the content of the SYSTEM INFORMATION BLOCK TYPE 1 is changed to disable periodical cell updating. SS then monitors the uplink CCCH for a period up to the maximum possible value for timer T305 (720minutes) and verifies that no CELL_UPDATE message is received. After this, the SS changes the timer T305 value to 5 minutes. UE shall resume periodical cell updating procedure and transmit CELL_UPDATE message 5 minutes after UE has re-read the modified system information. Next, the SS pages for the UE. UE shall send CELL UPDATE message with IE “cell update cause” set to “paging response”. SS shall not respond to this message and wait till UE’s timer T305 expires. UE shall transmit CELL UPDATE message with IE “cell update cause” set to “periodical cell update”. SS shall sent CELL UPDATE CONFIRM message to end the procedure.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_PCH state. SS waits until T305 has expired.
2	→		CELL UPDATE	The UE shall move to CELL_FACH state and transmits this message with the IE " Cell update cause" set to "periodical cell update".
3			VOID	
4			VOID	
5			VOID	
6			VOID	
7				
8			VOID	
9	←		CELL UPDATE CONFIRM	New C-RNTI and U-RNTI identities are assigned.
10	→		UTRAN MOBILITY INFORMATION CONFIRM	UE moves back to CELL_PCH after transmitting this message.
11	←		MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 1	SS changes the contents of MASTER INFORMATION BLOCK and SYSTEM INFORMATION BLOCK (see specific message contents). It waits for 720 minutes and checks that no CELL UPDATE message is transmitted on uplink PRACH channel.
12	←		MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 1	SS modified the contents of MASTER INFORMATION BLOCK and SYSTEM INFORMATION BLOCK (see specific message contents) again.
13	→		CELL UPDATE	UE shall transmit this message 5 minutes after step 12, with "cell update cause" set to "periodical cell updating"
14	←		CELL UPDATE CONFIRM	
15	←		PAGING TYPE 1	SS pages the UE.
16	→		CELL UPDATE	IE "Cell update cause" shall be set to "paging response".
17				SS wait for T305 timer to expire
18	→		CELL UPDATE	IE "Cell update cause" shall be set to "periodical cell update".
19	←		CELL UPDATE CONFIRM	

Specific Message Contents

CELL UPDATE (Step 2)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'periodical cell updating'

CELL UPDATE (Step 13 and 18)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 1010' Check to see if set to 'periodical cell updating'

CELL UPDATE (Step 16)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 1010' Check to see if set to 'paging response'

CELL UPDATE CONFIRM (Step 14 and 19)

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
RRC state indicator	CELL_PCH

CELL UPDATE CONFIRM (Step 9)

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
New U-RNTI - SRNC Identity - S-RNTI New C-RNTI	 Set to '0000 0000 0001' Set to '0000 0000 0000 0000 1010' Set to '0000 0000 0000 0101'

PAGING TYPE 1 (Step 15)

Information Element	Value/remark
CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	UTRAN identity '0000 0000 0001' '0000 0000 0000 0000 1010'

MASTER INFORMATION BLOCK (Step 11)

Information Element	Value/remark
MIB Tag	2

SYSTEM INFORMATION BLOCK TYPE 1 (Step 11)

Information Element	Value/remark
UE Timers and constants in connected mode T305	 Infinity

MASTER INFORMATION BLOCK (Step 12)

Information Element	Value/remark
MIB Tag	1

SYSTEM INFORMATION BLOCK TYPE 1 (Step 12)

Information Element	Value/remark
UE Timers and constants in connected mode T305	 5 minutes

8.3.1.4.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305, it shall then move to CELL_FACH state and transmits a CELL UPDATE message with the IE "Cell update cause" set to "periodical cell update".

Between step 11 and step 12 the UE shall cease periodic cell updating activity and not transmit any CELL UPDATE messages.

After step 12 the UE shall transmit a CELL UPDATE message stating the cell update cause to be periodic updating, 5 minutes after the UE has re-read the modified system information.

After step 15 the UE shall transmit a CELL UPDATE message stating the cell update cause to be paging response.

After step 17 the UE shall transmit a CELL UPDATE message stating the cell update cause to be periodic updating.

8.3.1.5 Cell Update: UL data transmission in URA_PCH

8.3.1.5.1 Definition

8.3.1.5.2 Conformance requirement

This procedure is to update UTRAN with the current cell information if the UE wants to transmit uplink data while in URA_PCH state.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.5.3 Test purpose

To confirm that the UE executes a cell update procedure when the UE transmits uplink data if the UE is in URA_PCH state. To confirm that the UE sends the correct response to CELL UPDATE CONFIRM message, after it has taken into consideration the current TFS and/or TFCS settings.

8.3.1.5.4 Method of test

Initial Condition

System Simulator: 1cell

UE: CS-CELL_FACH_Initial (state 6-2) or PS-CELL_FACH_Initial (state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

SS sends MEASUREMENT CONTROL message to UE. UE shall send MEASUREMENT REPORT message to SS using AM RLC on DCCH. SS do not send AM PDU back to UE. SS then transmit RADIO BEARER RELEASE message with IE “RRC State Indicator” is set to “URA_PCH”. The UE shall reply with RADIO BEARER RELEASE COMPLETE message and move to URA_PCH state. UE shall detect that SS has not acknowledge the last MEASUREMENT REPORT message. The UE then moves to CELL_FACH state and transmits a CELL UPDATE message to the SS on the uplink CCCH, with the IE “Cell update cause” set to value “uplink data transmission”. After receiving such a message, SS transmits CELL UPDATE CONFIRM message without specifying IE “new C-RNTI” or IE “new U-RNTI” or “CN information elements” or “ Physical channel information elements” or “Transport channel information elements” or RB information elements”. The UE shall stay in CELL_FACH state and transmit MEASUREMENT REPORT message using AM RLC on DCCH. SS shall acknowledge this message and then sends a RADIO BEARER RELEASE message with IE “RRC State Indicator” is set to “URA_PCH”. The UE shall reply with RADIO BEARER RELEASE COMPLETE message and move to URA_PCH state. Then SS prompts the test operator to transmit packet data. The UE shall send CELL UPDATE message once more. After the SS receives this message, it replies with a CELL UPDATE CONFIRM message including “Physical channel information elements”. The IE ”RRC State Indicator” is set to “CELL_FACH” in this message. The UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message. Then the UE shall enter CELL_FACH state and proceed to transmit packet data. SS

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state.
2	←		MEASUREMENT CONTROL	
3	→		MEASUREMENT REPORT	SS do not send AM PDU to acknowledge this message.
4	←		RADIO BEARER RELEASE	IE “RRC State Indicator” set to “URA_PCH”
5	→		RADIO BEARER RELEASE COMPLETE	UE moves to URA_PCH state.
6	→		CELL UPDATE	The UE shall move to CELL FACH state with the message set to “uplink data transmission” in IE “Cell update cause”.
7	←		CELL UPDATE CONFIRM	Use default message content.
8	→		MEASUREMENT REPORT	SS shall acknowledge this message.
9	←		RADIO BEARER RELEASE	IE “RRC State Indicator” set to “URA_PCH”
10	→		RADIO BEARER RELEASE COMPLETE	UE moves to URA_PCH state.
11				SS prompts test operator to initiate a packet data transmission.
12	→		CELL UPDATE	Should be same as in step 6.
13	←		CELL UPDATE CONFIRM	Including “Physical channel information elements”.
14	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
15				SS waits until transmission of uplink data has been completed.

Specific Message Contents

MEASUREMENT CONTROL (Step 2)

Use the same message sub-type found in Annex A.

RADIO BEARER RELEASE (Step 4)

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
RB information to release list	
- RB identity	3
RB information to be affected list	Not Present
UL Transport channel information common for all transport channel	Not Present
Deleted TrCH information list	Not Present
Added or Reconfigured UL TrCH information list	Not Present
DL Transport channel information common for all transport channel	Not Present
Deleted TrCH information list	Not Present
Added or Reconfigured UL TrCH information list	Not Present
CHOICE channel requirement	Not Present
Downlink information per radio link list	Not Present

CELL UPDATE (Step 6 and 12)

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 1111'
Cell Update Cause	Check to see if set to 'uplink data transmission'

CELL UPDATE CONFIRM (Step 7)

Use the same message sub-type found in Annex A.

CELL UPDATE CONFIRM (Step 13)

Use the same message sub-type found in step 3, with the following exceptions:

Information Element	Value/remark
Maximum allowed uplink TX power	3 dB below the follow value: Minimum of { 33 dBm, maximum uplink power allowed under the UE power class }

RADIO BEARER RELEASE (Step 9)

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
RB information to release list	
- RB identity	4
RB information to be affected list	Not Present
UL Transport channel information common for all transport channel	Not Present
Deleted TrCH information list	Not Present
Added or Reconfigured UL TrCH information list	Not Present
DL Transport channel information common for all transport channel	Not Present
Deleted TrCH information list	Not Present
Added or Reconfigured UL TrCH information list	Not Present
CHOICE channel requirement	Not Present
Downlink information per radio link list	Not Present

MEASUREMENT REPORT (Step 3 and 8)

Only the message type IE in this message will be checked.

RADIO BEARER RELEASE COMPLETE (Step 5 and 10)

Only the message type IE in this message will be checked.

PHYSICAL CHANNEL RECONFIGURATION COMPLETE (Step 11)

Only the message type IE in this message will be checked.

8.3.1.5.5 Test requirement

After step 2, UE shall transmit MEASUREMENT REPORT message to SS using AM RLC on DCCH.

After step 4, UE shall transmit RADIO BEARER RELEASE COMPLETE message and move to URA_PCH state. Then the UE shall move to CELL_FACH state to initiate a cell update procedure and transmits a CELL UPDATE message which is set to “uplink data transmission” in IE “Cell update cause”.

After step 7, UE shall transmit MEASUREMENT REPORT message to SS using AM RLC on DCCH.

After step 9, UE shall transmit RADIO BEARER RELEASE COMPLETE message and move to URA_PCH state.

After step 11 the UE shall initiate cell update procedure and transmit CELL UPDATE message on the uplink CCCH. The IE “Cell update cause” shall be set to “uplink data transmission”.

After step 13 the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH.

8.3.1.6 Cell Update: UL data transmission in CELL_PCH

8.3.1.6.1 Definition

8.3.1.6.2 Conformance requirement

This procedure is to update UTRAN with the current cell of the UE if the UE wants to transmit uplink data when the UE is in CELL_PCH state.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.6.3 Test purpose

To confirm that the UE executes a cell update procedure when the UE transmits uplink data if the UE is in CELL_PCH state. To confirm that the UE sends the correct response to CELL UPDATE CONFIRM message, after it has taken into consideration the current TFS and/or TFCS settings.

8.3.1.6.4 Method of test

Initial Condition

System Simulator: 1cell

UE: CELL_PCH (state 6-12) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in the CELL_PCH state. SS asks the test operator to send some packet data. The UE moves to CELL_FACH state and transmits a CELL UPDATE message to the SS on the uplink CCCH, which shall indicate "uplink data transmission" in IE "Cell update cause". After receiving such a message, SS transmits default CELL UPDATE CONFIRM message. The UE shall stay in CELL_FACH state and NOT transmit response message on the DCCH. SS waits until uplink data transmission is completed and sends a RADIO BEARER RELEASE message with IE "RRC State Indicator" is set to "URA_PCH". The UE shall reply with RADIO BEARER FAILURE COMPLETE message and move to CELL_PCH state. SS then prompts the test operator to transmit packet data. The UE shall send CELL UPDATE message and specifies the cause to be "uplink data transmission". SS replies with a CELL UPDATE CONFIRM message which assigns a new C-RNTI to the UE. After receiving this message, the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message and remains in CELL_FACH state. SS again waits for the transmission of user packet data to complete.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_PCH state. SS prompts the test operator to initiate a packet data call.
2	→		CELL UPDATE	The UE moves to CELL FACH state and transmit this message which is set to "uplink data transmission" in IE "Cell update cause".
3	←		CELL UPDATE CONFIRM	Use default message content.
4				SS check that UE does not send response message.
5				SS waits until transmission of uplink data has been completed.
6	←		RADIO BEARER FAILURE	IE "RRC State Indicator" set to "CELL_PCH"
7	→		RADIO BEARER FAILURE COMPLETE	UE moves to CELL_PCH state.
8				SS prompts test operator to initiate a packet data transmission.
9	→		CELL UPDATE	Should be same as in step 2
10	←		CELL UPDATE CONFIRM	Including the IE "new C-RNTI".
11	→		UTRAN MOBILITY INFORMATION CONFIRM	
12				SS waits until transmission of uplink data has been completed.

Specific Message Contents

CELL UPDATE (Step 2 and 9)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 1111' Check to see if set to 'uplink data transmission'

CELL UPDATE CONFIRM (Step 3)

Use the same message sub-type found in Annex A.

CELL UPDATE CONFIRM (Step 10)

Use the same message sub-type found in step 3, with the following exceptions:

Information Element	Value/remark
New C-RNTI	'0000 0000 1111 0000'

RADIO BEARER FAILURE (Step 6)

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
RB information to release list	Not Present
RB information to be affected list	Not Present
UL Transport channel information common for all transport channel	Not Present
Deleted TrCH information list	Not Present
Added or Reconfigured UL TrCH information list	Not Present
DL Transport channel information common for all transport channel	Not Present
Deleted TrCH information list	Not Present
Added or Reconfigured UL TrCH information list	Not Present
CHOICE channel requirement	Not Present
Downlink information per radio link list	Not Present

RADIO BEARER RELEASE COMPLETE (Step 7)

Only the message type IE in this message will be checked.

UTRAN MOBILITY INFORMATION CONFIRM (Step 11)

Only the message type IE in this message will be checked.

8.3.1.6.5 Test requirement

After step 1 the UE shall move to CELL_FACH state, initiate a cell update procedure for the UL data transmission, and transmit a CELL UPDATE message which is set to "uplink data transmission" in IE "Cell update cause".

After step 6, UE shall transmit RADIO BEARER RELEASE COMPLETE message and move to CELL_PCH state.

After step 8 the UE shall initiate cell update procedure and transmit CELL UPDATE message on the uplink CCCH. The IE "Cell update cause" shall be set to "uplink data transmission".

After step 10 the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH.

8.3.1.7 Cell Update: paging response in URA_PCH

8.3.1.7.1 Definition

8.3.1.7.2 Conformance requirement

This procedure is to update UTRAN with the current cell of the UE after it receives a PAGING TYPE 1 message addressed to itself while it is in URA_PCH state.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.7.3 Test purpose

To confirm that the UE executes a cell update procedure when it receives a PAGING TYPE 1 message while operating in URA_PCH state. To confirm that the UE responds with an appropriate uplink message after receiving a CELL UPDATE CONFIRM message during cell updating procedure triggered by paging.

8.3.1.7.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: URA_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to URA_PCH state. SS transmits a PAGING TYPE 1 message to page for the UE, setting IE “Used paging identity” to “UTRAN identity”. The UE shall move to CELL_FACH state and transmits a CELL UPDATE message to the SS on the uplink CCCH. This message shall set IE “Cell update cause” to “Paging Response”. After the SS receives this message, it transmits the default CELL UPDATE CONFIRM message with IE “RRC State Indicator” is set to “URA_PCH”. The UE shall not transmit response message and move to URA_PCH state. Next SS modifies the contents of SYSTEM INFORMATION BLOCK TYPE 5 and 6 messages. See specific message contents for further details. SS pages the UE again using PAGING TYPE 1 message. The UE shall send CELL UPDATE message once more. SS transmits a CELL UPDATE CONFIRM message which includes the IEs ”new C-RNTI”, ”new U-RNTI” on the downlink DCCH. The UE shall send UTRAN MOBILITY INFORMATION CONFIRM message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is first brought to URA_PCH state.
2	←		PAGING TYPE 1	SS transmits a PAGING TYPE 1 message to the UE which includes the UE's assigned U-RNTI with the IE "paging originator" set to "UTRAN originator".
3	→		CELL UPDATE	The UE shall move to CELL_FACH state and transmits this message with the IE "Cell update cause" set to "paging response".
4	←		CELL UPDATE CONFIRM	Use the default message from TS 34.108 Clause 8. Set IE "RRC State Indicator" to "URA_PCH".
5				The UE shall not transmits response message. UE shall moves to URA_PCH state
6			VOID	
7			VOID	
8				SS modifies MASTER INFORMATION BLOCK, SYSTEM INFORMATION BLOCK TYPE 5 and 6 messages. The TFS of the PRACH is changed.
9	←		PAGING TYPE 1	SS pages the UE again
10	→		CELL UPDATE	IE "Cell update cause" shall be set to "paging response".
11	←		CELL UPDATE CONFIRM	Includes IE "new C-RNTI" and "new U-RNTI".
12	→		UTRAN MOBILITY INFORMATION CONFIRM	

Specific Message Contents

PAGING TYPE 1 (Step 2 and 9)

Information Element	Value/remark
CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	UTRAN identity '0000 0000 0001' '0000 0000 0000 0000 0001'

CELL UPDATE (Step 3 and 10)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Paging Response'

CELL UPDATE CONFIRM (Step 4)

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH

CELL UPDATE CONFIRM (Step 11)

Use the same message sub-type found in step 4, with the following exceptions:

Information Element	Value/remark
New U-RNTI - SRNC Identity - S-RNTI New C-RNTI	 '0000 0000 0001' An arbitrary 20-bits string which is different from original S-RNTI An arbitrary 16-bits string which is different from original C-RNTI.

MASTER INFORMATION BLOCK (Step 8)

Use the same message sub-type found in Clause 6.1 of TS 34.108, with the following exceptions:

Information Element	Value/remark
MIB Tag	2

SYSTEM INFORMATION BLOCK TYPE 5 and TYPE 6 (Step 8)

Use the same message sub-type found in Clause 6.1 of TS 34.108, with the following exceptions:

Information Element	Value/remark
PRACH system information - RACH TFS - CHOICE Transport channel type - Dynamic Transport Format Information - RLC Size - Number of TBs and TTI List - Number of Transport blocks - CHOICE mode - CHOICE Logical Channel List - Semi-static Transport Format - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC Size	 Common transport channels 296 bits 1 FDD ALL 80 msec No coding No Present 1 16 bits

8.3.1.7.5 Test requirement

After step 2 the UE shall answer to the paging message then moves to CELL_FACH state and transmit a CELL UPDATE message. This message shall set the value "paging response" into IE "Cell update cause".

After step 9 the UE shall respond the paging by replying with a CELL UPDATE message. IE "Cell Update Cause" shall be set to "Paging Response" in this message.

8.3.1.8 Cell Update: paging response in CELL_PCH

8.3.1.8.1 Definition

8.3.1.8.2 Conformance requirement

This procedure is to update UTRAN with the current cell when the UE receives a PAGING TYPE 1 message addressed to it while in CELL_PCH state.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.8.3 Test purpose

To confirm that the UE executes a cell update procedure when the UE receives a PAGING TYPE 1 message while in CELL_PCH state. To confirm that the UE sends an appropriate uplink message after receiving a CELL UPDATE CONFIRM message during cell updating procedure due to paging.

8.3.1.8.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_PCH (state 6-12) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in the CELL_PCH state. The SS transmits a PAGING TYPE 1 message to the UE on the downlink PCCH which includes the connected mode identity of the UE and set value “UTRAN identity” into IE “CHOICE Used paging identity”. The UE shall respond to this message. Then the UE shall move to CELL_FACH state and transmits a CELL UPDATE message to the SS on the uplink CCCH which and set the value “Paging Response” into IE “Cell update cause”. After the SS receives this message, it transmits the default CELL UPDATE CONFIRM message, with the IE “RRC State Indicator” set to “CELL_PCH”. The UE shall not transmit response message on the DCCH and moves to CELL_PCH state. Next SS modifies the contents of SYSTEM INFORMATION BLOCK TYPE 5 and 6 messages. See specific message contents for further details. SS pages the UE again using PAGING TYPE 1 message. The UE shall send CELL UPDATE message once more. SS replies with a CELL UPDATE CONFIRM message which includes the IE “new C-RNTI” to the UE on the downlink DCCH. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH and enters the CELL_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_PCH state.
2	←		PAGING TYPE 1	The SS transmits a PAGING TYPE 1 message addressing the UE with its connected mode identity and set IE "paging originator" to "UTRAN originator".
3	→		CELL UPDATE	The UE shall move to CELL_FACH state and transmits this message with the IE "Cell update cause" set to "paging response".
4	←		CELL UPDATE CONFIRM	Use the default message from TS 34.108 Clause 8. Set IE "RRC State Indicator" to "CELL_PCH".
5				The UE shall not transmits response message and moves to CELL_PCH state.
6				SS modifies the contents of MASTER INFORMATION BLOCK, SYSTEM INFORMATION BLOCK TYPE 5 and 6 messages.
7			VOID	
8			VOID	
9	←		PAGING TYPE 1	SS pages the UE again
10	→		CELL UPDATE	IE " Cell update cause" shall be set to "paging response"
11	←		CELL UPDATE CONFIRM	Contains the IE "new C-RNTI"
12	→		UTRAN MOBILITY INFORMATION CONFIRM	

Specific Message Contents

PAGING TYPE 1

Information Element	Value/remark
CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	UTRAN identity '0000 0000 0001' '0000 0000 0000 0000 0001'

CELL UPDATE (Step 3 and 10)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Paging Response'

CELL UPDATE CONFIRM (Step 4)

Use the same message sub-type found Annex A, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH

CELL UPDATE CONFIRM (Step 11)

Use the same message sub-type found in step 4, with the following exceptions:

Information Element	Value/remark
New C-RNTI	An arbitrary 16-bits string which is different from original C-RNTI.

MASTER INFORMATION BLOCK (Step 6)

Use the same message sub-type found in Clause 6.1 of TS 34.108, with the following exceptions:

Information Element	Value/remark
MIB Tag	2

SYSTEM INFORMATION BLOCK TYPE 5 and TYPE 6 (Step 6)

Use the same message sub-type found in Clause 6.1 of TS34.108, with the following exceptions:

Information Element	Value/remark
PRACH system information - RACH TFS - CHOICE Transport channel type - Dynamic Transport Format Information - Number of Transport blocks - RLC Size - Semi-static Transport Format - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC Size	 Common transport channels 1 296 bits 80 msec No coding No Present 1 16 bits

8.3.1.8.5 Test requirement

After step 2 the UE shall answer to the paging message, moves to CELL_FACH state, and then transmits a CELL UPDATE message setting “paging response” into IE “Cell update cause”.

After step 9 the UE shall respond to the paging again by sending CELL UPDATE message, with the IE “Cell update cause” set to “Paging response”.

After step 11 the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message to end the cell updating procedure.

8.3.1.9 Cell Update: re-entering of service area after T305 expiry and being out of service area

8.3.1.9.1 Definition

8.3.1.9.2 Conformance requirement

When a UE detects that it's out of service area after experiencing a T305 timer expiry, it shall try to search for a suitable cell to camp on. At the same time, it shall start timer T307. If the UE subsequently re-enters the service area of a cell before T307 expires, it shall perform a cell update procedure.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.9.3 Test purpose

To confirm that the UE performs a cell search after experiencing an "out of service area" condition following the expiry of timer T305. To confirm that the UE initiates cell updating procedure if it manages to re-enter the service area.

8.3.1.9.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CS-CELL_FACH_Initial (state 6-2) or PS-CELL_FACH_Initial (state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE

Test Procedure

The UE is in the CELL_FACH state. SS decreases the transmission power of cell 1 until the cell selection parameter S<0. Following the expiry of periodic cell updating timer T305 according to the system information, the UE shall detect that it is out of service area. Within the time interval equivalent to T307 timer value, the SS restores the transmission power of cell 1. The UE shall find that it is back in service area, and transmits a CELL UPDATE message to the SS on the uplink CCCH. In this message, the IE "Cell update cause" shall be set to "re-entered service area". After the SS receives this message, it transmits a CELL UPDATE CONFIRM message with the IE "RRC State Indicator" set "CELL_PCH" on the downlink DCCH. The UE shall enter CELL_PCH state. SS decreases the transmission power of cell 1 until the cell selection parameter S<0. Following the expiry of periodic cell updating timer T305 according to the system information, the UE shall detect that it is out of service area. Within the time interval equivalent to T307 timer value, the SS restores the transmission power of cell 1. The UE shall find that it is back in service area, move to CELL_FACH and transmits a CELL UPDATE message to the SS on the uplink CCCH. In this message, the IE "Cell update cause" shall be set to "re-entered service area". After the SS receives this message, it transmits a CELL UPDATE CONFIRM message on the downlink DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_FACH state of cell 1.
2				SS decreases the transmission power of cell 1 so that its S value falls below 0.
3				The UE shall detect a “out of service” condition upon expiry of timer T305 and it shall search for other cells to camp on. (T307 timer starts)
4				SS restores cell 1’s original power level before T307 timer expires.
5	→		CELL UPDATE	The value “re-entered service area” should be found in IE “Cell update cause” in this message
6	←		CELL UPDATE CONFIRM	”RRC State Indicator” is set to “CELL_PCH”
7				SS decreases the transmission power of cell 1 so that its S value falls below 0 and waits until T305 has expired.
8				SS restores cell 1’s original power level before T307 timer expires.
9	→		CELL UPDATE	UE shall move to CELL_FACH. It shall transmit this message with cause set to “re-entered service area”
10	←		CELL UPDATE CONFIRM	

Specific Message Contents

CELL UPDATE (Step 5 and 9)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to ‘0000 0000 0001’ Check to see if set to ‘0000 0000 0000 0000 1111’ Check to see if set to ‘re-entered service area’

CELL UPDATE CONFIRM (Step 6 and 10)

Use the same message sub-type found in Annex A, with the following exception.

Information Element	Value/remark
RRC State Indicator	CELL_PCH

8.3.1.9.5 Test requirement

After step 4 the UE shall transmit a CELL UPDATE message in which the IE “Cell update cause” is set to the value “re-entered service area”.

After step 8 the UE shall move to CELL_FACH and then transmit a CELL UPDATE message, with the IE “Cell Update Cause” set to “re-entered service area”.

8.3.1.10 Cell Update: expiry of T307 after T305 expiry and being out of service area

8.3.1.10.1 Definition

8.3.1.10.2 Conformance requirement

This procedure is required to cater for the case of a failure to update UTRAN with the current cell, after the expiry of T307. In this case, the UE shall return to idle mode and perform cell reselection if possible.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.10.3 Test purpose

To confirm that the UE moves to idle mode after the expiry of T307, indicating that it is out of service area when attempting to perform a periodic cell updating procedure.

8.3.1.10.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CELL_PCH (state 6-12) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in CELL_PCH state at the start of the test. Before the expiry of periodic cell updating timer T305, SS starts to decrease the downlink transmission power such that the UE discovers that the cell is no longer suitable for camping and this results in a “out of service area” condition. The SS continues to listen to the uplink channel to detect possible attempts to perform a cell updating procedure. The UE shall not send CELL UPDATE message on the uplink DCCH, instead it triggers timer T307. After the expiry of timer T307 the UE shall enter idle state. This is confirmed by the SS, when it sends a PAGING TYPE 1 message to the UE using its U-RNTI identity, and the UE does not respond to the page. SS then attempts to page for the UE again, this time using PAGING TYPE 2 message sent on downlink DCCH. Likewise, the UE shall not respond to this page. Next, SS pages UE to request UE to establish RRC connection. UE shall be brought to CELL_FACH state. Then before the expiry of timer T305, SS decrease downlink transmission power such that cell criteria S <0. Upon the expiry of T305, UE discovers that it is in “out of service area” condition and therefore triggers T307. Upon expiry of T307, UE move to idle state. SS send PAGING TYPE 1 message to UE with IE “CHOICE Used paging identity” set to “UTRAN identity” and the UE shall not respond. Finally, SS pages for UE using PAGING TYPE 2 message sent on downlink DCCH and UE shall not respond.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_PCH state.
2				SS starts to decrease the transmission power until the cell is no longer suitable for camping. The UE shall detect that it is out of service area and refrains from transmitting CELL UPDATE message due to periodic cell updating.
3				The UE detects the expiry of timer T305 and it searches for other cells to camp on. After the expiry of timer T307, the UE shall enter idle mode.
4	←		PAGING TYPE 1	SS pages the UE at its assigned paging occasion using the allocated U-RNTI value. The UE shall not respond to this page as it has already entered the idle mode.
5	←		PAGING TYPE 2	SS pages the UE on the downlink DCCH. The UE shall not respond to this page.
6				SS pages UE to request UE to establish RRC connection. The UE is brought to CS-CELL_FACH_Initial (state 6-2) or PS-CELL_FACH_Initial (state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.
7				SS starts to decrease the transmission power until the cell is no longer suitable for camping. The UE shall detect that it is out of service area and refrains from transmitting CELL UPDATE message due to periodic cell updating.
8				The UE detects the expiry of timer T305 and it searches for other cells to camp on. After the expiry of timer T307, the UE shall enter idle mode.
9	←		PAGING TYPE 1	SS pages the UE at its assigned paging occasion using the allocated U-RNTI value. The UE shall not respond to this page as it has already entered the idle mode.
10	←		PAGING TYPE 2	SS pages the UE on the downlink DCCH. The UE shall not respond to this page.

Specific Message Contents

PAGING TYPE 1 (Step 4 and 9)

Information Element	Value/remark
Page record list - Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	 UTRAN identity Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 1111'

PAGING TYPE 2 (Step 5 and 10)

Information Element	Value/remark
Paging cause	Set to a cause corresponding to one radio access bearer services supported by the UE.
CN domain identity	CS-Domain
Paging Record Type Identifier	IMSI

8.3.1.10.5 Test requirement

After step 3 the UE shall remain in the idle mode and not respond to the paging message sent on PCCH as well as paging message addressed to it on the DCCH.

After step 8 the UE shall remain in the idle mode and not respond to the paging message sent on PCCH as well as paging message addressed to it on the DCCH.

8.3.1.11 Cell Update: Success after T302 time-out

8.3.1.11.1 Definition

8.3.1.11.2 Conformance requirement

The UE transmits a CELL UPDATE message to the UTRAN when it needs to update the UTRAN with the current cell of the UE. When the UE does not receive a CELL UPDATE CONFIRM message upon expiry of timer T302, the UE transmits a CELL UPDATE message repeatedly until its internal counter V302 counter is greater than N302.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.11.3 Test purpose

To confirm that the UE repeats the transmission of CELL UPDATE message upon the expiry of timer T302, after failing to receive any response from the SS during T302 timer period.

8.3.1.11.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-CELL_FACH_Initial (state 6-2) or PS-CELL_FACH_Initial (state 6-4) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE

Test Procedure

At the start of the test, the UE is brought to CELL_FACH state. When the UE detects the expiry of periodic cell updating timer T305 according to the system information, the UE transmits a CELL UPDATE message to the SS on the uplink CCCH. The IE "Cell update cause" in this message shall be set to "periodical cell update". SS ignores this message, and the UE shall then re-transmit a CELL UPDATE message after the expiry of timer T302. When the SS has received (N302+1) such messages, it transmits a CELL UPDATE CONFIRM message with new values for "C-RNTI" to the UE. Finally, the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE starts from CELL_FACH state. SS initializes its internal counter K to 0 and waits until the expiry of T305 timer.
2	→		CELL UPDATE	The value "periodical cell update" shall be set in IE "Cell update cause" after the expiry of timer T305 or timer T302.
3				If K is equal to N302then proceeds to step 5.
4				SS increments counter K, transmits no response to the UE and waits for an additional period equal to the value of timer T302. The next step is step 2.
5	←		CELL UPDATE CONFIRM	The message includes IEs "new C-RNTI". The IE "RRC State Indicator" is set to "CELL_FACH".
6	→		UTRAN MOBILITY INFORMATION CONFIRM	

Specific Message Contents

CELL UPDATE (Step 2)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Periodic cell updating'

CELL UPDATE CONFIRM (Step 5)

Use the same message sub-type found in Annex A, with the following exception:

Information Element	Value/remark
New C-RNTI	Set to an arbitrary string different from '0000 0000 0000 0001'

8.3.1.11.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305 then transmit a CELL UPDATE message on the uplink CCCH, setting "periodical cell update" into IE "Cell update cause".

After step 2 the UE shall re-transmits a CELL UPDATE message after the expiry of timer T302. A total of (N302+1) transmissions shall be detected in SS.

After step 5 the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH and stays at CELL_FACH state.

8.3.1.12 Cell Update: Failure (After Maximum Re-transmissions)

8.3.1.12.1 Definition

8.3.1.12.2 Conformance requirement

The UE transmits a CELL UPDATE message to the UTRAN when it needs to update UTRAN with information on the current cell of the UE. If the UE fails to receive a CELL UPDATE CONFIRM message, it re-transmits a CELL UPDATE message repeatedly upon the expiry of timer T302 until the value of V302 counter is greater than N302. If V302 is greater than N302, the UE stop the re-transmission and enters idle state.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.12.3 Test purpose

To confirm that the UE repeats the cell update procedure at the expiry of timer T302 and moves to idle state when its internal counter V302 is greater than N302.

8.3.1.12.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-CELL_FACH_Initial (state 6-2) or PS-CELL_FACH_Initial (state 6-4) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE

Test Procedure

The UE is initially in CELL_FACH state. When the UE detects the expiry of periodic cell updating timer T305, the UE transmits a CELL UPDATE message to the SS on the uplink CCCH to perform a periodic cell updating procedure. The SS ignores this message, and the UE shall attempt to re-transmit a CELL UPDATE message up to a maximum of (N302+1) times after the expiry of timer T302. After (N302) attempts of retransmission, the UE shall return to idle state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_FACH state. SS sets its internal counter K=0 and waits for a period equals to timer value T305. If CELL UPDATE message is received upon timer expiry, proceeds to step 2. Else goes to step 4.
2	→		CELL UPDATE	The value "periodical cell update" should be set in IE "Cell update cause" and this message should be sent on expiry of timer T302 or timer T305.
3				SS transmits no response to the UE and increments counter K.
4				SS waits for an additional period equal to T302 timer. If CELL UPDATE message is received, proceed to step 2. Otherwise, terminates the test. If K is not equal to N302+1, the test should be considered as a failure.

Specific Message Contents

CELL UPDATE (Step 2)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Periodic cell updating'

8.3.1.12.5 Test requirement

After step 1 the UE shall transmit a CELL UPDATE message on the uplink CCCH and set value "periodical cell update" into IE "Cell update cause".

After step 4 the counter K in SS shall be equal to N302+1.

8.3.1.13 Cell Update: Reception of Invalid CELL UPDATE CONFIRM Message

8.3.1.13.1 Definition

8.3.1.13.2 Conformance Requirement

If the UE encounters an invalid CELL UPDATE CONFIRM message while executing a cell update procedure, it shall check the current value of its internal counter V302. If V302 is not greater than N302, the UE shall set contexts pertaining to protocol error, re-transmits CELL UPDATE message on uplink CCCH, restart T302 timer and increments V302. It shall use the same "Cell Update Cause" as before receiving the invalid downlink message. On the other hand, if V302 is greater than N302, the UE shall abandon cell update procedure and enters idle mode.

8.3.1.13.3 Test Purpose

To confirm that the UE retransmits CELL UPDATE message when it receives an erroneous CELL UPDATE CONFIRM message, if the number of retransmissions is not the maximum allowed value. To confirm that the UE returns to idle mode after sending maximum allowed number of CELL UPDATE messages without receiving a valid CELL UPDATE CONFIRM message.

8.3.1.13.4 Method of Test

Initial Condition

System Simulator: 1 cell

UE: CELL_PCH (state 6-12) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to CELL_PCH state at the beginning of the test. SS pages the UE by sending PAGING TYPE 1 message using the U-RNTI identity assigned during RRC connection establishment procedure. The UE shall transmit CELL UPDATE message on the uplink CCCH. Upon receiving such a message, the SS replies with a CELL UPDATE CONFIRM message containing a protocol error in IE “RRC transaction identifier”. The UE shall detect the protocol error and re-transmit CELL UPDATE message up to a maximum of N302 times. The time interval between the transmissions shall be approximately equal to T302. SS verifies that it receives a total of (N302+2) identical CELL UPDATE messages. The UE shall return to idle mode after all uplink transmissions have finished. SS verifies this by paging the UE using the U-RNTI identity. The UE shall not respond to this page.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PAGING TYPE 1	The UE is in the CELL_PCH state. SS sets its internal counter K=0. SS pages for the UE using the allocated connected mode identity (U-RNTI).
2		→	CELL UPDATE	If CELL UPDATE message is received, check that the value “paging response” is set in IE “Cell update cause”. Else goes to step 6.
3		←	CELL UPDATE CONFIRM	SS transmits an invalid message. SS increments K.
4		→	CELL UPDATE	SS waits for T302 timer to expire. The UE shall send CELL UPDATE message.
5				If a CELL UPDATE message is received in step 4, SS increments K and returns to step 3. Else, SS proceeds to step 6.
6				SS verifies that K = (N302+1) and proceeds to the next step. Else, the test fails.
7		←	PAGING TYPE 1	SS pages the UE.
8				UE shall not respond.

Specific Message Content

CELL UPDATE (Step 2)

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	Check to see if set to 'Paging Response'

CELL UPDATE CONFIRM (Step 3)

Use the same message sub-type found in Annex A, with the following exception:

Information Element	Value/remark
Ciphering mode info	
- Ciphering mode info	Start
- Ciphering algorithm	Not Present
- Ciphering activation time for DPCH	Not Present
- Radio bearer downlink ciphering activation time info	Not Present

CELL UPDATE (Step 4)

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	Check to see if set to 'Paging Response'
Failure cause	Check to see if it is set to 'protocol error'
-Protocol error information	Check to see if it is set to 'Conditional information element error'

PAGING TYPE 1 (Step 1 and 7)

Information Element	Value/remark
Page record list	
- Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	'0000 0000 0001'
- S-RNTI	'0000 0000 0000 0000 0001'

8.3.1.13.5 Test Requirement

After step 3 the UE shall continue to transmit CELL UPDATE message for N302+1 times.

At step 6 the counter K should be equal to (N302+1).

After step 7 the UE shall return to idle mode and not respond the PAGING TYPE 1 message sent by the SS.

8.3.1.14 Cell Update: Incompatible simultaneous reconfiguration

8.3.1.14.1 Definition

8.3.1.14.2 Conformance Requirement

If the UE encounters a CELL UPDATE CONFIRM message that includes “Physical channel information elements” and UE’s variable ORDERED_RECONFIGURATION is set to TRUE because of an ongoing Reconfiguration procedure, it shall check the current value of its internal counter V302. If V302 is not greater than N302, the UE shall set IE “failure cause” to “Incompatible simultaneous reconfiguration”, re-transmits CELL UPDATE message on uplink CCCH, restart T302 timer and increments V302. It shall use the same “Cell Update Cause” as before receiving the downlink message. On the other hand, if V302 is greater than N302, the UE shall abandon cell update procedure and enters idle mode.

8.3.1.14.3 Test Purpose

To confirm that the UE retransmits CELL UPDATE message when it receives a CELL UPDATE CONFIRM message that includes “Physical channel information elements” and UE’s variable ORDERED_RECONFIGURATION is set to TRUE because of an ongoing Reconfiguration procedure, if the number of retransmissions has not reached the maximum allowed value.

8.3.1.14.4 Method of Test

Initial Condition

System Simulator: 1 cell

UE: CELL_PCH (state 6-12) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to CELL_PCH state at the beginning of the test. SS pages the UE by sending PAGING TYPE 1 message using the U-RNTI identity assigned during RRC connection establishment procedure. The UE shall transmit CELL UPDATE message on the uplink CCCH. Upon receiving such a message, the SS replies with a CELL UPDATE CONFIRM message contains IE “Physical channel information elements”. Following that, SS immediately transmit another CELL UPDATE CONFIRM message contains IE “Physical channel information elements”. The UE shall re-transmit CELL UPDATE message with the same cause as the previous CELL UPDATE message and failure cause as “Incompatible simultaneous reconfiguration”. SS then transmit a CELL UPDATE message to end the procedure.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PAGING TYPE 1	
2		→	CELL UPDATE	
3		←	CELL UPDATE CONFIRM	SS transmits this message including IE “Physical channel information elements”.
4		←	CELL UPDATE CONFIRM	SS transmits this message including IE “Physical channel information elements”.
5		→	CELL UPDATE	
6		←	CELL UPDATE CONFIRM	

Specific Message Content

CELL UPDATE (Step 2)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Paging Response'

CELL UPDATE (Step 5)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause Failure cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Paging Response' Check to see if set to 'Incompatible simultaneous reconfiguration'

CELL UPDATE CONFIRM (Step 3)

Use the same message sub-type found in Annex A, with the following exception:

Information Element	Value/remark
Maximum allowed UL TX power	30dBm

CELL UPDATE CONFIRM (Step 4)

Use the same message sub-type found in Annex A, with the following exception:

Information Element	Value/remark
Maximum allowed UL TX power	25dBm

CELL UPDATE CONFIRM (Step 5)

Use the same message sub-type found in Annex A.

PAGING TYPE 1 (Step 1)

Information Element	Value/remark
Page record list - Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	 UTRAN identity '0000 0000 0001' '0000 0000 0000 0000 0001'

8.3.1.14.5 Test Requirement

After step 1, UE shall perform cell update procedure.

After step 4 the UE shall re-transmit cell update procedure with failure cause set to "Incompatible simultaneous reconfiguration".

8.3.1.15 Cell Update: Acknowledged Mode RLC Reset

8.3.1.15.1 Definition

8.3.1.15.2 Conformance Requirement

In CELL_FACH, the UE shall ensure that all AM RLC entities (both signalling and u-plane links) are operational. In the event that an unrecoverable error has occurred, the UE shall trigger cell update procedure to report this event. The

UE shall send CELL UPDATE message on the uplink CCCH and set the appropriate AM_RLC error indicator IE(s) to TRUE. After receiving the CELL UPDATE CONFIRM message, the UE shall reset the affected AM RLC entities and then resume transmission and reception activities.

8.3.1.15.3 Test Purpose

To confirm that the UE reports the occurrence of an unrecoverable error in a C-plane AM RLC entity by initiating cell update procedure. To confirm that the UE is able to resume normal C-plane data transmission and reception after the completion of cell update procedure.

8.3.1.15.4 Method of Test

Initial Condition

System Simulator: 1 cell

UE: CS-CELL_FACH_Initial (state 6-2) or PS-CELL_FACH_Initial (state 6-4) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE

Test Procedure

The UE is initially in CELL_FACH state. SS sends RADIO BEARER SETUP message on the DCCH using AM mode to establish a DTCH logical channel for packet data transfer in RB>3. The UE shall reply with a RADIO BEARER SETUP COMPLETE message, sent using AM RLC on the DCCH. Then it activates the associated DTCH logical channel for user data transmission and reception. SS does not acknowledge the RADIO BEARER SETUP COMPLETE message. The UE shall continue to transmit the AM PDU carrying RADIO BEARER COMPLETE message until the maximum re-transmission count is reached. Thereafter, the UE shall start sending RESET PDUs to request that the AM RLC entity for RRC signalling be re-initialized. SS ignores the requests and wait for a duration equivalent to (MAX_RST+1) times expiry of Timer_RST. This figure is specified in IE “RLC info” of RADIO BEARER SETUP message in step 2. At this point, the UE shall initiate a cell update procedure by transmitting CELL UPDATE message on the uplink CCCH. The CELL UPDATE message shall specify the value “TRUE” in IE “AM_RLC error indicator (RB2 or RB3)”. SS replies with CELL UPDATE CONFIRM message using the default message content. SS then attempts to perform a local authentication by transmitting a COUNTER CHECK message using AM RLC on DCCH. The UE shall respond by sending a COUNTER CHECK RESPONSE message on the uplink DCCH, verifying that the AM RLC entity for RRC signalling was successfully reset.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is initially in CELL_FACH state.
2	←		RADIO BEARER SETUP	Establishes a DTCH logical channel operating in AM mode.
3	→		RADIO BEARER SETUP COMPLETE	UE shall stay in CELL_FACH state. SS does not acknowledge this AM PDU. The UE shall re-transmit this AM PDU until the maximum number has been reached.
4				UE shall start to transmit RESET PDU using AM RLC on the DCCH. SS does not respond to any PDU frames originating from the UE, and it waits for a period equivalent to (MAX_RST+1) times expiry of Timer_RST. This figure is specified in IE "RLC info" of RADIO BEARER SETUP message in step 2.
5	→		CELL UPDATE	UE shall send this message on CCCH. IE "AM_RLC Error Indication (RB2 or RB3)" shall be set to 'TRUE'
6	←		CELL UPDATE CONFIRM	"RRC State Indicator" set to "CELL_FACH". UE shall transit to CELL_FACH state.
7	←		COUNTER CHECK	SS requests for a local authentication of the amount of data sent/received during the lifetime of the RRC connection.
8	→		COUNTER CHECK RESPONSE	This message shall be transmitted using AM RLC for RRC signalling on the uplink DCCH.

Specific Message Contents

RADIO BEARER SETUP (Step 2)

Use the same message sub-type entitled "Packet to CELL_FACH from CELL_FACH in PS" found in Annex A.

RADIO BEARER SETUP COMPLETE (Step 3)

Only the message type IE is checked for this message.

CELL UPDATE (Step 5)

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
AM_RLC error indicator (for C-plane)	Check to see if set to 'TRUE'

CELL UPDATE CONFIRM (Step 6)

Use the same message sub-type found in Annex A.

COUNTER CHECK (Step 7)

Information Element	Values/Remarks
Integrity check info	Not present
RB COUNT-C MSB Information	
- RB Identity	5
- COUNT-C-MSB-uplink	Set to an arbitrary integer equal to the 25 MSBs from COUNT-C for RB#5
- COUNT-C-MSB-downlink	Set to an arbitrary integer equal to the 25 MSBs from COUNT-C for RB#5

COUNTER CHECK RESPONSE (Step 8)

Information Element	Values/Remarks
Integrity check info	Not checked
RB COUNT-C Information	Not checked

8.3.1.15.5 Test Requirement

After step 4 the UE shall transmit a CELL UPDATE message on the uplink CCCH to report the occurrence of an unrecoverable error in AM RLC entity for RB2 or RB3data.

After step 7 the UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH. This message shall be sent using the AM RLC entity for RRC signalling.

8.3.1.16 Cell Update: cell reselection in CELL_FACH

8.3.1.16.1 Definition

8.3.1.16.2 Conformance requirement

This procedure is used to update UTRAN with the current cell of the UE after it has perform a cell reselection in CELL_FACH state. UE shall receive acknowledgement from UTRAN on downlink CCCH.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.16.3 Test purpose

To confirm that the UE executes a cell update procedure after the successful reselection of another UTRA cell. To confirm that the UE sends the correct uplink response message when executing cell update procedure due to cell reselection. To confirm cell update procedure completes after UE receives CELL UPDATE CONFIRM on downlink CCCH from UTRAN.

8.3.1.16.4 Method of test

Initial Condition

System Simulator: 2 cells - Cell 1 is active, with the downlink transmission power shown in column marked “T0” in Table 8.3.1.1-1, while cell 2 is inactive

UE: CS-CELL_FACH_Initial (state 6-2) or PS-CELL_FACH_Initial (state 6-4) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE, ciphering in both UL and DL are disabled during RRC connection establishment.

Test Procedure

The UE is in the CELL_FACH state, camping onto cell 1. SS configures its downlink transmission power settings according to columns "T1" in Table 8.3.1.1-1. The UE shall find cell 2 to be more suitable for service and hence perform a cell reselection. After the completion of cell reselection, the UE shall transmit a CELL UPDATE message to the SS on the uplink CCCH of cell 2 and set IE " Cell update cause" to "Cell Reselection". After the SS receives this message, it transmits a CELL UPDATE CONFIRM message, which includes the IE "RRC State Indicator" set to "CELL_PCH", IE "U-RNTI" and an IE "New U-RNTI" to the UE on the downlink CCCH. UE shall response with UTRAN MOBILITY INFORMATION CONFIRM message.. UE shall move to CELL_PCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_FACH state in cell 1
2	←		BCCH	SS applies the downlink transmission power settings, according to the values in columns "T1" of Table 8.3.1.1-1. The UE shall find that the cell 2 is better for service and perform a reselection. SS waits for the maximum duration required for the UE to camp to cell 2.
3	→		CELL UPDATE	Value "cell reselection" should be indicated in IE " Cell update cause"
5	→		UTRAN MOBILITY INFORMATION CONFIRM	

Specific Message Contents

CELL UPDATE (Steps 3)

Use the same message sub-type found in Clause 9 of TS34.108.

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	Check to see if set to 'Cell Re-selection'

CELL UPDATE CONFIRM (Step 4)

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	'0000 0000 0001'
- S-RNTI	'0000 0000 0000 0000 0001'
RRC State Indicator	CELL_PCH
New U-RNTI	
- SRNC Identity	'0000 0000 0000 0001'
- S-RNTI	An arbitrary 20-bits string which is different from original S-RNTI

8.3.1.16.5 Test requirement

After step 2 the UE shall reselect to cell 2 and then it shall transmit a CELL UPDATE message which, sets the value "cell reselection" in IE " Cell update cause".

After step 4 the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message.

8.3.1.17 Cell Update: Failure (UTRAN initiate an RRC connection release procedure on CCCH)

8.3.1.17.1 Definition

8.3.1.17.2 Conformance requirement

The UE transmits a CELL UPDATE message to the UTRAN when it needs to update UTRAN with information on the current cell of the UE. If the UE receives a RRC CONNECTION RELEASE message on CCCH, it shall release all its radio resources and enter idle mode.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.17.3 Test purpose

To confirm that the UE moves to idle state upon the reception of RRC CONNECTION RELEASE message on DCCH.

8.3.1.17.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-CELL_FACH_Initial (state 6-2) or PS-CELL_FACH_Initial (state 6-4) in cell 1, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is initially in CELL_FACH state. When the UE detects the expiry of periodic cell updating timer T305, the UE transmits a CELL UPDATE message to the SS on the uplink CCCH to perform a periodic cell updating procedure. The SS transmits RRC CONNECTION RELEASE message on downlink CCCH. The UE shall return to idle mode after release of all current signalling flows and radio access bearers.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	→		CELL UPDATE	The value “periodical cell update” should be set in IE “ Cell update cause” and this message should be sent upon expiry of timer T305.
2	←		RRC CONNECTION RELEASE	SS transmits RRC CONNECTION RELEASE message to the UE.
3				The UE releases L2 signalling link and radio resources then the UE goes to idle mode.

Specific Message Contents

CELL UPDATE (Step 1)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to ‘0000 0000 0001’ Check to see if set to ‘0000 0000 0000 0000 0001’ Check to see if set to ‘Periodic cell updating’

RRC CONNECTION RELEASE (Step 2)

Only the message type is checked for this message.

8.3.1.17.5 Test requirement

In step 1 the UE shall transmit a CELL UPDATE message on the uplink CCCH and set value “periodical cell update” into IE “ Cell update cause”.

After step 2 the UE shall return to idle mode.

8.3.1.18 Cell Update: Radio Link Failure (T314>0, T315=0)

8.3.1.18.1 Definition

8.3.1.18.2 Conformance requirement

When a UE loses the radio connection due to e.g. radio link failure in CELL_DCH state. UE must release the radio bearer which is associated with T315 if T315 is set to 0. After a successful cell re-selection and subsequent transition to CELL_FACH state, the UE transmits CELL UPDATE message on the uplink CCCH.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.18.3 Test purpose

To confirm that the UE shall indicate to the non-access stratum the release of radio access bearer which is associated with T315 and try to find a new cell after detecting that a radio link failure has occurred.

8.3.1.18.4 Method of test

Initial Condition

System Simulator: 2 cells• Cell 1 is active, Cell 2 is inactive•

UE: CS_DCCH_DCH (state 6-5) or PS_DCCH_DCH (state 6.7) in cell 1, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to CELL_DCH state in a cell 1 after making an successful outgoing call attempt. After the call has been established, SS begins to broadcast the BCCH in cell 2, and then stops transmitting and receiving in cell 1. The UE shall detect a radio link failure in cell 1 and indicate to the non-access stratum the release of the radio bearer which is associated with T315. Then it shall attempt to re-select to cell 2. After that, it should then enter CELL_FACH state and transmits CELL UPDATE on the uplink CCCH to SS. The SS transmits CELL UPDATE CONFIRM message which includes IE "new C-RNTI". UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		RADIO BEARER SETUP	T315=0
2	→		RADIO BEARER SETUP COMPLETE	
3				The UE is brought to CELL_DCH state in a cell 1, after making a successful outgoing call.
4	←		BCCH	The SS starts transmitting the BCCH in a cell 2 using the same contents (except for cell identity which is set to "0000 0000 0000 0010") for system information sent on cell 1. SS starts to listen to the uplink CCCH of cell 2.
5				The SS stops transmitting and receiving in a cell .1.
6				The UE detects the radio link failure which is associated with T315. The UE indicates to the non-access stratum the release of the radio bearer .
7	→		CELL UPDATE	The UE should find a new cell 2 and the value "radio link failure" should be set in IE "Cell update cause".
8	←		CELL UPDATE CONFIRM	Including IE "new U-RNTI" and IE "new C-RNTI"
9	→		UTRAN MOBILITY INFORMATION CONFIRM	

Specific Message Contents

RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is identical to those in default contents of layer 3 messages for RRC tests with the following exceptions:

Information Element	Value/remark
RAB information to setup list - RAB information to setup - RAB info - T315	 0

CELL UPDATE (Step 7)

Information Element	Value/remark
U-RNTI -SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to value assigned previously in cell 1. Check to see if set to value assigned previously in cell 1. Check to see if set to 'radio link failure'

CELL UPDATE CONFIRM (Step 8)

Use the same message sub-type found in step 4, with the following exceptions:

Information Element	Value/remark
New U-RNTI - SRNC Identity - S-RNTI New C-RNTI	 '0000 0000 0001' An arbitrary 20-bits string which is different from original S-RNTI An arbitrary 16-bits string which is different from original C-RNTI.

8.3.1.18.5 Test requirement

After step 5, the UE shall indicate to the non-access stratum the release of the radio bearer which is associated with T315.

After step 6, the UE shall detect the presence of cell 2, perform cell re-selection and transmit CELL UPDATE message.

After step 8, the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM to SS.

8.3.1.19 Cell Update: Unrecoverable error in RLC

8.3.1.19.1 Definition

8.3.1.19.2 Conformance requirement

When a UE loses the radio connection due to e.g. detection of RLC unrecoverable error (amount of the retransmission of RESET_PDU reaches the value of Max_DAT and receives no ACK) in CELL_DCH state. After a successful cell re-selection and transition to CELL_FACH state, the UE shall transmit CELL UPDATE message which includes the value "RLC unrecoverable error" in the IE "cell update cause" on the uplink CCCH.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.19.3 Test purpose

To confirm that the UE tries to find a new cell, after detecting that a RLC unrecoverable error has occurred. The UE shall move to CELL_FACH state and transmit CELL UPDATE message to SS.

8.3.1.19.4 Method of test

Initial Condition

System Simulator : 2 cells• Cell 1 is active, with the downlink transmission power shown in column marked "T0" in Table 8.3.1.1-1, while cell 2 is inactive•

UE: CS_DCCH_DCH (state 6-5) or PS_DCCH_DCH (state 6-7) as defined in clause 7.4 of TS 34.108 in cell 1, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to CELL_DCH state in a cell 1 after a successful outgoing call attempt. After the call has been established, the SS transmits a PAGING TYPE 2 message on the downlink DCCH. Then the UE transmits an UPLINK DIRECT TRANSFER message on the uplink using AM-RLC for the response and the SS does not transmit a STATUS PDU for the response to AM-RLC PDU and begins to broadcast the BCCH in cell 2. The UE should detect an unrecoverable error in cell 1 and attempts to re-select to cell 2. It should then enter CELL_FACH state and transmits CELL UPDATE message which includes the value "RLC unrecoverable error" in IE "cell update cause" on the uplink CCCH to SS. The SS transmits CELL UPDATE CONFIRM message which includes "TRUE" in RLC reset indicator(RB2 or RB3) IE and a new TFCS setting according to the new transport channel. After this, UE shall reconfigure the RLC and the new radio connection and transmits TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state in a cell 1, after making a successful outgoing call.
2	←		PAGING TYPE 2	The SS transmits a PAGING TYPE 2 message to the UE on the downlink DCCH in cell 1.
3	→		UPLINK DIRECT TRANSFER	The UE responds to the PAGING TYPE 2 message using AM-RLC but the SS does not transmit a STATUS PDU as an acknowledgement.
4	←		BCCH	The SS starts transmitting the BCCH in a cell 2 using the same contents (except for cell identity which is set to “0000 0000 0000 0010”) for system information sent on cell 1. SS starts to listen to the uplink CCCH of cell 2.
5				The UE detects an unrecoverable error in the RLC level.
6	→		CELL UPDATE	The UE should find a new cell 2 and then transmits this message which includes the value “RLC unrecoverable error” in the IE ”cell update cause”.
7	←		CELL UPDATE CONFIRM	Including the new configuration information.
8	→		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	

Specific Message Contents

Cell 1: SYSTEM INFORMATION TYPE 1

Information Element	Value/remark
UE Timers and constants in connected mode	
T301	8 seconds
T313	15 seconds
T314	20 seconds
T315	30 seconds
N313	200

CELL UPDATE (Step 6)

Information Element	Value/remark
U-RNTI	
-SRNC Identity	Check to see if set to value assigned previously in cell 1.
- S-RNTI	Check to see if set to value assigned previously in cell 1.
Cell Update Cause	Check to see if set to ‘RLC unrecoverable error’

8.3.1.19.5 Test requirement

After step 5, the UE shall detect the presence of cell 2 and move to CELL_FACH in cell 2 to transmit CELL UPDATE message to SS.

After step 7, the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION COMPLETE message to SS.

8.3.1.20 Cell Update: Reception of CELL UPDATE CONFIRM Message that causes invalid configuration

8.3.1.20.1 Definition

8.3.1.20.2 Conformance Requirement

If the UE encounters a CELL UPDATE CONFIRM message that set the variable INVALID_CONFIGURATION to TRUE while executing a cell update procedure, it shall check the current value of its internal counter V302. If V302 is not greater than N302, the UE shall set IE “failure cause” to “invalid configuration”, re-transmits CELL UPDATE message on uplink CCCH, restart T302 timer and increments V302. It shall use the same “Cell Update Cause” as before receiving the invalid downlink message. On the other hand, if V302 is greater than N302, the UE shall abandon cell update procedure and enters idle mode.

8.3.1.20.3 Test Purpose

To confirm that the UE retransmits CELL UPDATE message when it receives a CELL UPDATE CONFIRM message that will trigger an invalid configuration in the UE, if the number of retransmissions has not reached the maximum allowed value. To confirm that the UE returns to idle mode after sending maximum allowed number of CELL UPDATE messages without receiving a valid CELL UPDATE CONFIRM message.

8.3.1.20.4 Method of Test

Initial Condition

System Simulator: 1 cell

UE: CELL_PCH (state 6-12) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is brought to CELL_PCH state at the beginning of the test. SS pages the UE by sending PAGING TYPE 1 message using the U-RNTI identity assigned during RRC connection establishment procedure. The UE shall transmit CELL UPDATE message on the uplink CCCH. Upon receiving such a message, the SS replies with a CELL UPDATE CONFIRM message with IE “RRC State Indicator” set to “CELL_DCH”. The UE shall detect its variable “invalid configuration” is set and re-transmit CELL UPDATE message up to a maximum of N302 times. SS verifies that it receives a total of (N302+1) identical CELL UPDATE messages. The UE shall return to idle mode after all uplink transmissions have finished. SS verifies this by paging the UE using the U-RNTI identity. The UE shall not respond to this page.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		PAGING TYPE 1	The UE is in the CELL_PCH state. SS sets its internal counter K=0. SS pages for the UE using the allocated connected mode identity (U-RNTI).
2	→		CELL UPDATE	If CELL UPDATE message is received, check that the value “paging response” is set in IE “Cell update cause”. Else goes to step 6.
3	←		CELL UPDATE CONFIRM	SS transmits an invalid message. SS increments K.
4	→		CELL UPDATE	
5				If a CELL UPDATE message is received in step 4, SS increments K and returns to step 3. Else, SS proceeds to step 6.
6				SS verifies that K = (N302+1) and proceeds to the next step. Else, the test fails.
7	←		PAGING TYPE 1	SS pages the UE.
8				UE shall not respond.

Specific Message Content

CELL UPDATE (Step 2)

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to ‘0000 0000 0001’
- S-RNTI	Check to see if set to ‘0000 0000 0000 0000 0001’
Cell Update Cause	Check to see if set to ‘Paging Response’

CELL UPDATE CONFIRM (Step 3)

Use the same message sub-type found in Annex A, with the following exception:

Information Element	Value/remark
RRC State Indicator	CELL_DCH
Uplink DPCH info	Not Present

CELL UPDATE (Step 4)

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to ‘0000 0000 0001’
- S-RNTI	Check to see if set to ‘0000 0000 0000 0000 0001’
Cell Update Cause	Check to see if set to ‘Paging Response’
Failure cause	Check to see if it is set to ‘invalid configuration’

PAGING TYPE 1 (Step 1 and 7)

Information Element	Value/remark
Page record list - Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	 UTRAN identity '0000 0000 0001' '0000 0000 0000 0000 0001'

8.3.1.20.5 Test Requirement

After step 3 the UE shall continue to transmit CELL UPDATE message for N302+1 times.

In step 6 the counter K should be equal to (N302+1).

After step 7 the UE shall return to idle mode and not respond the PAGING TYPE 1 message sent by the SS.

8.3.2 URA Update

8.3.2.1 URA Update: URA reselection

8.3.2.1.1 Definition

8.3.2.1.2 Conformance requirement

This procedure is to update UTRAN with the current URA of the UE after a URA reselection has occurred in URA_PCH state. It may also be used for supervision of the RRC connection, even if no URA reselection takes place.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.2.1.3 Test purpose

To confirm that the UE executes an URA update procedure after the successful URA reselection. To confirm UE responds correctly when it re-selects to a new cell while waiting from URA UPDATE CONFIRM message from SS.

8.3.2.1.4 Method of test

Initial Condition

System Simulator: 2 cells - Cell 1 is active with URA-ID 1 and the downlink transmission power shown in column marked "T0" in Table 8.3.1.1-1, while cell 2 is inactive with URA-ID 2. SS switches the power settings repeatedly between columns "T1" and "T2", whenever the description below specifies that the transmission power settings for cell 1 and cell 2 are reversed.

UE: URA_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE, with URA-ID 1 from the list of URA-ID in cell 1

Test Procedure

The UE is in the URA_PCH state and assigned with only 1 URA identity in cell 1: URA-ID 1. The SS starts to broadcast BCCH in cell 2 with URA-ID 2 and stop transmitting BCCH in cell 1. This is expected to cause the UE to perform a cell reselection to cell 2. When the UE finds that its current URA-ID 1 is not in the new broadcasted list of URA-IDs, it moves to CELL_FACH state and transmits a URA UPDATE message on the uplink CCCH. After the SS receives this message, it transmits URA UPDATE CONFIRM message which includes the IEs "RRC State Indicator"

and “URA-ID” to the UE on the downlink DCCH. The “RRC State Indicator” is set to “URA_PCH”. UE returns to URA_PCH state in cell 2 without sending a uplink response message. SS reverses the transmission power between the two cells. UE shall transmit URA UPDATE message to SS. However, SS do not acknowledge. SS reverses the transmission power between the two cells. UE shall perform cell re-selection and then sent URA UPDATE message to SS. Finally SS shall transmit URA UPDATE CONFIRM message to UE.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is updated with only 1 URA identity carried currently by cell 1. The starting state of the UE is URA_PCH
2	←		BCCH	SS starts sending BCCH for cell 2 with URA-ID 2 and ceases to transmit BCCH with URA-ID 1 carried by cell 1.
3	→		URA UPDATE	The UE shall perform a cell reselection first and when it finds that its current URA-ID 1 is not in the new broadcasted list of URA-IDs, it shall then transmit this message and set value “change of URA” into IE “URA update cause”.
4	←		URA UPDATE CONFIRM	Message comprises IE “RRC State Indicator” set “URA_PCH”, and also IE “URA Identity” equals to “URA-ID 2”.
5				SS reverses the transmission power level of cell 1 and cell 2.
6	→		URA UPDATE	
7				SS reverses the transmission power level of cell 1 and cell 2.
8	→		URA UPDATE	
9	←		URA UPDATE CONFIRM	

Specific Message Contents

URA UPDATE (Step 3, 6 and 8)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI URA Update Cause	 Check to see if set to ‘0000 0000 0001’ Check to see if set to ‘0000 0000 0000 0000 0001’ Check to see if set to ‘URA reselection’

URA UPDATE CONFIRM (Step 4 and 9)

Use the same message sub-type found in Annex A, with the following exceptions:.

Information Element	Value/remark
URA identity	URA-ID 2

8.3.2.1.5 Test requirement

After step 2 the UE shall find that URA-ID 2 is not in its maintained list of URA-IDs. After cell reselection, the UE shall move to CELL_FACH state and transmit URA UPDATE message setting value “URA reselection” into IE “URA update cause”.

8.3.2.2 URA Update: Periodical URA update and Reception of Invalid message

8.3.2.2.1 Definition

8.3.2.2.2 Conformance requirement

This procedure is to update UTRAN with the current URA of the UE when the UE detects that it is still within the service area after the expiry of periodic URA updating timer T305.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.2.2.3 Test purpose

To confirm that the UE executes a URA update procedure after the expiry of timer T305. To verify that the UE handles an invalid URA UPDATE CONFIRM message correctly when executing the URA update procedure.

8.3.2.2.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: URA_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in the URA_PCH state. When the UE detects the expiry of timer T305, set according to the value specified in system information, the UE moves to CELL_FACH state and transmits a URA UPDATE message to the SS on the uplink CCCH. The message shall indicate the cause to be “periodic URA update” in IE “URA update cause”. SS replies with an illegal URA UPDATE CONFIRM message sent on downlink CCCH, and check to see if the UE handles this event properly. The UE shall attempt to retransmit the identical URA UPDATE message. After the SS receives the second URA UPDATE message, it transmits a correct URA UPDATE CONFIRM message, which includes the IE “ new U-RNTI”, to the UE on the downlink DCCH. Then the UE shall then transmits an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH. The UE returns to CELL_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the URA_PCH state. SS wait until T305 timer has expired.
2	→		URA UPDATE	UE shall transmit this message and set value “periodic URA update” into IE “URA update cause”.
3	←		URA UPDATE CONFIRM	SS sends an illegal message.
4	→		URA UPDATE	UE shall not return to idle mode immediately, but attempts to re-transmit this message.
5	←		URA UPDATE CONFIRM	Including IE “new U-RNTI”

6	→	UTRAN MOBILITY INFORMATION CONFIRM	

Specific Message Contents

URA UPDATE (Step 2)

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
URA Update Cause	Check to see if set to 'Periodic URA update'

URA UPDATE (Step 4)

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
RRC Transaction identifier	Check to see if set to the value given in URA UPDATE CONFIRM message in step 3.
URA Update Cause	Check to see if set to 'Periodic URA update'
Protocol error indicator	TRUE
Protocol error information	
- Protocol error cause	Conditional information element error

URA UPDATE CONFIRM (Step 3)

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
Ciphering mode info	
- Ciphering mode info	start
- Ciphering algorithm	Not Present
- Ciphering activation time for DPCH	Not Present
- Radio bearer downlink ciphering activation time info	Not Present

URA UPDATE CONFIRM (Step 5)

Use the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
New U-RNTI	
SRNC Identity	'0000 0000 0001'
S-RNTI	'0000 0000 0000 0000 1111'

UTRAN MOBILITY INFORMATION CONFIRM (Step 6)

Only the message type IE of this message is checked.

8.3.2.2.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305, move to CELL_FACH state, and transmit a URA UPDATE message which is set the value "periodical cell update" into IE "URA update cause".

After step 3 the UE shall re-transmit URA UPDATE message.

After step 5 the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH and returns to the CELL_FACH state.

8.3.2.3 URA Update: re-entering of service area after T305 expiry

8.3.2.3.1 Definition

8.3.2.3.2 Conformance requirement

This procedure is to update UTRAN with the current URA of the UE if the UE detects that it is out of service area after the expiry of timer T305, and then subsequently re-enters the service area before the expiry of T307.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.2.3.3 Test purpose

To confirm that the UE executes a URA update procedure when the UE re-enters the service area before the expiry of timer T307, after being out of service area at the expiry of timer T305.

8.3.2.3.4 Method of test

Initial Condition

System Simulator: 2 cells - Cell 1 is active with URA-ID 1 and the downlink transmission power shown in column marked “T0” in Table 8.3.1.1-1, while cell 2 is inactive with URA-ID 2

UE: URA_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE, with URA-ID 1 in the list of URA-ID from cell 1

Test Procedure

The UE is initially in URA_PCH state. SS decrease the transmission power of cell such that cell selection figure of merit S<0. When the UE detects the expiry of timer T305 according to the system information, the UE moves to CELL_FACH state and finds that it is out of service area. The UE is expected to search for cell to camp. Then SS increases the transmission power so that the UE detects that it returns to normal service within T307. The UE shall move to CELL_FACH state and starts transmitting a URA UPDATE message which contains the value “re-entered service area” in IE “URA update cause” to the SS on the uplink CCCH. After the SS receives this message, it transmits a URA UPDATE CONFIRM message which includes the IE “new C-RNTI”, and “new U-RNTI” to the UE on the downlink DCCH. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH. Next, cell 1 is switched off. SS waits until T305 timer has expired and then turns on cell 2. The UE shall discover that cell 1 is no longer suitable for camping and initiate a cell search. It shall detect the presence of cell 2 and reselects to this cell. . When the UE finds that URA-ID 2 is not in its current list of URA-IDs, it moves to CELL_FACH state and transmits a URA UPDATE message on the uplink CCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE starts operating from URA_PCH state.
2				SS decreases the transmission power such that the cell 1 is no longer suitable for camping i.e. S<0.
3				The UE shall attempt to perform a URA update upon the expiry of timer T305. It shall discover that it is out of service and starts searching for cell to camp.(T307 timer starts)
4				SS increases the transmission power to the original level before T307 expires.
5	→		URA UPDATE	Value “re-entered service area” shall be set in IE “URA update cause”
6	←		URA UPDATE CONFIRM	The message includes IEs ”new C-RNTI” , and “new U-RNTI”
7	→		UTRAN MOBILITY INFORMATION CONFIRM	
8				SS ceases to transmit BCCH with URA-ID 1 carried by cell 1and wait until T305 expires.
9				SS starts sending BCCH for cell 2 with URA-ID 2 and.
10	→		URA UPDATE	UE shall detect the presence of cell 2 and re-select to it. It shall transmit this message with cause set to “URA reselection”
11	←		URA UPDATE CONFIRM	

Specific Message Contents

Use the same message sub-type found in Annex A, with the following exceptions:

URA UPDATE (Step 5)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI URA Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 're-entered service area'

URA UPDATE CONFIRM (Step 6)

Information Element	Value/remark
New U-RNTI - SRNC Identity - S-RNTI New C-RNTI	 '0000 0000 0001' '0000 0000 0000 1111 1111' Arbitrary 16-bit string which is different the assigned C-RNTI in RRC CONNECTION SETUP message.

URA UPDATE (Step 10)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI URA Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 1111 1111' Check to see if set to 'URA reselection'

8.3.2.3.5 Test requirement

After step 2 the UE shall detect that it is out of service area and shall not send a URA UPDATE on the uplink CCCH channel.

After step 4 the UE shall transmit a URA UPDATE message which sets value "re-entered service area" into IE "URA update cause", before the expiry of timer T307.

After step 6 the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH.

After step 9 the UE shall transmit a URA UPDATE message which sets value "URA reselection" into IE "URA update cause".

8.3.2.4 URA Update: loss of service after expiry of timers T307 and T305

8.3.2.4.1 Definition

8.3.2.4.2 Conformance requirement

This procedure is required to handle the case when the UE fails to update UTRAN with the current URA of after expiry of timers T307 and T305 consecutively. The UE shall move to idle mode subsequently.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.2.4.3 Test purpose

To confirm that the UE moves to idle mode after the expiry of timer T307, following an expiry of timer T305 when it discovers that it is out of service area.

8.3.2.4.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: URA_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in URA_PCH state. SS stops the downlink transmissions of cell 1. When the UE detects the expiry of periodic URA updating timer T305 according to the system information, the UE moves to CELL_FACH state and detects that it is out of service area. After the expiry of timer T307, the UE moves to the idle state and start to perform cell reselection. SS pages UE using PAGING TYPE 1 message with UTRAN identity to check if UE is in URA_PCH state. Finally, SS pages UE using PAGING TYPE 2 message to check if UE is in CELL_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				Initially, the UE is in the URA_PCH state.
2				SS switched off the downlink transmission of cell 1 so that the UE detects that it is out of service area.
3				Upon the expiry of timer T305, the UE shall search for cell to camp and triggers T307 timer. SS listens to the uplink CCCH to verify that URA UPDATE message is not transmitted.
4				After the expiry of timer T307, the UE enters idle state.
5	←		PAGING TYPE 1	Set IE “CHOICE Used paging identity” to “UTRAN identity”.
6	←		PAGING TYPE 2	

Specific Message Contents

None

8.3.2.4.5 Test requirement

After step 2 the UE shall detect the expiry of timer T305, not transmit URA UPDATE message on the uplink CCCH, move to CELL_FACH state, and start timer T307.

After step 5 and 6, UE shall not respond to the paging messages.

8.3.2.5 URA Update: Success after Confirmation error of URA-ID list

8.3.2.5.1 Definition

8.3.2.5.2 Conformance requirement

UE transmits a URA UPDATE message to the UTRAN when it needs to update UTRAN with the current URA of the UE. UTRAN should respond to the URA UPDATE message by sending a URA UPDATE CONFIRM message. When the indicated URA-ID in the received URA UPDATE CONFIRM message is not found in the list of URA-IDs that is

broadcasted in system information block type 2, the UE transmits a URA UPDATE message repeatedly until its internal counter V302 is greater than N302.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.2.5.3 Test purpose

To confirm that the UE retries to perform the URA update procedure following a confirmation error of URA-ID list.

8.3.2.5.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: URA_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

At the start of this test, the UE is brought to URA_PCH state and assigned a URA with URA-ID 1. When the UE detects the expiry of timer T305 according to the system information, the UE moves to CELL_FACH state and transmits a URA UPDATE message to the SS on the uplink CCCH. The reason for performing URA updating shall be set to "periodic URA update" in IE "URA update cause". After the SS receives this message, it transmits a URA UPDATE CONFIRM message which includes the IE "new C-RNTI", "new U-RNTI" and "URA-ID 2" to the UE on the downlink DCCH. The UE finds that the indicated URA-ID is not included in the list of URA-IDs broadcasted in system information block type 2, then the UE shall retry to transmit a URA UPDATE message for a confirmation error of URA-ID list. SS continue to send the same URA UPDATE CONFIRM message until N302+1 URA UPDATE messages have been received. Then SS transmits a URA UPDATE CONFIRM message to the UE which includes IE "URA Identity" set to "URA-ID 1". The UE shall find this URA-ID in its URA-ID list and transmits an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is URA_PCH state. SS initializes counter K to 0
2	→		URA UPDATE	This message shall contain value "periodic URA update" set in IE URA update cause" after expiry of timer T305.
3				SS increments K by 1. If K is not greater than N302, proceed to step 4. If K is greater than N302, SS proceeds to step 5.
4	←		URA UPDATE CONFIRM	SS transmits this message, setting the value "URA-ID 2" to IE "URA Identity". SS waits for T302 to expires and then returns to step 2.
5	←		URA UPDATE CONFIRM	SS transmits this message, setting IE "URA Identity" to "URA-ID 1". This message also comprises IE "New U-RNTI".
6	→		UTRAN MOBILITY INFORMATION CONFIRM	

Specific Message Contents

URA UPDATE (Step 2)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI URA Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Periodic URA update'

URA UPDATE CONFIRM (Step 4)

Use the same message sub-type as specified in Annex A, with the following exceptions:

Information Element	Value/remark
RRC State Indicator URA Identity	URA_PCH 2

URA UPDATE CONFIRM (Step 5)

Use the same message sub-type as specified in Annex A, with the following exceptions:

Information Element	Value/remark
New U-RNTI -SRNC Identity -S-RNTI URA Identity	 '0000 0000 0001' '0000 0000 0000 0101 0101' 1

UTRAN MOBILITY INFORMATION CONFIRM (Step 6)

Only the message type IE in this message is checked.

8.3.2.5.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305, move to CELL_FACH state, transmit a URA UPDATE message on the uplink CCCH and set value "periodic URA update" into IE "URA update cause".

After step 2 the UE shall repeatedly re-transmit a URA UPDATE message after it detects a confirmation error of URA-ID list for the URA-ID indicated in the URA UPDATE CONFIRM message. A total of (N302+1) URA UPDATE messages shall be received by the SS.

After step 5 the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH.

8.3.2.6 URA Update: Failure (V302 is greater than N302: Confirmation error of URA-ID list)

8.3.2.6.1 Definition

8.3.2.6.2 Conformance requirement

UE transmits a URA UPDATE message to the UTRAN when it needs to update UTRAN with the current URA of the UE. When the indicated URA-ID in the received URA UPDATE CONFIRM message is not in the list of URA-IDs that is broadcasted in system information block type 2, the UE transmits URA UPDATE messages repeatedly until its internal counter V302 is greater than N302. If V302 is greater than N302 then the UE enters idle state.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.2.6.3 Test purpose

To confirm that the UE make repeated attempts to perform the URA update procedure following a detection of a confirmation error of URA-ID list. It then moves to idle state when internal counter V302 is greater than N302.

8.3.2.6.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: URA_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is originally in the URA_PCH state updated with URA-ID 1. When the UE detects the expiry of timer T305 according to the system information, the UE shall move to CELL_FACH state and transmit a URA UPDATE message to the SS on the uplink CCCH. In this message, the value “periodic URA update” shall be set in IE “URA update cause”. After the SS receives this message, it transmits a URA UPDATE CONFIRM message which includes the IE “new C-RNTI”, “new U-RNTI” and indicating the IE “URA Identity” to be “URA-ID 2” to the UE on the downlink DCCH. The UE finds that the indicated URA-ID is not included in the list of URA-IDs broadcasted, the UE shall retry to transmit a URA UPDATE message for N302 times. After that, the UE shall enter idle state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in URA_PCH state at the start of the test. SS sets internal counter K to 0.
2	→		URA UPDATE	The message shall indicate “periodic URA update” in IE “URA update cause”. This message is sent following the expiry of timer T305. SS increments counter K by 1.
3	←		URA UPDATE CONFIRM	The SS transmit this message and set IE “URA Identity” to “URA-ID 2”. When K greater than N302 proceeds to step 4, else SS waits for T302 to expires and executes step 2.
4				SS waits for a T305 to verify that no further URA UPDATE messages are transmitted by UE. The counter K shall be equal to (N302+1). The UE shall enter idle state.

Specific Message Contents

URA UPDATE CONFIRM (Step 4)

Use the same message sub-type defined in Annex A, with the following exceptions:

Information Element	Value/remark
URA Identity	2

8.3.2.6.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305, then it shall move to CELL_FACH state and transmit a URA UPDATE message on the uplink CCCH, setting value “periodic URA update” into IE “URA update cause”.

After step 2 the UE shall retry to transmit a URA UPDATE message after it detects the confirmation error of URA-ID list for the URA-ID included in the URA UPDATE CONFIRM message.

After step 3 the UE shall stop transmitting URA UPDATE message and then enters idle state. The counter K shall be equal to (N302+1).

8.3.2.7 URA Update: Success after T302 timeout

8.3.2.7.1 Definition

8.3.2.7.2 Conformance requirement

The UE transmits an URA UPDATE message to the UTRAN when it needs to update UTRAN with the current URA identity stored the UE. When the UE fails to receive any URA UPDATE CONFIRM message after T302 timer expiry, it transmits a URA UPDATE message repeatedly at an interval of T302 timer value until its internal counter V302 is greater than N302.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.2.7.3 Test purpose

To confirm that the UE attempts to repeat the URA update procedure upon the expiry of timer T302. To confirm that a maximum of N302 re-transmission is performed.

8.3.2.7.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: URA_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in the URA_PCH. When the UE detects the expiry of timer T305 according to the system information, the UE moves to CELL_FACH state and transmits a URA UPDATE message to the SS on the uplink CCCH, setting value “periodic URA update” into IE “URA update cause”. The SS ignores this message, the UE shall then retry to transmit a URA UPDATE message after the expiry of timer T302. SS continues to ignore further URA UPDATE message until it receives (N302+1) such messages. Then it transmits a URA UPDATE CONFIRM message to the UE which includes IEs ”new C-RNTI”, ”new U-RNTI”. The UE shall then transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in URA_PCH state at the beginning of test. SS sets counter K to 0. SS waits for T305 to expire.
2	→		URA UPDATE	This message shall contain value “periodic URA update” in IE “URA update cause” sent upon the expiry of timer T305.
3				SS increments K by 1.
4				If K is not greater than N302, SS transmits no response to the UE, waits for an additional period equals to T302 timer and returns to step 2. Else, SS executes step 5.
5	←		URA UPDATE CONFIRM	This message includes IEs” new C-RNTI” , “new U-RNTI”
6	→		UTRAN MOBILITY INFORMATION CONFIRM	

Specific Message Contents

URA UPDATE CONFIRM (Step 5)

Use the same message sub-type as in Annex A, with the following exceptions:

Information Element	Value/remark
New U-RNTI	
SRNC Identity	‘0000 0000 0001’
S-RNTI	Arbitrary 20-bit string which is different from S-RNTI field in IE “U-RNTI”
New C-RNTI	Arbitrary 16-bit string which is different the assigned C-RNTI in RRC CONNECTION SETUP message.

8.3.2.7.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305, then it shall move to CELL_FACH state and transmit a URA UPDATE message on the uplink CCCH. The updating cause shall be set to “periodic URA update” in IE “URA update cause”.

After step 2 the UE shall retry to transmit a URA UPDATE message at each expiry of timer T302. UE shall attempt to re-transmit N302 URA UPDATE messages.

After step 5 the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH.

8.3.2.8 URA Update: Failure (V302 is greater than N302:T302 timeout)

8.3.2.8.1 Definition

8.3.2.8.2 Conformance requirement

The UE transmits a URA UPDATE message to the UTRAN when it needs to update the UTRAN with the current URA of the UE. When the UE fails to receive the URA UPDATE CONFIRM message, the UE transmits a URA UPDATE

message repeatedly after every expiry of T302 until its internal counter V302 is greater than N302. If V302 is greater than N302, UE stops sending URA UPDATE message and then enters idle state.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.2.8.3 Test purpose

To confirm that the UE retries to perform the URA update procedure upon expiry of timer T302 and moves to idle state after retrying for N302 times.

8.3.2.8.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: URA_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in the URA_PCH state. When the UE detects the expiry of timer T305 according to the system information, the UE moves to CELL_FACH state and transmits a URA UPDATE message to the SS on the uplink CCCH. This message shall contain value “periodical URA update” in IE “URA update cause”. SS ignores this message, the UE shall continue to transmit URA UPDATE messages for N302+1 times after the expiry of timer T302. After N302 re-transmissions, the UE shall enter idle state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in URA_PCH state and SS sets counter K=0. SS wait until T302 expires.
2	→		URA UPDATE	The value “periodic URA update” shall be set in IE “URA update cause”.
3				SS ignores the message, waits for T302 timer to expire and increments K by 1. If a message is received after T302 expiry, return to step 2. Else, go to step 4.
4				SS checks that K is equal to (N302+2).
5				The UE shall enter idle state.

Specific Message Contents

None

8.3.2.8.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305, then it shall move to CELL_FACH state and transmit a URA UPDATE message on the uplink CCCH, setting “periodical URA update” into IE “URA update cause”.

After step 2 the UE shall retry to transmit a URA UPDATE message after the expiry of timer T302. SS shall receive (N302+2) CELL UPDATE message. After this, the UE shall enter idle state.

8.3.2.9 URA Update: Failure (UTRAN initiate an RRC connection release procedure on CCCH)

8.3.2.9.1 Definition

8.3.2.9.2 Conformance requirement

The UE transmits a URA UPDATE message to the UTRAN when it needs to update UTRAN with information on the current URA of the UE. If the UE receives a RRC CONNECTION RELEASE message on downlink CCCH, it shall enter idle state.

Reference

3GPP TS 25.331 clause 8.3.1

8.3.2.9.3 Test purpose

To confirm that the UE moves to idle state upon the reception of RRC CONNECTION RELEASE message on downlink CCCH.

8.3.2.9.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: URA_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in the URA_PCH state. When the UE detects the expiry of periodic URA updating timer T305, the UE moves to CELL_FACH state and transmits a URA UPDATE message to the SS on the uplink CCCH. The message shall indicate the cause to be “periodic URA update” in IE “ URA update cause”. The SS transmits RRC CONNECTION RELEASE message on downlink CCCH. The UE shall return to idle mode after release of all current signalling flows and radio access bearers.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the URA_PCH state. SS wait until T305 timer has expired.
2	→		URA UPDATE	UE shall transmit this message and set value “periodic URA update” into IE “ URA update cause”.
3	←		RRC CONNECTION RELEASE	SS transmits RRC CONNECTION RELEASE message to the UE on the downlink CCCH.
4				The UE releases L2 signalling link and radio resources then the UE goes to idle mode.

Specific Message Contents

URA UPDATE (Step 2)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI URA Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Periodic URA update'

RRC CONNECTION RELEASE (Step 3)

Only the message type is checked for this message.

8.3.2.9.5 Test requirement

After step 1 the UE shall transmit a URA UPDATE message on the uplink CCCH and set value "periodic URA update" into IE " Cell update cause".

After step 3 the UE shall return to idle mode.

8.3.2.10 URA Update: Reception of URA UPDATE CONFIRM message that causes invalid configuration and invalid URA UPDATE CONFIRM message

8.3.2.10.1 Definition

8.3.2.10.2 Conformance Requirement

If the UE encounters a URA UPDATE CONFIRM message that set the variable INVALID_CONFIGURATION to TRUE while executing a URA update procedure, it shall check the current value of its internal counter V302. If V302 is not greater than N302, the UE shall re-transmits URA UPDATE message on uplink CCCH, restart T302 timer and increments V302. It shall use the same "Cell Update Cause" as before receiving the invalid downlink message. On the other hand, if V302 is greater than N302, the UE shall abandon cell update procedure and enters idle mode.

8.3.2.10.3 Test Purpose

To confirm that the UE retransmits URA UPDATE message when it receives a URA UPDATE CONFIRM message that will trigger an invalid configuration in the UE, if the number of retransmissions has not reached the maximum allowed value. To confirm that the UE retransmits URA UPDATE message when it receives an invalid URA UPDATE CONFIRM message.

8.3.2.10.4 Method of Test

Initial Condition

System Simulator: 1 cell

UE: URA_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

Test Procedure

The UE is in the URA_PCH state. When the UE detects the expiry of timer T305 according to the system information, the UE moves to CELL_FACH state and transmits a URA UPDATE message to the SS on the uplink CCCH. This message shall contain value "periodical URA update" in IE "URA update cause". Upon receiving such a message, the SS replies with a URA UPDATE CONFIRM message with IE "RRC State Indicator" set to "CELL_DCH". The UE shall detect its variable "invalid configuration" is set and re-transmit URA UPDATE message. Next SS shall transmit an invalid URA UPDATE CONFIRM message. The UE shall detect its variable "PROTOCOL_ERROR_REJECT" is

set to TRUE and re-transmit URA UPDATE message. SS then transmit an valid URA UPDATE CONFIRM UPDATE message to end the procedure.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the URA_PCH state. SS wait until T305 timer has expired.
2	→		URA UPDATE	UE shall transmit this message and set value "periodic URA update" into IE " URA update cause".
3	←		URA UPDATE CONFIRM	
4	→		URA UPDATE	UE shall re-transmit this message.
5	←		URA UPDATE CONFIRM	SS transmits an invalid message.
6	→		URA UPDATE	UE shall re-transmit this message. See specific message content.
7	←		URA UPDATE CONFIRM	

URA UPDATE (Step 2 and 4)

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
URA Update Cause	Check to see if set to 'Periodic URA update'

URA UPDATE CONFIRM (Step 3)

Use the same message sub-type found in Annex A, with the following exception:

Information Element	Value/remark
RRC State Indicator	CELL_DCH
Uplink DPCH info	Not present

URA UPDATE CONFIRM (Step 5)

Use the same message sub-type found in Annex A, with the following exception:

Information Element	Value/remark
Ciphering mode info	
- Ciphering mode info	Start
- Ciphering algorithm	Not Present
- Ciphering activation time for DPCH	Not Present
- Radio bearer downlink ciphering activation time info	Not Present

URA UPDATE (Step 6)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI URA Update Cause Failure cause -Protocol error information	 Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Paging Response' Check to see if it is set to 'protocol error' Check to see if it is set to 'Conditional information element error'

8.3.2.10.5 Test Requirement

After step 3 and 5, the UE shall re-transmit URA UPDATE message.

8.3.3. UTRAN Mobility Information

8.3.3.1 UTRAN Mobility Information: Success

8.3.3.1.1 Definition

8.3.3.1.2 Conformance requirement

This procedure is used by the network to assign a new RNTI identity to the UE. It is initiated by the UTRAN when it sends an UTRAN MOBILITY INFORMATION message, which includes a new C-RNTI and/or U-RNTI on the downlink DCCH. The UE starts to use the new identities and transmits an UTRAN MOBILITY INFORMATION CONFIRM message to the UTRAN on the uplink DCCH.

Reference

3GPP TS 25.331 clause 8.3.3

8.3.3.1.3 Test purpose

To confirm that the UE starts to use the new identities after it receives an UTRAN MOBILITY INFORMATION message from the SS.

8.3.3.1.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: CS-CELL_FACH_Initial (state 6-2) or PS-CELL_FACH_Initial (state 6-4) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE

Test Procedure

Initially, the UE is in the CELL_FACH state and it has been assigned a C-RNTI and U-RNTI. The SS transmits an UTRAN MOBILITY INFORMATION message which includes new C-RNTI and U-RNTI to the UE. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message as confirmation. SS waits for UE to perform periodic cell-updating. When SS received CELL UPDATE message, SS checks that UE uses the new U-RNTI in the CELL UPDATE message and the new C-RNTI in the MAC header. Then SS sends CELL UPDATE CONFIRM to end the test procedure.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The initial state of the UE is CELL_FACH state. UE has been allocated both C-RNTI and U-RNTI during RRC connection establishment phase.
2	←		UTRAN MOBILITY INFORMATION	Contains new C-RNTI and U-RNTI identities.
3	→		UTRAN MOBILITY INFORMATION CONFIRM	
4				SS wait for T305 to expire.
5	→		CELL UPDATE	UE shall trigger cell updating. The message shall indicate the same U-RNTI assigned in the UTRAN MOBILITY INFORMATION message in step 2.
6	←		CELL UPDATE CONFIRM	

Specific Message Content

UTRAN MOBILITY INFORMATION (Step 2)

Use the same message sub-type as in Annex A, with the following exceptions:

Information Element	Value/remark
New U-RNTI - SRNC Identity - S-RNTI New C-RNTI UE Timers and constants in connected mode - T305	 '0000 0000 0001' '0101 0101 0101 0101 0101' '1010 1010 1010 1010' 5 minutes

UTRAN MOBILITY INFORMATION CONFIRM (Step 3)

Only the message type IE is checked in this message.

CELL UPDATE (Step 5)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	 Check to see if set to '0000 0000 0001' Check to see if set to '0101 0101 0101 0101 0101' Check to see if set to 'periodical cell updating'

CELL UPDATE CONFIRM (Step 6)

Use the same message sub-type as in Annex A.

8.3.3.1.5 Test requirement

After step 2 the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH. The MAC PDU carrying this message shall comprise either the new C-RNTI or U-RNTI allocated in the "UE-id" field of the MAC header.

After step 4 the UE shall transmit a CELL UPDATE message on the uplink CCCH with IE “Cell update cause” set to “periodical cell updating”. The IE “U-RNTI” shall be identical to the IE “New RNTI” found in UTRAN MOBILITY INFORMATION message sent by the SS in step 2. The MAC header should contain the new C-RNTI.

8.3.3.2 UTRAN Mobility Information: Failure (Invalid message reception and cell re-selection)

8.3.3.2.1 Definition

8.3.3.2.2 Conformance Requirements

When the UE receives an UTRAN MOBILITY INFORMATION message, which contains an error in one of the mandatory IE, it shall transmit a UTRAN MOBILITY INFORMATION FAILURE message on the DCCH using AM RLC and set the value "protocol error" in the IE “failure cause”. The IE “protocol error information” in this message shall also be set to an appropriate value. The UE shall not utilize any identities relayed in the erroneous message, and it shall resume normal operations. When the conditions for cell re-selection are met before UE submit UTRAN MOBILITY INFORMATION CONFIRM message to lower layer for transmission, UE shall transmit UTRAN MOBILITY INFORMATION FAILURE message to SS.

8.3.3.2.3 Test Purpose

To confirm that the UE ignore the new connected mode identities conveyed in an erroneous UTRAN MOBILITY INFORMATION message. To confirm that the UE report this event to the UTRAN by sending UTRAN MOBILITY INFORMATION FAILURE message, stating the appropriate failure cause and information. To confirm UE send UTRAN MOBILITY INFORMATION FAILURE message when it performed cell re-selection before sending UTRAN MOBILITY INFORMATION CONFIRM message to SS.

8.3.3.2.4 Method of test

Initial Conditions

System Simulator: 2 cells - Cell 1 is active, with the downlink transmission power shown in column marked “T0” in Table 8.3.1.1-1, while cell 2 is inactive.

UE: CS-CELL_FACH_Initial (state 6-2) or PS-CELL_FACH_Initial (state 6-4) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE

Test Procedure

The UE is brought to CELL_FACH state. SS transmits a UTRAN MOBILITY INFORMATION message to the UE on the DCCH using UM-RLC mode. In this message, the IE “Ciphering mode info” is set to ”Start” but IE “Ciphering algorithm” is not present. A new U-RNTI identity is also present in this message. The UE shall respond by transmitting the UTRAN MOBILITY INFORMATION FAILURE message, indicating “protocol error” in IE “failure cause” and also “Information element not comprehended” in IE “Protocol error information”. After receiving the UTRAN MOBILITY INFORMATION FAILURE message, SS waits for a duration to allow T305 to expire. The UE shall transmit CELL UPDATE message with the original U-RNTI identity assigned. SS sends CELL UPDATE CONFIRM message to the UE on the downlink DCCH. Then SS again transmits a UTRAN MOBILITY INFORMATION message to the UE on the DCCH using UM-RLC mode. Immediately following that, SS reverses the power transmission of both cells (transmission power of both cells are adjusted to “T1” in table 8.3.1.1-1). UE shall re-select to the new cell before it can transmit UTRAN MOBILITY INFORMATION CONFIRM message to SS. Then UE shall transmit CELL UPDATE message to SS. SS responds with CELL UPDATE CONFIRM message. Then UE shall transmit UTRAN MOBILITY INFORMATION FAILURE with IE “failure cause” set to “cell reselection” to SS.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The initial state of the UE is CELL_FACH state.
2	←		UTRAN MOBILITY INFORMATION	SS sends illegal message.
3	→		UTRAN MOBILITY INFORMATION FAILURE	UE shall transmit this message to report the error in UTRAN MOBILITY INFORMATION message. It shall include the appropriate cause in the message.
4				SS waits for a period up to timer T305 to allow the UE to start performing a cell updating procedure.
5	→		CELL UPDATE	UE shall trigger periodic cell updating. The message shall not contain the U-RNTI given in the UTRAN MOBILITY INFORMATION message in step 2.
6	←		CELL UPDATE CONFIRM	
7	←		UTRAN MOBILITY INFORMATION	
8				SS reverses the transmission power level of cell 1 and cell 2.
9	→		CELL UPDATE	
10	←		CELL UPDATE CONFIRM	
11	→		UTRAN MOBILITY INFORMATION FAILURE	

Specific Message Content

UTRAN MOBILITY INFORMATION (Step 2)

Use the same message sub-type as in Annex A, with the following exceptions:

Information Element	Value/remark
Ciphering mode info	
- Ciphering mode info	Start
- Ciphering algorithm	Not Present
- Ciphering activation time for DPCH	Not Present
- Radio bearer downlink ciphering activation time info	Not Present
New U-RNTI	
- SRNC Identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 00011B

UTRAN MOBILITY INFORMATION (Step 7)

Use the same message sub-type as in Annex A, with the following exceptions:

Information Element	Value/remark
New U-RNTI	
- SRNC Identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 00011B

UTRAN MOBILITY INFORMATION FAILURE (Step 3)

Information Element	Value/remark
Failure Cause Protocol Error Information	Check to see if set to 'Protocol error' Check to see if set to 'Conditional information element error'

UTRAN MOBILITY INFORMATION FAILURE (Step 11)

Information Element	Value/remark
Failure Cause	Check to see if set to 'cell reselection'

CELL UPDATE (Step 5)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell update cause	Shall be the same as the original U-RNTI allocated Check to see if set to '0000 0000 0001'B Check to see if set to '0000 0000 0000 0000 0001'B Check to see if set to 'periodical cell updating'

CELL UPDATE (Step 9)

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell update cause	 Check to see if set to '0000 0000 0001'B Check to see if set to '0000 0000 0000 0000 0011'B Check to see if set to 'cell reselection'

CELL UPDATE CONFIRM (Step 6 and 10)

Use the same message sub-type as in Annex A.

8.3.3.2.5 Test Requirement

After step 2 the UE shall transmit UTRAN MOBILITY INFORMATION FAILURE message, indicating the value "protocol error" in IE "failure cause" and also "Conditional information element error" in IE "protocol error information".

After step 4 the UE shall initiate a periodic cell updating procedure by transmitting CELL UPDATE message on the CCCH. In this message, the U-RNTI identity shall be set to the same value as assigned during the RRC connection establishment procedure.

After step 8 the UE shall initiate a cell updating procedure by transmitting CELL UPDATE message on the CCCH. In this message, the U-RNTI identity shall be set to the same value as assigned during the RRC connection establishment procedure.

After step 10 the UE shall transmit UTRAN MOBILITY INFORMATION FAILURE message, indicating the value "cell reselection" in IE "failure cause".

8.3.4 Active set update in soft handover

8.3.4.1 Active set update in soft handover: Radio Link addition

8.3.4.1.1 Definition

8.3.4.1.2 Conformance requirement

Radio link addition is triggered in the network's RRC layer. The RRC entity in the network first configures the new radio link. Transmission and reception then begin immediately. This procedure is to update the active set of the connection between the UE and UTRAN. The UTRAN then transmits an ACTIVE SET UPDATE message to the UE. The UE configures layer 1 to begin reception for the additional radio link. After the UE receives confirmation from the physical layer in the UE, an ACTIVE SET UPDATE COMPLETE message is sent to the UTRAN.

Reference

3GPP TS 25.331 clause 8.3.4

8.3.4.1.3 Test purpose

To confirm that the UE continues to communicate with the SS on both the additional radio link and an already existing radio link after the radio link addition.

8.3.4.1.4 Method of test

Initial Condition

System Simulator: 2 cells - Cell 1 is active, Cell 2 is active

UE: CS-CELL_DCH_Initial (state 6-1) or PS-CELL_DCH_Initial (state 6-3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE

Test Procedure

Initially, the UE establishes a radio access bearer in the CELL_DCH state in cell 1. The SS begins to configure the new radio link to be added from cell 2. Then the SS transmits to the UE an ACTIVE SET UPDATE message in cell 1 on DCCH using AM RLC which includes the IE "Radio Link Addition Information" (e.g. Downlink DPCH information and other optional parameters relevant for the additional radio links with Primary CPICH info used for the reference ID). When the UE receives this message, the UE shall configure layer 1 to begin reception without affecting the current uplink and downlink activities of existing radio links. After the UE confirms the synchronization with the new radio link from cell 2, the UE shall transmit an ACTIVE SET UPDATE COMPLETE message to the SS on the uplink DCCH using AM RLC. The UE continues to communicate with the SS on the both radio links. To test this condition, SS ceases the operations of all uplink and downlink DPCH from cell 1. SS shall observe that the data communication for both DCCH and DTCH channels continue as per normal using cell 2, as if cell 1 is still operational.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state in cell 1, after the successful establishment of a radio access bearer service.
2				The SS configures an additional radio link in the downlink direction from cell 2.
3	←		ACTIVE SET UPDATE	SS transmits this message in cell 1 on downlink DCCH using AM RLC. The message includes IE "Radio Link Addition Information". (e.g. Downlink DPCH information and other optional parameters relevant for the additional radio links with Primary CPICH info used for the reference ID in cell 2)
4	→		ACTIVE SET UPDATE COMPLETE	The UE shall configure a new radio link to cell 2, without interfering with existing connections on the radio link in cell 1.
5				SS ceases all Tx and Rx activities in cell 1. But it shall be able to communicate with UE through cell 2.

Specific Message Content

ACTIVE SET UPDATE

The message to be used in this test is defined in the default message content clause, with the following exceptions:

Information Element	Value/remark
Radio link addition information	
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as assigned for cell 2
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	P-CPICH can be used.
- DPCH frame offset	0 chips
- Power offset $P_{Pilot-DPDCH}$	TBD
- Secondary CPICH info	Not Present
- DL channelisation code	This IE is repeated for all existing downlink DPCHs allocated to the UE
- Secondary scrambling code	Not Present
- CHOICE Spreading factor	512
- Code Number	For each DPCH, assign the same code number in the current code given in cell 1.
- Scrambling code change	Not Present
- TPC Combination Index	0
- SSDT Cell Identity	Not Present
- Close loop timing adjustment mode	Not Present
- TFCI Combining Indicator	Not Present
- SCCPCH information for FACH	Not Present
Radio link removal information	Not Present

8.3.4.1.5 Test requirement

After step 3 the UE shall configures a new radio link to cell.2, with the connection on the old radio link in cell 1 remaining operational and unaffected. It shall transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH using AM RLC to acknowledge the completion of the active set additional procedure.

After step 4 the SS shall continue to communicate with the UE using the radio links added to the UE from cell 2.

8.3.4.2 Active set update in soft handover: Radio Link removal

8.3.4.2.1 Definition

8.3.4.2.2 Conformance requirement

This procedure is to update the active set of the connection between the UE and the UTRAN after the UTRAN has commanded a removal of a radio link from the current active set. The UTRAN RRC transmits an ACTIVE SET UPDATE message to the UE RRC. The UE RRC requests UE L1 to terminate transmission and reception of the radio link to be removed. The UE shall continue to communicate normally with the UTRAN using the new active set, without losing the connection link. After this the UE acknowledges the radio link removal by sending an ACTIVE SET UPDATE COMPLETE message to the UTRAN on DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.3.4

8.3.4.2.3 Test purpose

To confirm that the UE continues to communicate with the SS on the remaining radio link after radio link removal on the active set.

8.3.4.2.4 Method of test

Initial Condition

System Simulator: 2 cells - both Cell 1 and Cell 2 are active

UE: CS-CELL_DCH_Initial (state 6-1) or PS-CELL_DCH_Initial (state 6-3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE

Test Procedure

At the start of the test, the UE establishes a radio access bearer service in the CELL_DCH state in cell 1. This is followed by a radio link addition procedure in cell 2. SS then transmits an ACTIVE SET UPDATE message, which includes IE “Radio Link Removal Information” and specifying the P-CPICH information of the cell to be removed. When the UE receives this message, the UE RRC entity shall request UE L1 entity to terminate transmission and reception of the radio link from cell 1. Then the UE transmits an ACTIVE SET UPDATE COMPLETE message to the SS on the uplink DCCH using AM RLC. The UE shall continue to communicate with the SS on the remained radio link in cell 2.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_DCH state in cell 1. SS executes step 1 to 3 of test 8.3.4.1, and the UE shall update the active set to contain cell 1 and cell 2 after the radio link addition procedure.
2	←		ACTIVE SET UPDATE	The SS transmits this message on downlink DCCH using AM RLC which includes IE "Radio Link Removal Information".
3	→		ACTIVE SET UPDATE COMPLETE	The UE shall remove the radio link associated with cell 1.
4				The SS stops transmission on the downlink direction from cell 1 and the UE shall continue to communicate on the remaining radio link in cell 2.

Specific Message Contents

ACTIVE SET UPDATE

The message to be used in this test is the same as the message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
Radio link addition information Radio link removal information - Primary CPICH info - Primary scrambling code	Not Present 1 radio link to be removed Set to the same P-CPICH scrambling code assigned for cell 1

8.3.4.2.5 Test requirement

After step 2 the UE shall remove the radio link from cell 1 and it shall transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH using AM RLC.

After step 3 the UE shall continue to communicate on the remaining radio link from cell 2.

8.3.4.3 Active set update in soft handover: Combined radio link addition and removal (active set is not full)

8.3.4.3.1 Definition

8.3.4.3.2 Conformance requirement

When radio links are to be replaced, the UTRAN RRC first configures the UTRAN L1 to activate the radio link(s) that are being added. The UTRAN RRC then transmits an ACTIVE SET UPDATE message to the UE RRC, which shall configure the UE L1 to terminate transmission and reception on the removed radio link(s) and begin transmission and reception on the added radio link(s). At the completion of the reconfiguration of radio links, the UE shall acknowledge the replacement with an ACTIVE SET UPDATE COMPLETE message.

Reference

3GPP TS 25.331 clause 8.3.4

8.3.4.3.3 Test purpose

To confirm that the UE continues to communicate with the SS on the added radio link and removes radio link which exists prior to the execution of active set update procedure.

8.3.4.3.4 Method of test

Initial Condition

System Simulator: 2 cells- Both Cell 1 and Cell 2 are active

UE: CS-CELL_DCH_Initial (state 6-1) or PS-CELL_DCH_Initial (state 6-3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE [Active set is not full.]

Test Procedure

The UE establishes a radio access bearer in the CELL_DCH state in cell 1. SS begin to configure the new radio link in cell 2. Then the SS transmits to the UE an ACTIVE SET UPDATE message in cell 1 on DCCH using AM RLC. The message includes IE “Radio Link Addition Information” and IE “Radio Link Removal Information”, indicating the removal of cell 1 and addition of cell 2 into the active set. When the UE receives this message, the UE RRC shall terminate the transmission and reception of the removed radio link in cell 1 and then configures layer 1 to begin transmission and reception in cell 2. After the UE received confirmations from the physical layer regarding the update of active set, it transmits an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH to the SS. The UE shall continue to communicate with the SS on the added radio link in cell 2. When SS receives ACTIVE SET UPDATE COMPLETE message, it verifies that the UE has ceased any uplink transmission in cell 1.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_DCH state in cell 1
2				The SS configures an additional radio link in cell 2, starts the transmission and reception of data in cell 2.
3	←		ACTIVE SET UPDATE	The SS transmit this message on downlink DCCH using AM RLC which includes IE “Radio Link Addition Information” for cell 2 and IE “Radio Link Removal Information” for cell 1.
4	→		ACTIVE SET UPDATE COMPLETE	The UE shall configure a new radio link in cell 2 and removes the old radio link in cell 1.
5				The SS removes the radio link from cell 1 and the UE shall continue to communicate on the added radio link in cell 2, and not transmit any data in cell 1.

Specific Message Content

ACTIVE SET UPDATE

The message to be used in this test is defined in the default message content clause, with the following exceptions:

Information Element	Value/remark
Radio link addition information	
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as assigned for cell 2
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	P-CPICH can be used.
- DPCH frame offset	0 chips
- Power offset $P_{Pilot-DPDCH}$	TBD
- Secondary CPICH info	Not Present
- DL channelisation code	This IE is repeated for all existing downlink DPCHs allocated to the UE
- Secondary scrambling code	Not Present
- CHOICE Spreading factor	512
- Code Number	For each DPCH, assign the same code number in the current code given in cell 2.
- Scrambling code change	Not Present
- TPC Combination Index	0
- SSDT Cell Identity	Not Present
- Close loop timing adjustment mode	Not Present
- TFCI Combining Indicator	Not Present
- SCCPCH information for FACH	Not Present
Radio link removal information	
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code assigned as for cell 1

8.3.4.3.5 Test requirement

After step 3 the UE shall remove the radio link in cell 1 and add the radio link in cell 2. Then the UE shall transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH.

After step 4 the UE shall continue to communicate on the added radio link in cell 2. SS monitors the uplink direction to confirm that no data are designated for reception in cell 1.

8.3.4.4 Active set update in soft handover: Invalid Configuration

8.3.4.4.1 Definition

8.3.4.4.2 Conformance requirement

If the UTRAN attempts to remove a radio link that is not currently present in the UE's active set, the UE transmits an ACTIVE SET UPDATE FAILURE message on the DCCH using AM RLC and maintain its current communication status with the radio links.

Reference

3GPP TS 25.331 clause 8.3.4

8.3.4.4.3 Test purpose

To confirm that the UE transmits an ACTIVE SET UPDATE FAILURE message on the DCCH using AM RLC, following the reception of a message specifying the removal of a radio link unknown to the UE.

8.3.4.4.4 Method of test

Initial Condition

System Simulator: 2 cells - Cell 1 is active, Cell 2 is active.

UE: CS-CELL_DCH_Initial (state 6-1) or PS-CELL_DCH_Initial (state 6-3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

Test Procedure

The UE establishes a radio access bearer in the CELL_DCH state in cell 1. SS requests for a radio link addition by executing the step 1 to 3 described in test case 8.3.4.1. The UE shall then include cell 2 into its active set and establish the transmission and reception capabilities related to cell 2. SS then transmits an ACTIVE SET UPDATE message in cell 1 on DCCH using AM RLC which includes IE “Radio Link Removal Information” This IE indicates that a cell with unknown P-CPICH scrambling code be removed from the active set. When the UE receives this message, it transmits an ACTIVE SET UPDATE FAILURE message which is set to “Invalid configuration” in IE “failure cause” on the uplink DCCH using AM RLC to the SS, and continues to communicate on the existing radio links in cell 1 and cell 2.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_DCH state in cell 1.
2				SS commands the UE to perform a radio link addition procedure by executing step 1 to 3 in test case 8.3.4.1. The UE shall respond accordingly. Both cell 1 and cell 2 should be found in the active set maintained by the UE.
3	←		ACTIVE SET UPDATE	The SS transmits this message on downlink DCCH using AM RLC which includes IE “Radio Link Removal Information”. This content of this IE indicates an unknown cell.
4	→		ACTIVE SET UPDATE FAILURE	The message shall state “Invalid configuration” in IE “failure cause”. UE shall continue to communicate normally with both cells.

Specific Message Contents

ACTIVE SET UPDATE (Step 3)

The message to be used in this test is defined in the default message content clause, with the following exceptions:

Information Element	Value/remark
Radio link addition information Radio link removal information - Primary CPICH info - Primary scrambling code	Not Present 1 radio link to be removed Set to an unknown scrambling code not assigned to any cells.

ACTIVE SET UPDATE FAILURE (Step 4)

Information Element	Value/remark
Integrity check info	Not Checked
Failure cause	Check to see if it's set to 'Invalid configuration'

8.3.4.4.5 Test requirement

After step 3 the UE shall transmit an ACTIVE SET UPDATE FAILURE message, setting "Invalid configuration" in IE "failure cause" and sent on the uplink DCCH using AM RLC.

After step 4 the UE shall continue to communicate on the radio links for both cell 1 and cell 2.

8.3.4.5 Active set update in soft handover: Combined radio link addition and removal (active set is full)

8.3.4.5.1 Definition

8.3.4.5.2 Conformance requirement

When the UE active set is full, the UE shall first remove the old radio link and then add the new radio link, after it receives an ACTIVE SET UPDATE message for the combined radio link addition and removal.

Reference

3GPP TS 25.331 clause 8.3.4

8.3.4.5.3 Test purpose

To confirm that the UE removes one of existing radio links, which is indicated in an ACTIVE SET UPDATE message and continues to communicate on the added radio link.

8.3.4.5.4 Method of test

Initial Condition

System Simulator: 3 cells - Cell 1, Cell 2, and Cell 3 are all active

UE: CS-CELL_DCH_Initial (state 6-1) or PS-CELL_DCH_Initial (state 6-3) in cell 1 and cell 2 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE (The assumed maximum number for active set is 2.)

[Editor's Note] The maximum number of radio link (i.e. MaxRL) specified in TS 25.331 is 8. However, if the UE capability is more inferior in this aspect, can the assumption above still stands?

Test Procedure

The UE establishes a radio access bearer in the CELL_DCH state in cell 1 and cell 2. The SS configures the new radio link in cell 3 and sends an ACTIVE SET UPDATE message on DCCH using AM. This message includes IE "Radio Link Addition Information" indicating cell 3 to be added into the active set, and IE "Radio Link Removal Information" indicating the removal of cell 1 from the active set. When the UE receives this message, it shall not report a failure but firstly removes the indicated radio link and then adds the new radio link. Then the UE transmits an ACTIVE SET UPDATE COMPLETE message on the DCCH using AM RLC to the SS and continues to communicate with the SS on the added radio link and the remaining old radio link.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_DCH state in cell 1 and cell 2.
2				The SS configures an new radio link in cell 3, and starts reception and transmission using cell 3.
3	←		ACTIVE SET UPDATE	The SS transmit this message on downlink DCCH using AM RLC which includes IE "Radio Link Addition Information" and IE "Radio Link Removal Information". The contents of the IE dictate the addition of cell 3 into the active set and removal of cell 1 from it.
4	→		ACTIVE SET UPDATE COMPLETE	The UE shall configure a new radio link in cell 3 and removes the old radio link in cell 1.
5				The SS removes the radio link in cell 1. The UE shall continue to communicate on the added radio link in cell 3 and also the existing radio link in cell 2.

Specific Message Content

ACTIVE SET UPDATE

The message to be used in this test case is identical to the same message sub-type found in Annex A, with the following exceptions:

Information Element	Value/remark
Radio link addition information	
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as assigned for cell 3
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	P-CPICH can be used.
- DPCH frame offset	0 chips
- Power offset $P_{Pilot-DPDCH}$	TBD
- Secondary CPICH info	Not Present
- DL channelisation code	This IE is repeated for all existing downlink DPCHs allocated to the UE
- Secondary scrambling code	Not Present
- CHOICE Spreading factor	512
- Code Number	For each DPCH, assign the same code number in the current code given in cell 3.
- Scrambling code change	Not Present
- TPC Combination Index	0
- SSDT Cell Identity	Not Present
- Close loop timing adjustment mode	Not Present
- TFCI Combining Indicator	Not Present
- SCCPCH information for FACH	Not Present
Radio link removal information	
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code assigned as for cell 1

8.3.4.5.5 Test requirement

After step 3 the UE shall remove the radio link in cell 1 and add the radio link in cell 3. Then the UE shall transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH.

After step 4 the UE shall continue to communicate on the added radio link in cell 3 and on the existing old radio link in cell 2. It shall cease all transmission to cell 1.

8.3.4.6 Void

8.3.4.7 Active set update in soft handover: Invalid Message Reception

8.3.4.7.1 Definition

8.3.4.7.2 Conformance Requirement

The UE shall keep its old configuration when the UE receives an ACTIVE SET UPDATE message, which omits a conditional IE. It shall transmit a ACTIVE SET UPDATE FAILURE message which set value “protocol error” in IE “failure cause” and also value “Conditional information element error” in IE “Protocol error cause”.

Reference

3GPP TS 25.331 clause 8.3.4

8.3.4.7.3 Test Purpose

To confirm that the UE retains its active set list when it receives an ACTIVE SET UPDATE message, with a conditional IE missing in the message.

8.3.4.7.4 Method of test

Initial Condition

System Simulator: 2 cells – both cell 1 and cell 2 are active.

UE: CS-CELL_DCH_Initial (state 6-1) or PS-CELL_DCH_Initial (state 6-3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE (Integrity protection algorithm is not applied at the start of test)

Test Procedure

The UE establishes a radio access bearer in CELL_DCH in cell 1. SS requests that cell 2 be added into the active set by performing step 1 to 3 described in test cases 8.3.4.1. The UE shall react accordingly and incorporate cell 2 into its active set. SS transmits an ACTIVE SET UPDATE message , with both IE “Integrity check info” and IE “Integrity protection mode info” present in the message. This message also commands the starting of integrity mode protection. However, the IE “integrity protection initialisation number” is omitted. The UE shall detect that it has received an invalid message. It shall then send an ACTIVE SET UPDATE FAILURE message, stating the reason “Conditional information element error” in the IE “Protocol error information”. The UE shall not remove cell 1 from its current active set.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is CELL_DCH state in cell 1.
2				SS executes step 1 to 3 in test case 8.3.4.1. The UE shall add cell 2 into its active set.
3	←		ACTIVE SET UPDATE	The SS transmits this message on downlink DCCH using AM RLC which includes IE "Integrity check info" and IE "Integrity protection mode info". This message indicates that integrity mode protection be started but omit the IE "integrity protection initialisation number". The message also specifies that cell 1 be removed from the active set.
4	→		ACTIVE SET UPDATE FAILURE	The message shall state "conditional information element error" in IE "protocol error information". UE shall continue to communicate normally with both cells.

Specific Message Contents

ACTIVE SET UPDATE (Step 3)

The message to be used in this test is defined in the default message content clause, with the following exceptions:

Information Element	Value/remark
Integrity Check Info	
- Message authentication code	Set to an arbitrary 32-bits string
- RRC Message sequence number	Set to an arbitrary integer between 0 and 15
Integrity Protection Mode Info	
- Integrity protection mode command	Start
- Downlink integration protection activation info	Not Present
- Integrity protection algorithm	Standard UMTS Integrity Algorithm UIA1
- Integrity protection initialisation number	Not Present
Radio link addition information	Not Present
Radio link removal information	
- Primary CPICH info	
- Primary scrambling code	Set to the P-CPICH scrambling code assigned to cell 1.

ACTIVE SET UPDATE FAILURE (Step 4)

Information Element	Value/remark
Protocol Error Information	
- Protocol Error Cause	Check to see if it's set to 'Conditional information element error'

8.3.4.7.5 Test Requirement

After step 3 the UE shall report a protocol error by transmitting the ACTIVE SET UPDATE FAILURE message on the DCCH. In this message, the value "Conditional information element error" shall be set in IE "Protocol Error Information". The UE shall continue to communicate normally with the SS using cell 1 and cell 2.

8.3.5 Hard Handover

[Editor's note: This test is included in the "Physical channel reconfiguration", "Radio bearer establishment", "Radio bearer reconfiguration", "Radio bearer release" and "Transport channel reconfiguration".]

8.3.6 Inter-system hard handover from GSM to UTRAN

The content of this sub-clause has been moved to 3GPP TS 51.010-1, clause 60.

8.3.7 Inter-system hard handover from UTRAN to GSM

Clauses 8.3.7 contains test procedures to be used for executing Inter-system Handover from UTRAN to GSM tests. Table 8.3.7-1 contains a summary of the different combinations of parameters being tested, together with a reference to the appropriate generic test procedure. If a test uses a parameter which the UE under test does not support, the test shall be skipped. Test cases in this clause are applicable only to the UE supporting both UTRAN and GSM. The test USIM shall support service 27 to carry out these test cases.

Table 8.3.7-1

From	To	State of call	Ref. clause	Exec counter	Remark
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM AMR	U10	8.3.7.1	1	call active state
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM EFR	U10	8.3.7.1	2	call active state
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.1	3	call active state
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM HR	U10	8.3.7.1	4	call active state
UTRAN (Streaming/unknown/ uplink:14.4 DL:14.4 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 14.4 kbps CS data	U10	8.3.7.2	1	Same data rate
UTRAN (Streaming/unknown/ uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 28.8 kbps CS data	U10	8.3.7.2	2	Same data rate
UTRAN (Streaming/unknown/ uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 57.6 kbps CS data	U10	8.3.7.2	3	Same data rate
UTRAN (Streaming/unknown/ uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 14.4 kbps CS data	U10	8.3.7.3	1	Data rate down grading
UTRAN (Streaming/unknown/ uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 14.4 kbps CS data	U10	8.3.7.3	2	Data rate down grading
UTRAN (Streaming/unknown/ uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 28.8 kbps CS data	U10	8.3.7.3	3	Data rate down grading
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U1	8.3.7.4	1	During call establishment
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.5	1	failure case

8.3.7.1 Inter system handover from UTRAN/To GSM/Speech/Success

8.3.7.1.1 Definition

8.3.7.1.2 Conformance requirement

When the UE receives an INTER-SYSTEM HANDOVER COMMAND message from UTRAN the UE shall take the following actions:

- Establish the connection to the other radio access system, by using the contents of the IE "Inter system message". This IE contains candidate/ target cell identifier(s) and radio parameters relevant for the other radio access system.
- For each IE "Remaining radio access bearer", associate the radio access bearer given by the IE "RAB info" to the radio resources in the target system given by the IE "Inter system message". Other information for making the association may be included in the IE "Inter system message" and requirements may be stated in the specifications relevant for the target system [FFS].
- Switch the current connection to the other radio access system.

NOTE 1: Requirements concerning the establishment of the radio connection towards the other radio access system and the signalling procedure are outside the scope of this specification.

NOTE 2: The release of the UMTS radio resources is initiated by the other system.

NOTE 3: Currently only one radio access bearer can be associated with the IE "Inter-system message", and this association is limited to the radio access bearers in the CS domain. It is assumed that all the radio access bearers in the PS domain, if any, remain after the handover.

Reference(s)

TS 25.331 Clause 8.3.7.3.

8.3.7.1.3 Test purpose

To test that the UE supporting both GSM and UTRAN handovers from a UTRAN serving cell to the indicated channel of GSM target cell when the UE is in the speech call active state and receives an INTER-SYSTEM HANDOVER COMMAND.

8.3.7.1.4 Method of test

Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 11.10-1 section 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE : CC State U10 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM ARM,

UE supports GSM EFR,

UE supports GSM HR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 2.

Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. The SS starts GSM cell and configures a traffic channel, then sends INTER-SYSTEM HANDOVER COMMAND indicating the traffic channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. After the UE receives the command it shall configure itself accordingly and switch to the new channel of the UTRAN cell. The SS checks whether the handover is performed by checking that the UE transmits the HANDOVER COMPLETE message to the SS through GSM cell.

Depending on the PIXIT parameters the above procedure is executed maximum four times, each time with different target channel in the GSM cell.

Expected sequence

This sequence is performed for a maximum execution counter M = 1, 2, 3, 4, depending on the PIXIT parameters.

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS bring the UE into UTRAN U10 state in cell 1
2	SS			The SS configures cell 2 as a GSM cell with a traffic channel: for GSM AMR (M = 1); or for GSM EFR (M = 2); or for GSM FR (M = 3); or for GSM HR (M = 4).
3	←		InterSystemHandoverCommand-GSM	Send on cell 1 (UTRAN cell) and the message indicates: the target channel for GSM AMR (M = 1); or the target channel for GSM EFR (M = 2); or the target channel for GSM FR (M = 3); or the target channel for GSM HR (M = 4).
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the InterSystemHandoverCommand-GSM
5	→		HANDOVER ACCESS	The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
6	→		HANDOVER ACCESS	
7	→		HANDOVER ACCESS	
8	→		HANDOVER ACCESS	
9	←		PHYSICAL INFORMATION	
10	→		SABM	
11	←		UA	
12	→		HANDOVER COMPLETE	The SS receives the message on the traffic channel of GSM cell.

Specific message contents

For execution:

InterSystemHandoverCommand-GSM

Information Element	Value/remark
Message Type	
Integrity check info	
- Message authentication code	
- Message sequence number	
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- CHOICE system	GSM
- Message	GSM HANDOVER COMMAND formatted as BIT STRING(1..512). The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 11.10-1, Release 1999, except that the CHANNEL MODE IE is included with value = speech full rate or half rate version 3

For execution 2:

InterSystemHandoverCommand-GSM

Information Element	Value/remark
Message Type	
Integrity check info	
- Message authentication code	
- Message sequence number	
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- CHOICE system	GSM
- Message	GSM HANDOVER COMMAND formatted as BIT STRING(1..512). The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 11.10-1, Release 1999, except that the CHANNEL MODE IE is included with value = speech full rate or half rate version 2

For execution 3:

InterSystemHandoverCommand-GSM

Information Element	Value/remark
Message Type	
Integrity check info	
- Message authentication code	
- Message sequence number	
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- CHOICE system	GSM
- Message	GSM HANDOVER COMMAND formatted as BIT STRING(1..512). The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 11.10-1, Release 1999, except that the CHANNEL MODE IE is included with value = speech full rate or half rate version 1

For execution 4:

InterSystemHandoverCommand-GSM

Information Element	Value/remark
Message Type	
Integrity check info	
- Message authentication code	
- Message sequence number	
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- CHOICE system	GSM
- Message	GSM HANDOVER COMMAND formatted as BIT STRING(1..512). The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 4 in clause 26.6.5.1 of GSM 11.10-1 version 8.2.0 Release 1999, except that the CHANNEL MODE IE is included with value = speech full rate or half rate version 1

8.3.7.1.5 Test requirement

After step 12 the ongoing call shall be continued on the GSM cell.

8.3.7.2 Inter system handover from UTRAN/To GSM/Data/Same data rate/Success

8.3.7.2.1 Definition

8.3.7.2.2 Conformance requirement

When the UE receives an INTER-SYSTEM HANDOVER COMMAND message from UTRAN the UE shall take the following actions:

- Establish the connection to the other radio access system, by using the contents of the IE "Inter system message". This IE contains candidate/ target cell identifier(s) and radio parameters relevant for the other radio access system.
- For each IE "Remaining radio access bearer", associate the radio access bearer given by the IE "RAB info" to the radio resources in the target system given by the IE "Inter system message". Other information for making the association may be included in the IE "Inter system message" and requirements may be stated in the specifications relevant for the target system [FFS].
- Switch the current connection to the other radio access system.

NOTE 1: Requirements concerning the establishment of the radio connection towards the other radio access system and the signalling procedure are outside the scope of this specification.

NOTE 2: The release of the UMTS radio resources is initiated by the other system.

NOTE 3: Currently only one radio access bearer can be associated with the IE "Inter-system message", and this association is limited to the radio access bearers in the CS domain. It is assumed that all the radio access bearers in the PS domain, if any, remain after the handover.

Reference(s)

TS 25.331 Clause 8.3.7.3.

8.3.7.2.3 Test purpose

To test that the UE handovers to the indicated channel of same data rate in the GSM target cell when it is in the data call active state in the UTRAN serving cell and receives an INTER-SYSTEM HANDOVER COMMAND.

8.3.7.2.4 Method of test

Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 11.10-1 section 26.6.5.1 or section 26.13.1.3 (for HSCSD) shall be referenced for the default parameters of cell 2.

UE : CC State U10 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports UTRAN Streaming/unknown/uplink:14.4 DL:14.4 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,

UE supports UTRAN Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,

UE supports UTRAN Streaming/unknown/uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,

UE supports GSM 14.4 kbps data (HSCSD or full rate traffic channel for 14.4 kbit/s user data (TCH/F14.4)),

UE supports GSM 28.8 kbps data (HSCSD or enhanced circuit switched full rate traffic channel for 28.8 kbit/s user date (E-TCH/F28.8)),

UE supports GSM 57.6 kbps data,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 2.

Test Procedure

The SS starts the UTRAN cell and brings the UE into data call active state (CC state U10) with a suitable configuration (e.g. Streaming/unknown/uplink:14.4 DL:14.4 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs for M = 1). The SS starts GSM cell and configures a traffic channel (e.g. 14.4 kbps data channel for M = 1), then sends INTER-SYSTEM HANDOVER COMMAND indicating the traffic channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. After the UE receives the command it shall configure itself accordingly and switch to the new channel of the GSM cell. The SS checks whether the handover is performed by checking that the UE transmits the HANDOVER COMPLETE message to the SS in GSM cell.

Depending on the PIXIT parameters the above procedure is executed maximum three times, each time with different target channel in the GSM cell.

Expected sequence

This sequence is performed for a maximum execution counter M = 1, 2, 3, depending on the PIXIT parameters.

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS bring the UE into UTRAN U10 state in cell 1, the configuration is: Streaming/unknown/uplink:14.4 DL:14.4 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for M = 1); Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for M = 2); Streaming/unknown/uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for M = 3).
2	SS			The SS configures cell 2 as a GSM cell with a traffic channel: for GSM 14.4 kbps data (M = 1); or for GSM 28.8 kbps data (M = 2); or for GSM 57.6 kbps data (M = 3).
3	←		InterSystemHandoverCommand-GSM	Send on cell 1 (UTRAN cell) and the message indicates: the target channel for GSM 14.4 kbps data (M = 1); or for GSM 28.8 kbps data (M = 2); or for GSM 57.6 kbps data (M = 3).
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the InterSystemHandoverCommand-GSM
5	→		HANDOVER ACCESS	The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
6	→		HANDOVER ACCESS	
7	→		HANDOVER ACCESS	
8	→		HANDOVER ACCESS	
9	←		PHYSICAL INFORMATION	
10	→		SABM	
11	←		UA	
12	→		HANDOVER COMPLETE	The SS receives the message on the traffic channel of GSM cell.

Specific message contents

For execution :

InterSystemHandoverCommand-GSM

Information Element	Value/remark
Message Type	
Integrity check info	
- Message authentication code	
- Message sequence number	
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- CHOICE system	GSM
- Message	GSM HANDOVER COMMAND formatted as BIT STRING(1..512). The contents of the HANDOVER COMMAND see next table.

If the UE supports 14.4 kbps single slot:

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 11.10-1, Release 1999, except that the CHANNEL MODE IE is included with value = data, 14.5 kbit/s radio interface rate (14.4 kbit/s user data (TCH/F14.4))

If the UE supports HSCSD:

HANDOVER COMMAND

Same as the HANDOVER COMMAND in clause 26.13.3.1 of GSM 11.10-1, Release 1999, except that the Description of a multi-slot configuration supporting 14.4 kbps user data.

For execution 2:

InterSystemHandoverCommand-GSM

Information Element	Value/remark
Message Type	
Integrity check info	
- Message authentication code	
- Message sequence number	
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- CHOICE system	GSM
- Message	GSM HANDOVER COMMAND formatted as BIT STRING(1..512). The contents of the HANDOVER COMMAND see next table.

If the UE supports enhanced circuit switched full rate traffic channel for 28.8 kbps user data:

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 11.10-1, Release 1999, except that the CHANNEL MODE IE is included with value = data, 29.0 kbit/s radio interface rate (28.8 kbit/s user data (E-TCH/F28.8))

If the UE supports HSCSD:

HANDOVER COMMAND

Same as the HANDOVER COMMAND in clause 26.13.3.1 of GSM 11.10-1, Release 1999, except that the Description of a multi-slot configuration supporting 28.8 kbps user data.

For execution 3:

InterSystemHandoverCommand-GSM

Information Element	Value/remark
Message Type	
Integrity check info	
- Message authentication code	
- Message sequence number	
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- CHOICE system	GSM
- Message	GSM HANDOVER COMMAND formatted as BIT STRING(1..512). The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Same as the HANDOVER COMMAND in clause 26.13.3.1 of GSM 11.10-1, Release 1999, except that the Description of a multi-slot configuration supporting 57.6 kbps user data.

8.3.7.2.5 Test requirement

After step 12 the ongoing call shall be continued on the GSM cell.

8.3.7.3 Inter system handover from UTRAN/To GSM/Data/Data rate down grading/Success

8.3.7.3.1 Definition

8.3.7.3.2 Conformance requirement

When the UE receives an INTER-SYSTEM HANDOVER COMMAND message from UTRAN the UE shall take the following actions:

- Establish the connection to the other radio access system, by using the contents of the IE "Inter system message". This IE contains candidate/ target cell identifier(s) and radio parameters relevant for the other radio access system.

- For each IE "Remaining radio access bearer", associate the radio access bearer given by the IE "RAB info" to the radio resources in the target system given by the IE "Inter system message". Other information for making the association may be included in the IE "Inter system message" and requirements may be stated in the specifications relevant for the target system [FFS].

- Switch the current connection to the other radio access system.

NOTE 1: Requirements concerning the establishment of the radio connection towards the other radio access system and the signalling procedure are outside the scope of this specification.

NOTE 2: The release of the UMTS radio resources is initiated by the other system.

NOTE 3: Currently only one radio access bearer can be associated with the IE "Inter-system message", and this association is limited to the radio access bearers in the CS domain. It is assumed that all the radio access bearers in the PS domain, if any, remain after the handover.

Reference(s)

TS 25.331 Clause 8.3.7.3.

8.3.7.3.3 Test purpose

To test that the UE handovers to the indicated channel of lower data rate in the GSM target cell when it is in the data call active state in the UTRAN serving cell and receives an INTER-SYSTEM HANDOVER COMMAND.

8.3.7.3.4 Method of test

Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 11.10-1 section 26.6.5.1 or section 26.13.1.3 (for HSCSD) shall be referenced for the default parameters of cell 2.

UE : CC State U10 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports UTRAN Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,

UE supports UTRAN Streaming/unknown/uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,

UE supports GSM 14.4 kbps data (HSCSD or full rate traffic channel for 14.4 kbit/s user data (TCH/F14.4)),

UE supports GSM 28.8 kbps data (HSCSD or enhanced circuit switched full rate traffic channel for 28.8 kbit/s user date (E-TCH/F28.8)),

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 2.

Test Procedure

The SS starts the UTRAN cell and brings the UE into data call active state (CC state U10) with a suitable configuration (e.g. Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs for M = 1). The SS starts GSM cell and configures a traffic channel (e.g. 14.4 kbps data channel for M = 1), then sends INTER-SYSTEM HANDOVER COMMAND indicating the traffic channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. After the UE receives the command it shall configure itself accordingly and switch to the new channel of the GSM cell. The SS checks whether the handover is performed by checking that the UE transmits the HANDOVER COMPLETE message to the SS in GSM cell.

Depending on the PIXIT parameters the above procedure is executed maximum three times, each time with different target channel in the GSM cell.

Expected sequence

This sequence is performed for a maximum execution counter M = 1, 2, 3, depending on the PIXIT parameters.

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS bring the UE into UTRAN U10 state in cell 1, the configuration is: Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for M = 1); Streaming/unknown/uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for M = 2 and 3).
2	SS			The SS configures cell 2 as a GSM cell with a traffic channel: for GSM 14.4 kbps data (M = 1 and 2); or for GSM 28.8 kbps data (M = 3).
3	←		InterSystemHandoverCommand-GSM	Send on cell 1 (UTRAN cell) and the message indicates: the target channel for GSM 14.4 kbps data (M = 1 and 2); or for GSM 28.8 kbps data (M = 3).
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the InterSystemHandoverCommand-GSM
5	→		HANDOVER ACCESS	The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
6	→		HANDOVER ACCESS	
7	→		HANDOVER ACCESS	
8	→		HANDOVER ACCESS	
9	←		PHYSICAL INFORMATION	
10	→		SABM	
11	←		UA	
12	→		HANDOVER COMPLETE	The SS receives the message on the traffic channel of GSM cell.

Specific message contents

For execution 1:

Same as the message contents of clause 8.3.7.2 for M = 1.

For execution 2:

Same as the message contents of clause 8.3.7.2 for M = 1.

For execution 3:

Same as the message contents of clause 8.3.7.2 for M = 2.

8.3.7.3.5 Test requirement

After step 12 the ongoing call shall be continued on the GSM cell.

8.3.7.4 Inter system handover from UTRAN/To GSM/Speech/Establishment/Success

8.3.7.4.1 Definition

8.3.7.4.2 Conformance requirement

When the UE receives an INTER-SYSTEM HANDOVER COMMAND message from UTRAN the UE shall take the following actions:

- Establish the connection to the other radio access system, by using the contents of the IE "Inter system message". This IE contains candidate/ target cell identifier(s) and radio parameters relevant for the other radio access system.

- For each IE "Remaining radio access bearer", associate the radio access bearer given by the IE "RAB info" to the radio resources in the target system given by the IE "Inter system message". Other information for making the association may be included in the IE "Inter system message" and requirements may be stated in the specifications relevant for the target system [FFS].

- Switch the current connection to the other radio access system.

NOTE 1: Requirements concerning the establishment of the radio connection towards the other radio access system and the signalling procedure are outside the scope of this specification.

NOTE 2: The release of the UMTS radio resources is initiated by the other system.

NOTE 3: Currently only one radio access bearer can be associated with the IE "Inter-system message", and this association is limited to the radio access bearers in the CS domain. It is assumed that all the radio access bearers in the PS domain, if any, remain after the handover.

Reference(s)

TS 25.331 Clause 8.3.7.3.

8.3.7.4.3 Test purpose

To test that the UE handovers to the indicated channel in the GSM target cell when it is in the call establishment phase in the UTRAN serving cell and receives an INTER-SYSTEM HANDOVER COMMAND.

8.3.7.4.4 Method of test

Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 11.10-1 section 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE : CC State U1 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports UTRAN AMR,

UE supports GSM FR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U1 on cell 2.

Test Procedure

The SS starts the UTRAN cell and the UE is triggered to initialise an MO speech call. During the call establishment phase, after the SS receives SETUP message the SS starts GSM cell and configures a dedicated channel, then sends the UE an INTER-SYSTEM HANDOVER COMMAND indicating the dedicated channel in the target GSM cell. After the UE receives the command it shall configure itself accordingly and switch to the new channel of the GSM cell. The SS checks whether the handover is performed by checking that the UE transmits the HANDOVER COMPLETE message to the SS in GSM cell.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			To trigger the UE to initialise an MO call
2	→		SETUP	U1
3	SS			The SS starts the GSM cell and configure a dedicated channel SDCCH.
4	←		InterSystemHandoverCommand-GSM	Send on cell 1 (UTRAN cell) and the message indicates: the dedicated channel SDCCH.
5	UE			The UE accepts the handover command and switches to the GSM dedicated channel specified in the InterSystemHandoverCommand-GSM
6	→		HANDOVER ACCESS	The SS receives this burst on the dedicated channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
7	→		HANDOVER ACCESS	
8	→		HANDOVER ACCESS	
9	→		HANDOVER ACCESS	
10	←		PHYSICAL INFORMATION	
11	→		SABM	
12	←		UA	
13	→		HANDOVER COMPLETE	The SS receives the message on the dedicated channel of GSM cell.

Specific message contents

InterSystemHandoverCommand-GSM

Information Element	Value/remark
Message Type	
Integrity check info	
- Message authentication code	
- Message sequence number	
Activation time	now
RAB Info	Not present
Inter-system message	
- System type	GSM
- CHOICE system	GSM
- Message	GSM HANDOVER COMMAND formatted as BIT STRING(1..512). The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 4 in clause 26.6.5.2 of GSM 11.10-1 version 8.2.0 Release 1999

8.3.7.4.5 Test requirement

At step 13 the SS shall receive HANDOVER COMPLETE message on the dedicated channel of the GSM cell.

8.3.7.5 Inter system handover from UTRAN/To GSM/Speech/Failure

8.3.7.5.1 Definition

8.3.7.5.2 Conformance requirement

If the UE does not succeed to establish the connection to the other radio access technology, it shall

- resume the connection to UTRAN using the resources used before receiving the INTER-SYSTEM HANDOVER COMMAND message; and
- transmit the INTER-SYSTEM HANDOVER FAILURE message on uplink DCCH using AM RLC. When the successful delivery of the INTER-SYSTEM FAILURE message has been confirmed by RLC, the procedure ends.

Reference(s)

TS 25.331 Clause 8.3.7.5.

8.3.7.5.3 Test purpose

To test that the UE reactivates the old channel and transmits INTER-SYSTEM HANDOVER FAILURE message to the network on the old channel in UTRAN cell when it receives an INTER-SYSTEM HANDOVER COMMAND and the connection to GSM for handover can not be established.

8.3.7.5.4 Method of test

Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 11.10-1 section 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE : CC State U10 in cell 1

Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. The SS starts GSM cell without activating any dedicated channel in the cell, then sends INTER-SYSTEM HANDOVER COMMAND indicating a dedicated channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. The UE receives the command and configures itself accordingly but can not complete the handover. The SS checks that the handover is failed by checking that the UE transmits the INTER-SYSTEM HANDOVER FAILURE message to the SS in UTRAN cell.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS bring the UE into UTRAN U10 state in cell 1
2	SS			The SS configures cell 2 as a GSM cell but without any traffic channel.
3	←		InterSystemHandoverCommand-GSM	Send on cell 1 (UTRAN cell) and the message indicates: the target channel for GSM FR which does not exist in the GSM cell.
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the InterSystemHandoverCommand-GSM
5	→		HANDOVER ACCESS	The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
6	→		HANDOVER ACCESS	
7	→		HANDOVER ACCESS	
8	→		HANDOVER ACCESS	
n	→		HANDOVER ACCESS	The last handover access burst before T3124 times out.
n+1	→		InterSystemHandoverFailure	The SS receives the message on the old channel of UTRAN cell.

Specific message contents

Same as the message contents of clause 8.3.7.1 for M = 3.

8.3.7.5.5 Test requirement

After step n+1 the SS shall receive INTER-SYSTEM HANDOVER FAILURE message on the old channel of the UTRAN cell.

8.3.8 Inter system cell reselection to UTRAN

[Editor's note: This test is FFS until R2000 core specification will be defined.]

8.3.9 Inter system cell reselection from UTRAN

[Editor's note: This test is FFS until R2000 core specification will be defined.]

8.4 Measurement procedure

For all test cases in the following sub-clauses, SS configures the downlink transmission power for various cells according to table 6.1.3 of [9] unless otherwise stated explicitly in the following sub-clauses. The distribution of the total downlink power from a cell (I_{or}) into its respective downlink physical channels (e.g. DPCH, CPICH, P-CCPCH) should follow the settings defined in table 6.1.4 of [9]. The use of a noise source in SS (such as AWGN) is not necessary for all test cases in the following sub-clauses. Similarly, the application of OCNS facility to simulate the interference effects of other uses or control signals on the other orthogonal channels of the downlink is not needed.

8.4.1 Measurement Control and Report

8.4.1.1 Measurement Control and Report: Intra-frequency measurement for transition from idle mode to CELL_DCH state

8.4.1.1.1 Definition

8.4.1.1.2 Conformance requirement

After a state transition from idle mode to CELL_DCH state, the UE shall continue to monitor the list of neighbouring cells which is specified in System Information Block type 11 or 12 messages on BCCH. When entering CELL_DCH state, the UE shall send a MEASUREMENT REPORT message when reporting criteria are satisfied. During CELL_DCH state, if the UE receives a MEASUREMENT CONTROL message, it shall terminate existing monitoring activities for the neighbouring cells previously known from System Information Block type 11 or 12 messages. It shall perform the measurement and reporting tasks based on the latest MEASUREMENT CONTROL message received.

Reference

3GPP TS 25.331 clause 8.4.1.8.1

8.4.1.1.3 Test Purpose

To confirm that the UE continue to monitor intra-frequency measurement quantity of the neighbour cells listed in System Information Block type 11 or 12 messages, after it has entered the CELL_DCH state from idle mode. When the reporting criteria specified in System Information Block type 11 or 12 messages have been met, it shall report the measurements using MEASUREMENT REPORT messages. To confirm that the UE terminates monitoring activities for the neighbour cells found in System Information Block type 11 or 12 messages, after it has received a MEASUREMENT CONTROL message that specifies the measurement type to be “intra-frequency measurement”. To confirm that the UE reconfigures the monitoring and reporting activities based on the last MEASUREMENT CONTROL message received.

8.4.1.1.4 Method of test

Initial Condition

System Simulator: 2 cells – The initial configurations of the 2 cells in the SS should follow the values indicated in the column marked “T0” in table 8.4.1.1-1. The table is found in “Test Procedure” sub-clause.

UE: ”Registered idle mode on CS” (state 2) or ”Registered idle mode on PS” (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE If the UE supports both CS and PS domains, the initial UE state shall be “Registered idle mode on CS/PS” (state 7).

Test Procedure

Table 8.4.1.1-1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Column marked “T0” denotes the initial conditions, while columns marked “T1 are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this sub-clause.

Table 8.4.1.1-1

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-65.7	-74.4	-68.7	-81.3

The UE is initially at idle mode and has selected cell 1 for camping. The System Information Block type 11 messages are modified with respect to the default settings to prevent reporting of "Cell synchronisation information" and also to include cell 2 into the monitored neighbour cell list. The key measurement parameters are as follow: measurement type = "intra-frequency measurement", measurement quantity = "CPICH RSCP", report criteria = "periodic reporting criteria", reporting interval = "12 seconds".

SS prompts the operator to make an outgoing call of a supported traffic class. The UE shall transmit a RRC CONNECTION REQUEST message on the CCCH, SS replies with RRC CONNECTION SETUP message and allocates uplink and downlink dedicated physical resources to the UE. UE shall then transmit RRC CONNECTION SETUP COMPLETE message and move to CELL_DCH state. After approximately 12 seconds, the UE shall transmit a MEASUREMENT REPORT message with measurement readings from cell 2. SS waits for 25 seconds after the sending of RRC CONNECTION SETUP message to verify that 2 consecutive MEASUREMENT REPORT messages are received.

SS sends a MEASUREMENT CONTROL message on the downlink DCCH. In this message, SS assigns an intra-frequency measurement type with the measurement quantity based on cell 2's CPICH RSCP value. Parameters used in this message are: measurement identity = "2", report criteria = "event-trigger", event identity = "1f", reporting threshold = "-75 dBm". After receiving this message, the UE shall delete the existing measurement and reporting contexts captured from System Information Block type 11 messages. SS checks to see that no MEASUREMENT REPORT messages are sent within the next 12 seconds (which is due to periodic reporting). SS reconfigures the downlink transmission power settings according to values in column "T1" in Table 8.4.1.1-1. The UE shall transmit MEASUREMENT REPORT messages when it detects that the CPICH RSCP of cell 2 has reached the threshold value specified in MEASUREMENT CONTROL message.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		System Information Block type 11	The UE is idle mode and camped onto cell 1. The System Information Block type 11 messages to be transmitted are different from the default settings (see specific message contents)
2				SS prompts the operator to make an outgoing call.
3	→		RRC CONNECTION REQUEST	
4	←		RRC CONNECTION SETUP	SS allocates dedicated physical channels to UE
5	→		RRC CONNECTION COMPLETE	UE transmits this message to acknowledge the RRC CONNECTION SETUP message and moves to CELL_DCH state.
6	→		MEASUREMENT REPORT	SS waits for 25 seconds. It shall receive 2 consecutive MEASUREMENT REPORT messages

7	←	MEASUREMENT CONTROL	A new measurement identity is assigned, with the reporting quantity changed to cell 2's CPICH RSCP. See specific message content for the rest of the message.
8			SS waits for approximately 15 seconds and verifies that no further MEASUREMENT REPORT messages are detected on the uplink DCCH.
9			SS re-adjusts the downlink transmission power settings according to columns "T1" in Table 8.4.1.1-1.
10	→	MEASUREMENT REPORT	SS verifies that UE transmits 2 MEASUREMENT REPORT messages at 500 msec interval to report the P-CPICH RSCP value of cell 2.

Specific Message Contents

All messages indicated below shall use the same content as described in default message content, with the following exceptions:

System Information Block type 11 (Step 1)

Information Element	Value/Remark
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	
- Intra-frequency cell id	Set to id of cell 2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection	
- $Qoffset_{s,n}$	0dB
- Maximum allowed UL TX power	0dBm
- HCS neighbouring cell information	Not Present
- Qqualmin	-115dB
- Qrxlevmin	-20dBm
- Cell for measurement	
- Intra-frequency cell id	Set to the id of cell 2
- Intra-frequency measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency measurement for RACH reporting	
- SFN-SFN observed time difference	No report
- Reporting quantity	No report
- Maximum number of reported cells on RACH	No report
- Reporting information for state CELL_DCH	
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	12 seconds
- Inter-frequency measurement system information	Not present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

RRC CONNECTION REQUEST (Step 3)

Information Element	Value/Remarks
Establishment cause	Check to see if set to originating call of a supported traffic class
Measured results on RACH	Check to see if this IE is absent

RRC CONNECTION SETUP (Step 4)

Use the message found in clause 9 of TS 34.108.

MEASUREMENT REPORT (Step 6)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 1
Measured Results	
- CHOICE measurement	Check to see if set to “Intra-frequency measured results list”
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it’s the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Event Results	Check to see if this IE is absent

MEASUREMENT CONTROL (Step 7)

Information Element	Value/Remark

Measurement Identity	2
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	
- Intra-frequency cell id	Set to id of cell 2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell for measurement	
- Intra-frequency cell id	Set to id of cell 2
- Intra-frequency measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	Same as in default message content
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- Reporting cell status	
- CHOICE reported cell	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Measurement validity	Not present
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameters required for each events	
- Intra-frequency event identity	1f
- Triggering condition 1	Monitored set cells
- Triggering condition 2	Not Present
- Reporting range	Not Present
- Cells forbidden to affect reporting range	Not Present
- W	Not Present
- Hysteresis	1 dB
- Threshold used frequency	-75 dBm
- Reporting deactivation threshold	Not Present
- Replacement activation threshold	Not Present
- Time to trigger	0 msec
- Amount of reporting	2
- Reporting interval	500 msec
- Reporting cell status	Not Present
DPCH compressed mode status info	Not Present

MEASUREMENT REPORT (Step 10)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 2
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Event Results	
- CHOICE event result	Check to see if this IE is set to "Intra-frequency measurement event results"
- Intra-frequency event identity	Check to see if this IE is set to "1f"
- Cell measured event results	
- CHOICE mode	Check to see if this IE is set to "FDD"
- Primary CPICH info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2

8.4.1.1.5 Test Requirement

After step 5 the UE shall start to transmit MEASUREMENT REPORT message. The measurement quantity "CPICH RSCP" of cell 2 shall be reported to the SS at 12 seconds interval.

After step 7 the UE shall not transmit any MEASUREMENT REPORT messages within 15 seconds after SS has transmitted the MEASUREMENT CONTROL message.

After step 9 the UE shall transmit 2 MEASUREMENT REPORT messages on the uplink DCCH, to report that the CPICH RSCP value for cell 2 has dropped below the threshold stated in the MEASUREMENT CONTROL message transmitted by the SS in step 7.

8.4.1.2 Measurement Control and Report: Inter-frequency measurement for transition from idle mode to CELL_DCH state

8.4.1.2.1 Definition

8.4.1.2.2 Conformance requirement

After entering CELL_DCH state from idle mode, the UE shall discontinue the monitoring of the list of neighbouring cells assigned in System Information Block 11 or 12 messages. In CELL_DCH state, when the UE receives a MESUREMENT CONTROL message requesting for inter-frequency measurement to be setup, it shall start inter-frequency measurement and the associated reporting activities if "DPCH compressed mode status info" IE in the message simultaneously activates at least one compressed mode pattern sequence. When the UE receives a MEASUREMENT CONTROL message with "Reporting cell status" IE omitted, it shall not include "Cell measured results" IE for any cells in MEASUREMENT REPORT messages sent on uplink DCCH.

Reference

3GPP TS 25.331 clause 8.4.1.3, 8.4.1.8.2, 8.6.7.9

8.4.1.2.3 Test Purpose

To confirm that the UE stops monitoring the list of neighbouring cell assigned in the IE "inter-frequency cell info" in System Information Block type 11 messages, after it enters CELL_DCH state from idle mode. To confirm that the UE starts to perform inter-frequency measurement and related reporting activities, when it receives a MEASUREMENT CONTROL message with the "DPCH compress mode status info" IE indicating that a stored compressed mode pattern sequence be simultaneously activated. To confirm that the UE excludes the IE "cell measured results" for any cells in the MEASUREMENT REPORT messages, after it receives a MEASUREMENT CONTROL message with "Reporting cell status" IE omitted.

8.4.1.2.4 Method of test

Initial Condition

System Simulator: 2 cells – The initial configurations of the 2 cells in the SS should follow the values indicated in table 8.4.1.2-1. The table is found in "Test Procedure" sub-clause.

UE: "Registered idle mode on CS" (state 2) or "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

Test Procedure

Table 8.4.1.2-1 illustrates the downlink power to be applied for the 2 cells.

Table 8.4.1.2-1

Parameter	Unit	Cell 1	Cell 4
UTRA RF Channel Number		Ch. 1	Ch. 2
CPICH RSCP	dBm	-74.3	-77.7

The UE is initially at idle mode and has selected cell 1 for camping. The System Information Block type 11 messages are modified with respect to the default settings to prevent reporting of "Cell synchronisation information", and also to include cell 4 into the monitored neighbour cells list.

SS prompts the operator to make an outgoing call for one of the traffic classes supported by the UE. The UE shall transmit a RRC CONNECTION REQUEST message on the CCCH, SS replies with RRC CONNECTION SETUP message and allocates uplink and downlink dedicated physical resources to the UE. The RRC CONNECTION SETUP message contains IE "DPCH compressed mode info", signifying the establishment of a transmission pattern gap sequence with TGPSI=1. UE shall send RRC CONNECTION SETUP COMPLETE on the uplink DCCH and then moves to CELL_DCH state. The UE shall not transmit any MEASUREMENT REPORT messages, which pertain to measurement readings from cells belonging to the monitored set.

SS sends PHYSICAL CHANNEL RECONFIGURATION message on the downlink DCCH, specifying that compressed mode sequence pattern with TGPSI=1 be deactivated. The UE shall reply with PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH. It shall stop compressed mode operations at the activation time stated in PHYSICAL CHANNEL RECONFIGURATION message. After the designated activation time has elapsed, SS sends MEASUREMENT CONTROL message on the downlink DCCH. In this message, SS requests UE to perform inter-frequency measurement with periodic reporting of CPICH RSCP values for cell 4. The "DPCH compressed status info" IE in this message activates the transmission gap pattern sequence with TGPSI = 1. The UE shall start inter-frequency measurement for cell 4's CPICH RSCP values. It shall report this measurement result by transmitting MEASUREMENT REPORT messages on uplink DCCH periodically at 16 seconds interval.

In the next sequence, SS sends another MEASUREMENT CONTROL message on the downlink DCCH. In this message, the IE "Reporting cell status" is not included. The UE shall send MEASUREMENT REPORT messages on the uplink DCCH, with the IE "Cell measured results" excluded from these messages.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		System Information Block type 11	The UE is idle mode and camped onto cell 1.System Information Block Type 11 to be transmitted is different from the default settings (see specific message contents)
2				SS prompts the operator to make an outgoing call.
3	→		RRC CONNECTION REQUEST	
4	←		RRC CONNECTION SETUP	SS allocates dedicated physical channels to UE, as well as specifying the activation of compressed mode behaviour with pattern sequence TGPSI = 1.
5	→		RRC CONNECTION SETUP COMPLETE	UE transmits this message to acknowledge the RRC CONNECTION SETUP message and moves to CELL_DCH state.
6				SS checks to see that no MEASUREMENT REPORT messages are sent from UE to cell 1.
7	←		PHYSICAL CHANNEL RECONFIGURATION	Existing compressed mode sequence pattern is de-activated in this message.
8	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall remain in CELL_DCH state.
9	←		MEASUREMENT CONTROL	SS requests UE to start inter-frequency measurement for cell 4 and performing periodic reporting for cell 4 CPICH RSCP. “DPCH compressed mode status info” IE is set to simultaneously activate compressed mode pattern.
10	→		MEASUREMENT REPORT	UE shall report cell 4’s CPICH RSCP reading periodically.
11	←		MEASUREMENT CONTROL	SS changes the reporting criteria of cell 4 to ‘event 2c’. “Reporting cell status” IE in this message is omitted.
12	→		MEASUREMENT REPORT	SS monitors the uplink DCCH to make sure that only 1 such message is received 32 seconds after step 11. This message shall not contain IE “Inter-frequency cell measured results”

Specific Message Content

All messages indicated below shall use the same content as described in default message content, with the following exceptions:

System Information Block type 11 (Step 1)

Information Element	Value/Remark
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	
- Inter-frequency measurement identity	1
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	Set to id of cell 4
- Frequency info	
- UARFCN uplink (Nu)	Set to the uplink UARFCN of cell 4
- UARFCN downlink (Nd)	Set to the downlink UARFCN of cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and re-selection info	
- $Qoffset_{s,n}$	0 dB
- Maximum allowed UL TX power	0 dBm
- HCS neighbouring cell information	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-115dBm
- Cell for measurement	
- Inter-frequency cell id	Set to the id of cell 4
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

RRC CONNECTION REQUEST (Step 3)

Information Element	Value/Remarks
Establishment cause	Check to see if set to originating call of a supported traffic class
Measured results on RACH	Check to see if this IE is absent

RRC CONNECTION SETUP (Step 4)

Use the message found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remarks
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing Indication	Maintain
- CFN-targetSFN frame offset	Not Present
- Downlink DPCH power control information	
- DPC mode	Single TPC
- CHOICE Mode	FDD
- DL rate matching restriction information	Not Present
- Spreading factor	Refer to the parameter set in TS 34.108
- Fixed or flexible position	Flexible
- TFCI existence	FALSE
- Number of bits for Pilot bits (SF=128, 256)	Refer to the parameter set in TS 34.108
- DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	Active
- TGCFN	(Current CFN + (256 – TTI/10msec))mod 256
- Transmission gap pattern sequence configuration parameters	
- TGMP	FDD Measurement
- TGPRC	62
- TGSN	8
- TGL1	10
- TGL2	5
- TGD	15
- TGPL1	35
- TGPL2	35
- RPP	Mode 1
- ITP	DL
- CHOICE UL/DL Mode	SF/2
- Downlink compressed mode method	Not Present
- Downlink frame type	A
- DeltaSIR1	2.0
- DeltaSIRAfter1	1.0
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present
- TX Diversity Mode	None
- SSDT information	Not Present
- Default DPCH Offset Value	0

PHYSICAL CHANNEL RECONFIGURATION (Step 7)

Use the same message sub-type in Annex A titled “Speech in CS”, with the following exceptions:

Information Element	Value/remark
CHOICE *channel requirement*	Uplink DPCH info
- Uplink DPCH power control info	
- DPCCH power offset	-6dB
- PC Preamble	1 frame
- SRB delay	7 frames
- Power Control Algorithm	Algorithm1
- TPC step size	1dB
- Scrambling code type	Long
- Scrambling code number	0
- Number of DPDCH	Not Present (Use default value of 1)
- Spreading factor	SF is reference to TS34.108 clause 6.10 Parameter Set
- TFCI existence	TRUE
- Number of FBI bit	Not Present (Use default value of 0)
- Puncturing Limit	Reference to TS34.108 clause 6.10 Parameter Set
CHOICE Mode	FDD
- Downlink PDSCH information	Not Present
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Downlink DPCH power control information	
- DPC mode	0 (single)
- CHOICE mode	FDD
- DL rate matching restriction information	Not Present
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Fixed or Flexible Position	Flexible
- TFCI existence	TRUE
- Number of bits for Pilot bits (SF=128,256)	Not Present
- DPCH compressed mode info	
- Transmission gap pattern sequence	
- TGPSI	1
- TPGS status Flag	Inactive
- TGCFN	Not Present
- Transmission gap pattern sequence configuration parameters	Not Present
- TX Diversity mode	None
- SSDT information	Not Present
- Default DPCH Offset Value	0
Downlink information per radio link list	Not Present

MEASUREMENT CONTROL (Step 9)

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	Set to id of cell 4
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 4
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Inter-frequency measurement quantity	
- CHOICE reporting criteria	Inter-frequency reporting criteria
- Filter Coefficient	0
- Measurement quantity for frequency quality estimate	CPICH RSCP
- Inter-frequency reporting quantity	
- UTRA Carrier RSSI	FALSE
- Frequency quality estimate	TRUE
- Non frequency related cell reporting quantities	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	
- CHOICE reported cell	Report cell within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Measurement validity	Not present
- Inter-frequency set update	Not present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	16 seconds
DPCH compressed mode status info	
TGPS reconfiguration CFN	(Current CFN + (256 – TTI/10msec))mod 256
Transmission gap pattern sequence	
- TGPSI	1
- TGPS Status Flag	Active
- TGCFN	(Current CFN + (256 – TTI/10msec))mod 256

MEASUREMENT REPORT (Step 10)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 1
Measured Results	
- CHOICE measurement	Check to see if set to “Inter-frequency measured results list”
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- UTRA carrier RSSI	Check to see if it is absent
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if it is absent
- Cell synchronisation information	Check to see if it is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 4
- CPICH Ec/No	Check to see if it is absent
- CPICH RSCP	Check to see if it is present
- Pathloss	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Event Results	Check to see if it is absent

MEASUREMENT CONTROL (Step 11)

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	Set to id of cell 4
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 4
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Inter-frequency measurement quantity	
- CHOICE reporting criteria	Inter-frequency reporting criteria
- Filter Coefficient	0
- Measurement quantity for frequency quality estimate	CPICH RSCP
- Inter-frequency reporting quantity	
- UTRA Carrier RSSI	FALSE
- Frequency quality estimate	TRUE
- Non frequency related cell reporting quantities	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	Not Present
- Measurement validity	Not present
- Inter-frequency set update	Not present
- CHOICE report criteria	Inter-frequency measurement reporting criteria
- Parameters required for each event	
- Inter-frequency event identity	2c
- Threshold used frequency	Not Present
- W used frequency	Not Present
- Hysteresis	0.5 dB
- Time to trigger	0 milliseconds
- Reporting cell status	Not Present
- Parameters required for each non-used frequency	
- Threshold non used frequency	-85 dBm
- W non used frequency	0
DPCH compressed mode status info	Not Present

MEASUREMENT REPORT (Step 12)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 1
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-frequency measured results list"
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- UTRA carrier RSSI	Check to see if it is absent
- Inter-frequency cell measurement results	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Event Results	
- CHOICE event result	Check to see if this IE is set to "Intra-frequency measurement event results"
- Inter-frequency event identity	Check to see if this IE is set to "2c"
- Inter-frequency cells	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- Non frequency related measurement event results	
- CHOICE Mode	Check to see if set to "FDD"
- Primary CPICH info	
- Primary Scrambling Code	Check to see if set to the same code as cell 4

8.4.1.2.5 Test Requirement

After step 5 the UE shall not transmit any MEASUREMENT REPORT messages pertaining to the measurement of CPICH RSCP quantity of cell 4.

After step 9 the UE shall transmit MEASUREMENT REPORT messages on uplink DCCH, reporting cell 4's CPICH RSCP value at periodic time interval of 16 seconds.

After step 11 the UE shall transmit only 1 MEASUREMENT REPORT message on the uplink DCCH. In this message, IE "inter-frequency cell measured results" shall be absent.

8.4.1.3 Measurement Control and Report: Intra-frequency measurement for transition from idle mode to CELL_FACH state

8.4.1.3.1 Definition

8.4.1.3.2 Conformance requirement

The UE shall begin monitoring neighbouring cells listed in the "intra-frequency cell info" received in System Information Block type 11 or 12 messages. During a transition from idle mode to CELL_FACH state, the UE shall continue to monitor neighbouring cells listed in the IE "Intra-frequency cell info" received in System Information Block type 11 or 12 messages. If an "intra-frequency measurement reporting criteria" is also specified in these messages, the UE shall store this information. The UE shall apply these reporting rules when deciding to transmit MEASUREMENT REPORT messages following a subsequent transition to CELL_DCH state. If reporting during RACH transmissions is dictated by the UTRAN, the UE shall append the measurement information when sending messages on RACH.

Reference

3GPP TS 25.331, clause 8.4.1.9

8.4.1.3.3 Test Purpose

To confirm that the UE begins to monitor the neighbouring cells listed in IE “intra-frequency cell info” of System Information Block type 11 or 12 messages in idle mode, and continue to do so after it has entered the CELL_FACH state. If information regarding the intra-frequency measurement reporting criteria is also broadcasted, the UE shall store this information and apply the reporting criteria after a subsequent transition to CELL_DCH state. If RACH measurement reporting is dictated in System Information Block type 11 or 12 messages, the UE shall include these measurements when transmitting on the RACH channel.

8.4.1.3.4 Method of test

Initial Condition

System Simulator: 2 cells – both cell 1 and cell 2 are active. See Table 8.4.1.3-1 for the power settings.

UE: ”Registered idle mode on CS” (state 2) or ”Registered idle mode on PS” (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be “Registered idle mode on CS/PS” (state 7).

Test Procedure

Table 8.4.1.3-1 illustrates the downlink power to be applied for the 2 cells in this test case.

Table 8.4.1.3-1

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel Number		Ch. 1	Ch. 2
CPICH RSCP	dBm	-74.3	-77.7

The UE is initially at idle mode and has selected cell 1 for camping. The System Information Block type 11 messages are modified with respect to the default settings to prevent reporting of ”Cell synchronisation information” and also to include cell 2 into the monitored neighbour cell list. The key measurement parameters are as follow: measurement type = “intra-frequency measurement”, measurement quantity = “CPICH RSCP”, report criteria = “periodic reporting criteria”, reporting interval = “12 seconds”. In the System Information type 11 messages, reporting of CPICH RSCP is also required for intra-frequency reporting when transmitting RACH messages to cell 1.

SS prompts the operator to make an outgoing call for one of the traffic classes supported by the UE. The UE shall transmit a RRC CONNECTION REQUEST message on the uplink CCCH, SS replies with RRC CONNECTION SETUP message and allocates PRACH and S-CCPCH physical channels for uplink and downlink usage. UE shall then enter CELL_FACH state. SS starts timer T305 and waits until timer T305 expires, the UE shall send a CELL UPDATE message on the CCCH which includes the measurement reading of cell 2’s CPICH RSCP values. SS then replies with CELL UPDATE CONFIRM message on the downlink DCCH, without changing the physical channel resources.

In the next sequence, SS transmits PHYSICAL CHANNEL RECONFIGURATION message, and allocates dedicated physical channels to the UE. The UE shall transit to CELL_DCH state and then send a MEASUREMENT REPORT message, correctly stating the measurement identity. The measurement identity indicated shall match the value that was previously broadcasted on System Information Block type 11 messages when the UE was still in idle mode. The IE “Measured results” in the MEASUREMENT REPORT messages shall contain measured values of cell 2’s CPICH RSCP.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		System Information Block type 2, System Information Block type 11	The UE is idle mode and camped onto cell 1. System Information Block type 2 and 11 to be transmitted are different from the default settings (see specific message contents)
2				SS prompts the test operator to make an outgoing call.
3	→		RRC CONNECTION REQUEST	The CPICH RSCP value of Cell 1 should be reported.
4	←		RRC CONNECTION SETUP	SS allocates common physical channels to UE.
5	→		RRC CONNECTION COMPLETE	UE shall enter CELL_FACH state, and transmit this message to acknowledge the RRC CONNECTION SETUP message.
6				SS monitors the uplink DCCH to confirm that no MEASURENENT REPORT messages are detected. SS waits for 5 minutes (for the expiry of T305 timer).
7	→		CELL UPDATE	This message shall contain measurement readings of CPICH RSCP for cell 1.
8	←		CELL UPDATE CONFIRM	SS does not change the physical channel configurations.
9	←		PHYSICAL CHANNEL RECONFIGURATION	SS assigns dedicated physical resources to the UE, but keeps the parameters for transport channels and RBs unchanged.
10	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall transit to CELL_DCH state after sending this message.
11	→		MEASUREMENT REPORT	UE shall begin to report cell 2's CPICH RSCP value periodically at 12 seconds interval. The measurement identity shall match measurement contexts transmitted on BCCH in step 1

Specific Message Content

System Information Block type 2 (Step 1)

Information Element	Value/Remarks
UE Timers and constants in connected mode - T305	 5 minutes.

System Information Block type 11 (Step 1)

Information Element	Value/Remark
SIB12 indicator	FALSE
FACH measurement occasion info	
- FACH Measurement occasion cycle length coefficient	2
- Inter-frequency FDD measurement indicator	FALSE
- Inter-frequency TDD measurement indicator	FALSE
- Inter-RAT measurement indicators	Not Present
Measurement control system information	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	5
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	
- Intra-frequency cell id	Set to id of cell 2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	
- $Qoffset_{s,n}$	0 dB
- Maximum allowed UL TX power	0 dBm
- HCS neighbouring cell information	Not Present
- Qqualmin, Qrxlevmin	-20dB, -115dBm
- Cell for measurement	
- Intra-frequency cell id	Set to id of cell 2
- Intra-frequency Measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency measurement for RACH reporting	
- SFN-SFN observed time difference	No report
- Reporting quantity	CPICH RSCP
- Maximum number of reported cells on RACH	Current cell
- Reporting information for state CELL_DCH	
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected set cells	Not present
- Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged mode RLC
- Periodic Reporting/Event Trigger Reporting Mode	Periodic Reporting
- CHOICE report criteria	Periodical reporting criteria

- Amount of reporting	Infinity
- Reporting interval	12 seconds
- Reporting Cell Status	
- CHOICE reported cell	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Inter-frequency measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

RRC CONNECTION REQUEST (Step 3)

Information Element	Value/Remarks
Initial UE Identity	Check to see if it is the same as the IMSI in USIM card, TMSI or P-TMSI previously allocated.
Establishment cause	Check to see if set to originating call of the compatible traffic classes supported by the UE
Measured results on RACH	
- Measured result for current cell	
- CHOICE measurement quantity	Check to see if value is present
- CPICH Ec/No	Check to see if this IE is set to “CPICH RSCP”
- Measured results for monitored cells	Check to see if it is absent

RRC CONNECTION SETUP (Step 4)

Use the same message sub-type found in Annex A, which is titled “Transition to CELL_FACH”.

CELL UPDATE (Step 7)

Information Element	Value/Remarks
U-RNTI	Check to see if set to same U-RNTI value assigned in RRC CONNECTION SETUP message.
Cell update cause	Check to see if set to ‘Periodic cell updating’
Protocol error indicator	Check to see if set to ‘FALSE’
Measured results on RACH	
- Measurement result for current cell	
- CHOICE measurement quantity	CPICH RSCP
- CPICH RSCP	Checked to see if set to within an acceptable range.
- Measurement results for monitored cells	Checked to see if this IE is absent.
Protocol error information	Check to see if set to ‘FALSE’

PHYSICAL CHANNEL RECONFIGURATION (Step 9)

Use the same message sub-type found in Annex A, which is entitled “Packet to CELL_DCH from CELL_FACH”.

MEASUREMENT REPORT (Step 11)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 5
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Event Results	Check to see if this IE is absent

8.4.1.3.5 Test Requirement

After step 3 the UE shall send RRC CONNECTION REQUEST message, which includes measured value of cell 1's CPICH RSCP value.

After step 5 the UE shall not transmit any MEASUREMENT REPORT messages on the uplink DCCH.

After step 6 the UE shall initiate cell update procedure by transmitting CELL UPDATE message on CCCH. In this message, the cause shall be set to "periodic cell updating". It shall include measured value for cell 1's CPICH RSCP measurement quantity.

After step 10 the UE shall transmit MEASUREMENT REPORT messages at 12 seconds interval. In these messages, neighbouring cell 2's CPICH RSCP value shall be reported. The IE "measurement identity" in this message shall match the IE "Intra-frequency measurement identity" found in System Information Block type 11 messages transmitted in step 1.

8.4.1.4 Measurement Control and Report: Inter-frequency measurement for transition from idle mode to CELL_FACH state

8.4.1.4.1 Definition

8.4.1.4.2 Conformance requirement

After entering CELL_FACH state from idle mode, the UE shall start to monitor the list of "inter-frequency" neighbouring cells assigned in the System Information Block type 11 or 12 messages.

Reference

3GPP TS 25.331, clause 8.4.1.9.2

8.4.1.4.3 Test Purpose

To confirm that the UE begins to monitor the list of neighbouring cell assigned in the IE "inter-frequency cell info" in System Information Block type 11 or 12 messages, after it enters CELL_FACH state from idle mode. However, it shall not transmit any MEASUREMENT REPORT messages to report measured results for inter-frequency cells.

8.4.1.4.3 Method of test

Initial Condition

System Simulator: 2 cells – The initial configurations of the 2 cells in the SS should follow the values indicated in the columns marked "T0" in table 8.4.1.4-1. The table is found in "Test Procedure" sub-clause.

UE: "Registered idle mode on CS" (state 2) or "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

Test Procedure

Table 8.4.1.4-1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Columns marked "T0" denote the initial conditions, while columns marked "T1 are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this sub-clause.

Table 8.4.1.4-1

Parameter	Unit	Cell 1		Cell 4	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH RSCP	dBm	-70.3	-79.5	-79.5	-70.3

The UE is initially at idle mode and has selected cell 1 for camping. The System Information Block type 12 messages are modified with respect to the default settings to prevent reporting of "Cell synchronisation information" and also to include cell 4 into the monitored neighbour cell list for inter-frequency measurement type.

SS prompts the operator to make an outgoing call of a supported traffic class. The UE shall transmit a RRC CONNECTION REQUEST message on the CCCH, SS replies with RRC CONNECTION SETUP message and allocates PRACH channel on the uplink and S-CCPCH channel on the downlink to the UE. UE then moves to CELL_FACH state. The UE shall not transmit any MEASUREMENT REPORT messages, which pertain to measurement readings from inter-frequency cells belonging to the monitored set. SS re-adjusts its downlink power settings according to columns marked "T1" in Table 8.4.1.4-1. This is expected to trigger a cell reselection in the UE. The UE shall send CELL UPDATE message to cell 4 in order to report this event. Upon receiving this message, SS replies with the default CELL UPDATE CONFIRM message on the downlink DCCH.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		System Information Block type 11	The UE is idle mode and camped onto cell 1. System Information Block type 11 to be transmitted is different from the default settings (see specific message contents)
2				SS prompts the test operator to make an outgoing call.
3	→		RRC CONNECTION REQUEST	
4	←		RRC CONNECTION SETUP	SS allocates PRACH and S-CCPCH resources to UE
5	→		RRC CONNECTION SETUP COMPLETE	UE transmits this message to acknowledge the RRC CONNECTION SETUP message and moves to CELL_FACH state.

6			SS checks to see that no MEASUREMENT REPORT messages are sent from UE to cell 1.
7			SS reconfigures the downlink transmission power, according to columns “T1” of Table 8.4.1.4-1.
8	→	CELL UPDATE	UE shall detect that cell 4 has become stronger than cell 1. It sends this message after re-selecting to cell 4
9	←	CELL UPDATE CONFIRM	Use default message.

Specific Message Content

All messages indicated below shall use the same content as described in default message content, with the following exceptions:

System Information Block type 11 (Step 1)

Information Element	Value/Remark
SIB12 Indicator	FALSE
FACH measurement occasion info	
- FACH Measurement occasion cycle length coefficient	2
- Inter-frequency FDD measurement indicator	TRUE
- Inter-frequency TDD measurement indicator	FALSE
- Inter-RAT measurement indicators	Not Present
Measurement control system information	
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	
- Inter-frequency measurement identity	1
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	Set to id of cell 4
- Frequency info	
- UARFCN uplink (Nu)	Set to uplink UARFCN of cell 4
- UARFCN downlink (Nd)	Set to the downlink UARFCN of cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and re-selection info	
- $Qoffset_{s,n}$	0 dB
- Maximum allowed UL TX power	0 dBm
- HCS neighbouring cell information	Not Present
- Qqualmin, Qrxlevmin	-20dB, -115dBm
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

RRC CONNECTION REQUEST (Step 3)

Information Element	Value/Remarks
Establishment cause	Check to see if set to originating call of the compatible traffic class supported by the UE
Measured results on RACH	Check to see if this IE is absent

RRC CONNECTION SETUP (Step 4)

Use the message sub-type in default message content defined in Annex A, which is marked as "Transition to CELL_FACH".

CELL UPDATE (Step 8)

Information Element	Value/Remarks
U-RNTI	Check to see if same to value as in RRC CONNECTION SETUP message
Cell update cause	Check to see if it is set to "Cell Reselection"
Protocol error info	Check to see if it is absent or set to FALSE
Measured results on RACH	Check to see if it is absent
Protocol error information	Check to see if it is absent

CELL UPDATE CONFIRM (Step 9)

Use the message sub-type in default message content defined in Annex A.

8.4.1.4.5 Test Requirement

After step 5 the UE shall not transmit any MEASUREMENT REPORT messages pertaining to any measurement quantities for cell 4.

After step 7 the UE shall reselect to cell 4 and transmit a CELL UPDATE message on the uplink CCCH of cell 4.

8.4.1.5 Measurement Control and Report: Intra-frequency measurement for transition from CELL_DCH to CELL_FACH state

8.4.1.5.1 Definition

8.4.1.5.2 Conformance requirement

After entering CELL_FACH state from CELL_DCH state, the UE shall stop intra-frequency type measurement reporting assigned in a previous MEASUREMENT CONTROL message. After transition to CELL_FACH state, the UE shall start to monitor neighbouring cells listed in the "intra-frequency cell info" received in System Information Block type 11 or 12. The UE shall store the reporting criteria specified in System Information Block type 11 or 12 messages received whilst in CELL_FACH state, and apply these reporting criteria after a subsequent return to CELL_DCH state. If requested to perform measurement reporting on RACH channels, the UE shall append the measured results when transmitting uplink RACH messages.

Reference

3GPP TS 25.331, clause 8.4.1.6.1

8.4.1.5.3 Test Purpose

To confirm that the UE stops performing intra-frequency measurement reporting specified in a previously received MEASUREMENT CONTROL message, when it moves from CELL_DCH state to CELL_FACH state. To confirm that the UE reads the System Information Block type 11 or 12 messages when in CELL_FACH state and starts to monitor the intra-frequency neighbouring cells indicated in these messages. To confirm that the UE performs measurements on uplink RACH transmissions and appends the measured results in RACH messages, when requested by the UTRAN to do so in the System Information Block type 11 or 12 messages.

8.4.1.5.4 Method of test

Initial Condition

System Simulator: 3 cells – The initial configurations of the 3 cells in the SS should follow the values indicated in the column marked "T0" in table 8.4.1.14-1. The table is found in "Test Procedure" sub-clause.

UE: "Registered idle mode on CS" (state 2) or "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

Test Procedure

Table 8.4.1.5-1 illustrates the downlink power to be applied for the 3 cells at various time instants of the test execution. Column marked "T0" denotes the initial conditions, while columns marked "T1 are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this sub-clause.

Table 8.4.1.5-1

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T0	T1	T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1		Ch. 1	
						Cell 3 is switched off	
CPICH RSCP	dBm	-74.7	-74.7	-79.5	-79.5		-76.7

The UE is initially in idle mode and has selected cell 1 as the current cell. The System Information Block type 11 message is modified from its default message contents, in order to prevent the UE's reporting of "Cell synchronisation information". No measurement requirements are specified for the UE in any of the System Information Block type 11 or 12 messages.

SS then prompts the test operator to initiate an outgoing call of a supported traffic class. When UE transmits a RRC CONNECTION REQUEST message on RACH, SS replies with RRC CONNECTION SETUP message. Uplink and downlink dedicated physical channels are allocated. Upon receiving RRC CONNECTION SETUP message, the UE shall transmit RRC CONNECTION SETUP COMPLETE message on DCCH and then moves to CELL_DCH state. SS then sends a MEASUREMENT CONTROL message to UE. In this message, the SS requests the establishment of an intra-frequency measurement task for the measurement of cell 2's CPICH RSCP. At the same time, reporting of cell 2's CPICH RSCP is commanded with the reporting criteria set to "periodic reporting" and "reporting interval" set to 16 seconds. The UE shall start transmitting MEASUREMENT REPORT messages at 16 seconds interval corresponding to the requested reporting event.

SS transmits PHYSICAL CHANNEL RECONFIGURATION message, triggering a switch of transport channels from DCH (UL)/DCH (DL) to RACH (UL)/FACH (DL). After receiving this message, the UE shall reconfigure itself and reply with a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on RACH. SS acknowledges this message and the UE shall move to CELL_FACH state and read the System Information Block messages. SS then monitors the uplink channels to verify that no MEASUREMENT REPORT messages are received.

SS reconfigures itself according to the settings in columns marked "T1" in table 8.4.1.5-1. It then transmits System Information Block type 12 messages in cell 1, which indicates to include cell 3 into the neighbour cells monitoring list. IEs "Intra-frequency reporting quantity for RACH Reporting" and IE "Maximum number of Reported cells on RACH" are also specified in these messages. An event-triggered (event type 1a) reporting criterion is specified for intra-frequency measurements. SS then pages for the UE using PAGING TYPE 1 message. The UE shall respond with a CELL UPDATE message, which comprises measurement readings of CPICH RSCP for cell 1 and cell 3. Upon the receipt of CELL UPDATE message, SS replies with CELL UPDATE CONFIRM message on the downlink DCCH. This message does not change the physical resources nor allocate any new RNTI identities. SS transmits PHYSICAL CHANNEL RECONFIGURATION message again, allocating dedicated physical resources for both uplink and downlink directions to the UE. The UE shall then send PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and return to CELL_DCH state. SS listens to the uplink DCCH for MEASUREMENT REPORT messages. SS verifies that all messages received pertain to the periodic measured value of cell 2's CPICH RSCP value. UE shall not send any reports containing the measured values of cell 3.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		System Information Block type 11	UE is initially in idle mode in cell 1, and test operator is asked to make an outgoing call.
2	→		RRC CONNECTION REQUEST	
3	←		RRC CONNECTION SETUP	Uplink and downlink dedicated resources are allocated.
4	→		RRC CONNECTION SETUP COMPLETE	UE shall move to CELL_DCH state.
5	←		MEASUREMENT CONTROL	SS requests for measurement and reporting of cell 2's CPICH RSCP value.
6	→		MEASUREMENT REPORT	UE shall send periodic report at 16 seconds interval. SS waits for 2 consecutive reports.
7	←		PHYSICAL CHANNEL RECONFIGURATION	SS switches the physical resources to common physical channels.
8	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall reconfigure its uplink and downlink channels before transiting to CELL_FACH state.
9	←		System Information Block type 12	SS reconfigures itself according to the settings stated in column "T1" of table 8.4.1.5-1. SIB type 12 indicates UE should include cell 3 into the monitored neighbour cell list. SS waits for 1 minute and verifies that no MEASUREMENT REPORT messages are detected on the uplink.
10	←		PAGING TYPE 1	SS pages for UE using the assigned U-RNTI identity.
11	→		CELL UPDATE	UE shall transmit this message with measured results on RACH channels for cell 1 and cell 3 present in this message.
12	←		CELL UPDATE CONFIRM	No changes in physical resource allocation and RNTI identities.
13	←		PHYSICAL CHANNEL RECONFIGURATION	Allocates dedicated physical channels.
14	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall transit to CELL_DCH state.
15	←		MEASUREMENT REPORT	UE shall continue to report cell 2's CPICH RSCP value on a periodic basis.

Specific Message Content

System Information Block type 11 (Step 1)

Information Element	Value/Remark
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

RRC CONNECTION SETUP (Step 3)

Use the same message sub-type found in Annex A, which is entitled “Transition to CELL_DCH”.

MEASUREMENT CONTROL (Step 5)

Information Element	Value/Remark
Measurement Identity	5
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	
- Intra-frequency cell id	Set to id of cell 2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell for measurement	
- Intra-frequency cell id	Set to id of cell 2
- Intra-frequency measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- Reporting cell status	
- CHOICE reported cell	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Measurement validity	Not present
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	16 seconds
DPCH compressed mode status info	Not Present

MEASUREMENT REPORT (Step 6)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 5
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Event results	Check to see if this IE is absent

PHYSICAL CHANNEL RECONFIGURATION (Step 7)

Use the same message sub-type found in Annex A, which is entitled "(Packet to CELL_FACH from CELL_DCH in PS)"

System Information Block type 12 (Step 9)

Information Element	Value/Remark
FACH measurement occasion info	Not Present
Measurement control system information	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	6
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	
- Intra-frequency cell id	Set to id of cell 3
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 3
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	
- $Qoffset_{s,n}$	0dB
- Maximum allowed UL TX power	0dBm
- HCS neighbouring cell information	Not Present
- Qqualmin, Qrxlevmin	-20dB, -115dBm
- Cell for measurement	
- Intra-frequency cell id	Set to id of cell 3
- Intra-frequency measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency measurement for RACH reporting	
- SFN-SFN observed time difference	No report
- Reporting quantity	CPICH RSCP
- Maximum number of reported cells on RACH	Current cell + best neighbour
- Reporting information for state CELL_DCH	
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameter required for each event	
- Intra-frequency event identity	1a
- Triggering condition 1	Not Present
- Triggering condition 2	Monitored set cells
- Reporting range	9.0 dB
- Cells forbidden to affect reporting	Not present
- CHOICE Mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to scrambling code for cell 3
- W	0.0

- Hysteresis	1.0 dB
- Threshold used frequency	Not Present
- Reporting deactivation threshold	7
- Replacement activation threshold	Not Present
- Time to trigger	0
- Amount of reporting	Infinity
- Reporting Interval	8 seconds
- Reporting cell status	Not Present
- Inter-frequency measurement system information	Not present
- Inter-RAT measurement system information	Not present
- Traffic volume measurement system information	Not present
- UE internal measurement system information	Not present

PAGING TYPE 1 (Step 10)

Information Element	Value/Remarks
Page Record List	
- Page Record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Set to same U-RNTI value as assigned in the RRC CONNECTION SETUP message
BCCH modification info	Not Present

CELL UPDATE (Step 11)

Information Element	Value/Remarks
U-RNTI	Check to see if same to value as in PAGING TYPE 1 message
Cell update cause	Check to see if it is set to “Paging Response”
Protocol error info	Check to see if it is absent or set to FALSE
Measured results on RACH	
- Measurement result for current cell	
- CHOICE measurement quantity	Check to see if set to “CPICH RSCP”
- CPICH RSCP	Check to see if it is present
- Measurement results for monitored cells	
- SFN-SFN observed time difference	Not Checked
- Primary CPICH info	
- Primary scrambling code	Check to see if the same as cell 3’s code.
- CHOICE measurement quantity	Check to see if set to “CPICH RSCP”
- CPICH RSCP	Check to see if it is present
Protocol error information	Check to see if it is absent

PHYSICAL CHANNEL RECONFIGURATION (Step 13)

Use the same message sub-type found in Annex A, which is entitled “(Packet to CELL_DCH from CELL_FACH in PS)”

MEASUREMENT REPORT (Step 15)

Measurement identity	Check to see if set to 6
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Event results	Check to see if this IE is absent

8.4.1.5.5 Test Requirement

After step 5, the UE shall start to transmit MEASUREMENT REPORT messages at 16 seconds interval. The message shall contain the measured result of cell 2's CPICH RSCP value.

After step 8, the UE shall not send any MEASUREMENT REPORT messages containing reporting quantities requested in MEASUREMENT CONTROL messages in step 5.

After step 10, the UE shall respond to the paging and transmit a CELL UPDATE message. In this message, the measured values CPICH RSCP for cell 1 and cell 3 shall be included.

After step 14, the UE shall apply the stored inter-frequency measurement reporting criteria specified in System Information Block type 12 messages of step 9. It shall send MEASUREMENT REPORT messages containing estimates for cell 2's CPICH RSCP value. The UE shall not transmit any MEASUREMENT REPORT messages, which report measurement quantities of cell 3.

8.4.1.6 Measurement Control and Report: Inter-frequency measurement for transition from CELL_DCH to CELL_FACH state

8.4.1.6.1 Definition

8.4.1.6.2 Conformance requirement

When transiting from CELL_DCH state to CELL_FACH state, the UE shall stop all measurement reporting activities related to inter-frequency measurements assigned in a MEASUREMENT CONTROL message. After reaching CELL_FACH state, the UE shall begin to monitor neighbouring cells listed in the IE "inter-frequency cell info" specified in the System Information Block type 11 or 12 messages.

Reference

3GPP TS 25.331, clause 8.4.1.6.2

8.4.1.6.3 Test Purpose

To verify that UE ceases to transmit MEASUREMENT REPORT messages to report inter-frequency type measurements when moving from CELL_DCH state to CELL_FACH. This requirement shall be observed even if the UE has detected that inter-frequency type measurement reporting criteria have been satisfied in CELL_FACH state. To verify that the UE monitors the neighbouring cells listed in "inter-frequency cell info" received in System Information Block type 11 or 12 messages after reaching CELL_FACH state.

8.4.1.6.4 Method of test

Initial Condition

System Simulator: 2 cells – The initial configurations of the 2 cells in the SS should follow the values indicated in the columns marked "T0" in table 8.4.1.6-1. The table is found in "Test Procedure" sub-clause.

UE: "Registered idle mode on CS" (state 2) or "Registered idle mode on CS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

Test Procedure

Table 8.4.1.6-1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Columns marked "T0" denote the initial conditions, while columns marked "T1 are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this sub-clause.

Table 8.4.1.6-1

Parameter	Unit	Cell 1		Cell 4	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH RSCP	dBm	-70.5	-81.5	-81.5	-70.5

The UE is initially in idle mode, after camping on cell 1. SS prompts the test operator to initial an outgoing call for one of the supported traffic classes. The System Information Block type 11 message is modified so that no measurement tasks are required of the UE. The UE shall send a RRC CONNECTION REQUEST message on the uplink CCCH. Upon receiving this message, SS allocates dedicated physical channels to the UE by transmitting RRC CONNECTION SETUP message. The UE shall reply by transmitting a RRC CONNECTION SETUP COMPLETE message. SS then checks the IE "Measurement Capability" of this message and verifies that the UE is capable of performing inter-frequency measurements under FDD mode. After confirmation of the UE inter-frequency measurement capability, SS transmits PHYSICAL CHANNEL RECONFIGURATION message. In this message, IE "DPCH compressed mode info" is present, which indicates that the UE shall apply the given parameters for compressed mode operations. The UE shall return a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to acknowledge that compressed mode mechanism can be exercised.

SS then sends a MEASUREMENT CONTROL message to the UE, specifying that cell 4 be the measurement object for inter-frequency type measurement. The periodic reporting criterion is associated with this measurement. SS waits for 8 seconds to allow the periodic timer to expire. The UE shall send a MEASUREMENT REPORT message containing measured result of cell 4's measurement reporting quantity. SS transmits PHYSICAL CHANNEL RECONFIGURATION message again, requesting the UE to switch from uplink and downlink dedicated physical channels to common physical channels. The UE shall return a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and then move to CELL_FACH state.

SS modifies the contents of Master Information Block (MIB) and System Information Block (SIB) type 11. In SIB 11, cell 4 is added to the neighbouring cell list in the "inter-frequency cell info" IE. SS waits for 8 seconds to detect any possible uplink MEASUREMENT REPORT messages as a result of inter-frequency measurements. SS then reconfigures the downlink transmission power settings of cell 1 and cell 4 according to the values stated in columns "T1" of Table 8.4.1.6-1. SS waits for [x] seconds to allow the UE to perform cell re-selection. The UE shall transmit a CELL UPDATE message on the uplink CCCH of cell 4, specifying the cause as "cell re-selection". SS replies with CELL UPDATE CONFIRM message on the downlink DCCH to complete the cell update procedure.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		System Information Block type 11	UE is initially in idle mode and camped onto cell 1. System Information Block type 11 is modified with respect to the default settings, in order to disable all measurement and reporting activities.
2				SS prompts the test operator to trigger an outgoing call for a supported traffic class
3	→		RRC CONNECTION REQUEST	
4	←		RRC CONNECTION SETUP	Uplink and downlink DPCH resources are allocated.
5	→		RRC CONNECTION SETUP COMPLETE	UE shall indicate that it's capable of performing inter-frequency measurement for FDD mode.
6	←		PHYSICAL CHANNEL RECONFIGURATION	SS instructs UE to begin compressed mode operation.
7	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall remain in CELL_DCH state.
8	←		MEASUREMENT CONTROL	SS indicates that the CPICH RSCP of cell 4 shall be monitored and reported. SS waits for 8 seconds.
9	→		MEASUREMENT REPORT	UE shall transmit this message to report cell 4's CPICH RSCP value.
10	←		PHYSICAL CHANNEL RECONFIGURATION	SS changes the physical channel allocation to common channel configuration.
11	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall moves to CELL_FACH state.
12	←		Master Information Block, System Information Block type 11	SS modifies MIB and SIB 11. Cell 4 is included in the neighbouring cells list for inter-frequency measurement
13				SS waits for 8 seconds to verify that no MEASUREMENT REPORT messages are detected.
14				SS changes the power settings for cell 1 and cell 4 according to columns marked "T1" of Table 8.4.1.6-1, and then waits for [x] seconds to allow the UE to re-select to a new cell.
15	→		CELL UPDATE	UE shall determine that cell 4 has become the best cell and then perform cell re-selection procedure.
16	←		CELL UPDATE CONFIRM	

Notes:

The value [x] seconds is TBD, after the cell re-selection duration is determined from TS 25.304.

Specific Message Content

System Information Block Type 11 (Step 1)

Information Element	Value/Remark
References to other system information blocks	Not Present
FACH measurement occasion info	
- FACH Measurement occasion cycle length coefficient	2
- Inter-frequency FDD measurement indicator	FALSE
- Inter-frequency TDD measurement indicator	FALSE
- Inter-RAT measurement indicators	Not Present
Measurement control system information	
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE Internal measurement system information	Not Present

RRC CONNECTION SETUP (Step 4)

Use the same message sub-type found in Clause 9 of TS 34.108, which is entitled “Transition to CELL_DCH”

RRC CONNECTION SETUP COMPLETE (Step 5)

Information Element	Value/Remarks
START List	
- CN Domain Identity	Check to see if it is present for all supported CN domains
- START	Check to see if it is present for all supported CN domains
UE Radio access capability	
- ICS Version	Checked to see if set to ‘R99’
- PDCP capability	Not checked.
- RLC capability	Not checked.
- Transport channel capability	Not checked.
- RF capability	Not checked.
- Physical channel capability	Not checked.
- UE multi-mode/multi-RAT capability	Not checked.
- Security capability	Not checked.
- LCS capability	Not checked.
- Measurement capability	
- FDD measurements DL	Checked to see if set to ‘TRUE’
- TDD measurements DL	Not checked.
- GSM measurements DL	Not checked.
- GSM 900 DL	Not checked.
- DCS 1800 DL	Not checked.
- GSM 1900 DL	Not checked.
- Multi-carrier measurement DL	Not checked.
- FDD measurements UL	Checked to see if set to ‘TRUE’
- TDD measurements UL	Not checked.
- GSM measurements UL	Not checked.
- GSM 900 UL	Not checked.
- DCS 1800 UL	Not checked.
- GSM 1900 UL	Not checked.
- Multi-carrier measurement UL	Not checked.
UE system specific capability	Not checked.

PHYSICAL CHANNEL RECONFIGURATION (Step 6)

Use the same message sub-type found in Annex A, which is entitled "(Packet to CELL_DCH from CELL_DCH in PS)", with the following exceptions in the IE(s) concerned:

Information Element	Value/Remarks
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Downlink DPCH power control information	
- DPC mode	0 (Single)
- CHOICE Mode	FDD
- DL rate matching restriction information	Not Present
- Spreading factor	Refer to the parameter set in TS 34.108
- Fixed or flexible position	Flexible
- TFCI existence	FALSE
- Number of bits for Pilot bits (SF=128, 256)	Not Present
- DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	Active
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence configuration parameters	
- TGMP	FDD Measurement
- TGPRC	62
- TGSN	8
- TGL1	10
- TGL2	5
- TGD	15
- TGPL1	35
- TGPL2	35
- RPP	Mode 1
- ITP	Mode 1
- CHOICE UL/DL Mode	DL
- Downlink compressed mode method	SF/2
- - Downlink frame type	A
- DeltaSIR1	2.0
- DeltaSIRAfter1	1.0
- DeltaSIR2	Not Present
- DeltaSIRAfter2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present
- TX Diversity Mode	None
- SSDT information	Not Present
- Default DPCH Offset Value	0

MEASUREMENT CONTROL (Step 8)

Information Element	Value/Remark
Measurement Identity	15
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	Set to id of cell 4
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 4
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Inter-frequency measurement quantity	
- CHOICE reporting criteria	Inter-frequency reporting criteria
- Filter Coefficient	0
- Measurement quantity for frequency quality estimate	CPICH RSCP
- Inter-frequency reporting quantity	
- UTRA Carrier RSSI	FALSE
- Frequency quality estimate	TRUE
- Non frequency related cell reporting quantities	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	
- CHOICE reported cell	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Measurement validity	Not present
- Inter-frequency set update	Not Present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	8 seconds
DPCH compressed mode status info	Not Present

MEASUREMENT REPORT (Step 9)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 15
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-frequency measured results list"
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- UTRA carrier RSSI	Check to see if it is absent
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if it is absent
- Cell synchronisation information	Check to see if it is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 4
- CPICH Ec/No	Check to see if it is absent
- CPICH RSCP	Check to see if it is present
- Pathloss	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Event Results	Check to see if it is absent

PHYSICAL CHANNEL RECONFIGURATION (Step 10)

Use the same message sub-type found in Annex A, which is entitled "(Packet to CELL_FACH from CELL_DCH in PS)".

Master Information Block (Step 12)

Information Element	Value/Remarks
MIB value tag	2

System Information Block type 11 (Step 12)

Information Element	Value/Remarks
Measurement control system information	
- Use of HCS	Not used
- Cell_selection_and_reselection_-quality_measure	CPICH_Ec/No
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	
- Inter-frequency cell info list	
- CHOICE Inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency cells	
- Inter-frequency cell id	0
- Frequency info	
- CHOICE mode	FDD
- UARFCN uplink (Nu)	Set to uplink UARFCN for cell 4
- UARFCN downlink (Nd)	Set to downlink UARFCN for cell 4
- Cell info	
- Cell individual offset	Not Present – use default of 0 dB
- Reference time difference to cell	Not Present
- Read SFN indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to the scrambling code of cell 4
- Primary CPICH Tx power	Not Present
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Cell selection and re-selection info	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE Internal measurement system information	Not Present

CELL UPDATE (Step 15)

Information Element	Value/Remarks
U-RNTI	Check to see if same to value as in RRC CONNECTION SETUP message
Cell update cause	Check to see if it is set to “Cell Reselection”
Protocol error info	Check to see if it is absent or set to FALSE
Measured results on RACH	Check to see if it is absent
Protocol error information	Check to see if it is absent

CELL UPDATE CONFIRM (Step 16)

Use the same message sub-type found in Annex A.

8.4.1.6.5 Test Requirement

After step 4 the UE shall transmit RRC CONNECTION SETUP COMPLETE message with the IE ”Measurement capability”, indicating that both uplink and downlink inter-frequency measurements for FDD mode are supported.

After step 8 the UE shall transmit MEASUREMENT REPORT message to report cell 4’s RSCP value.

After step 11 the UE shall stop sending MEASUREMENT REPORT messages, which contain inter-frequency measured results for cell 4’s CPICH RSCP value.

After step 14 the UE shall transmit CELL UPDATE message on the uplink CCCH to inform that a cell reselection to cell 4 has occurred.

8.4.1.7 Measurement Control and Report: Intra-frequency measurement for transition from CELL_FACH to CELL_DCH state

8.4.1.7.1 Definition

8.4.1.7.2 Conformance requirement

When transiting from CELL_FACH state to CELL_DCH state, the UE shall resume intra-frequency measurement if it has previously stored such a measurement context in CELL_DCH state, and if this measurement context is indicated to be resume in CELL_DCH state. The UE shall also re-start the associated reporting activities for the resumed intra-frequency measurement. If the UE has performed a cell reselection whilst out of CELL_DCH state, the UE shall not re-start intra-frequency measurement previously designated to be resumed in CELL_DCH state.

In the case when the UE is not assigned any measurement tasks, it shall continue to monitor the list of intra-frequency neighbouring cells stated in System Information Block type 11 or 12 messages. It shall transmit MEASUREMENT REPORT messages when the reporting criteria (if specified in System Information Block type 11 or 12 messages) are met. When in CELL_DCH state, the UE shall override existing measurement and reporting contexts obtained from System Information Block type 11 or 12 messages, if a MEASUREMENT CONTROL message is received. The UE shall start to use the new measurement and reporting parameters received in the MEASUREMENT CONTROL message.

Reference

3GPP TS 25.331, clause 8.4.1.7.1

8.4.1.7.3 Test Purpose

To confirm that UE resumes intra-frequency measurements and the associated reporting when it enters CELL_DCH state from CELL_FACH state, and that such measurement contexts (and optionally, the reporting context) have been stored for resumption in CELL_DCH state. To confirm that the UE continues to monitor the intra-frequency neighbour cells listed in the System Information Block type 11 or 12 messages, if no previously assigned measurements are present. To confirm that the UE transmits MEASUREMENT REPORT messages if reporting conditions stated in System Information Block type 11 or 12 messages have been satisfied. To confirm that a MEASUREMENT CONTROL message received in CELL_DCH state overrides the measurement and associated reporting contexts maintained in the UE by virtue of System Information Block type 11 or 12 messages.

8.4.1.7.4 Method of test

Initial Condition

System Simulator: 3 cells – The initial configurations of the 3 cells in the SS should follow the values indicated in the column marked “T0” in table 8.4.1.7-1. The table is found in “Test Procedure” sub-clause.

UE: CS-CELL_FACH_Initial (state 6-2) or PS-CELL_FACH_Initial (state 6-4) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

Test Procedure

Table 8.4.1.7-1 illustrates the downlink power to be applied for the 3 cells at various time instants of the test execution. Column marked “T0” denotes the initial conditions, while columns marked “T1” are to be applied subsequently. The exact instants on which these values shall be applied are described in the text in this sub-clause.

Table 8.4.1.7-1

Para-meter	Unit	Cell 1		Cell 2		Cell 3	
		T0	T1	T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1		Ch. 1	
CPICH RSCP	dBm	-72.1	-85.0	-72.7	-72.7	-74.3	-74.3

The UE is brought to CELL_FACH state in cell 1, after it has successfully executed procedure P4 or P6 (depending on the CN domain supported by the UE) as specified in clause 7.4 of TS 34.108. System Information Block type 12 message is changed with respect to the default message contents, specifying that cell 2 is to be included in the neighbouring cell list for intra-frequency measurement. Event 1e is selected in IE "Reporting information for state CELL_DCH", and "Intra-frequency measurement quantity" is set to CPICH RSCP.

SS send a PHYSICAL CHANNEL RECONFIGURATION message to UE, allocating dedicated physical channels on both uplink and downlink directions. Upon receiving such a message, the UE shall return PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and then move to CELL_DCH state. The UE shall send MEASUREMENT REPORT messages to indicate that the measured result of cell 2's CPICH RSCP value, as the measurement quantity has exceeded the threshold value in System Information Block type 12 messages. After receiving the MEASUREMENT REPORT messages, SS transmits a MEASUREMENT CONTROL message in which it specifies that only intra-frequency measurement and periodic reporting for cell 3 's CPICH RSCP shall be performed. After receiving such a message, the UE shall transmit another set of MEASUREMENT REPORT messages. SS verifies that only measurement readings for cell 3 's CPICH RSCP are included in these messages.

Next, SS sends PHYSICAL CHANNEL RECONFIGURATION message to UE. In this message, the physical channel resources are switched to common physical channels – PRACH for the uplink and S-CCPCH for the downlink. The UE shall reply with a PHYSICAL CHANNEL RECONFIGURATION COMPLETE and transits to CELL_FACH. SS waits for 16 seconds and checks the uplink RACH to confirm that no MEASUREMENT REPORT messages are received. SS transmits MEASUREMENT CONTROL message on the downlink DCCH. The key parameters specified in this message are: measurement command = 'setup', measurement type = 'intra-frequency measurement', measurement object = 'cell 2', reporting criteria = 'periodic reporting', measurement validity IE is present and "UE state" = "CELL_DCH". SS waits for 16 seconds, verifies that no MEASUREMENT REPORT messages are detected on the uplink DCCH, before sending another PHYSICAL CHANNEL RECONFIGURATION message, allocating dedicated physical channels to the UE. UE shall then return to CELL_DCH state, start to monitor the neighbour cell specified by the SS in the latest MEASUREMENT CONTROL message while the UE was previously in CELL_FACH state. The UE shall resume periodic reporting of cell 2's CPICH RSCP measured results by sending MEASUREMENT REPORT messages. Following the reception of the MEASUREMENT REPORT message, SS commands the UE to stop performing measurements and generation of reports for cell 2 CPICH RSCP. Thereafter, SS verifies that no MEASUREMENT REPORT messages are detected. After this requirement is satisfied, SS sends MEASUREMENT CONTROL on the downlink DCCH once more. This message is identical to the one sent in step 10 (see specific message content).

In the next sequence, SS dispatches a PHYSICAL CHANNEL RECONFIGURATION message on the downlink DCCH. In this message, common physical channel are assigned to the UE. The UE shall respond with a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and then transit to CELL_FACH state. SS monitor the uplink DCCH once more to verify that no MEASUREMENT REPORT messages are detected. SS modifies the contents of Master Information Block and System Information Block type 12 messages, followed by a reconfiguration of the downlink transmission power of the respect cells according to the settings in columns "T1" in Table 8.4.1.7-1. SS starts timer T305 and then waits for it to expire. The UE shall discover an "out-of-service" condition and initiate a cell re-selection procedure. This is verified in the SS when a CELL UPDATE message is received on the uplink CCCH with the "cell update cause" IE set to "cell reselection". SS transmits a CELL UPDATE CONFIRM message on the DCCH to end the cell update procedure. Next, SS sends a PHYSICAL CHANNEL RECONFIGURATION message on the downlink DCCH, assigning dedicated physical channels in both uplink and downlink directions. The UE shall respond with a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and then return to CELL_DCH state. SS checks that the UE does not generate any MEASUREMENT REPORT messages on the uplink DCCH.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		System Information Block type 12	UE is initially in CELL_FACH in cell 1, after having successfully executed procedure P4 or P6, depending on the supported CN domain. Refer to clause 7.4 of TS 34.108 for details. System Information Block type 12 messages are changed according to the descriptions in "Specific Message Contents" sub-clause.
2	←		PHYSICAL CHANNEL RECONFIGURATION	Allocates dedicated physical channels.
3	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall move to CELL_DCH state.
4	→		MEASUREMENT REPORT	Reports cell 2's CPICH RSCP measurement value.
5	←		MEASUREMENT CONTROL	Specifies cell 3 as the measurement object for intra-frequency measurement.
6	→		MEASUREMENT REPORT	UE shall report the estimated value for cell 3's CPICH RSCP reading only.
7	←		PHYSICAL CHANNEL RECONFIGURATION	Allocates PRACH and S-CCPCH physical channels.
8	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall move to CELL_FACH state.
9				SS waits for 16 seconds and checks that no MEASUREMENT REPORT messages are sent by UE.
10	←		MEASUREMENT CONTROL	SS instructs the UE to perform intra-frequency measurement and reporting for cell 2. These activities should be resumed if the UE subsequently transits to CELL_DCH state again.
11				SS once again waits for 16 seconds and verifies that no MEASUREMENT REPORT messages are sent by UE.
12	←		PHYSICAL CHANNEL RECONFIGURATION	Dedicated physical channels are assigned to the UE in this message.
13	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall return to CELL_DCH state.
14	→		MEASUREMENT REPORT	UE begins to report cell 2's measured results for CPICH RSCP again.
15	←		MEASUREMENT CONTROL	Terminate all the intra-frequency measurement activity related to cell 2.
16				SS waits for 16 seconds and verifies that UE stop transmitting MEASUREMENT REPORT messages.
17	←		MEASUREMENT CONTROL	This message is the same as in step 5
18	←		PHYSICAL CHANNEL RECONFIGURATION	Allocates common physical channels.
19	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall move to CELL_FACH state.

20			SS checks that no MEASUREMENT REPORT messages are received.
21	←	Master Information Block System Information Block type 12	System Information Block type 12 messages are modified to include cell 2 and cell 3 into neighbouring cells list for intra-frequency type measurements. SS reconfigures the downlink transmission power settings for cell 1 to cell 3 according to columns "T1" in Table 8.4.1.7-1, runs timer T305, and then waits until T305 expires.
22	→	CELL UPDATE	UE shall re-selects to cell 2 and then perform a cell update procedure.
23	←	CELL UPDATE CONFIRM	UE shall stay in CELL_FACH state.
24	→	PHYSICAL CHANNEL RECONFIGURATION	Dedicated physical channels are assigned to the UE in this message.
25	←	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall return to CELL_DCH state.
26			SS checks that no MEASUREMENT REPORT messages are received on uplink DCCH.

Specific Message Content

System Information Block type 12 (Step 1)

Information Element	Value/Remark
FACH measurement occasion info	Not Present
Measurement control system information	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	10
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	
- Intra-frequency cell id	Set to id of cell 2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	Not Present – use default values
- Cell for measurement	
- Intra-frequency cell id	Set to id of cell 2
- Intra-frequency measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency measurement for RACH reporting	Not Present
- Maximum number of reported cells on RACH	No report
- Reporting information for state CELL_DCH	
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting	FALSE

indicator	
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameter required for each event	
- Intra-frequency event identity	1e
- Triggering condition 1	Not Present
- Triggering condition 2	Monitored set cells
- Reporting range	Not present
- Cells forbidden to affect reporting	Not present
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary scrambling code	Set to the scrambling code of cell 2
- W	Not present
- Hysteresis	0 dB
- Threshold used frequency	-79 dBm
- Reporting deactivation threshold	Not present
- Replacement activation threshold	Not present
- Time to trigger	0
- Amount of reporting	Infinity
- Reporting Interval	16 seconds
- Reporting cell status	
- CHOICE reported cells	Report cells within monitored set cells on used frequency
- Maximum number of reported cells	1
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

PHYSICAL CHANNEL RECONFIGURATION (Step 2, Step 12 and Step 24)

Use the same message sub-type found in Annex A, which is entitled “Packet to CELL_DCH from CELL_FACH in PS”

MEASUREMENT REPORT (Step 4)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 10
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Event Results	
- CHOICE event result	Check to see if it's set to 'Intra-frequency measurement event results'
- Intra-frequency event identity	Check to see if this IE is set to '1e'
- Cell measurement event results	
- Primary CPICH info	
- Primary scrambling code	Check to see if it's the same code for cell 2

MEASUREMENT CONTROL (Step 5 and Step 17)

Information Element	Value/Remark
Measurement Identity	11
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	
- Intra-frequency cell id	Set to id of cell 3
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 3
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	Not Present
- Cell for measurement	
- Intra-frequency cell id	Set to id of cell 3
- Intra-frequency measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- Reporting cell status	Not present
- Measurement validity	Not present
- CHOICE report criteria	Intra-frequency measurement criteria
- Parameters required for each event	
- Intra-frequency event identity	1e
- Triggering condition 1	Not Present
- Triggering condition 2	Monitored set cells
- Reporting Range	Not Present
- Cells forbidden to affect Reporting range	Not Present
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to the same scrambling code for cell 3
- W	Not Present
- Hysteresis	0 dB
- Reporting deactivation threshold	Not Present
- Replacement activation threshold	Not Present
- Reporting Threshold	-81 dBm
- Time to Trigger	0
- Amount of reporting	Infinity
- Reporting interval	16 seconds
- Reporting cell status	

- CHOICE reported cells	Report cells within monitored set cells on used frequency
- Maximum number of reported cells	1
DPCH compressed mode status info	Not Present

MEASUREMENT REPORT (Step 6)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 11
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 3
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	
Event Results	
- CHOICE event result	Check to see if it's set to 'Intra-frequency measurement event results'
- Intra-frequency event identity	Check to see if this IE is set to '1e'
- Cell measurement event results	
- Primary CPICH info	
- Primary scrambling code	Check to see if it's the same code for cell 3

PHYSICAL CHANNEL RECONFIGURATION (Step 7 and 18)

Use the same message sub-type found in Annex A, which is entitled "Packet to CELL_FACH from CELL_DCH in PS"

MEASUREMENT CONTROL (Step 10)

Information Element	Value/Remark
Measurement Identity	12
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra- frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	
- Intra-frequency cell id	Set to id of cell 2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	Not Present
- Cell for measurement	
- Intra-frequency cell id	Set to id of cell 2
- Intra-frequency measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- Reporting cell status	Not present
- Measurement validity	
- UE state	CELL_DCH
- CHOICE report criteria	Intra-frequency measurement criteria
- Parameters required for each event	
- Intra-frequency event identity	1e
- Triggering condition 1	Not Present
- Triggering condition 2	Monitored set cells
- Reporting Range	Not Present
- Cells forbidden to affect Reporting range	Not Present
- Primary CPICH Info	
- Primary Scrambling Code	Set to the same scrambling code for cell 2
- W	Not Present
- Hysteresis	0 dB
- Reporting deactivation threshold	Not Present
- Replacement activation threshold	Not Present
- Reporting Threshold	-80 dBm
- Time to Trigger	0
- Amount of reporting	Infinity
- Reporting interval	16 seconds
- Reporting cell status	

- CHOICE reported cell	Report cells within monitored set cells on used frequency
- Maximum number of reported cells	1
DPCH compressed mode status info	Not Present

MEASUREMENT REPORT (Step 14)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 12
Measured Results	
- CHOICE measurement	Check to see if set to “Intra-frequency measured results list”
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it’s the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Event Results	
- CHOICE event result	Check to see if it’s set to ‘Intra-frequency measurement event results’
- Intra-frequency event identity	Check to see if this IE is set to ‘1e’
- Cell measurement event results	
- Primary CPICH info	
- Primary scrambling code	Check to see if it’s the same code for cell 2

MEASUREMENT CONTROL (Step 15)

Information Element	Value/Remarks
Measurement Identity	12
Measurement Command	Release
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE Measurement type	Not Present
DPCH compressed mode status info	Not Present

Master Information Block (Step 21)

Information Element	Value/Remarks
MIB Value Tag	2

System Information Block type 12 (Step 21)

Information Element	Value/Remark
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell_selection_and_reselection_-quality_measure	CPICH_Ec/No
- Intra-frequency measurement system information	13
- Intra-frequency measurement identity	Not Present
- Intra-frequency cell info list	*Cell 2 and Cell 3 are added*
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	
- Intra-frequency cell id	Set to id of cell 2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	Not Present – use default values
- Intra-frequency cell id	Set to id of cell 3
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 3
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	Not Present – use default values
- Cell for measurement	
- Intra-frequency cell id	Set to ids of cell 2 and cell 3
- Intra-frequency measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency measurement for RACH reporting	Not Present
- Maximum number of reported cells on RACH	No report
- Reporting information for state CELL_DCH	
- Intra-frequency reporting quantity	CPICH RSCP
- Measurement reporting mode	
- Measurement Reporting Transfer Mode	Acknowledged mode RLC
- Periodic Reporting / Event Triggering Report Mode	Periodic Reporting
- CHOICE report criteria	Perioidical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	250 msec
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

CELL UPDATE (Step 22)

Information Element	Value/Remarks
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	Check to see if set to 'Cell Re-selection'
Protocol error indicator	Check to see if it is absent or set to 'FALSE'
Measured results on RACH	Check to see if it is absent
Protocol error information	Check to see if it is absent

CELL UPDATE CONFIRM (Step 23)

Use the default message content of the same message type in Annex A.

8.4.1.7.5 Test Requirement

After step 3 the UE shall report cell 2's CPICH RSCP value by transmitting MEASUREMENT REPORT messages.

After step 5 the UE shall delete all measurement and reporting contexts obtained from System Information Block type 12 messages. It shall transmit MEASUREMENT REPORT messages which contain measured results of cell 3's CPICH RSCP value only

After step 9 and step 11 the UE shall not transmit MEASUREMENT REPORT messages, which pertain to intra-frequency type measurement reporting.

After step 13 the UE shall resume the measurement and reporting activities as specified in MEASUREMENT CONTROL message received in step 10. The UE shall transmit MEASUREMENT REPORT messages, containing measured results of cell 2's CPICH RSCP value.

After step 15 the UE shall stop measurement activities pertaining to periodic reporting of cell 2's CPICH RSCP, no MEASUREMENT REPORT messages shall be detectable by the SS on the uplink DCCH.

After step 21 the UE shall re-select to cell 2 and initiate a cell update procedure. SS shall receive a CELL UPDATE message on the uplink CCCH of cell 2, with the "cell update cause" IE stated as "cell re-selection".

After step 25 the UE shall not resume measurements and any associated reporting activities for cell 3's CPICH RSCP, no MEASUREMENT REPORT messages shall be detectable by the SS in the uplink DCCH.

8.4.1.8 Measurement Control and Report: Inter-frequency measurement for transition from CELL_FACH to CELL_DCH state

8.4.1.8.1 Definition

8.4.1.8.2 Conformance requirement

When transiting from CELL_FACH state to CELL_DCH state, the UE shall stop monitoring the list of inter-frequency neighbour cells indicated in System Information Block type 11 or 12 messages. If the UE has a previously stored inter-frequency measurement context marked as 'resume' and for which the IE "UE state for reporting" has been assigned to "CELL_DCH", it shall reinstate the stored measurement and associated reporting activities after it has re-entered CELL_DCH state. The UE shall be able to start or terminate inter-frequency measurements by decoding the "DPCH compressed mode status info" IE in MEASUREMENT CONTROL messages.

Reference

3GPP TS 25.331 clause 8.4.1.7.2

8.4.1.8.3 Test Purpose

To confirm that the UE erases all inter-frequency measurement contexts received from System Information Block type 11 or 12 while in CELL_FACH state, when it moves to CELL_DCH. To confirm that the UE resumes inter-frequency measurements and reporting stored previously in the UE, after it re-enters CELL_DCH state. To confirm that the UE resumes inter-frequency measurement and reporting activities after it has received a MEASUREMENT CONTROL message specifying that a stored compressed mode pattern sequence be re-activated.

8.4.1.8.4 Method of test

Initial Condition

System Simulator: 3 cells – The initial configurations of the 3 cells in the SS should follow the values indicated in table 8.4.1.8-1. The table is found in "Test Procedure" sub-clause.

UE: CS-DCCH+DTCH_DCH (State 6-9) or PS-DCCH+DTCH_DCH (State 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

Test Procedure

Table 8.4.1.8-1 illustrates the downlink power to be applied for the 3 cells in this test.

Table 8.4.1.8-1

Para-meter	Unit	Cell 1	Cell 4	Cell 5
UTRA RF Channel Number		Ch. 1	Ch. 2	Ch. 2
CPICH RSCP	dBm	-70.3	-72.7	-74.3

The UE is in CELL_DCH state in cell 1, after successfully executing procedures P11 or P13 as specified in clause 7.4 of TS 34.108. Next, SS transmits MEASUREMENT CONTROL message to request the UE to perform inter-frequency measurements for cell 5. The parameters of the reporting criteria are as follow: event-triggered with event identity ='2c', reporting quantity = "CPICH RSCP", threshold for non-used frequency = '-85 dBm', hysteresis = '1.0dB', time to trigger = '10 seconds', amount of reporting = '1' and reporting interval = '0'. In the same message, IE "Measurement validity" is present and "UE state" is assigned the value 'CELL_DCH'. SS checks that no MEASUREMENT REPORT messages are detected on the uplink DCCH after it has transmitted the MEASUREMENT CONTROL message.

Following this action, SS sends a PHYSICAL CHANNEL RECONFIGURATION message on the downlink DCCH and commands the UE to switch from dedicated physical channels to PRACH and S-CCPCH. The UE shall reconfigure itself to receive and transmit using the new common physical channels assigned. SS then modifies the content of Master Information Block and System Information Block type 12 messages, such that cell 4 is included in the list of neighbouring cells to be monitored for inter-frequency measurements. Once again, SS verifies that the UE does not transmit MEASUREMENT REPORT messages in the uplink direction.

SS sends PHYSICAL CHANNEL RECONFIGURATION message to allocate dedicated physical channels to the UE. In this message, SS commands the UE to start applying compressed mode mechanism for DPCH. The UE shall reply with PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and then move to CELL_DCH state. SS waits for 10 seconds. The UE shall transmit MEASUREMENT REPORT message, containing the selected frequency quality estimate (in this case CPICH RSCP) of cell 5. SS verifies that this message does not contain measured results for cell 4. After sending this message, the UE shall not transmit any more MEASUREMENT REPORT messages.

SS modifies the reporting criteria by transmitting a MEASUREMENT CONTROL message on the downlink DCCH using AM-RLC. In this message, SS commands the UE to perform inter-frequency measurement and reporting for cell 5 using periodic reporting mechanism. Upon receiving this message, the UE shall transmit MEASUREMENT REPORT message at 2 seconds interval. In the next sequence, SS transmits a PHYSICAL CHANNEL RECONFIGURATION message and deactivates the compressed mode pattern sequence with "TGPSI" IE set to 1. The

UE shall respond by sending PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and also stop the periodic reporting activities. Following this, SS sends a MEASUREMENT CONTROL message and re-activates the compressed mode pattern sequence by using the “DPCH compressed mode status” IE. SS confirms that the UE has reconfigured itself to start measurement reporting again. The SS shall be able to receive MEASUREMENT REPORT messages continuously at 2 seconds interval.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The initial state of UE is in CELL_DCH state of cell 1, after executing procedure P11 or P13, depending on the supported CN domain. Refer to clause 7.4 of TS 34.108.
2	←		MEASUREMENT CONTROL	SS specifies inter-frequency measurement and reporting parameters for cell 5, with "measurement validity" IE present and "UE state" set to "CELL_DCH".
3				SS checks that no MEASUREMENT REPORT messages are detected on the uplink DCCH.
4	←		PHYSICAL CHANNEL RECONFIGURATION	SS allocates PRACH and S-CCPCH physical resources.
5	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall moves to CELL_FACH state.
6	←		Master Information Block System Information Block type 12	SS modifies MIB and SIB 12 in order to include cell 4 into the neighbour cell list for inter-frequency measurements.
7				SS confirms that there are no transmissions of MEASUREMENT REPORT message in the uplink direction.
8	←		PHYSICAL CHANNEL RECONFIGURATION	SS allocates dedicated physical channels and specifies compressed mode parameters
9	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE moves to CELL_DCH state.
10	→		MEASUREMENT REPORT	UE shall resume inter-frequency measurement task for cell 5 and transmit this message to report the measured CPICH RSCP value
11	←		MEASUREMENT CONTROL	SS changes the reporting criteria for cell 5 to 'periodic reporting'
12	→		MEASUREMENT REPORT	UE shall begin to transmit this message at 2 seconds interval.
13	←		PHYSICAL CHANNEL RECONFIGURATION	SS deactivates the currently used pattern sequence for compressed mode operation.
14	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE stays in CELL_DCH state. SS verifies that no MEASUREMENT REPORT messages are received.
15	←		MEASUREMENT CONTROL	SS activates the pattern sequence stored by the UE.
16	→		MEASUREMENT REPORT	SS checks that MEASURE-MENT REPORT messages are received at 2 seconds interval.

Specific Message Content

MEASUREMENT CONTROL (Step 2)

Information Element	Value/Remark
Measurement Identity	14
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	
- Frequency info	Set to id of cell 5
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 5
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 5
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 5
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 5
- Inter-frequency measurement quantity	
- CHOICE reporting criteria	Inter-frequency reporting criteria
- Filter Coefficient	0
- Measurement quantity for frequency quality estimate	CPICH RSCP
- Inter-frequency reporting quantity	
- UTRA Carrier RSSI	FALSE
- Frequency quality estimate	TRUE
- Non frequency related cell reporting quantities	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	Not present
- Measurement validity	
- UE State	CELL_DCH
- Inter-frequency set update	Not Present
- CHOICE report criteria	Inter-frequency measurement reporting criteria
- Parameters required for each event	
- Inter-frequency event identity	2c
- Threshold used frequency	Not Present
- W used frequency	Not Present
- Hysteresis	1.0 dB
- Time to trigger	10 seconds
- Reporting cell status	Not Present
- Parameters required for each non-used frequency	
- Threshold non used frequency	-85 dBm
- W non-used frequency	0.0
DPCH compressed mode status info	Not Present

PHYSICAL CHANNEL RECONFIGURATION (Step 4)

Use the same message sub-type found in Annex A titled "(Packet to CELL_FACH from CELL_DCH in PS)".

Master Information Block (Step 6)

Information Element	Value/Remark
Value Tag	2

System Information Block type 12 (Step 6)

Information Element	Value/Remark
FACH measurement occasion info	
- FACH Measurement occasion cycle length coefficient	2
- Inter-frequency FDD measurement indicator	TRUE
- Inter-frequency TDD measurement indicator	FALSE
- Inter-RAT measurement indicators	Not Present
Measurement control system information	
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	
- Inter-frequency cell info list	
- CHOICE inter-frequency cells removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	Set to id of cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	Not Present – use default values
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

PHYSICAL CHANNEL RECONFIGURATION (Step 8)

Use the same message sub-type found in Annex A, which is entitled "(Packet to CELL_DCH from CELL_FACH in PS)", with the following exceptions in the IE(s) concerned:

Information Element	Value/Remarks
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Downlink DPCH power control information	
- DPC mode	0 (Single)
- CHOICE Mode	FDD
- DL rate matching restriction information	Not Present
- Spreading factor	Refer to the parameter set in TS 34.108
- Fixed or flexible position	Flexible
- TFCI existence	FALSE
- Number of bits for Pilot bits (SF=128, 256)	Not Present
- DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	Active
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence configuration parameters	
- TGMP	FDD Measurement
- TGPRC	62
- TGSN	8
- TGL1	10
- TGL2	5
- TGD	15
- TGPL1	35
- TGPL2	35
- RPP	Mode 1
- ITP	Mode 1
- CHOICE UL/DL Mode	DL
- Downlink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	2.0
- DeltaSIRAfter1	1.0
- DeltaSIR2	Not Present
- DeltaSIRAfter2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present
- TX Diversity Mode	None
- SSDT information	Not Present
- Default DPCH Offset Value	0

MEASUREMENT REPORT (Step 10)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 14
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-frequency measured results list"
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 5
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 5
- UTRA carrier RSSI	Check to see if it is absent
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if it is absent
- Cell synchronisation information	Check to see if it is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 5
- CPICH Ec/No	Check to see if it is absent
- CPICH RSCP	Check to see if it is present
- Pathloss	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Event Results	
- CHOICE event result	Inter-frequency event results
- Inter-frequency event identity	Check to see if it's set to '2c'
- Inter-frequency cells	
- Frequency Info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 5
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 5
- Non frequency related measurement event results	
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 5

MEASUREMENT CONTROL (Step 11)

Information Element	Value/Remark
Measurement Identity	14
Measurement Command	Modify
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	Set to id of cell 5
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 5
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 5
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 5
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 5
- Inter-frequency measurement quantity	
- CHOICE reporting criteria	Inter-frequency reporting criteria
- Filter Coefficient	0
- Measurement quantity for frequency quality estimate	CPICH RSCP
- Inter-frequency reporting quantity	
- UTRA Carrier RSSI	FALSE
- Frequency quality estimate	TRUE
- Non frequency related cell reporting quantities	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	
- CHOICE reported cell	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Measurement validity	Not Present
- Inter-frequency set update	Not Present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	2000 milliseconds
DPCH compressed mode status info	Not Present

MEASUREMENT REPORT (Step 12, 16)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 14
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-frequency measured results list"
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 5
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 5
- UTRA carrier RSSI	Check to see if it is absent
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Check to see if is absent
- SFN-SFN observed time difference	Check to see if it is absent
- Cell synchronisation information	Check to see if it is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 5
- CPICH Ec/No	Check to see if it is absent
- CPICH RSCP	Check to see if it is present
- Pathloss	Check to see if it is absent
- CFN-SFN observed time difference	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Event Results	Check to see if it is absent

PHYSICAL CHANNEL RECONFIGURATION (Step 13)

Use the same message transmitted in step 8 with the following modifications:

Information Element	Value/Remarks
Downlink information common for all radio links	
- DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	Inactive
- TGCFN	Not Present
- Transmission gap pattern sequence configuration parameters	Not Present

MEASUREMENT CONTROL (Step 15)

Information Element	Value/Remark
Measurement Identity	Any number except 14
Measurement Command	Modify
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Not Present
DPCH compressed mode status info	
- TGPS reconfiguration CFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence	
- TGPSI	1
- TGPS Flag	Active
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod 256

8.4.1.8.5 Test Requirement

After step 2 the UE shall not send any MEASUREMENT REPORT messages on the uplink DCCH of cell 1.

After step 9 the UE shall transmit a MEASUREMENT REPORT message, containing the measured results for cell 5's CPICH RSCP value. The UE shall not transmit any messages pertaining to cell 4's measurements.

After step 11 the UE shall send MEASUREMENT REPORT messages, which comprises cell 5's CPICH RSCP measured value at 2 seconds interval. The "Event results" IE shall be omitted in these messages.

After step 14 the UE shall not transmit any MEASUREMENT REPORT messages.

After step 15 the UE shall resume the transmission of MEASUREMENT REPORT messages with identical contents as in those received after step 9.

8.4.1.9 Measurement Control and Report: Unsupported measurement in the UE

8.4.1.9.1 Definition

8.4.1.9.2 Conformance requirement

If the UTRAN indicates the UE to perform a measurement that is not supported in the UE, the UE shall keep the measurement configuration that was valid before the MEASUREMENT CONTROL message was received. Then the UE shall transmit a MEASUREMENT CONTROL FAILURE message on the DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.4.1.4

8.4.1.9.3 Test purpose

To confirm that the UE transmits a MEASUREMENT CONTROL FAILURE message, with the value "unsupported measurement" specified in IE "failure cause" when the SS commanded the UE to perform an unsupported measurement by sending a MEASUREMENT CONTROL message. To confirm that the UE retains its existing valid measurement configuration, after receiving a MEASUREMENT CONTROL message containing an unsupported measurement.

8.4.1.9.4 Method of test

Initial Condition

System Simulator: 1cell

UE: CS-DCCH_DCH (State 6-5) or PS-DCCH_DCH (State 6-7) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

[Editor's note: It is assumed in this test that the UE under test does not possess any inter-RAT measurement capability. The mandatory type(s) of measurement capability that should be implemented by the UE is to be discussed]

Test Procedure

The UE is in the CELL_DCH state. SS sends MEASUREMENT CONTROL message to command the UE to perform internal measurement and reporting for UE transmitted power. The UE shall transmit MEASUREMENT REPORT messages on DCCH at 1 sec interval. The SS transmits a MEASUREMENT CONTROL message which includes parameters that requests for inter-RAT measurements. As the UE under test does not support inter-RAT measurement, it shall transmit a MEASUREMENT CONTROL FAILURE message on the uplink DCCH using AM RLC. SS verifies that the UE does not stop to transmit MEASURMENT REPORT messages on uplink DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_DCH state.
2	←		MEASUREMENT CONTROL	UE internal measurement and reporting is requested.
3	→		MEASUREMENT REPORT	Contains estimated reading for UE transmitted power.
4	←		MEASUREMENT CONTROL	Inter-RAT measurements are requested in this message
5	→		MEASUREMENT CONTROL FAILURE	Which is set to “unsupported measurement” in IE “failure cause”.
6	→		MEASUREMENT REPORT	SS verifies that UE continue to send this message on uplink DCCH.

Specific Message Content

MEASUREMENT CONTROL (Step 2)

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	UE internal measurement
- UE internal measurement quantity	
- CHOICE mode	FDD
- Measurement quantity	UE Transmitted Power
- Filter Coefficient	0
- UE internal reporting quantity	
- UE Transmitted Power	TRUE
- CHOICE mode	FDD
- UE Rx-Tx time difference	FALSE
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	1000 msec
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 3 and Step 6)

Information Element	Value/Remark
Measurement Identity number	Check to see if it's set to '1'
Measured Results	
- CHOICE measurement	Check to see if it's set to "UE internal measured results"
- CHOICE mode	Check to see if it's set to "FDD"
- UE Transmitted Power	Check to see if the reported power is compatible with RF class
- UE Rx-Tx report entries	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Additional Measured results	Check to see if it is absent
Event results	Check to see if it is absent

MEASUREMENT CONTROL (Step 4)

Information Element	Value/Remark
RRC transaction identifier	Select an arbitrary an integer between 0 and 3
Measurement Identity	2
Measurement Command	Setup
Measurement Reporting Mode	Unacknowledged mode
Additional measurements list	Not Present
CHOICE measurement type	Inter-RAT measurement
- Inter-RAT cell info list	
- CHOICE inter-RAT cell removal	Remove no inter-RAT cells
- New inter-RAT cells	
- Inter-RAT cell id	1
- CHOICE *Radio Access Technology*	GSM
- Cell selection and re-selection info	Not Present
- BSIC	Set to the BSIC code of cell 2
- BSIC ARFCN	Set to the ARFCN assigned to cell 2
- Output power	Not Present
- Cell for measurement	
- Inter-RAT cell id	Set to id of cell 2
- Inter-RAT measurement quantity	
- CHOICE system	GSM
- Measurement quantity	GSM Carrier RSSI
- Filter Coefficient	0
- BSIC verification required	Not required
- Inter-RAT reporting quantity	
- UTRAN estimate quantity	FALSE
- CHOICE system	GSM
- Pathloss	FALSE
- Observed time difference to GSM cell	FALSE
- GSM Carrier RSSI	TRUE
- Reporting cell status	Not Present
- CHOICE report criteria	No reporting
DPCH compressed mode status info	Not Present

MEASUREMENT CONTROL FAILURE (Step 5)

Information Element	Value/Remarks
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 4.
Failure cause	Check if it is set to "Unsupported measurement"

8.4.1.9.5 Test requirement

After step 4 the UE shall identify the unsupported measurement element in the MEASUREMENT CONTROL message and transmit a MEASUREMENT CONTROL FAILURE message. In this message, the value "unsupported measurement" shall be specified in IE "failure cause".

After step 5 the UE shall continue to transmit MEASUREMENT REPORT messages on the uplink DCCH, to report an estimation of its transmission power.

8.4.1.10 Measurement Control and Report: Failure (Invalid Message Reception)

8.4.1.10.1 Definition

8.4.1.10.2 Conformance requirement

When the UE received a MEASUREMENT CONTROL message containing a missing conditional IE for which the specified conditions for its presence is met, it shall reply with a MEASUREMENT CONTROL FAILURE message stating the appropriate protocol error information. It shall maintain the ongoing monitoring and measurement reporting mechanism as in before the MEASUREMENT CONTROL message has been received.

Reference

3GPP TS 25.331 clause 8.4.1.5, 9.5

8.4.1.10.3 Test Purpose

To confirm that the UE does not change its current monitoring and measurement settings after it has received an illegal MEASUREMENT CONTROL message, which contains a conditional IE error. To confirm that the UE continue to perform its ongoing measurement reporting operations after transmitting MEASUREMENT CONTROL FAILURE message to the SS.

8.4.1.10.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH_DCH (State 6-5) or PS-DCCH_DCH (State 6-7) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

Test Procedure

The UE is initially brought to CELL_DCH. SS transmits a MEASUREMENT CONTROL message to the UE, commanding it to start transmitting report messages for the reporting quantity “UE Transmitted Power”. SS waits for the MEASUREMENT REROrT message with the allocated measurement identity to arrive. After the MEASUREMENT REPORT message is received, SS transmits the MEASUREMENT CONTROL message again. In this message, SS requests to start a measurement task with measurement identity” = 3. However, IE “Choice measurement type” is omitted in this MEASUREMENT CONTROL message. When the UE receives this message, it shall reply with MEASURMENT CONTROL FAILURE message as it has detected a protocol error. It shall not cease to report its own transmission power level using MEASUREMENT REPORT messages.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is CELL_DCH state in cell 1.
2	←		MEASUREMENT CONTROL	SS transmits this message on downlink DCCH to instruct UE to start reporting the quantity "UE transmitted power".
3	→		MEASUREMENT REPORT	UE shall send this message periodically at 32 seconds interval
4	←		MEASURMENT CONTROL	SS sends a MEASUREMENT CONTROL message with "Measurement identity" = 3 and "Choice measurement type" is absent
5	→		MEASUREMENT CONTROL FAILURE	UE shall maintain its current measurement and reporting contexts after sending this message.
6	→		MEASUREMENT REPORT	UE shall continue to transmit this message to the SS at 32 seconds interval.

Specific Message Content

MEASUREMENT CONTROL (Step 2)

Information Element	Value/Remark
Measurement Identity	3
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	UE internal measurement
- UE internal measurement quantity	
- Measurement quantity	UE Transmitted Power
- Filter coefficient	0
- UE internal reporting quantity	
- UE Transmitted Power	TRUE
- UE Rx-Tx time difference	FALSE
CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	32 seconds
DPCH compressed mode status info	Not Present

MEASUREMENT REPORT (Step 3 and Step 6)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 3
Measured Results	
CHOICE measurement	Check to see if set to "UE internal measurement results"
- CHOICE mode	Check to see if it's set to "FDD"
- UE Transmitted Power	Check to see if the reported power is compatible with RF class
- UE Rx-Tx report entries	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional Measured results	Check to see if this IE is absent
Event Results	Check to see if this IE is absent

MEASUREMENT CONTROL (Step 4)

Information Element	Value/Remark
RRC transaction identifier	Selects an arbitrary integer between 0 and 3
Measurement Identity	3
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Not Present
DPCH compressed mode status info	Not Present

MEASUREMENT CONTROL FAILURE (Step 5)

Information Element	Value/Remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 4.
Failure cause	Check to see if set to "protocol error"
Protocol error information	Check to see if set to "Conditional information element error"

8.4.1.10.5 Test Requirement

After step 4 the UE shall transmit MEASUREMENT CONTROL FAILURE message, stating the IE "failure cause" as "protocol error" and IE "protocol error information" as "conditional information element error".

After step 5 the UE shall continue to send MEASUREMENT REPORT, with the measurement identity number set to 3 and measurement result for UE Tx power, at approximately 32 seconds interval.

8.4.1.11 Measurement Control and Report: Compressed Mode Configuration Failure during radio bearer reconfiguration procedure

8.4.1.11.1 Definition

8.4.1.11.2 Conformance requirement

During a radio bearer reconfiguration procedure, the UTRAN might request the activation of a new transmission gap pattern sequence configuration. If the UE detects a runtime error due to overlapping compressed mode configuration (when transmission gap pattern sequences create transmission gaps in the same frame), it shall delete the transmission gap pattern sequence configuration associated with highest value of TGPSI. The UE shall also terminate any inter-frequency measurements corresponding to the deleted transmission gap pattern sequence. Finally, the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM-RLC, with the cause value in IE "failure cause" set to "compressed mode runtime error".

Reference

3GPP TS 25.331 clause 8.2.2, clause 8.2.11, clause 8.6.6.15

8.4.1.11.3 Test purpose

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH using AM RLC, if it receives a RADIO BEARER RECONFIGURATION message which includes IE "DPCH compressed mode info" that causes an illegal overlap involving more than one parallel transmission gap pattern sequences. To confirm that the UE terminate any inter-frequency measurements corresponding to the deleted transmission gap pattern sequence

8.4.1.11.4 Method of test

Initial Condition

System Simulator: 2 cells – both cell 1 and cell 4 are active. See Table 8.4.1.11-1 for the power settings.

UE: CS-DCCH+DTCH_DCH (State 6-9) or PS-DCCH+DTCH_DCH (State 6-10) as specified in TS34.108 clause 7.4, depending on the CN domain supported.

Test Procedure

Table 8.4.1.11-1 illustrates the downlink power to be applied for the 2 cells in this test case.

Table 8.4.1.11-1

Parameter	Unit	Cell 1	Cell 4
UTRA RF Channel Number		Ch. 1	Ch. 2
CPICH RSCP	dBm	-74.3	-77.7

The UE is in the CELL_DCH state in cell 1. SS sends a MEASUREMENT CONTROL message on the downlink DCCH to request the UE to start inter-frequency measurement for cell 4's CPICH Ec/No value, and also to report the UTRA RSSI in the UARFCN in which cell 4 resides. Simultaneously, the stored transmission gap pattern sequence configuration associated with TGPSI=1 is indicated to be activated in this message. Upon the reception of this message, the UE shall transmit MEASUREMENT REPORT messages periodically at 16 seconds interval to report cell 4's measurement results. Next, SS sends a second MEASUREMENT CONTROL message. In this message, a new measurement task is to be established for the measurement and reporting of cell 4's CPICH RSCP value on a periodic basis. A deactivated transmission pattern gap sequence configuration (with TGPSI=2) is associated with this new measurement task.

The SS transmits a RADIO BEARER RECONFIGURATION message and commands the activation of transmission gap pattern sequence with TGPSI=2. This is expected to result in the detection of a runtime error due to overlapping compressed mode configuration. The UE then shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM-RLC. In this message, the value of IE " failure cause" shall be set to "compressed mode runtime error". The UE shall terminate all inter-frequency measurement tasks associated with TGPSI=2. However, the UE shall continue to send MEASUREMENT REPORT messages to report the UTRA RSSI in the UARFCN in which cell 4 resides, which is measured during the transmission gap created by compressed mode configuration corresponding to TGPSI=1.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				UE is initially in CELL_DCH state.
2	←		MEASUREMENT CONTROL	Start inter-frequency measurements for cell 4's CPICH Ec/No using transmission gap pattern sequence with TGPSI=1. Report the UTRA RSSI in the UARFCN in which cell 4 resides.
3	→		MEASUREMENT REPORT	UE reports UTRA RSSI for the UARFCN of cell 4 periodically.
4	←		MEASUREMENT CONTROL	Assign inter-frequency measurements for cell 4's CPICH RSCP. This measurement task is associated with transmission gap pattern sequence with TGPSI=2, which has not been activated yet.
5	←		RADIO BEARER RECONFIGURATION	SS specifies the parameters for transmission gap pattern sequence with TGPSI=2 and activate it simultaneously
6				UE shall delete transmission gap pattern sequence configuration associated with TGPSI=2.
7	→		PHYSICAL CHANNEL RECONFIGURATION FAILURE	Failure cause shall be set to "Compressed mode runtime error"
8	→		MEASUREMENT REPORT	The contents shall be the same as that in step 3.

Specific Message Contents

MEASUREMENT CONTROL (Step 2)

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	Set to id of cell 4
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 4
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Inter-frequency measurement quantity	
- CHOICE reporting criteria	Inter-frequency reporting criteria
- Filter Coefficient	0
- Measurement quantity for frequency quality estimate	CPICH Ec/No
- Inter-frequency reporting quantity	
- UTRA Carrier RSSI	TRUE
- Frequency quality estimate	TRUE
- Non frequency related cell reporting quantities	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation reporting indicator	FALSE
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting cell status	
- CHOICE reported cell	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Measurement validity	Not present
- Inter-frequency set update	Not present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	16 seconds
DPCH compressed mode status info	
- TGPS reconfiguration CFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence	
- TGPSI	1
- TGPS Status Flag	Active
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod 256

MEASUREMENT REPORT (Step 3 and 8)

Information Element	Value/Remarks

Measurement identity	Check to see if set to “1”
Measured Results	
- CHOICE measurement	Check to see if set to “Inter-frequency measured results list”
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- UTRA carrier RSSI	Check to see if it is present
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if it is absent
- Cell synchronisation information	Check to see if it is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 4
- CPICH Ec/No	Check to see if it is absent
- CPICH RSCP	Check to see if it is absent
- Pathloss	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Event Results	Check to see if it is absent

MEASUREMENT CONTROL (Step 4)

Information Element	Value/Remark
Measurement Identity	2
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	Set to id of cell 4
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 4
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	Set to same code as used for cell 4
- Primary Scrambling Code	Not Present
- Primary CPICH TX power	FALSE
- TX Diversity Indicator	
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Inter-frequency measurement quantity	Inter-frequency reporting criteria
- CHOICE reporting criteria	0
- Filter Coefficient	CPICH RSCP
- Measurement quantity for frequency quality estimate	
- Inter-frequency reporting quantity	FALSE
- UTRA Carrier RSSI	TRUE
- Frequency quality estimate	
- Non frequency related cell reporting quantities	No report
- SFN-SFN observed time difference reporting indicator	FALSE
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	TRUE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	
- Reporting cell status	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- CHOICE reported cell	2
- Maximum number of reported cells	Not present
- Measurement validity	Not present
- Inter-frequency set update	Periodic reporting criteria
- CHOICE report criteria	Infinity
- Amount of reporting	16 seconds
- Reporting interval	
DPCH compressed mode status info	(Current CFN+(256 – TTI/10msec)) mod 256
- TGPS reconfiguration CFN	
- Transmission gap pattern sequence	2
- TGPSI	Inactive
- TGPS Status Flag	Not Present
- TGCFN	

RADIO BEARER RECONFIGURATION

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical to the message sub-type title “Packet to CELL_DCH from CELL_DCH in PS” found in Annex A with the following exceptions:

Information Element	Value/remark
- DPCH compressed mode info	
- TGPSI	2
- TGPS Status Flag	Active
- TGCFN	(Current CFN + (256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence configuration parameters	
- TGMP	FDD Measurement
- TGPRC	62
- TGSN	8
- TGL1	10
- TGL2	5
- TGD	15
- TGPL1	35
- TGPL2	35
- RPP	Mode 1
- ITP	Mode 1
- CHOICE UL/DL Mode	DL
- Downlink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	2.0
- DeltaSIRafter1	1.0
- DeltaSIR2	Not Present
- DeltaSIRafter2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present

PHYSICAL CHANNEL RECONFIGURATION FAILURE

Information Element	Value/remark
Failure cause	Checked to see if set to “compressed mode runtime error”
- Protocol error information	Checked to see if it is absent
- Deleted TGPSI	Checked to see if it is set to “2”

8.4.1.11.5 Test requirement

After step 6 the UE shall keep transmission gap pattern sequence configuration associated with TGPSI=1. It shall delete the transmission gap pattern sequence configuration associated with TGPSI=2, and delete the inter-frequency measurements corresponding to it. It shall transmit PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH, with the IE “Failure cause” set to “Compressed mode runtime error”.

After step 7 the UE shall continue to send MEASUREMENT REPORT messages periodically, to report the UTRA RSSI value for the UARFCN in which cell 4 resides. However, no MEASUREMENT REPORT messages containing the CPICH RSCP readings for cell 4 shall be sent by the UE.

8.4.1.12 Measurement Control and Report: Compressed Mode Configuration Failure during transport channel reconfiguration procedure

8.4.1.12.1 Definition

8.4.1.12.2 Conformance requirement

During a transport channel reconfiguration procedure, the UTRAN might request the activation of a new transmission gap pattern sequence configuration. If the UE detects a runtime error due to overlapping compressed mode

configuration (when transmission gap pattern sequences create transmission gaps in the same frame), it shall delete the transmission gap pattern sequence configuration associated with highest value of TGPSI. The UE shall also terminate any inter-frequency measurements corresponding to the deleted transmission gap pattern sequence. Finally, the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM-RLC, with the cause value in IE "failure cause" set to "compressed mode runtime error".

Reference

3GPP TS 25.331 clause 8.2.2, clause 8.2.11, clause 8.6.6.15

8.4.1.12.3 Test purpose

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH using AM RLC, if it receives a TRANSPORT CHANNEL RECONFIGURATION message which includes IE “DPCH compressed mode info” that causes an illegal overlap involving more than one parallel transmission gap pattern sequences. To confirm that the UE terminate any inter-frequency measurements corresponding to the deleted transmission gap pattern sequence

8.4.1.12.4 Method of test

Initial Condition

System Simulator: 2 cells – both cell 1 and cell 4 are active. See Table 8.4.1.11-1 in clause 8.4.1.11.4 for the power settings.

UE: CS-DCCH+DTCH_DCH (State 6-9) or PS-DCCH+DTCH_DCH (State 6-10) as specified in TS34.108 clause 7.4, depending on the CN domain supported.

Test Procedure

For this test case, the downlink transmission power settings should follow that specified in Table 8.4.1.11-1 in clause 8.4.1.11.4.

The UE is in the CELL_DCH state in cell 1. SS sends a MEASUREMENT CONTROL message on the downlink DCCH to request the UE to start inter-frequency measurement for cell 4’s CPICH Ec/No value, and also to report the UTRA RSSI in the UARFCN in which cell 4 resides. Simultaneously, the stored transmission gap pattern sequence configuration associated with TGPSI=1 is indicated to be activated in this message. Upon the reception of this message, the UE shall transmit MEASUREMENT REPORT messages periodically at 16 seconds interval to report cell 4’s measurement results. Next, SS sends a second MEASUREMENT CONTROL message. In this message, a new measurement task is to be established for the measurement and reporting of cell 4’s CPICH RSCP value on a periodic basis. A deactivated transmission pattern gap sequence configuration (with TGPSI=2) is associated with this new measurement task.

The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message and commands the activation of transmission gap pattern sequence with TGPSI=2. This is expected to result in the detection of a runtime error due to overlapping compressed mode configuration. The UE then shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM-RLC. In this message, the value of IE ” failure cause” shall be set to “compressed mode runtime error”. The UE shall terminate all inter-frequency measurement tasks associated with TGPSI=2. However, the UE shall continue to send MEASUREMENT REPORT messages to report the UTRA RSSI in the UARFCN in which cell 4 resides, which is measured during the transmission gap created by compressed mode configuration corresponding to TGPSI=1.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				UE is initially in CELL_DCH state.
2	←		MEASUREMENT CONTROL	Start inter-frequency measurements for cell 4's CPICH Ec/No using transmission gap pattern sequence with TGPSI=1. Report the UTRA RSSI in the UARFCN in which cell 4 resides.
3	→		MEASUREMENT REPORT	UE reports UTRA RSSI for the UARFCN of cell 4 periodically.
4	←		MEASUREMENT CONTROL	Assign inter-frequency measurements for cell 4's CPICH RSCP. This measurement task is associated with transmission gap pattern sequence with TGPSI=2, which has not been activated yet.
5	←		TRANSPORT CHANNEL RECONFIGURATION	SS specifies the parameters for transmission gap pattern sequence with TGPSI=2 and activate it simultaneously
6				UE shall delete transmission gap pattern sequence configuration associated with TGPSI=2.
7	→		PHYSICAL CHANNEL RECONFIGURATION FAILURE	Failure cause shall be set to "Compressed mode runtime error"
8	→		MEASUREMENT REPORT	The contents shall be the same as that in step 3.

Specific Message Contents

MEASUREMENT CONTROL (Step 2)

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	Set to id of cell 4
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 4
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	Set to same code as used for cell 4
- Primary Scrambling Code	Not Present
- Primary CPICH TX power	FALSE
- TX Diversity Indicator	
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Inter-frequency measurement quantity	Inter-frequency reporting criteria
- CHOICE reporting criteria	0
- Filter Coefficient	CPICH Ec/No
- Measurement quantity for frequency quality estimate	
- Inter-frequency reporting quantity	TRUE
- UTRA Carrier RSSI	TRUE
- Frequency quality estimate	
- Non frequency related cell reporting quantities	No report
- SFN-SFN observed time difference reporting indicator	FALSE
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	
- Reporting cell status	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- CHOICE reported cell	2
- Maximum number of reported cells	Not present
- Measurement validity	Not present
- Inter-frequency set update	Periodic reporting criteria
- CHOICE report criteria	Infinity
- Amount of reporting	16 seconds
- Reporting interval	
DPCH compressed mode status info	(Current CFN+(256 – TTI/10msec)) mod 256
- TGPS reconfiguration CFN	
- Transmission gap pattern sequence	1
- TGPSI	Active
- TGPS Status Flag	(Current CFN+(256 – TTI/10msec)) mod 256
- TGCFN	

MEASUREMENT REPORT (Step 3 and 8)

Information Element	Value/Remarks
Measurement identity	Check to see if set to “1”
Measured Results	
- CHOICE measurement	Check to see if set to “Inter-frequency measured results list”
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- UTRA carrier RSSI	Check to see if it is present
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if it is absent
- Cell synchronisation information	Check to see if it is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 4
- CPICH Ec/No	Check to see if it is absent
- CPICH RSCP	Check to see if it is absent
- Pathloss	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Event Results	Check to see if it is absent

MEASUREMENT CONTROL (Step 4)

Information Element	Value/Remark
Measurement Identity	2
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	Set to id of cell 4
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 4
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Inter-frequency measurement quantity	
- CHOICE reporting criteria	Inter-frequency reporting criteria
- Filter Coefficient	0
- Measurement quantity for frequency quality estimate	CPICH RSCP
- Inter-frequency reporting quantity	
- UTRA Carrier RSSI	FALSE
- Frequency quality estimate	TRUE
- Non frequency related cell reporting quantities	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	
- CHOICE reported cell	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Measurement validity	Not present
- Inter-frequency set update	Not present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	16 seconds
DPCH compressed mode status info	
- TGPS reconfiguration CFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence	
- TGPSI	2
- TGPS Status Flag	Inactive
- TGCFN	Not Present

TRANSPORT CHANNEL RECONFIGURATION

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title “Packet to CELL_DCH from CELL_DCH in PS” found in Annex A with the following exceptions:

Information Element	Value/remark
- DPCH compressed mode info	
- TGPSI	2
- TGPS Status Flag	Active
- TGCFN	(Current CFN + (256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence configuration parameters	
- TGMP	FDD Measurement
- TGPRC	62
- TGSN	8
- TGL1	10
- TGL2	5
- TGD	15
- TGPL1	35
- TGPL2	35
- RPP	Mode 1
- ITP	Mode 1
- CHOICE UL/DL Mode	DL
- Downlink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	2.0
- DeltaSIRafter1	1.0
- DeltaSIR2	Not Present
- DeltaSIRafter2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present

PHYSICAL CHANNEL RECONFIGURATION FAILURE

Information Element	Value/remark
Failure cause	Checked to see if set to “compressed mode runtime error”
- Protocol error information	Checked to see if it is absent
- Deleted TGPSI	Checked to see if it is set to “2”

8.4.1.12.5 Test requirement

After step 6 the UE shall keep transmission gap pattern sequence configuration associated with TGPSI=1. It shall delete the transmission gap pattern sequence configuration associated with TGPSI=2, and delete the inter-frequency measurements corresponding to it. It shall transmit PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH, with the IE “Failure cause” set to “Compressed mode runtime error”.

After step 7 the UE shall continue to send MEASUREMENT REPORT messages periodically, to report the UTRA RSSI value for the UARFCN in which cell 4 resides. However, no MEASUREMENT REPORT messages containing the CPICH RSCP readings for cell 4 shall be sent by the UE.

8.4.1.13 Measurement Control and Report: Compressed Mode Configuration Failure during physical channel reconfiguration procedure

8.4.1.13.1 Definition

8.4.1.13.2 Conformance requirement

During a physical channel reconfiguration procedure, the UTRAN might request the activation of a new transmission gap pattern sequence configuration. If the UE detects a runtime error due to overlapping compressed mode configuration (when transmission gap pattern sequences create transmission gaps in the same frame), it shall delete the transmission gap pattern sequence configuration associated with highest value of TGPSI. The UE shall also terminate

any inter-frequency measurements corresponding to the deleted transmission gap pattern sequence. Finally, the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM-RLC, with the cause value in IE "failure cause" set to "compressed mode runtime error".

Reference

3GPP TS 25.331 clause 8.2.2, clause 8.2.11, clause 8.6.6.14

8.4.1.13.3 Test purpose

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH using AM RLC, if it receives a PHYSICAL CHANNEL RECONFIGURATION message which includes IE “DPCH compressed mode info” that causes an illegal overlap involving more than one parallel transmission gap pattern sequences. To confirm that the UE terminate any inter-frequency measurements corresponding to the deleted transmission gap pattern sequence

8.4.1.13.4 Method of test

Initial Condition

System Simulator: 2 cells – both cell 1 and cell 4 are active. See Table 8.4.1.11-1 in clause 8.4.1.11.4 for the power settings.

UE: CS-DCCH+DTCH_DCH (State 6-9) or PS-DCCH+DTCH_DCH (State 6-10) as specified in TS34.108 clause 7.4, depending on the CN domain supported.

Test Procedure

For this test case, the downlink transmission power settings should follow that specified in Table 8.4.1.11-1 in clause 8.4.1.11.4.

The UE is in the CELL_DCH state in cell 1. SS sends a MEASUREMENT CONTROL message on the downlink DCCH to request the UE to start inter-frequency measurement for cell 4’s CPICH Ec/No value, and also to report the UTRA RSSI in the UARFCN in which cell 4 resides. Simultaneously, the stored transmission gap pattern sequence configuration associated with TGPSI=1 is indicated to be activated in this message. Upon the reception of this message, the UE shall transmit MEASUREMENT REPORT messages periodically at 16 seconds interval to report cell 4’s measurement results. Next, SS sends a second MEASUREMENT CONTROL message. In this message, a new measurement task is to be established for the measurement and reporting of cell 4’s CPICH RSCP value on a periodic basis. A deactivated transmission pattern gap sequence configuration (with TGPSI=2) is associated with this new measurement task.

The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message and commands the activation of transmission gap pattern sequence with TGPSI=2. This is expected to result in the detection of a runtime error due to overlapping compressed mode configuration. The UE then shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM-RLC. In this message, the value of IE ” failure cause” shall be set to “compressed mode runtime error”. The UE shall terminate all inter-frequency measurement tasks associated with TGPSI=2. However, the UE shall continue to send MEASUREMENT REPORT messages to report the UTRA RSSI in the UARFCN in which cell 4 resides, which is measured during the transmission gap created by compressed mode configuration corresponding to TGPSI=1.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				UE is initially in CELL_DCH state.
2	←		MEASUREMENT CONTROL	Start inter-frequency measurements for cell 4's CPICH Ec/No using transmission gap pattern sequence with TGPSI=1. Report the UTRA RSSI in the UARFCN in which cell 4 resides.
3	→		MEASUREMENT REPORT	UE reports UTRA RSSI for the UARFCN of cell 4 periodically.
4	←		MEASUREMENT CONTROL	Assign inter-frequency measurements for cell 4's CPICH RSCP. This measurement task is associated with transmission gap pattern sequence with TGPSI=2, which has not been activated yet.
5	←		PHYSICAL CHANNEL RECONFIGURATION	SS specifies the parameters for transmission gap pattern sequence with TGPSI=2 and activate it simultaneously
6				UE shall delete transmission gap pattern sequence configuration associated with TGPSI=2.
7	→		PHYSICAL CHANNEL RECONFIGURATION FAILURE	Failure cause shall be set to "Compressed mode runtime error"
8	→		MEASUREMENT REPORT	The contents shall be the same as that in step 3.

Specific Message Contents

MEASUREMENT CONTROL (Step 2)

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	Set to id of cell 4
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 4
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Inter-frequency measurement quantity	
- CHOICE reporting criteria	Inter-frequency reporting criteria
- Filter Coefficient	0
- Measurement quantity for frequency quality estimate	CPICH Ec/No
- Inter-frequency reporting quantity	
- UTRA Carrier RSSI	TRUE
- Frequency quality estimate	TRUE
- Non frequency related cell reporting quantities	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting cell status	
- CHOICE reported cell	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Measurement validity	Not present
- Inter-frequency set update	Not present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	16 seconds
DPCH compressed mode status info	
- TGPS reconfiguration CFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence	
- TGPSI	1
- TGPS Status Flag	Active
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod 256

MEASUREMENT REPORT (Step 3 and 8)

Information Element	Value/Remarks
Measurement identity	Check to see if set to “1”
Measured Results	
- CHOICE measurement	Check to see if set to “Inter-frequency measured results list”
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- UTRA carrier RSSI	Check to see if it is present
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if it is absent
- Cell synchronisation information	Check to see if it is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 4
- CPICH Ec/No	Check to see if it is absent
- CPICH RSCP	Check to see if it is absent
- Pathloss	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Event Results	Check to see if it is absent

MEASUREMENT CONTROL (Step 4)

Information Element	Value/Remark
Measurement Identity	2
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	Set to id of cell 4
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 4
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	Set to same code as used for cell 4
- Primary Scrambling Code	Not Present
- Primary CPICH TX power	FALSE
- TX Diversity Indicator	
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Inter-frequency measurement quantity	Inter-frequency reporting criteria
- CHOICE reporting criteria	0
- Filter Coefficient	CPICH RSCP
- Measurement quantity for frequency quality estimate	
- Inter-frequency reporting quantity	FALSE
- UTRA Carrier RSSI	TRUE
- Frequency quality estimate	
- Non frequency related cell reporting quantities	No report
- SFN-SFN observed time difference reporting indicator	FALSE
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	TRUE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	
- Reporting cell status	Report cells within active and/or monitored set on used frequency or within active and/or monitored cells on non-used frequency
- CHOICE reported cell	2
- Maximum number of reported cells	Not present
- Measurement validity	Not present
- Inter-frequency set update	Periodic reporting criteria
- CHOICE report criteria	Infinity
- Amount of reporting	16 seconds
- Reporting interval	
DPCH compressed mode status info	(Current CFN + (256 – TTI/10msec)) mod 256
- TGPS reconfiguration CFN	
- Transmission gap pattern sequence	2
- TGPSI	Inactive
- TGPS Status Flag	Not Present
- TGCFN	

PHYSICAL CHANNEL RECONFIGURATION

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title “Packet to CELL_DCH from CELL_DCH in PS” found in Annex A with the following exceptions:

Information Element	Value/remark
- DPCH compressed mode info	
- TGPSI	2
- TGPS Status Flag	Active
- TGCFN	(Current CFN + (256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence configuration parameters	
- TGMP	FDD Measurement
- TGPRC	62
- TGSN	8
- TGL1	10
- TGL2	5
- TGD	15
- TGPL1	35
- TGPL2	35
- RPP	Mode 1
- ITP	Mode 1
- CHOICE UL/DL Mode	DL
- Downlink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	2.0
- DeltaSIRafter1	1.0
- DeltaSIR2	Not Present
- DeltaSIRafter2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present

PHYSICAL CHANNEL RECONFIGURATION FAILURE

Information Element	Value/remark
Failure cause	Checked to see if set to “compressed mode runtime error”
- Protocol error information	Checked to see if it is absent
- Deleted TGPSI	Checked to see if it is set to “2”

8.4.1.13.5 Test requirement

After step 6 the UE shall keep transmission gap pattern sequence configuration associated with TGPSI=1. It shall delete the transmission gap pattern sequence configuration associated with TGPSI=2, and delete the inter-frequency measurements corresponding to it. It shall transmit PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH, with the IE “Failure cause” set to “Compressed mode runtime error”.

After step 7 the UE shall continue to send MEASUREMENT REPORT messages periodically, to report the UTRA RSSI value for the UARFCN in which cell 4 resides. However, no MEASUREMENT REPORT messages containing the CPICH RSCP readings for cell 4 shall be sent by the UE.

8.4.1.14 Measurement Control and Report: Cell forbidden to affect reporting range

8.4.1.14.1 Definition

8.4.1.14.2 Conformance requirement

When event 1A is ordered by the UTRAN in a MEASUREMENT CONTROL message, the UE shall send a MEASUREMENT REPORT message when a primary CPICH measured has entered the specified reporting range. The UTRAN can request that a certain primary CPICH be forbidden to affect the reporting range used for event 1A measurement reporting. However, the UE shall ignore such request from the UTRAN if two conditions are satisfied –

(a) the primary CPICH concerned is included in the active set, and (b) all cells in the active set are defined as primary CPICH forbidden to affect the reporting range.

Reference

3GPP TS 25.331 clause 14.1.2.1, clause 14.1.5.4

8.4.1.14.3 Test Purpose

To confirm that the UE reports to the SS, if a primary CPICH currently measured by the UE enters the reporting range (event 1A). The reporting range was specified in a MEASUREMENT CONTROL message received earlier. To confirm that the UE ignores SS's request to forbid the updating of reporting range, when (a) the primary CPICH concerned is one of the cells currently in active set and (b) all cells in the active sets are marked as primary CPICH forbidden to affect the reporting range.

8.4.1.14.4 Method of test

Initial Condition

System Simulator: 3 cells – The initial configurations of the 3 cells in the SS should follow the values indicated in the column marked "T0" in table 8.4.1.14-1. The table is found in "Test Procedure" sub-clause.

UE: CS-DCCH_DCH (State 6-5) or PS-DCCH_DCH (State 6-7) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

Test Procedure

Table 8.4.1.14-1 illustrates the downlink power to be applied for the 3 cells at various time instants of the test execution. Column marked "T0" denotes the initial conditions, while columns marked "T1", "T2", "T3" and "T4" are to be applied subsequently. The exact instants on which these values shall be applied are described in the text in this sub-clause.

Table 8.4.1.14-1

Para-meter	Unit	Cell 1					Cell 2					Cell 3				
		T0	T1	T2	T3	T4	T0	T1	T2	T3	T4	T0	T1	T2	T3	T4
UTRA RF Channel Number		Ch. 1					Ch. 1					Ch. 1				
												Cell 3 is switche				
CPICH RSCP	dBm	-70.5	-70.5	-70.5	-70.5	-70.5	-76.0	-76.0	-76.0	-66.5	-66.5		-72.0	-78.5	-78.5	-72.0

The UE is initially in CELL_DCH state of cell 1. SS then performs an active set update procedure by sending ACTIVE SET UPDATE REQUEST message on the downlink DCCH. Cell 2 is to be added to the active set, according to the content of this downlink message. The UE shall reply with an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH, and include cell 2 to the active set when the activation time specified has elapsed.

SS configures itself according to the values in columns "T1" shown above. SS then sends a MEASUREMENT CONTROL message to the UE, commanding the start of intra-frequency measurement for all 3 cells. The intra-frequency measurement report criteria is set to event-triggered using event 1A. The reporting range is set to 5 dB in the MEASUREMENT CONTROL message. The UE shall send a MEASUREMENT REPORT on the uplink DCCH, which contains the CPICH RSCP reading for cell 3.

SS executes the active set update procedure again, requesting that cell 3 be added to the active set this time. The UE shall respond with ACTIVE SET UPDATE message on the uplink DCCH and then includes cell 3 into its current active set. Following this, SS configures itself according to the values in columns "T2" shown above. The UE should detect that CPICH RSCP of cell 3 has dropped out of the reporting range.

Next, SS configures itself according to the values in columns "T3" shown above. SS then sends a MEASUREMENT CONTROL message to command that all cells in the active set are forbidden to update the reporting range for event 1A.

Finally, SS configures itself according to the values in columns "T4" shown above. The UE shall proceed to update the reporting range as cell 2 has become the strongest cell. Although the CPICH RSCP value of cell 3 has been restored, this value still falls outside the new reporting range. Therefore, the UE shall not transmit a MEASUREMENT REPORT message on the uplink to report the triggering of event 1A.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	←		System Information Block type 11	UE is initially in CELL_DCH state in cell 1. SIB 11 is modified to include both cell 2 and 5 into the monitored cell list.
2	←		ACTIVE SET UPDATE	SS asks UE to add cell 2 into the active set
3	→		ACTIVE SET UPDATE COMPLETE	
4				SS configures itself according to the settings stated in column "T1" of Table 8.4.1.14-1.
5	←		MEASUREMENT CONTROL	SS commands the start of measurement tasks for CPICH RSCP of cell 1, cell 2 and cell 3. All 3 cells are added under IE "Intra-frequency cell info list". The reporting criteria is set to event-triggered using event type 1A, with reporting range = 5 dB.
6	→		MEASUREMENT REPORT	UE shall report that cell 3 has entered the reporting range for event 1A.
7	←		ACTIVE SET UPDATE	SS asks UE to add cell 3 into the active set
8	→		ACTIVE SET UPDATE COMPLETE	
9				SS configures itself according to the settings stated in column "T2" of Table 8.4.1.14-1.
10				SS configures itself according to the settings stated in column "T3" of Table 8.4.1.14-1.
11	←		MEASUREMENT CONTROL	SS forbids all cells in active list to affect the reporting range
12				SS configures itself according to the settings stated in column "T4" of Table 8.4.1.14-1.
13				UE shall ignore the restrictions imposed by the messages received in step 11. It shall update the reporting range. SS verifies that no MEASUREMENT REPORT messages are received in the uplink direction

Specific Message Contents

ACTIVE SET UPDATE (Step 2)

The contents of ACTIVE SET UPDATE message for this test step is identical to the same message found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Radio link addition information	
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as assigned for cell 2
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	P-CPICH can be used.
- DPCH frame offset	0 chips
- Power offset $P_{Pilot-DPDCH}$	TBD
- Secondary CPICH info	Not Present
- DL channelisation code	This IE is repeated for all existing downlink DPCHs allocated to the UE
- Secondary scrambling code	Not Present
- CHOICE Spreading factor	512
- Code Number	For each DPCH, assign the same code number in the current code given in cell 1.
- Scrambling code change	Not Present
- TPC Combination Index	0
- SSDT Cell Identity	Not Present
- Close loop timing adjustment mode	Not Present
- TFCI Combining Indicator	Not Present
- SCCPCH information for FACH	Not Present
Radio link removal information	Not Present

ACTIVE SET UPDATE COMPLETE (Step 3 and Step 8)

Information Element	Value/remark
RRC transaction identifier	Check to see if it is set to 0

MEASUREMENT CONTROL (Step 5)

The contents of MEASUREMENT CONTROL message for this test step is identical to the same message found in Annex A with the following exceptions:

Information Element	Value/Remark
RRC transaction identifier	1
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency
- New intra-frequency info list	*3 cells are specified – cell 1, cell 2 and cell 3*
- Intra-frequency cell id	0
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 1
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- Read SFN Indicator	FALSE
- TX Diversity Indicator	FALSE
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 3
- Primary CPICH TX power	Not Present
- Read SFN Indicator	FALSE
- TX Diversity Indicator	FALSE
- Cell for measurement	
- Intra-frequency cell id	Set to ids of cell 1, cell 2 and cell 3
- Intra-frequency measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- Reporting cell status	Not present
- Measurement validity	Not present
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameters required for each events	*Only 1 event is specified*
- Intra-frequency event identity	1a

- Triggering conditions 1	Not Present
- Triggering conditions 2	Active set cells
- Reporting range	5.0 dB
- Cells forbidden to affect reporting range	Not Present
- W	0
- Hysteresis	0 dB
- Threshold used frequency	Not Present
- Reporting deactivation threshold	3
- Replacement activation threshold	Not Present
- Time to trigger	0 msec
- Amount of reporting	1
- Reporting interval	0
- Reporting cell status	Not Present
DPCH compressed mode status info	Not Present

MEASUREMENT REPORT (Step 6)

Information Element	Value/Remarks
RRC transaction identifier	Check to see if set to 1
Measurement identity	Check to see if set to 1
Measured Results	
- CHOICE measurement	Check to see if set to “Intra-frequency measured results list”
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it’s the same code for cell 3
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional Measured Results	Check to see if this IE is absent
Event Results	Check to see if this IE is absent

ACTIVE SET UPDATE (Step 7)

The contents of ACTIVE SET UPDATE message for this test step is identical to the same message found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Radio link addition information	
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as assigned for cell 3
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	P-CPICH can be used.
- DPCH frame offset	0 chips
- Power offset $P_{Pilot-DPDCH}$	TBD
- Secondary CPICH info	Not Present
- DL channelisation code	This IE is repeated for all existing downlink DPCHs allocated to the UE
- Secondary scrambling code	Not Present
- CHOICE Spreading factor	512
- Code Number	For each DPCH, assign the same code number in the current code given in cell 1.
- Scrambling code change	Not Present
- TPC Combination Index	0
- SSDT Cell Identity	Not Present
- Close loop timing adjustment mode	Not Present
- TFCI Combining Indicator	Not Present
- SCCPCH information for FACH	Not Present
Radio link removal information	Not Present

MEASUREMENT CONTROL (Step 11)

The contents of MEASUREMENT CONTROL message for this test step is identical to the same message found in Annex A with the following exceptions:

Information Element	Value/Remark
RRC transaction identifier	1
Measurement Identity	1
Measurement Command	Modify
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	Not Present
- Intra-frequency measurement quantity	Not Present
- Intra-frequency reporting quantity	Not Present
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameters required for each events	*Only 1 event is specified*
- Intra-frequency event identity	1a
- Triggering conditions 1	Not Present
- Triggering conditions 2	Active set cells
- Reporting range	5.0 dB
- Cells forbidden to affect reporting range	*3 cells – cell 1, cell 2 and cell 3*
- CHOICE Mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to the same code as in cell 1
- CHOICE Mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to the same code as in cell 2
- CHOICE Mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to the same code as in cell 3
- W	0
- Hysteresis	0 dB
- Threshold used frequency	Not Present
- Reporting deactivation threshold	3
- Replacement activation threshold	Not Present
- Time to trigger	0 msec
- Amount of reporting	1
- Reporting interval	0
- Reporting cell status	Not Present
DPCH compressed mode status info	Not Present

8.4.1.14.5 Test requirement

After step 2, the UE shall transmit ACTIVE SET UPDATE COMPLETE message on the uplink DCCH to acknowledge the successful addition of cell 2 into the active set. The UE shall be able to communicate with cell 2 in both the uplink and downlink directions after this step.

After step 5, the UE shall send a MEASUREMENT REPORT message on the uplink DCCH. The message shall contain the measurement reading for cell 3's CPICH RSCP.

After step 7, the UE shall transmit ACTIVE SET UPDATE COMPLETE message on the uplink DCCH to acknowledge the successful addition of cell 3 into the active set. The UE shall be able to communicate with cell 3 in both the uplink and downlink directions after this step.

After step 12, the UE shall ignore the previous restriction imposed for the updating of reporting range. It shall determine that cell 3's RSCP value is not within the updated reporting range. SS verifies that the UE does not send a MEASUREMENT REPORT message on the uplink DCCH to report cell 3's RSCP value.

8.4.1.15 Measurement Control and Report: Configuration Incomplete

8.4.1.15.1 Definition

8.4.1.15.2 Conformance requirement

When the UE received a MEASUREMENT CONTROL message which results in an "configuration incomplete" condition to be detected, the UE shall retain the measurement configuration that was valid before the MEASUREMENT CONTROL message was received. It shall also send MEASUREMENT CONTROL FAILURE, with the IE "RRC transaction identifier" set to the value of the same IE in the received MEASUREMENT CONTROL message, and also the "failure cause" IE set to "incomplete configuration".

Reference

3GPP TS 25.331 clause 8.4.1.4a, 8.6.7.13, 8.6.7.14, 8.6.7.16

8.4.1.14.3 Test Purpose

To confirm that the UE sends a MEASUREMENT CONTROL FAILURE message, after receiving a MEASUREMENT CONTROL message with IE "Measurement command" set to "Setup" and the following contents:

- "CHOICE measurement type" IE is set to "Intra-frequency measurement" and "Intra-frequency measurement quantity" is omitted or
- "CHOICE measurement type" IE is set to "Inter-frequency measurement" and "Inter-frequency reporting quantity" is omitted or
- "Reporting mode" IE is omitted

To confirm that the UE set the "failure cause" IE to value "incomplete configuration" in the uplink MEASUREMENT CONTROL FAILURE message.

8.4.1.15.4 Method of test

Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH_DCH (State 6-5) or PS-DCCH_DCH (State 6-7) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

Test Procedure

The UE is initially brought to CELL_DCH. SS transmits a MEASUREMENT CONTROL message to the UE, commanding it to start an intra-frequency measurement and reporting task. However, IE "Intra-frequency measurement quantity" is absent in the message. The UE shall not establish the intra-frequency measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

Next, SS sends the MEASUREMENT CONTROL message once more. In this message, SS commands the establishment of an inter-frequency measurement and reporting task, but IE "Inter-frequency reporting quantity" is omitted in this message. The UE shall not establish the intra-frequency measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

In the final sequence, SS sends a third MEASUREMENT CONTROL message. In this message, SS commands the establishment of an intra-frequency measurement and reporting task, but IE "Measurement reporting mode" is omitted in this message. The UE shall not establish the intra-frequency measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is CELL_DCH state in cell 1.
2	←		MEASUREMENT CONTROL	SS commands the start of an intra-frequency measurement and reporting task. IE "Intra-frequency measurement quantity" is absent.
3	→		MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
4	←		MEASURMENT CONTROL	SS commands the start of an inter-frequency measurement and reporting task. IE "Inter-frequency reporting quantity" is absent.
5	→		MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
6	←		MEASURMENT CONTROL	SS commands the start of an inter-frequency measurement and reporting task. IE "Measurement reporting mode" is absent.
7	→		MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"

Specific Message Content

MEASUREMENT CONTROL (Step 2)

Information Element	Value/Remark
Measurement Identity	1
RRC transaction Identifier	Arbitrarily selected between 0 and 3
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting/Event Trigger Reporting Mode	Periodical reporting
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cell	Not Present
- Cell for measurement	
- Intra-frequency cell id	Set to id of cell 1
- Intra-frequency measurement quantity	Not Present
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN onserved time difference reporting indicator	No report
- Cell synchronization information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CHOICE mode	FDD
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN onserved time difference reporting indicator	No report
- Cell synchronization information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CHOICE mode	FDD
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	
- CHOICE reported cell	Report cells within active set
- Maximum number of reported cells	1
- Measurement validity	CELL_DCH
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	32 seconds
DPCH compressed mode status info	Not Present

MEASUREMENT CONTROL FAILURE (Step 3)

Information Element	Value/Remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 2
Failure cause	Check to see if set to “incomplete configuration”

MEASUREMENT CONTROL (Step 4) (Note 1)

Information Element	Value/Remark

Measurement Identity	2
RRC transaction Identifier	Arbitrarily selected between 0 and 3
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting/Event Trigger Reporting Mode	Periodical reporting
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency cell	
- Inter-frequency cell id	Set to id of cell 4
- Frequency info	
- CHOICE Mode	FDD
- UARFCN uplink (Nu)	Set to the same UARFCN as cell 4 in clause 6.1 of TS 34.108
- UARFCN downlink (Nu)	Set to the same UARFCN as cell 4 in clause 6.1 of TS 34.108
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and re-selection info	Not Present
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Inter-frequency measurement quantity	
- CHOICE rerporting criteria	Inter-frequency reporting criteria
- Filter coefficients	0
- CHOICE mode	FDD
- Measurement quantity for frequency quality estimate	CPICH RSCP
- Inter-frequency reporting quantity	Not Present
- Reporting cell status	
- CHOICE reported cell	Report cells within monitored set on non-used frequency
- Maximum number of reported cells	1
- Measurement validity	CELL_DCH
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	32 seconds
- Inter-frequency set update	Not Present
DPCH compressed mode status info	Not Present

MEASUREMENT CONTROL FAILURE (Step 5)

Information Element	Value/Remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 4
Failure cause	Check to see if set to “incomplete configuration”

MEASUREMENT CONTROL (Step 6)

Information Element	Value/Remark

Measurement Identity	3
RRC transaction Identifier	Arbitrarily selected between 0 and 3
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cell	Not Present
- Cell for measurement	
- Intra-frequency cell id	Set to id of cell 1
- Intra-frequency measurement quantity	
- Filter coefficient	0
- CHOICE mode	FDD
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN onserved time difference reporting indicator	No report
- Cell synchronization information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CHOICE mode	FDD
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN onserved time difference reporting indicator	No report
- Cell synchronization information reporting indicator	No report
- Cell identity reporting indicator	FALSE
- CHOICE mode	FDD
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	
- CHOICE reported cell	Report cells within active set
- Maximum number of reported cells	1
- Measurement validity	CELL_DCH
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	32 seconds
DPCH compressed mode status info	Not Present

MEASUREMENT CONTROL FAILURE (Step 7)

Information Element	Value/Remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 6
Failure cause	Check to see if set to “incomplete configuration”

Note1: For the MEASUREMENT CONTROL message in step 4, cell 4 is signalled to be added as a new cell into the UE’s inter-frequency cell list. However, SS does not need to transmit cell 4 in the downlink, as the UE is not expected to perform measurement and reporting for this cell.

8.4.1.15.5 Test Requirement

After step 2, step 4 and step 6, the UE shall transmit MEASUREMENT CONTROL FAILURE message, stating the IE ”failure cause” as “incomplete configuration”. The UE shall not transmit any MEASUREMENT REPORT messages during the execution of this test case.

9 Elementary procedures of mobility management

The tests are based on TS 24.008.

In this clause, when the expected sequence require that "a mobile originated CM connection is attempted", it shall be for a service other than emergency call.

In this clause, a initial CM message is either a SETUP message, a REGISTER message or a CP-DATA message (in that case the acknowledged mode of operation on SAPI 3 will have be established and this message will be sent on SAPI 3).

9.1 TMSI reallocation

The intention of the TMSI Reallocation procedure is to assign a new temporary identity for the UE. If the message is not understood by the UE, the network could not establish a link to the UE. As this is a common MM procedure, it can be initiated at any time.

9.1.1 Definition

9.1.2 Conformance requirement

1) A UE shall acknowledge a new TMSI when explicitly allocated during a location updating procedure or an incoming call.

2) The TMSI shall be updated on the USIM when the UE is correctly deactivated in accordance with the manufacturer's instructions.

3) A UE shall answer paging with this TMSI and includes it in the PAGING RESPONSE message.

Reference(s)

TS 24.008 Clause 4.3.1.

9.1.3 Test purpose

To verify that the UE is able to receive and acknowledge a new TMSI by means of an explicit TMSI reallocation procedure.

To verify that the UE has stored the TMSI in a non-volatile memory.

The implicit reallocation procedure is tested in clause 9.4.1.

9.1.4 Method of test

Initial conditions

- System Simulator:
  - two cells A and B, belonging to different location areas a and b, default parameters.
- User Equipment:
  - the UE has valid TMSI (= TMSI1), CKSN, CK, IK. It is "idle updated" on cell B.

Related ICS/IXIT statement(s)

Switch off button Yes/No.

Way to bring the UE into service.

Test Procedure

The UE is paged in cell B and the security mode is established. An explicit TMSI reallocation procedure is performed. The RRC CONNECTION is released. The UE is switched off and then its power supply is interrupted for 10 seconds. The power supply is resumed and then the UE is switched on and allowed sufficient time to guarantee that the UE is in service (listening to its paging subchannel). The system simulator then checks, by paging, whether the UE has stored the received TMSI.

The UE is made to select cell A. A normal location updating procedure is performed in cell A. An explicit TMSI reallocation procedure is performed and then the location updating procedure is accepted by the SS. The system simulator checks, by paging, whether the UE has stored the allocated TMSI.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell B.				
1	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" = TMSI1. Establishment Cause: Terminating Conversation Call.
2	→		PAGING RESPONSE	"Mobile identity" =TMSI1
2a	←		AUTHENTICATION REQUEST	
2b	→		AUTHENTICATION RESPONSE	
3	←		SECURITY MODE COMMAND	The SS starts deciphering.
4	→		SECURITY MODE COMPLETE	The SS starts enciphering.
5	←		TMSI REALLOCATION COMMAND	"Mobile identity" = new TMSI (TMSI2) different from TMSI 1.
6	→		TMSI REALLOCATION COMPLETE	
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9	UE			If possible (see ICS), the UE is switched off.
9a	UE			The power supply is interrupted for 10 seconds.
10	UE			The UE is switched on.
11	SS			The SS waits an amount of time which is enough to guarantee that the UE is in service (listening to its paging subchannel).
12	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" = TMSI2. Establishment Cause: Terminating Conversation Call.
13	→		PAGING RESPONSE	"Mobile identity" =TMSI2.
14	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The following messages are sent and shall be received on cell A
15	→		RRC CONNECTION RELEASE COMPLETE	
16	SS			The RF level of cell B is lowered until the UE selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable.
17	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
18	←		RRC CONNECTION SETUP	
19	→		RRC CONNECTION SETUP COMPLETE	
20	→		LOCATION UPDATING REQUEST	location updating type = normal, "ciphering key sequence number" = CKSN, LAI = b, "mobile identity" = TMSI2.
20a	←		AUTHENTICATION REQUEST	
20b	→		AUTHENTICATION RESPONSE	
20c	←		SECURITY MODE COMMAND	The SS starts deciphering.
20d	→		SECURITY MODE COMPLETE	The SS starts enciphering.
21	←		TMSI REALLOCATION COMMAND	TMSI = TMSI1.
22	→		TMSI REALLOCATION COMPLETE	
23	←		LOCATION UPDATING ACCEPT	This message does not contain the optional Mobile Identity field.
24	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The SS waits an amount of time which is enough to guarantee that the UE is "idle updated" on cell A.
25	→		RRC CONNECTION RELEASE COMPLETE	
26	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" IE contains the new TMSI (= TMSI1). "Establishment cause": Terminating Conversational Call.
27	→		PAGING RESPONSE	"Mobile identity" IE contains the new TMSI (= TMSI1).
28	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

29	→	RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.1.5 Test requirement

At step 5 the UE shall receive and acknowledge a new TMSI (TMSI2) and has stored that in the USIM, and the UE is switched off and on after step 9 and 10.

At step 13 the UE shall transmit a new TMSI2 and includes it in the PAGING RESPONSE message.

At step 27 the UE shall answer paging with this TMSI1 and includes it in the PAGING RESPONSE message.

9.2 Authentication

The purpose of this procedure is to verify the user identity. A correct response is essential to guarantee the establishment of the connection. If not, the connection will drop.

The SS shall be able to handle vectors of AUTN, RAND, CK, IK, AUTS and XRES in a similar way as the MSC/BSS entities. The SS and test USIM shall incorporate a test algorithm for generating RES and CK, IK from RAND, AUTN and IK which operates as described in TS 34.108 Clause 8.1.2.

9.2.1 Authentication accepted

9.2.1.1 Definition

9.2.1.2 Conformance requirement

1) A UE shall correctly respond to an AUTHENTICATION REQUEST message by sending an AUTHENTICATION RESPONSE message with the RES information field set to the same value as the one produced by the authentication algorithm in the network.

2) A UE shall indicate in a PAGING RESPONSE message the ciphering key sequence number which was allocated to it through the authentication procedure.

Reference(s)

TS 24.008 Clause 4.3.2.2, 4.3.2.4.

9.2.1.3 Test purpose

1) To check that a UE correctly responds to an AUTHENTICATION REQUEST message by sending an AUTHENTICATION RESPONSE message with the RES information field set to the same value as the one produced by the authentication algorithm in the network.

2) To check that a UE indicates in a PAGING RESPONSE message the ciphering key sequence number which was allocated to it through the authentication procedure.

9.2.1.4 Method of test

Initial conditions

- System Simulator:

- 1 cell, default parameters.

- User Equipment:

  - the UE has valid TMSI, CKSN (CKSN1), CK, IK. It is "idle updated" on the cell.

Related ICS/IXIT statement(s)

None.

Test Procedure

The UE is paged. After the UE has sent a PAGING RESPONSE message to the SS, the SS initiates an authentication procedure and checks the value RES sent by the UE in the AUTHENTICATION RESPONSE message. The RRC CONNECTION is released. The UE is paged and the SS checks the value of the ciphering key sequence number sent by the UE in the PAGING RESPONSE message.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 Establishment Cause: Terminating Conversational Call.
2	→		PAGING RESPONSE	CKSN = CKSN1
3	←		AUTHENTICATION REQUEST	The SS initiates authentication with CKSN2 different from CKSN1.
4	→		AUTHENTICATION RESPONSE	"Auth. parameter RES" IE shall be bit exact with the value as produced by the authentication algorithm.
5	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The SS waits an amount of time which is enough to guarantee that the UE is in service.
6	→		RRC CONNECTION RELEASE COMPLETE	
7			Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 Establishment Cause: Terminating Conversational Call.
8	→		PAGING RESPONSE	"Ciphering key sequence number" shall be the same as the value that was sent in the last AUTHENTICATION REQUEST message (= CKSN2).
9	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
10	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.2.1.5 Test requirement

1) At step 4 the UE shall send an AUTHENTICATION RESPONCE message with the RES information field set to the same value as the XRES calculated by the SS.

2) At step 8 the UE shall indicate in a PAGING RESPONSE message the ciphering key sequence number which was allocated to it through the authentication procedure.

9.2.2 Authentication rejected by the network

9.2.2.1 Definition

9.2.2.2 Conformance requirement

1) After reception of an AUTHENTICATION REJECT message the UE shall:

   1.1 not perform normal location updating;

   1.2 not perform periodic location updating;

   1.3 not respond to paging with TMSI;

   1.4 reject any request from CM entity for MM connection except for emergency call;

   1.5 not perform IMSI detach if deactivated.

2) After reception of an AUTHENTICATION REJECT message the UE, if it supports speech, shall accept a request for an emergency call by sending a RRC CONNECTION REQUEST message with the establishment cause set to "emergency call" and include an IMEI as mobile identity in the CM SERVICE REQUEST message.

3) After reception of an AUTHENTICATION REJECT message the UE shall delete the stored LAI, CKSN and TMSI.

Reference(s)

TS 24.008 clause 4.3.2.5.

9.2.2.3 Test purpose

1) To check that ,after reception of an AUTHENTICATION REJECT message, the UE:

   1.1 does not perform normal location updating;

   1.2 does not perform periodic location updating;

   1.3 does not respond to paging with TMSI;

   1.4 rejects any request from CM entity for MM connection except for emergency call;

   1.5 does not perform IMSI detach if deactivated.

2) To check that, after reception of an AUTHENTICATION REJECT message the UE, if it supports speech, accepts a request for an emergency call by sending a RRC CONNECTION REQUEST message with the establishment cause set to "emergency call" and includes an IMEI as mobile identity in the CM SERVICE REQUEST message.

3) To check that, after reception of an AUTHENTICATION REJECT message and after having been deactivated and reactivated, the UE performs location updating using its IMSI as mobile identity and indicates deleted LAI and CKSN.

9.2.2.4 Method of test

Initial conditions

- System Simulator:
  - two cells: A and B, belonging to different location areas a and b;
  - IMSI attach/detach is allowed in both cells;
  - the T3212 time-out value is 1/10 hour in both cells.

- User Equipment:
  - the UE has valid TMSI, CKSN (CKSN2) , CK and IK. It is "idle updated" on cell B.

Related ICS/IXIT statement(s)

USIM removal possible while UE is powered Yes/No.

Switch off on button Yes/No.

Support of speech Yes/No.

Test procedure

The SS rejects an authentication. The RRC CONNECTION is released. The SS checks that the UE has entered the state MM IDLE substate NO IMSI, i.e. does not perform normal location updating, does not perform periodic updating, does not respond to paging, rejects any requests from CM entities except emergency calls and does not perform IMSI detach if USIM detachment is performed, switch off is performed, or the power is removed, depending on the UE (see ICS/IXIT).

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell B				
1			Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 Establishment Cause: Terminating Conversational Call..
2	→		PAGING RESPONSE	"Ciphering key sequence number" shall be the same as the value that was sent in the last AUTHENTICATION REQUEST message (= CKSN2).
3	←		AUTHENTICATION REQUEST	
4	→		AUTHENTICATION RESPONSE	
5	←		AUTHENTICATION REJECT	
6	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
7	→		RRC CONNECTION RELEASE COMPLETE	
8	←		PAGING TYPE 1	The UE is paged in cell B. "UE identity " IE contains TMSI. Paging Cause: Terminating Conversational Call.
9	UE			The UE shall ignore this message. This is verified during 3 seconds.
10	SS			The SS waits for at least for 15 s.
11	UE			A MO CM connection is attempted.
12	UE			The UE shall not initiate an RRC connection establishment on cell A or cell B. This is checked during 3 seconds.
13	UE			If the UE supports speech (see ICS), an emergency call is attempted.
14	→		RRC CONNECTION REQUEST	"Establishment cause": Emergency call.
15	←		RRC CONNECTION SETUP	
16	→		RRC CONNECTION SETUP COMPLETE	
17	→		CM SERVICE REQUEST	"CM service type": Emergency call establishment. "Mobile identity": type of identity is set to IMEI.
18	←		CM SERVICE ACCEPT	
19	→		EMERGENCY SETUP	
20	←		RELEASE COMPLETE	"Cause" = unassigned number.
21	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
22	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell A.				
23	SS			The RF levels are changed to make the UE reselect the cell A.
24	UE			The UE performs cell reselection according to procedure as specified in (this however is not checked until step 29). The UE shall not initiate an RRC connection establishment on cell A or on cell B.
25	SS			The SS waits at least 7 minutes for a possible periodic updating.
26	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B.
27	UE			If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
28	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 seconds.
29	UE			Depending on what has been performed in step 26 the UE is brought back to operation.
30	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
31	←		RRC CONNECTION SETUP	
32	→		RRC CONNECTION SETUP COMPLETE	
33	→		LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "Mobile Identity" = IMSI, "LAI" = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE).

34	←	AUTHENTICATION REQUEST	"CKSN" = CKSN1.
35	→	AUTHENTICATION RESPONSE	
36	←	LOCATION UPDATING ACCEPT	"Mobile Identity" = TMSI.
37	→	TMSI REALLOCATION COMPLETE	
38	←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
39	→	RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.2.2.5 Test requirement

1)

1.1 At step 24 the UE shall not send any RRC CONNECTION REQUEST on cell A or on cell B.

1.2 At step 25 the UE shall not send any RRC CONNECTION REQUEST on cell A or on cell B.

1.3 At step 9 the UE shall not respond to paging.

1.4 At step 12 the UE shall not send any RRC CONNECTION REQUEST on cell A or on cell B.

1.5 At step 28 the UE shall not send any RRC CONNECTION REQUEST on cell A or on cell B.

2) At step 14 the UE shall send a RRC CONNECTION REQUEST message with the establishment cause set to "emergency call"; and at step 17 the UE shall send a CM SERVICE REQUEST message with the “CM service type” set to “Emergency call establishment”

3) At step 33 the UE shall perform location updating using its IMSI as mobile identity and indicates deleted LAI and CKSN.

9.2.3 Authentication rejected by the UE (MAC code failure)

9.2.3.1 Definition

Following a UMTS authentication challenge, the UE may reject the core network, on the grounds of an incorrect AUTN parameter (see TS 33.102).

If the UE considers the MAC code (supplied by the core network in the AUTN parameter) to be invalid, it shall send an AUTHENTICATION FAILURE message to the network, with the reject cause ‘MAC failure’.

9.2.3.2 Conformance requirement

1) A UE shall correctly respond to an AUTHENTICATION REQUEST message by sending an AUTHENTICATION FAILURE message with the reject cause ‘MAC failure’. A UE shall correctly respond to an AUTHENTICATION REQUEST message with correct AUTN parameter by sending AUTHENTICATION RESPONSE message after identification procedure.

2) Upon reception of an IDENTITY REQUEST message, the UE shall identify itself by sending an IDENTITY RESPONSE message including the IMSI to the network.

3) Upon receiving the second AUTHENTICATION REQUEST message from the network, the UE shall stop the timer T3214, if running, and then process the challenge information as normal. Upon successfully validating the network (an AUTHENTICATION REQUEST that contains a valid MAC is received), the UE shall send the AUTHENTICATION RESPONSE message to the network and shall start any retransmission timers (e.g. T3210, T3220 or T3230) , if they were running and stopped when the UE received the first AUTHENTICATION REQUEST message containing an invalid MAC.

Reference(s)

TS 24.008 clause 4.3.2.5.1, 4.3.2.6 (c)

9.2.3.3 Test purpose

1) To check that a UE shall correctly respond to an AUTHENTICATION REQUEST message by sending an AUTHENTICATION FAILURE message with the reject cause 'MAC failure'. A UE shall correctly respond to an AUTHENTICATION REQUEST message with correct AUTN parameter by sending AUTHENTICATION RESPONSE message after identification procedure.

2) To verify that upon reception of an IDENTITY REQUEST message the UE identifies itself by sending an IDENTITY RESPONSE message including the IMSI to the network.

3) To verify that upon receiving the second AUTHENTICATION REQUEST message from the network, the UE shall stop the timer T3214, if running, and then process the challenge information as normal. To verify that upon successfully validating the network (an AUTHENTICATION REQUEST that contains a valid MAC is received), the MS sends the AUTHENTICATION RESPONSE message to the SS.

9.2.3.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE has valid TMSI, CKSN (CKSN1), CK, IK. It is "idle updated" on the cell.

Related ICS/IXIT statement(s)

None.

Test procedure

The UE rejects an authentication. The AUTHENTICATION FAILURE is sent by UE. Upon receipt of the AUTHENTICATION FAILURE message.The SS initiates identification procedure. The UE responded to the SS by sending IDENTITY RESPONSE message. The SS sends AUTHENTICATION REQUEST message with correct AUTN parameter.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 Establishment Cause: Terminating Conversational Call.
2	→		PAGING RESPONSE	CKSN = CKSN1
3	←		AUTHENTICATION REQUEST	with the AUTN parameter having an invalid MAC code
4	→		AUTHENTICATION FAILURE	with reject cause "MAC failure"
5	←		IDENTITY REQUEST	
6	→		IDENTITY RESPONSE(IMSI)	
7	←		AUTHENTICATION REQUEST	with the AUTN parameter having a correct MAC code
8	→		AUTHENTICATION RESPONSE	"Auth.parameter RES" IE shall be bit exact with the value as produced by the authentication algorithm.
9	←		RRC CONNECTION RELEASE	
10	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.2.3.5 Test requirement

1) At step 4 the UE shall send AUTHENTICATION FAILURE message with reject cause set to “MAC failure”.

2) At step 6 the UE shall send an IDENTITY RESPONSE message including the IMSI.

3) At step 8 the UE shall send an AUTHENTICATION RESPONSE message.

9.2.4 Authentication rejected by the UE (SQN failure)

9.2.4.1 Definition

Following a UMTS authentication challenge, the UE may reject the core network, on the grounds of an incorrect AUTN parameter (see TS 33.102).

If the UE considers the SQN (supplied by the core network in the AUTN parameter) to be out of range, it shall send an AUTHENTICATION FAILURE message to the network, with the reject cause ‘Synch failure’ and a re-synchronisation token AUTS provided by the USIM (see TS 33.102)

9.2.4.2 Conformance requirement

1) A UE shall correctly respond to an AUTHENTICATION REQUEST message by sending an AUTHENTICATION FAILURE message with the reject cause ‘Synch failure’ and parameter (AUTS) provided by the USIM (see TS 33.102).

2) Upon successfully validating the network (a second AUTHENTICATION REQUEST is received which contains a valid SQN) while T3216 is running, the UE shall send the AUTHENTICATION RESPONSE message to the network and shall start any retransmission timers (e.g. T3210, T3220 or T3230), if they were running and stopped when the MS received the first AUTHENTICATION REQUEST message containing an invalid SQN.

Reference(s)

TS 24.008 clause 4.3.2.5.1, 4.3.2.6 (d)

9.2.4.3 Test purpose

1) To check that a UE shall correctly respond to an AUTHENTICATION REQUEST message by sending an AUTHENTICATION FAILURE message with the reject cause ‘Synch failure’ and parameter (AUTS) provided by the USIM (see TS 33.102).

2) To check that upon successfully validating the network (a second AUTHENTICATION REQUEST is received which contains a valid SQN) while T3216 is running, the UE shall send the AUTHENTICATION RESPONSE message to the network.

9.2.4.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE has valid TMSI, CKSN (CKSN1), CK, IK. It is "idle updated" on the cell.

Related ICS/IXIT statement(s)

None.

Test procedure

The SS sends an AUTHENTICATION REQUEST having an invalid SQN code (i.e. uses the predefined $AMF_{RESYNCH}$ value to trigger the SQN re-synchronisation procedure, see TS 34.108 clause 8.1.2.2) to the UE. The SS verifies that the UE rejects the authentication.

The SS sends a second AUTHENTICATION REQUEST with a valid SQN code (i.e. uses an AMF value different from $AMF_{RESYNCH}$ value, see TS 34.108 clause 8.1.2.2). The SS checks that the UE accepts the authentication request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 Establishment Cause: Terminating Conversational Call.
2	→		PAGING RESPONSE	CKSN = CKSN1
3	←		AUTHENTICATION REQUEST	with the AMF information field set to $AMF_{RESYNCH}$ value to trigger SQN re-synchronisation procedure in test USIM, see TS 34.108 clause 8.1.2.2.
4	→		AUTHENTICATION FAILURE	including the AUTS parameter and with the reject cause set to 'Synch failure'
5	←		AUTHENTICATION REQUEST	with the AMF information field set to value different from $AMF_{RESYNCH}$ value to cause test USIM to treat SQN value as valid, see TS 34.108 clause 8.1.2.2.
6	→		AUTHENTICATION RESPONSE	*"Auth. parameter RES" IE shall be bit exact with the value as produced by the authentication algorithm.*
7	←		RRC CONNECTION RELEASE	
8	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.2.4.5 Test requirement

1) At step 4 the UE shall reject an authentication and the AUTHENTICATION FAILURE is sent to SS with reject cause "Synch failure".

2) At step 6 the UE shall send an AUTHENTICATION RESPONSE message with the RES information field set to the same value as the XRES calculated by SS.

9.3 Identification

The purpose of this procedure is to check that the UE gives its identity as requested by the network. If this procedure does not work, it will not be possible for the network to rely on the identity claimed by the UE.

9.3.1 General Identification

9.3.1.1 Definition

9.3.1.2 Conformance requirement

1) When requested by the network the UE shall send its IMSI.

2) When requested by the network the UE shall send the TMSI which it was previously allocated.

3) When requested by the network the UE shall send its IMEI as stored in the UE.

4) When requested by the network the UE shall send its IMEISV as stored in the UE.

Reference(s)

TS 24.008 clause 4.3.3.

9.3.1.3 Test purpose

1) To verify that the UE sends identity information as requested by the system in the following cases: IMSI and TMSI are requested in non-security mode, IMEI is requested in security mode.

2) To verify that the UE sends its IMEI, when requested to do so, in non- security mode.

3) To verify that the UE sends its IMEISV, when requested to do so, in non- security mode.

9.3.1.4 Method of test

9.3.1.4.1 Identification / test 1

Initial conditions

- System Simulator:
  - 1 cell, default values.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated" on the cell.

Related ICS/IXIT statement(s)

IMEI of the UE.

Test Procedure

The SS requests identity information from the UE:

- IMSI in non security mode;
- allocated TMSI in non security mode;
- IMEI in security mode.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 Establishment Cause: Terminating Conversational Call.
2	→		PAGING RESPONSE	
3		←	IDENTITY REQUEST	"Identity type" IE is IMSI.
4	→		IDENTITY RESPONSE	"Mobile identity" IE specifies the IMSI of the UE.
5		←	IDENTITY REQUEST	"Identity type" IE is TMSI.
6	→		IDENTITY RESPONSE	"Mobile identity" IE specifies the allocated TMSI of the UE.
7		←	SECURITY MODE COMMAND	The SS starts deciphering.
8	→		SECURITY MODE COMPLETE	The SS starts enciphering.

9	←	IDENTITY REQUEST	"Identity type" IE is IMEI.
10	→	IDENTITY RESPONSE	"Mobile identity" IE specifies the IMEI stored in the UE.
11	←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
12	→	RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.3.1.4.2 Identification / test 2

Initial conditions

- System Simulator:
  - 1 cell, default values.
- User Equipment:
  - the UE has a valid TMSI. It is in "idle updated".

Related ICS/IXIT statement(s)

IMEI of the UE.

IMEISV of the UE.

Test Procedure

The SS requests identity information from the UE:

- IMEI in non security mode;
- IMEISV in non security mode.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 Establishment Cause: Terminating Conversational Call.
2	→		PAGING RESPONSE	
3	←		IDENTITY REQUEST	"Identity type" IE is IMEI.
4	→		IDENTITY RESPONSE	"Mobile identity" IE specifies the IMEI of the UE.
5	←		IDENTITY REQUEST	"Identity type" IE is IMEISV.
6	→		IDENTITY RESPONSE	"Mobile identity" IE specifies the IMEISV of the UE.
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.3.1.5 Test requirement

1) At step 4 in test 1 and test 2 the UE shall send its IMSI.

2) At step 6 in test 1 the UE shall send the TMSI which it was previously allocated.

3) At step 10 in test 1 the UE shall send its IMEI as stored in the UE.

4) At step 6 in test 2 the UE shall send its IMEISV as stored in the UE.

9.3.2 Handling of IMSI shorter than the maximum length

9.3.2.1 Definition

9.3.2.2 Conformance requirement

The UE shall be capable of handling an IMSI that is not of the maximum length.

Reference(s)

TS 24.008 Clause 10.5.1.4.

9.3.2.3 Test purpose

To check that the UE behaves correctly when activated with an IMSI of length less than the maximum length.

In this condition, the UE shall:

- perform location updating;
- answer to paging with IMSI;
- give the correct IMSI when asked by an IDENTITY REQUEST;
- attempt CM connection establishment when requested to;
- attempt call re-establishment when needed;
- attempt IMSI detach when needed;
- erase its TMSI when the IMSI is sent by the network in a LOCATION UPDATING ACCEPT or a TMSI REALLOCATION COMMAND message.

9.3.2.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default values;
  - IMSI attach/detach bit set to "1".
- User Equipment:
  - the UE has no valid TMSI;
  - it is "idle updated";
  - the IMSI has the value 001011234.

Related ICS/IXIT statement(s)

On/Off switch - Yes/No.

Foreseen final state of UE

The UE has no valid TMSI. It is in "idle, updated".

Test Procedure

The UE is paged with its IMSI. The UE shall answer to paging and include the correct IMSI in the PAGING RESPONSE message. During call establishment, the SS asks for the IMSI of the UE. The UE shall answer by an IDENTITY RESPONSE message including the correct IMSI. During the active phase of the call, the SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP). The UE performs call re-establishment. The UE shall include the correct IMSI in the CM RE-ESTABLISHMENT message. a TMSI REALLOCATION COMMAND including a TMSI is sent to the UE. The UE acknowledges this message. The call is release.

The UE is paged with its TMSI. The UE shall answer to paging and includes its TMSI in the PAGING RESPONSE message. During call establishment, the SS sends a TMSI REALLOCATION COMMAND including the IMSI to the UE. The UE shall acknowledge this message. The UE shall erase its TMSI. The call is released.

The UE is switched off or has its power source removed. The UE performs IMSI detach. The UE shall include the correct IMSI in the IMSI DETACH INDICATION message.

The UE is switched on or powered on. The UE performs IMSI attach. The UE shall include the correct IMSI in the LOCATION UPDATING REQUEST message. A TMSI is allocated to the UE.

The LAC of the cell is changed. The UE performs location updating. The SS includes the IMSI in the LOCATION UPDATING ACCEPT message.

A mobile originated CM connection is attempted. The UE shall include the correct IMSI in the CM SERVICE REQUEST message.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" IE contains IMSI of UE. Establishment cause: Terminating Conversational Call.
2	→		PAGING RESPONSE	"mobile identity" contains the IMSI of the UE.
3	←		IDENTITY REQUEST	"identity type" IE is IMSI.
4	→		IDENTITY RESPONSE	"mobile identity" IE contains the IMSI of the UE.
5				The call is established using the sequence of the generic terminating call set-up procedure.
6		SS		The SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP) .
6a	→		CELL UPDATE	CCCH.
6b	←		RRC CONNECTION RELEASE	CCCH.
6c		SS		SS remodifies the scrambling code of DL DPCH to the original one.
7	→		RRC CONNECTION REQUEST	
8	←		RRC CONNECTION SETUP	
9	→		RRC CONNECTION SETUP COMPLETE	
10	→		CM REESTABLISHMENT REQUEST	"mobile identity" IE contains IMSI of the UE.
10a	←		AUTHENTICATION REQUEST	
10b	→		AUTHENTICATION RESPONSE	
10c	←		SECURITY MODE COMMAND	The SS starts deciphering.
10d	→		SECURITY MODE COMPLETE	The SS starts enciphering.
11	←		TMSI REALLOCATION COMMAND	"mobile identity" contains a TMSI.
12	→		TMSI REALLOCATION COMPLETE	
13	←		RRC CONNECTION RELEASE	After sending this message, the SS waits for the disconnection of the main signalling link.
14	→		RRC CONNECTION RELEASE COMPLETE	
15	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" IE contains TMSI of UE. Establishment cause: Terminating Conversational Call.
16	→		PAGING RESPONSE	"mobile identity" contains the TMSI of the UE.
17	←		AUTHENTICATION REQUEST	
18	→		AUTHENTICATION RESPONSE	
18a	←		SECURITY MODE COMMAND	The SS starts deciphering.
18b	→		SECURITY MODE COMPLETE	The SS starts enciphering.
19	←		TMSI REALLOCATION COMMAND	"mobile identity" contains a IMSI of UE.
20	→		TMSI REALLOCATION COMPLETE	
21	←		RRC CONNECTION RELEASE	
22	→		RRC CONNECTION RELEASE COMPLETE	
23	UE			If possible (see ICS) the UE is switched off, otherwise the UE has its power source removed.
24	→		RRC CONNECTION REQUEST	If the UE was switched off it performs IMSI detach. "Establishment cause": Detach
25	←		RRC CONNECTION SETUP	
26	→		RRC CONNECTION SETUP COMPLETE	
27	→		IMSI DETACH INDICATION	"mobile identity" contains IMSI of UE.
28	←		RRC CONNECTION RELEASE	
29	→		RRC CONNECTION RELEASE COMPLETE	
30	UE			The UE is switched on or has power restored.
31	→		RRC CONNECTION REQUEST	
32	←		RRC CONNECTION SETUP	
33	→		RRC CONNECTION SETUP COMPLETE	

34	→	LOCATION UPDATING REQUEST	"mobile identity" contains IMSI of UE.
35	←	LOCATION UPDATING ACCEPT	"mobile identity" contains a TMSI.
36	→	TMSI REALLOCATION COMPLETE	
37	←	RRC CONNECTION RELEASE	
38	→	RRC CONNECTION RELEASE COMPLETE	
39	SS		The SS changes the LAC of the cell.
40	→	RRC CONNECTION REQUEST	Shall be sent within 35s of the LAC being changed.
41	←	RRC CONNECTION SETUP	
42	→	RRC CONNECTION SETUP COMPLETE	
43	→	LOCATION UPDATING REQUEST	"mobile identity" contains TMSI of the UE.
44	←	LOCATION UPDATING ACCEPT	"mobile identity" contains IMSI of the UE.
45	←	RRC CONNECTION RELEASE	
46	→	RRC CONNECTION RELEASE COMPLETE	
47	UE		a mobile originated CM connection is attempted.
48	→	RRC CONNECTION REQUEST	
49	←	RRC CONNECTION SETUP	
50	→	RRC CONNECTION SETUP COMPLETE	
51	→	CM SERVICE REQUEST	"mobile identity" contains IMSI of the UE.
52	←	RRC CONNECTION RELEASE	
53	→	RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.3.2.5 Test requirement

At step 34 the UE shall performs location updating.

At step 2 the UE shall answer to paging with IMSI.

At step 4 the UE shall answer the correct IMSI to the SS by an IDENTITY RESPONSE message.

At step 51 the UE shall attempt CM connection establishment and include the correct IMSI in the CM SERVICE REQUEST message.

At step 10 the UE shall perform call re-establishment with the correct IMSI in the CM RE-ESTABLISHMENT message.

At step 19 the IMSI is sent by the network in a TMSI REALLOCATION COMMAND message, at step 27 the UE shall attempt IMSI detach.

At step 44 the IMSI is sent by the network in a LOCATION UPDATING ACCEPT message, at step 51 the UE shall attempt IMSI detach.

9.4 Location updating

This procedure is used to register the UE in the network. If it is not performed correctly, no call can be established.

9.4.1 Location updating / accepted

9.4.1.1 Definition

9.4.1.2 Conformance requirement

1.

1.1 if the network accepts a location updating from the UE and reallocates a TMSI in the LOCATION UPDATING ACCEPT message the UE shall acknowledge the reception of the new TMSI;

1.2 the UE shall answer to paging with this TMSI and include it in a PAGING RESPONSE message.

2 If the network accepts a location updating from the UE and the LOCATION UPDATING ACCEPT message contains neither TMSI nor IMSI, the UE shall answer to paging when addressed with the last allocated TMSI and include it in the PAGING RESPONSE message.

3.

3.1 if the network accepts a location updating from the UE by use of a LOCATION UPDATING ACCEPT message containing the IMSI of the UE, the UE shall not answer paging with the last allocated TMSI;

3.2 the UE shall still answer paging with IMSI.

Reference(s)

TS 24.008 clause 4.4.4.6.

9.4.1.3 Test purpose

1) To test the behaviour of the UE if the network accepts the location updating of the UE.

For the network response three different cases are identified:

1.1) TMSI is allocated;

1.2) location updating accept contains neither TMSI nor IMSI;

1.3) location updating accept contains IMSI.

9.4.1.4 Method of test

Initial conditions:

- System Simulator:
  - two cells, A and B, belonging to different location areas with location area identification a and b of the same PLMN;
  - IMSI attach/detach is allowed in both cells;
  - the T3212 time-out value is 1/10 hour in both cells.
- User Equipment:
  - the UE has a valid TMSI (=TMSI1) and CKSN (=CKSN1). It is "idle updated" on cell A.

Related ICS/IXIT statement(s)

None.

Test Procedure

The UE is made to select cell B. A normal location updating with TMSI reallocation is performed in cell B. The RRC CONNECTION is released. The SS checks, by paging, that the UE has stored the newly allocated TMSI. The RRC CONNECTION is released. The UE is made to select cell A. A normal location updating is performed in cell A. The LOCATION UPDATING ACCEPT message contains neither IMSI nor TMSI. The SS checks, by paging, that the UE has kept the old TMSI. The RRC CONNECTION is released. The UE is made to select cell B. A normal location updating is performed in cell B. The LOCATION UPDATING ACCEPT message contains an IMSI. The SS checks, by paging, that the UE has deleted its TMSI and responds to paging with IMSI.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The RF level of cell A is lowered until the UE selects cell B.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "location area identification" = a, "mobile station classmark 1" as given by the ICS and "mobile identity" = TMSI1.
5a	←		SECURITY MODE COMMAND	The SS starts deciphering.
5b	→		SECURITY MODE COMPLETE	The SS starts enciphering.
6	←		LOCATION UPDATING ACCEPT	"Mobile identity" = new TMSI (=TMSI2), LAI = b.
7	→		TMSI REALLOCATION COMPLETE	
8	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The SS waits an amount of time which is enough to guarantee that the UE is in service.
9	→		RRC CONNECTION RELEASE COMPLETE	
10	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" IE contains the new TMSI (= TMSI2). Establishment Cause: Terminating Conversational Call.
11	→		PAGING RESPONSE	"Mobile identity" IE contains the new TMSI (= TMSI2).
12	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
13	→		RRC CONNECTION RELEASE COMPLETE	
14		SS		The RF level of cell B is lowered until the UE selects cell A.
15	→		RRC CONNECTION REQUEST	"Establishment cause": Registration
16	←		RRC CONNECTION SETUP	
17	→		RRC CONNECTION SETUP COMPLETE	
18	→		LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "location area identification" = b, "mobile station classmark 1" as given by the ICS and "mobile identity" = TMSI2.
19	←		LOCATION UPDATING ACCEPT	"Mobile identity" IE not included.
20	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The SS waits an amount of time which is enough to guarantee that the UE is in service.
21	→		RRC CONNECTION RELEASE COMPLETE	
22	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.12.2 "Initial UE identity" IE contains the TMSI (= TMSI2). Establishment Cause: Terminating Conversational Call.
23	→		PAGING RESPONSE	"Mobile identity" IE contains the TMSI (=TMSI2).
24	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
25	→		RRC CONNECTION RELEASE COMPLETE	
26		SS		The RF level of cell A is lowered until the UE selects cell B.
27	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
28	←		RRC CONNECTION SETUP	
29	→		RRC CONNECTION SETUP COMPLETE	
30	→		LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "location area identification" = a, "mobile station classmark 1" as given by the ICS and "mobile identity" = TMSI2.

31	←	LOCATION UPDATING ACCEPT	"Mobile identity" IE contains IMSI.
32	←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. The SS waits an amount of time which is enough to guarantee that the UE is in service.
33	→	RRC CONNECTION RELEASE COMPLETE	
34	←	PAGING TYPE 1	"UE identity" IE contains the old TMSI (= TMSI2). Paging Cause: Terminating Conversational Call.
35	UE		The UE shall ignore this message. This is checked during 5 seconds.
36	←	Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" IE contains the IMSI. Establishment Cause: Terminating Conversational Call.
37	→	PAGING RESPONSE	"Mobile identity" IE contains the IMSI.
38	←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
39	→	RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.4.1.5 Test requirement

At step 7 the UE shall acknowledge the reception of the new TMSI (TMSI2).

At step 11 the UE shall answer to paging with this TMSI (TMSI2).

At step 23 the UE shall answer to paging with the last allocated TMSI (TMSI2).

At step 35 the UE shall not answer paging with the last allocated TMSI, but at step 37 the UE shall still answer paging with IMSI.

9.4.2 Location updating / rejected

9.4.2.1 Location updating / rejected / IMSI invalid

9.4.2.1.1 Definition

9.4.2.1.2 Conformance requirement

1) If the network rejects a location updating from the UE with the cause "IMSI unknown in HLR", "Illegal MS" or "Illegal ME" the UE shall:

   1.1 not perform normal location updating;

   1.2 not perform periodic location updating;

   1.3 not respond to paging with IMSI;

   1.4 not respond to paging with TMSI;

   1.5 reject any request from CM entity for MM connection other than for emergency call;

   1.6 not perform IMSI detach if it is switched off or has its power source removed.

2) If the network rejects a location updating from the UE with the cause "IMSI unknown in HLR", "Illegal MS" or "Illegal ME" the UE, if it supports speech, shall accept a request for an emergency call by sending a RRC

CONNECTION Request message with the establishment cause set to "emergency call" and include an IMEI as mobile identity in the CM SERVICE REQUEST message.

3) If the network rejects a location updating from the UE with the cause "IMSI unknown in HLR", "Illegal MS" or "Illegal ME" the UE shall delete the stored LAI, CKSN and TMSI.

Reference(s)

TS 24.008 clause 4.4.4.7.

9.4.2.1.3 Test purpose

To test the behaviour of the UE if the network rejects the location updating of the UE with the cause "IMSI unknown in HLR", "illegal MS" or "Illegal ME".

9.4.2.1.4 Method of test

Initial conditions

- System Simulator:
  - two cells: A and B, belonging to different location areas of the same PLMN;
  - IMSI attach/detach is allowed in both cells;
  - the T3212 time-out value is 1/10 hour in both cells.
- User Equipment:
  - the UE has valid TMSI, CKSN and CK, IK. It is "idle updated" on cell A.

Related ICS/IXIT statement(s)

USIM removal possible while the UE is powered Yes/No.

Switch off on button Yes/No.

Support for speech Yes/No.

Test Procedure

The SS rejects a normal location updating with the cause value "IMSI unknown in HLR". The RRC CONNECTION is released. The SS checks that the UE has entered the state MM IDLE and the substate NO IMSI, i.e. does not perform normal location updating when a new cell of the same or another PLMN is entered, does not perform periodic updating, does not respond to paging, rejects any requests from CM entities except emergency calls and does not perform IMSI detach if it is switched off or has its power source removed.

The test is repeated with cause value "Illegal MS" and with cause value "Illegal ME".

Expected sequence

The sequence is executed for execution counter k = 1, 2, 3.

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell B.
1	SS			The RF level of cell A is lowered until the UE selects cell B.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	
6	←		LOCATION UPDATING REJECT	"Reject cause" IE is "IMSI unknown in HLR" for k = 1, "Illegal MS" for k = 2, "Illegal ME" for k = 3.
7	→		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
				The following messages are sent and shall be received on cell A.
9	SS			The RF levels are then changed again to make the UE reselect the cell A.
10	UE			The UE performs cell reselection according to procedure as specified in (this however is not checked until step 23). The UE shall not initiate an RRC connection establishment on cell A or on cell B.
11	SS			The SS waits at least 7 minutes for a possible periodic updating.
12	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B.
13	←		PAGING TYPE 1	The UE is paged in cell A. "UE identity" IE contains IMSI. Paging Cause: Terminating Conversational Call.
14	UE			The UE shall ignore this message. This is verified during 3 seconds.
15	←		PAGING TYPE 1	The UE is paged in cell A. "UE identity" IE contains TMSI. Paging Cause: Terminating Conversational Call.
16	UE			The UE shall ignore this message. This is verified during 3 seconds.
17	UE			A MO CM connection is attempted.
18	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 seconds.
19	UE			If the UE supports speech (see ICS), it is made to perform an emergency call.
20	→		RRC CONNECTION REQUEST	"Establishment cause": Emergency call.
This message is sent in cell A.				
21	←		RRC CONNECTION SETUP	
22	→		RRC CONNECTION SETUP COMPLETE	
23	→		CM SERVICE REQUEST	"CM service type": Emergency call establishment. "Mobile identity": type of identity is set to IMEI.
24	←		CM SERVICE ACCEPT	
25	→		EMERGENCY SETUP	
26	←		RELEASE COMPLETE	"Cause" = unassigned number.
27	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
28	→		RRC CONNECTION RELEASE COMPLETE	
29	UE			If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.

30	UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 seconds.
31	UE		Depending on what has been performed in step 31 the UE is brought back to operation.
32	→	RRC CONNECTION REQUEST	"Establishment cause": Registration.
33	←	RRC CONNECTION SETUP	
34	→	RRC CONNECTION SETUP COMPLETE	
35	→	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "mobile station classmark 1" as given by the ICS, "Mobile Identity" = IMSI, "LAI" = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE).
36	←	AUTHENTICATION REQUEST	"CKSN" = CKSN1.
37	→	AUTHENTICATION RESPONSE	
38	←	LOCATION UPDATING ACCEPT	"Mobile Identity" = TMSI.
39	→	TMSI REALLOCATION COMPLETE	
40	←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
41	→	RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.4.2.1.5 Test requirement

1) 1.1 At step 10 the UE shall not perform normal location updating.

   1.2 At step 12 the UE shall not perform periodic location updating.

   1.3 At step 14 the UE shall not respond to paging with IMSI.

   1.4 At step 16 the UE shall not respond to paging with TMSI.

   1.5 At step 18 the UE shall reject a MO CM connection.

   1.6 At step 30 the UE shall not initiate an RRC connection establishment on cell A or on cell B.

2) At step 20 the UE shall accept a request for an emergency call with the establishment cause set to "Emergency call".

3) At step 35 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the LAI "deleted LAI".

9.4.2.2 Location updating / rejected / PLMN not allowed

9.4.2.2.1 Definition

9.4.2.2.2 Conformance requirement

1) If the network reject a location updating from the UE with the cause "PLMN not allowed" the UE shall:

   1.1 not perform periodic updating;

   1.2 not perform IMSI detach when switched off;

   1.3 not perform IMSI attach when switched on in the same location area;

   1.4 not perform normal location updating when in the same PLMN and when that PLMN is not selected manually;

1.5 reject any request from CM entity for MM connection other than for emergency call.

2) If the network rejects a location updating from the UE with the cause "PLMN not allowed" the UE shall:

2.1 perform normal location updating when a new PLMN is entered;

2.2 accept a request for an emergency call, if it supports speech, by sending a RRC CONNECTION REQUEST message with the establishment cause set to "emergency call".

3) If the network rejects a location updating from the UE with the cause "PLMN not allowed" and if after that the PLMN from which this rejection was received, is manually selected, the UE shall perform a normal location updating procedure.

Reference(s)

TS 24.008 clause 4.4.4.7.

9.4.2.2.3 Test purpose

To test the behaviour of the UE if the network rejects the location updating of the UE with the cause "PLMN not allowed".

9.4.2.2.4 Method of test

9.4.2.2.4.1 Location updating / rejected / PLMN not allowed / test 1

Initial conditions

- System Simulator:
  - one cell: C, belonging to PLMN1;
  - two cells: A and B, belonging to different location areas a and b and belonging to PLMN2. PLMN2 is different from HPLMN and from PLMN1;
  - IMSI attach/detach is allowed in cells A and B but not in cell C;
  - the T3212 time-out value is 1/10 hour in cells A and B.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated" on cell C;
  - the UE is in manual mode for PLMN selection.

Related ICS/IXIT statement(s)

USIM removal possible while the UE is powered Yes/No.

Switch off on button Yes/No.

The UE is automatically in automatic mode after switch on Yes/No.

Support for speech Yes/No.

Test Procedure

The SS rejects a normal location updating with the cause value "PLMN not allowed". The RRC CONNECTION is released. The SS checks that the UE does not perform periodic updating, does not perform IMSI detach, does not perform IMSI attach if activated in the same location area, rejects any request for CM connection establishment other than emergency call, accepts a request for an emergency call and performs normal location updating only when a new PLMN is entered.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell B.
1	UE			The UE is switched off (or power is removed).
2	SS			The SS activates cells A and B and deactivates cell C. Cell B has a level higher by at least 5 dB than cell A.
3	UE			The UE is switched on. (or power is reapplied) If necessary the UE is put in manual selection mode. The UE shall offer the new PLMN as available to the user. The PLMN is manually selected.
4	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
5	←		RRC CONNECTION SETUP	
6	→		RRC CONNECTION SETUP COMPLETE	
7	→		LOCATION UPDATING REQUEST	
8	←		LOCATION UPDATING REJECT	"Reject cause" = PLMN not allowed.
9	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
10	→		RRC CONNECTION RELEASE COMPLETE	
11	SS			The SS waits for a possible periodic updating for 7 minutes.
12	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B.
13	UE			If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
14	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 seconds.
15	UE			Depending on what has been performed in step 13 the UE is brought back to operation. The UE is not made to select PLMN 2.
16	UE			The UE shall not initiate an RRC connection establishment. This is checked during 3 seconds.
				The following message are sent and shall be received on cell A.
17	SS			The RF level of cell B is lowered to make the UE reselect cell A.
18	UE			No access to the network shall be registered by the SS within one minute.
19	UE			If the UE supports speech (see ICS) it is made to perform an emergency.
20	→		RRC CONNECTION REQUEST	"Establishment cause": Emergency Call.
21	←		RRC CONNECTION SETUP	
22	→		RRC CONNECTION SETUP COMPLETE	
23	→		CM SERVICE REQUEST	"CM service type" = Emergency call establishment.
24	←		CM SERVICE ACCEPT	
25	→		EMERGENCY SETUP	
26	←		RELEASE COMPLETE	Cause IE: "unassigned number".
27	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
28	→		RRC CONNECTION RELEASE COMPLETE	
29	UE			A MO CM connection is attempted.
30	UE			The UE shall not initiate an RRC connection establishment. This is checked during 3 seconds.
				The following messages are sent and shall be received on cell C.
31	UE			The UE is switched off.
32	SS			The SS activates cell C and deactivates cells A and B.

33	UE		The UE is switched on. If necessary the UE is placed into the automatic mode.
34	→	RRC CONNECTION REQUEST	"Establishment cause": Registration.
35	←	RRC CONNECTION SETUP	
36	→	RRC CONNECTION SETUP COMPLETE	
37	→	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "LAI" = deleted LAI (the MCC and MNC hold the values of PLMN1, the LAC is coded FFFE) "mobile identity" = IMSI.
38	←	LOCATION UPDATING ACCEPT	"Mobile identity" = TMSI.
39	→	TMSI REALLOCATION COMPLETE	
40	←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
41	→	RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

9.4.2.2.4.2 Location updating / rejected / PLMN not allowed / test 2

Initial conditions

- System Simulator:
  - one cell C, belonging to PLMN1;
  - two cells A and B, belonging to different location areas a and b and belonging to PLMN2. PLMN2 is different from HPLMN;
  - IMSI attach/detach is allowed in cells A and B but not in cell C;
  - the T3212 time-out value is 1/10 hour in cells A and B.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated" on cell C.

Related ICS/IXIT statement(s)

USIM removal possible while UE is powered Yes/No.

Switch off on button Yes/No.

The UE is automatically in automatic mode after switch on Yes/No.

Test Procedure

The SS rejects a normal location updating with the cause value "PLMN not allowed". The RRC CONNECTION is released. Then the PLMN from which this rejection was received is manually selected and the SS checks that a normal location updating is performed.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell B.
1	UE			The UE is switched off (or power is removed).
2	SS			The SS activates cells A and B and deactivates cell C. Cell B has a level higher by at least 5 dB than cell A.
3	UE			The UE is switched on (or power is reapplied).
3a	UE			If the UE is in manual mode, it shall offer the new PLMN as available to the user. In this case the PLMN is manually selected.
4		→	RRC CONNECTION REQUEST	"Establishment cause": Registration.
5		←	RRC CONNECTION SETUP	
6		→	RRC CONNECTION SETUP COMPLETE	
7		→	LOCATION UPDATING REQUEST	
8		←	LOCATION UPDATING REJECT	"Reject cause" = PLMN not allowed.
9		←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
10		→	RRC CONNECTION RELEASE COMPLETE	
11	UE			The UE is made to search for PLMNs and the PLMN indicated by the SS is manually selected.
12		→	RRC CONNECTION REQUEST	"Establishment cause": Registration.
13		←	RRC CONNECTION SETUP	
14		→	RRC CONNECTION SETUP COMPLETE	
15		→	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "LAI" = deleted LAI (the MCC and MNC hold the values of PLMN1, the LAC is coded FFFE) "mobile identity" = IMSI.
16		←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
17		→	RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell C.				
18	UE			The UE is switched off.
19	SS			The SS activates cell C and deactivates cells A and B.
20	UE			The UE is switched on. If necessary, the UE is put into the automatic mode.
21		→	RRC CONNECTION REQUEST	"Establishment cause": Registration.
22		←	RRC CONNECTION SETUP	
23		→	RRC CONNECTION SETUP COMPLETE	
24		→	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "LAI" = deleted LAI (the MCC and MNC hold the values of PLMN1, the LAC is coded FFFE) "mobile identity" = IMSI.
25		←	LOCATION UPDATING ACCEPT	"Mobile identity" = TMSI.
26		→	TMSI REALLOCATION COMPLETE	
27		←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
28		→	RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.4.2.2.5 Test requirement

1) 1.1 At step 12 in test 1 the UE shall not perform periodic updating.

   1.2 At step 14 in test 1 the UE shall not initiate an RRC connection establishment (IMSI detach).

   1.3 At step 16 in test 1 the UE shall not initiate an RRC connection establishment (IMSI attach).

   1.4 At step 16 in test 1 the UE shall not perform normal location updating.

   1.5 At step 29 in test 1 the UE shall reject a MO CM connection.

2) 2.1 At step 37 in test 1 the UE shall perform normal location updating.

   2.2 At step 20 in test 1 the UE shall accept a request for an emergency call with the establishment cause set to "Emergency call".

3) At step 11 in test 2 the UE is made to search for PLMNs and the PLMN indicated by the SS is manually selected, and at step 15 the UE shall perform a normal location updating procedure.

9.4.2.3 Location updating / rejected / location area not allowed

9.4.2.3.1 Definition

9.4.2.3.2 Conformance requirement

1) If the network rejects a location updating from the UE with the cause "Location Area not allowed" the UE shall:

   1.1 not perform periodic updating;

   1.2 not respond to paging with TMSI;

   1.3 reject any request from CM entity for MM connection other than for emergency call;

   1.4 not perform IMSI detach.

2) If the network rejects a location updating from the UE with the cause "Location Area not allowed" the UE shall:

   2.1 perform normal location updating when a new location area is entered;

   2.2 accept a request for an emergency call, if it supports speech, by sending a RRC CONNECTION REQUEST message with the establishment cause set to "emergency call";

   2.3 delete the list of forbidden LAs after switch off (power off).

Reference(s)

TS 24.008 clause 4.4.4.7.

9.4.2.3.3 Test purpose

To test the behaviour of the UE if the network rejects the location updating of the UE with the cause "Location Area not allowed".

To test that the UE deletes the list of forbidden LAs after switch off (power off).

9.4.2.3.4 Method of test

Initial conditions

- System Simulator:

- two cells: A and B, belonging to different location areas a and b;
- IMSI attach/detach is allowed in both cells;
- the T3212 time-out value is 1/10 hour in both cells.

- User Equipment:
  - the UE has a valid TMSI. It is "idle updated" on cell A.

Related ICS/IXIT statement(s)

Switch off on button Yes/No.

Support for speech Yes/No.

Method to clear the list of forbidden location areas periodically.

Test Procedure

The SS rejects a normal location updating with the cause value "Location Area not allowed". The RRC CONNECTION is released. The SS checks that the UE does not perform periodic updating, does not respond to paging with TMSI, rejects any requests from CM entities for MM-connections except emergency calls, does not perform IMSI detach, performs normal location updating when a new location area is entered and deletes the list of forbidden LAs when switched off.

Different types of UE may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell B.
1		SS		The RF level of cell A is lowered so that cell B is selected, while keeping the C1 and C2 of cell A greater than 10.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Location updating.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	
6	←		LOCATION UPDATING REJECT	"Reject cause" = "Location Area not allowed".
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the mainsignalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9		SS		SS waits for a possible location updating for 7 minutes.
10		UE		The UE shall not initiate an RRC-connection establishment either on cell A or cell B.
11	←		PAGING TYPE 1	The UE is paged in cell B. "UE identity" = TMSI. Paging Cause: Terminating Conversational Call.
12		UE		The UE shall ignore this message. This is checked during 3 seconds.
13		UE		A MO CM connection is attempted.
14		UE		The UE shall not initiate an RRC connection establishment on cell A or cell B. This is checked during 3 seconds.
15		UE		If the UE supports speech (see ICS), it is made to perform an emergency call.
16	→		RRC CONNECTION REQUEST	"Establishment cause": Emergency call.
17	←		RRC CONNECTION SETUP	
18	→		RRC CONNECTION SETUP COMPLETE	
19	→		CM SERVICE REQUEST	"CM service type": Emergency call establishment.
20	←		CM SERVICE ACCEPT	
21	→		EMERGENCY SETUP	
22	←		RELEASE COMPLETE	Cause: "unassigned number".
23	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
24	→		RRC CONNECTION RELEASE COMPLETE	
25		UE		If possible (see ICS) switch off is performed. Otherwise the power is removed.
26		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B (check for IMSI detach) This is checked during 3 seconds.
27		UE		Depending on what has been performed in step 25 the UE is brought back to operation.
28	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
29	←		RRC CONNECTION SETUP	
30	→		RRC CONNECTION SETUP COMPLETE	
31	→		LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available,"LAI" = deleted LAI, "mobile identity" = IMSI (This checks the deletion of the forbidden lists)
32	←		LOCATION UPDATING REJECT	"Reject cause" = "Location Area not allowed".
33	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
34	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell A.				
35		SS		The RF level of cell B is lowered until the UE selects cell A.
36	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.

37	←	RRC CONNECTION SETUP	
38	→	RRC CONNECTION SETUP COMPLETE	
39	→	LOCATION UPDATING REQUEST	
40	←	AUTHENTICATION REQUEST	
41	→	AUTHENTICATION RESPONSE	
42	←	LOCATION UPDATING ACCEPT	Mobile identity = TMSI.
43	→	TMSI REALLOCATION COMPLETE	
44	←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
45	→	RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.4.2.3.5 Test requirement

1) 1.1 At step 10 the UE shall not perform periodic updating.

   1.2 At step 12 the UE shall not respond to paging with TMSI.

   1.3 At step 14 the UE shall not initiate an RRC connection establishment.

   1.4 At step 26 the UE shall not initiate an RRC connection establishment (IMSI detach).

2) 2.1 At step 39 the UE shall perform normal location updating.

   2.2 At step 16 the UE shall accept a request for an emergency call.

   2.3 At step 31 the UE shall send a LOCATION UPDATING REQUEST message with the LAI "deleted LAI".

9.4.2.4 Location updating / rejected / roaming not allowed in this location area

9.4.2.4.1 Definition

9.4.2.4.2 Conformance requirement

1) If the network rejects a location updating from the UE with the cause "Roaming not allowed in this area" the UE shall:

   1.1 not perform periodic updating;

   1.2 not respond to paging with TMSI;

   1.3 reject any request from CM entity for MM connection other than for emergency call;

   1.4 not perform IMSI detach.

2) If the network rejects a location updating from the UE with the cause "Roaming not allowed in this area" the UE shall:

   2.1 perform normal location updating when a new location area is entered;

   2.2 accept a request for an emergency call, if it supports speech, by sending a RRC CONNECTION Request message with the establishment cause set to "emergency call";

   2.3 periodically search for its HPLMN.

3) The UE shall reset the list of "Forbidden location areas for roaming" when it is switched off or has its power source removed or when the USIM is removed.

4) The UE shall be capable of storing at least 6 entries in the list of "Forbidden location areas for roaming".

Reference(s)

TS 24.008 Clause 4.4.4.7.

9.4.2.4.3 Test purposes

Test purpose 1

To test that on receipt of a rejection using the Roaming cause code, the UE ceases trying to update on that cell, that this situation continues for at least one periodic location interval period, and that the corresponding list is re-set by switching off the UE or removing its power source.

Test purpose 2

To test that if no cell is available, the UE does not answer to paging with TMSI, rejects a request from CM entity other than for emergency calls.

Test purpose 3

To test that at least 6 entries can be held in the list of "forbidden location areas for roaming" (the requirement in is to store at least 10 entries. This is not fully tested by the third procedure).

Test purpose 4

To test that if a cell of the Home PLMN is available then the UE returns to it in preference to any other available cell.

Test purpose 5

To test that if the USIM is removed the list of "forbidden location areas for roaming" is cleared.

9.4.2.4.4 Method of test

Initial conditions

The initial conditions shall be met before each of the different procedures.

- System Simulator:
  - for procedures 1, 2, 3 and 5: Two cells A and B, belonging to different location areas of the same PLMN with LAI a and b. The MCC of that PLMN is the same as that of the HPLMN. The MNC of that PLMN is different from that of the HPLMN;
  - for procedure 4: three cells A, B, C of the same PLMN which is not the HPLMN with 3 different location area codes. Cells should differ in signal strength by 10 dB with cell A being the strongest and cell C the weakest. There should be a 20 dB range between A and C. A should be set to a level of - 40 dBm;
  - IMSI attach/detach is allowed in every cell;
  - the T3212 time-out value is 1/10 hour in every cell.
- User Equipment:
  - procedures 1, 2, 3 and 5: The UE has valid TMSI, CKSN and CK, IK. It is "idle updated" on cell B;
  - procedure 4: The UE has valid TMSI, CKSN and CK, IK. It is "idle updated" on cell A;
  - the list of "forbidden location areas for roaming" shall be empty (this may be achieved by either removing the USIM or switching the UE OFF then ON or removing the UE power source depending on ICS).

Related ICS/IXIT statement(s)

USIM removal possible while UE is powered Yes/No.

Switch off on button Yes/No.

Support of speech Yes/No.

Method to clear the list of location areas for roaming periodically.

The UE is automatically in automatic mode after switch on Yes/No.

Test Procedures

Procedure 1:

- The SS rejects a normal location updating with the cause value "Roaming not allowed in this area". The RRC CONNECTION is released. The SS checks that the UE does not perform periodic location updating procedure. The UE is turned off and then on. The SS checks that the UE performs location updating on the cell on which its location update request had been rejected (this checks that the LA is not the forbidden list after switch on). This procedure is performed another time but the deletion of the list is checked while removing the USIM (instead of turning off the UE).

Procedure 2:

- The SS rejects a normal location updating with the cause value "Roaming not allowed in this area". The RRC CONNECTION is released. The SS checks that the UE does not answer to a paging message with TMSI, rejects a request from CM entity but supports an emergency call.

Procedure 3:

- The SS rejects a normal location updating with the cause value "Roaming not allowed in this area". This is done for 6 different location areas. Then the SS checks that the UE does not attempt to begin a location updating procedure on the non-allowed location areas.

Procedure 4:

- The SS accepts a periodic location updating on a cell not belonging to the HPLMN. Then when the UE attempts to perform a periodic location updating to this cell, the SS rejects this location updating with the cause value "Roaming not allowed in this area". Two cells are then available, one belonging to the HPLMN but with the weakest level. It is checked that the UE returns to its HPLMN.

Procedure 5: If USIM removal is possible while UE is powered:

- The SS rejects a normal location updating with the cause value "Roaming not allowed in this area". The RRC CONNECTION is released. The SS checks that the UE does not perform periodic location updating procedure. The USIM is removed and inserted in the UE. The SS checks that the UE performs location updating on the cell on which its location update request had been rejected (this checks that the LA is not the forbidden list after switch on).

Different types of UE may use different methods to periodically clear the list of forbidden areas (e.g. every day at 12am) for roaming. If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected sequence

The following procedure is used during the test:

- change_LAI (x):
  - the purpose of this procedure is to change the value of Location Area Identifier of cell x;
  - the Location Area Identifier of cell x shall be changed. The code shall be chosen arbitrarily but shall be different from any previously used in this procedure. The code shall have the same MCC as the Home PLMN and shall not have the same MNC as the Home PLMN.

Procedure 1

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The RF level of cell B is lowered until cell B is no more suitable and the UE selects cell A.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	Location Updating Type = normal.
6	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9		SS		The SS waits at least 7 minutes for a possible location updating.
10		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B.
11		UE		If possible (see ICS) the UE is switched off. Otherwise if possible the power is removed.
12		UE		Depending on what has been performed in step 11 the UE is brought back to operation and placed in an automatic mode.
13	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
14	←		RRC CONNECTION SETUP	
15	→		RRC CONNECTION SETUP COMPLETE	
16	→		LOCATION UPDATING REQUEST	Location Updating Type = normal.
17	←		LOCATION UPDATING ACCEPT	“Mobile Identity” not IE included.
18	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
19	→		RRC CONNECTION RELEASE COMPLETE	

Procedure 2

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1	SS			The RF level of cell B is lowered until the UE selects cell A. The level of cell B shall be such that cell B is suitable for cell selection.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration. This message is sent on cell A.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	
6	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
				The following messages are sent and shall be received on cell B.
9	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
10	←		RRC CONNECTION SETUP	
11	→		RRC CONNECTION SETUP COMPLETE	
12	→		LOCATION UPDATING REQUEST	
13	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
14	→		RRC CONNECTION RELEASE COMPLETE	
15	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
16	SS			The SS waits for a possible location updating procedure on both cells A and B for 2 minutes.
17	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B within 2 minutes after the end of step 15.
18	←		PAGING TYPE 1	"UE identity" = TMSI. This message is sent on cell A and on cell B. Paging Cause: Terminating Conversational Call.
19	UE			The UE shall not initiate an RRC connection on cell A or on cell B. This is checked during 3 seconds.
20	UE			A MO CM connection is attempted.
21	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 seconds.
The following messages are sent and shall be received on cell A. Steps 22 to 31 are performed if the UE supports speech.				
22	UE			An emergency call is attempted.
23	→		RRC CONNECTION REQUEST	"Establishment cause": Emergency Call.
24	←		RRC CONNECTION SETUP	
25	→		RRC CONNECTION SETUP COMPLETE	
26	→		CM SERVICE REQUEST	"CM service type": Emergency call establishment.
27	←		CM SERVICE ACCEPT	
28	→		EMERGENCY SETUP	
29	←		RELEASE COMPLETE	"Cause" = unassigned number.
30	→		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
31	→		RRC CONNECTION RELEASE COMPLETE	

Procedure 3

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell A				
1		SS		The RF level of cell B is lowered until the UE selects cell A. The level of cell B shall be such that cell B is suitable for cell selection.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	
6	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell B.				
9	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
10	←		RRC CONNECTION SETUP	
11	→		RRC CONNECTION SETUP COMPLETE	
12	→		LOCATION UPDATING REQUEST	
13	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
14	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
15	→		RRC CONNECTION RELEASE COMPLETE	
16		SS		Change_LAI (A) within 5 seconds after step 13.
The following messages are sent and shall be received on cell A.				
17	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
18	←		RRC CONNECTION SETUP	
19	→		RRC CONNECTION SETUP COMPLETE	
20	→		LOCATION UPDATING REQUEST	
21	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
22	→		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
23	→		RRC CONNECTION RELEASE COMPLETE	
24		SS		Change_LAI (B) within 5 seconds after step 21.
The following messages are sent and shall be received on cell B.				
25	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
26	←		RRC CONNECTION SETUP	
27	→		RRC CONNECTION SETUP COMPLETE	
28	→		LOCATION UPDATING REQUEST	
29	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
30	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
31	→		RRC CONNECTION RELEASE COMPLETE	
32		SS		Change_LAI (A) within 5 seconds after step 29.
The following messages are sent and shall be received on cell A.				
33	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
34	←		RRC CONNECTION SETUP	
35	→		RRC CONNECTION SETUP COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
36	→		LOCATION UPDATING REQUEST	
37	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
38	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
39	→		RRC CONNECTION RELEASE COMPLETE	
40		SS		Change_LAI (B) within 5 seconds after step 37.
The following messages are sent and shall be received on cell B.				
41	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
42	←		RRC CONNECTION SETUP	
43	→		RRC CONNECTION SETUP COMPLETE	
44	→		LOCATION UPDATING REQUEST	
45	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
46	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
47	→		RRC CONNECTION RELEASE COMPLETE	
48		SS		The SS waits for a possible location updating procedure on both cells A and B for 7 minutes.
49	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B within 7 minutes after the end of step 47.

Procedure 4

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell A.				
1		SS		The SS waits for a periodic location updating procedure on cell A for 7 minutes after the initial conditions have been established.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	Location Updating Type = periodic.
6	←		LOCATION UPDATING ACCEPT	“Mobile Identity” not IE included.
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9		SS		The location area identity of cell C shall be changed to that of a location area in the Home PLMN.
10		SS		The SS waits for a periodic location updating procedure on cell A for 7 minutes.
11	→		RRC CONNECTION REQUEST	"Establishment cause": Registration. This message is sent on cell A within 7 minutes after the end of step 8.
12	←		RRC CONNECTION SETUP	
13	→		RRC CONNECTION SETUP COMPLETE	
14	→		LOCATION UPDATING REQUEST	"Location updating type" = periodic.
15	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
16	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
17	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell C.				
18	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
19	←		RRC CONNECTION SETUP	
20	→		RRC CONNECTION SETUP COMPLETE	
21	→		LOCATION UPDATING REQUEST	"Location updating type" = periodic.
22	←		LOCATION UPDATING ACCEPT	“Mobile Identity” not IE included.
23	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
24	→		RRC CONNECTION RELEASE COMPLETE	

Procedure 5

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell A.				
1		SS		The RF level of cell B is lowered until cell B is no longer suitable and the UE selects cell A.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	
6	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9		SS		The SS waits at least 7 minutes for a possible location updating.
10		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B.
11		UE		The USIM is removed.
12		UE		The USIM is inserted into the ME.
13	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
14	←		RRC CONNECTION SETUP	
15	→		RRC CONNECTION SETUP COMPLETE	
16	→		LOCATION UPDATING REQUEST	Location Updating Type = normal.
17	←		LOCATION UPDATING ACCEPT	“Mobile Identity” not IE included.
18	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
19	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.4.2.4.5 Test requirement

1) 1.1 At step 10 in Procedure 1 the UE shall not perform periodic updating.

   1.2 At step 19 in Procedure 2 the UE shall not respond to paging with TMSI.

   1.3 At step 21 in procedure 2 the UE shall not initiate an RRC connection establishment.

   1.4 After step 13 in Procedure 5 the UE shall perform location updating (at step 16; not perform IMSI detach).

2) 2.1 After step 9 in Procedure 2 the UE perform normal location updating (at step 12).

   2.2 At step 23 in Procedure 2 the UE shall initiate a RRC CONNECTION REQUEST message with the establishment cause set to "Emergency call";

   2.3 After step 14 in Procedure 4 the UE shall attempt to location updating with location updating type "periodic" (at step 21: periodically search for its HPLMN).

3) After step 12 in Procedure 5 the UE shall perform location updating (at step 16) when the USIM is removed.

4) At step 49 in Procedure 3 the UE shall not attempt to begin a location updating procedure.

9.4.3 Location updating / abnormal cases

9.4.3.1 Void

9.4.3.2 Location updating / abnormal cases / attempt counter less or equal to 4, LAI different

9.4.3.2.1 Definition

9.4.3.2.2 Conformance requirement

1) When a failure such as cases f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during a normal location updating procedure, if the attempt counter is smaller than 4 and after expiry of T3211, the UE shall resend its LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "normal location updating".

2) When a failure such as cases f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during a normal location updating procedure the UE shall:

   2.1 not answer to paging with the previously allocated TMSI;

   2.2 not perform the IMSI detach procedure, when switched off.

3) When a failure such as case e) of clause 4.4.4.9 of TS 24.008 has occurred during a normal location updating procedure and when an emergency call establishment is requested by the user the UE, if it supports speech, shall send a CM SERVICE REQUEST message with CM Service Type IE set to "emergency call establishment", CKSN IE set to "no key available" and Mobile Identity IE set to its IMSI and after acceptance by the network it shall send an EMERGENCY SETUP message.

4) When a failure such as cases f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during a normal location updating procedure the UE shall use a request from CM entity other than emergency call as a trigger for a normal location updating procedure and shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

5) When a failure such as cases f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during a normal location updating procedure the UE shall answer to paging with IMSI and shall send a PAGING RESPONSE message with CKSN IE set to "no key available" and Mobile Identity IE set to its IMSI.

6) When a failure such as cases f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during a normal location updating procedure the UE shall perform a normal location updating procedure as soon as it enters a new cell.

References

TS 24.008 Clauses 4.4.4.2, 4.4.4.9.

9.4.3.2.3 Test purpose

To verify that the UE performs normal location updating procedures when its attempt counter is smaller than 4.

To check that the UE does not perform the IMSI detach procedure when "idle not updated".

To verify that when "idle not updated" the UE can perform an emergency call.

To verify that when "idle not updated" the UE uses requests from CM layer other than emergency call as triggering of a normal location updating procedure.

To verify that the UE performs a normal location updating procedure if it enters a new cell while being "idle not updated".

9.4.3.2.4 Method of test

Initial conditions

- System Simulator:
  - two cells: A and B of the same PLMN, belonging to different location areas with LAI a and b;
  - ATT flag shall be set to IMSI attach/detach allowed.
- User Equipment:
  - the UE is "idle updated" on cell A. A valid CKSN value is stored in the USIM and is noted "initial CKSN". A TMSI is allocated.

Related ICS/IXIT statements

USIM removal possible while UE is powered Yes/No.

Switch off on button Yes/No.

Support for speech Yes/No.

Test Procedure

The UE is made to perform a normal location updating procedure. Four types of failure cases are triggered:

- sending of a Location Updating Reject with cause randomly chosen between all defined cause values except 2, 3, 6, 11, 12 and 13 (which trigger a different action) (case g of TS 24.008 clause 4.4.4.9);
- sending of a RRC CONNECTION RELEASE message before the normal end of the procedure (case f);
- T3210 time-out (case e);
- RR connection establishment failure (case h).

As there is no stored LAI or the stored LAI is different from the broadcast LAI, and the attempt counter in the UE shall be lower than 4, the UE enters the state MM IDLE and substate ATTEMPTING TO UPDATE and waits for T3211 seconds before trying again a location updating procedure.

Then the behaviour of the UE in the MM IDLE ATTEMPTING TO UPDATE SERVICE state is checked, that is:

- not answer to paging with TMSI;
- not perform an IMSI detach procedure;
- support request for emergency call;
- use requests from CM layer other than emergency call as triggering of a normal location updating procedure;
- perform normal location updating procedure when a new cell is entered.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell B.				
1	UE			The RF level of cell A is lowered until the UE selects cell B. The RF level of cell A is set sufficiently low to ensure that cell A is not suitable.
2	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = a, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
6	←		LOCATION UPDATING REJECT	IE Reject cause is set to a value arbitrarily chosen: X in table 10.5.95 of TS 24.008, causes #2, #3, #6, #11, #12 and #13 being excluded.
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC CONNECTION release.
8	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
9	←		RRC CONNECTION SETUP	
12	→		RRC CONNECTION SETUP COMPLETE	
13	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
14	SS			The SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP).
15	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B within T3211 + RadioLinkTimeout after the SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP).
15a	→		CELL UPDATE	CCCH.
15b	←		RRC CONNECTION RELEASE	CCCH.
15c	SS			SS remodifies the scrambling code of DL DPCH to the original one.
16	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
17	←		RRC CONNECTION SETUP	
18	→		RRC CONNECTION SETUP COMPLETE	
19	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
20	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
21	→		RRC CONNECTION RELEASE COMPLETE	
22	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC CONNECTION release.
23	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
24	←		RRC CONNECTION SETUP	
25	→		RRC CONNECTION SETUP COMPLETE	
26	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
27	←		AUTHENTICATION REQUEST	CKSN = initial CKSN.

Step	Direction		Message	Comments
	UE	SS		
28	→		AUTHENTICATION RESPONSE	
28a	←		SECURITY MODE COMMAND	The SS starts deciphering.
28b	→		SECURITY MODE COMPLETE	The SS starts enciphering.
29	←		LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
30	→		TMSI REALLOCATION COMPLETE	
31	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. UE is now "idle updated" in cell B.
32	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell A.				
33	UE			The RF level of cell B is lowered until the UE selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable.
34	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
35	←		RRC CONNECTION SETUP	
36	→		RRC CONNECTION SETUP COMPLETE	
37	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
38	SS			performs step 6 with reject cause #100 and step 7.
38a	UE			performs step8.
39	←		PAGING TYPE 1	UE identity = old TMSI of the UE. This message is sent continuously to the UE during 8 seconds. Paging Cause: Trminating Conversational Call.
40	SS			The SS checks that there is no answer from the UE during 12 seconds.
41	SS			If during steps 39 and 40 the UE attempts to perform a location updating procedure the SS will perform step 38 and then continue the procedure.
42	UE			If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) mobile switch off is performed. Otherwise the power is removed.
43	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 30 seconds.
44	UE			Depending on what has been performed in step 42 the UE is brought back to operation.
45	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
46	←		RRC CONNECTION SETUP	
47	→		RRC CONNECTION SETUP COMPLETE	
48	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
49	←		AUTHENTICATION REQUEST	CKSN = initial CKSN.
50	→		AUTHENTICATION RESPONSE	
50a	←		SECURITY MODE COMMAND	The SS starts deciphering.
50b	→		SECURITY MODE COMPLETE	The SS starts enciphering.
51	←		LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
52	→		TMSI REALLOCATION COMPLETE	
53	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. UE is now "idle updated" in cell A.
54	→		RRC CONNECTION RELEASE COMPLETE	
55	UE			The RF level of cell A is lowered until the UE selects cell B. The RF level of cell A is set sufficiently low to ensure that cell A is not suitable.
56	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
57	←		RRC CONNECTION SETUP	

Step	Direction		Message	Comments
	UE	SS		
58	→		RRC CONNECTION SETUP COMPLETE	
59	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = a, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
60	←		AUTHENTICATION REQUEST	
61	→		AUTHENTICATION RESPONSE	steps 62 and 63 are performed N times. N shall be chosen in such a way that T3210 expires. Depending on when T3210 expires in the UE, it is possible that on the Nth occurrence of step 63 the UE may send a L2 DISC rather than the AUTHENTICATION RESPONSE message.
62		SS		The SS checks that there is no more activity from the UE on the RRC.
63	UE			If the UE supports speech it is made to perform an emergency call.
64	→		RRC CONNECTION REQUEST	Establishment cause: Emergency call.
65	←		RRC CONNECTION SETUP	
66	→		RRC CONNECTION SETUP COMPLETE	
67	→		CM SERVICE REQUEST	CM service type = Emergency call establishment; CKSN = no key available; Mobile Identity = IMSI.
68	←		CM SERVICE ACCEPT	
69	→		EMERGENCY SETUP	
70	←		RELEASE COMPLETE	Cause = unassigned number.
71	←		RRC CONNECTION RELEASE	
72	→		RRC CONNECTION RELEASE COMPLETE	
73	→		RRC CONNECTION REQUEST	Establishment cause: Registration. The SS will wait at most 15 seconds for this message.
74	←		RRC CONNECTION SETUP	
75	→		RRC CONNECTION SETUP COMPLETE	
76	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
77	←		AUTHENTICATION REQUEST	CKSN = initial CKSN.
78	→		AUTHENTICATION RESPONSE	
78a	←		SECURITY MODE COMMAND	The SS starts deciphering.
78b	→		SECURITY MODE COMPLETE	The SS starts enciphering.
79	←		LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
80	→		TMSI REALLOCATION COMPLETE	
81	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. UE is now "idle updated" in cell B.
82	→		RRC CONNECTION RELEASE COMPLETE	
83	UE			The RF level of cell B is lowered until the UE selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable.
84	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
85	←		RRC CONNECTION SETUP	
86	→		RRC CONNECTION SETUP COMPLETE	
87	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
88	SS			performs step 14.
88a	UE			performs step 15.
88b	→		CELL UPDATE	CCCH.
88c	←		RRC CONNECTION RELEASE	CCCH.
88d	SS			performs step 15c.
89	UE			A MO CM connection is attempted before T3211 expiry.
90	→		RRC CONNECTION REQUEST	Establishment cause: Registration.

Step	Direction		Message	Comments
	UE	SS		
91	←		RRC CONNECTION SETUP	
92	→		RRC CONNECTION SETUP COMPLETE	
93	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
94	←		LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
95	→		TMSI REALLOCATION COMPLETE	
96	←		RRC CONNECTION RELEASE	Steps 101 to 105 are optional as the UE may have memorized the request for CM connection attempt Wait 10 s to decide whether to go directly to step 106.
97	→		RRC CONNECTION RELEASE COMPLETE	
98	→		RRC CONNECTION REQUEST	Establishment cause: Not checked.
99	←		RRC CONNECTION SETUP	
100	→		RRC CONNECTION SETUP COMPLETE	
101	→		CM SERVICE REQUEST	CKSN = no key available, Mobile identity = TMSI.
102	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. UE is now "idle updated" in cell A.
103	→		RRC CONNECTION RELEASE COMPLETE	
104	UE			The RF level of cell A is lowered until the UE selects cell B. The RF level of cell A is set sufficiently low to ensure that cell A is not suitable.
105	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
106	←		RRC CONNECTION SETUP	
107	→		RRC CONNECTION SETUP COMPLETE	
108	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available LAI = a, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
109	SS			performs step 14.
109a	UE			performs step 15.
109b	→		CELL UPDATE	CCCH.
109c	←		RRC CONNECTION RELEASE	CCCH.
109d	SS			performs step 15c.
110	UE			The RF level of cell B is lowered until the UE selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable.
111	→		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" = IMSI. Establishment Cause: Terminating Conversation Call.
112	→		PAGING RESPONSE	"Mobile identity" = IMSI, CKSN = no key available.
113	←		RRC CONNECTION RELEASE	
114	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.4.3.2.5 Test requirement

1) At step 9 the UE shall not attempt location updating procedure.

2)

2.1 At step 40 the UE shall not answer to paging with the previously allocated TMSI.

2.2 At step 44 the UE shall not perform the IMSI detach procedure.

3) At step 67 the UE shall send a CM SERVICE REQUEST message with CM Service Type IE set to "emergency call establishment", CKSN IE set to "no key available" and Mobile Identity IE set to its IMSI.

   At step 69 the UE shall send an EMERGENCY SETUP message.

4) At step 93 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available".

5) At step 112 the UE shall send a PAGING RESPONSE message with CKSN IE set to "no key available".

6) At step 108 the UE shall perform a normal location updating procedure.

9.4.3.3 Location updating / abnormal cases / attempt counter equal to 4

9.4.3.3.1 Definition

9.4.3.3.2 Conformance requirement

1) When four failures such as cases e) to h) of clause 4.4.4.9 of TS 24.008 have occurred during a normal location updating procedure the UE shall:

   1.1 perform location updating after T3212 expiry by sending a LOCATION UPATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "normal updating";

   1.2 if the T3212 initiated location updating was unsuccessful, then after T3211 expiry the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

2) When four failures such as cases f), g), h) of clause 4.4.4.9 of TS 24.008 have occurred during a normal location updating procedure the UE, if it supports speech, shall be able to perform an emergency call i.e. the UE is able to send a CM SERVICE REQUEST message with the CM Service Type IE set to "emergency call establishment", CKSN IE set to "no key is available" and Mobile Identity IE set to its IMSI and then send an EMERGENCY SETUP message.

3) When four failures such as cases f), g), h) of clause 4.4.4.9 of TS 24.008 have occurred during a normal location updating procedure:

   3.1 the UE shall use a request from CM entity for MM connection for a service other than emergency call as a trigger for a normal location updating procedure and shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating";

   3.2 after a location updating triggered by a request from the CM layer which was .unsuccessful, after T3211 expiry the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

4) When four failures such as cases f), g), h) of clause 4.4.4.9 of TS 24.008 have occurred during a normal location updating procedure:

   4.1 the UE shall perform a normal location updating procedure if it enters a new cell;

   4.2 if this location updating is unsuccessful, after T3211 expiry the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

References

TS 24.008 Clause 4.4.4.9.

9.4.3.3.3 Test purpose

To verify that the UE performs normal location updating procedures after T3212 expiry, when its attempt counter has reached value 4 and that the UE reset its attempt counter after a timer T3212 expiry.

To verify that the UE still follows the MM IDLE ATTEMPTING TO UPDATE state requirements after its attempt counter has reached value 4.

To verify that the attempt counter is reset in the cases where it has to be done.

9.4.3.3.4 Method of test

Initial conditions

- System Simulator:
  - two cells: A and B, belonging to different location areas a and b;
  - IMSI attach/detach is allowed in both cells;
  - T3212 is set to 6 minutes.
- User Equipment:
  - the UE is "Idle updated" on cell B with a valid CKSN and a TMSI.

Related ICS/IXIT statements

USIM removal possible while UE is powered Yes/No.

Switch off on button Yes/No.

Support of speech Yes/No.

Test Procedure

The UE is made to perform a normal location updating. The SS triggers a failure in this procedure by modifying scrambing code of DL DPCH. After T3211 expiry the UE will try again the location updating procedure. The SS triggers again a failure by modifying it. This is done again 2 times. At this point the attempt counter shall be equal to 4. It is then checked that T3212 has been started and that at its expiry the UE will try a normal location updating procedure. It is verified that the UE has reset its attempt counter after timer T3212 expiry.

Then it is checked that, when the attempt counter has reached the value of 4, the UE is in the MM IDLE state and ATTEMPTING TO UPDATE substate, that is:

- not perform an IMSI detach procedure;
- support request for emergency call;
- use requests from CM layer other than emergency call as triggering of a normal location updating procedure;
- perform normal location updating procedure when a new cell is entered.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell A.				
1	UE			The RF level of cell B is lowered until the UE selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable.
2	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
6	←		LOCATION UPDATING REJECT	IE Reject cause is set to #22 in table 10.5.95 of TS 24.008, causes #2, #3, #6, #11, #12 and #13 being excluded.
7	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B within T3211.
10	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
11	←		RRC CONNECTION SETUP	
12	→		RRC CONNECTION SETUP COMPLETE	
13	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
14	SS			The SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP).
15	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B with the assumed time interval after the SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP).
15a	→		CELL UPDATE	CCCH.
15b	←		RRC CONNECTION RELEASE	CCCH.
15c	SS			SS remodifies the scrambling code of DL DPCH to the original one.
16	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
17	←		RRC CONNECTION SETUP	
18	→		RRC CONNECTION SETUP COMPLETE	
19	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
20	←		AUTHENTICATION REQUEST	
21	→		AUTHENTICATION RESPONSE	these steps (20 and 21) are performed N times. N shall be chosen in such a way that T3210 expires. Depending on when T3210 expires in the UE, it is possible that on the Nth occurrence of step 63 the UE may send a L2 DISC rather than the AUTHENTICATION RESPONSE message.
22	UE			The UE shall cease transmission and then shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the expiry of T3210.
23	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
24	←		RRC CONNECTION SETUP	
25	→		RRC CONNECTION SETUP COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
26	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
27	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
28	→		RRC CONNECTION RELEASE COMPLETE	
29	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3212 (tolerance -15s; 45s) at least after the RRC CONNECTION release.
30	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
31	←		RRC CONNECTION SETUP	
32	→		RRC CONNECTION SETUP COMPLETE	
33	→		LOCATION UPDATING REQUEST	location updating type: "normal location update" CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
34	←		LOCATION UPDATING REJECT	IE Reject cause = #17 "network failure".
35	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
36	→		RRC CONNECTION RELEASE COMPLETE	
37	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC CONNECTION release.
38	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
39	←		RRC CONNECTION SETUP	
40	→		RRC CONNECTION SETUP COMPLETE	
41	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
42	←		AUTHENTICATION REQUEST	CKSN = initial CKSN.
43	→		AUTHENTICATION RESPONSE	
43a	←		SECURITY MODE COMMAND	The SS starts deciphering.
43b	→		SECURITY MODE COMPLETE	The SS starts enciphering.
44	←		LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
45	→		TMSI REALLOCATION COMPLETE	
46			RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. UE is now "idle, updated" in cell A.
47	→		RRC CONNECTION RELEASE COMPLETE	
48	UE			The RF level of cell A is lowered until the UE selects cell B. The RF level of cell A is set sufficiently low to ensure that cell A is not suitable.
49	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
50	←		RRC CONNECTION SETUP	
51	→		RRC CONNECTION SETUP COMPLETE	
52	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = a, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
53	←		LOCATION UPDATING REJECT	IE Reject cause is set to #X in table 10.5.95 of TS 24.008, causes #2, #3, #6, #11, #12 and #13 being excluded.
54	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.

Step	Direction		Message	Comments
	UE	SS		
55	→		RRC CONNECTION RELEASE COMPLETE	
56	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC CONNECTION release.
57	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
58	←		RRC CONNECTION SETUP	
59	→		RRC CONNECTION SETUP COMPLETE	
60	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
61	SS			The SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP).
61a	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B within T3211 + RadioLinkTimeOut after the SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP).
61b	→		CELL UPDATE	CCCH.
61c	←		RRC CONNECTION RELEASE	CCCH.
61d	SS			SS remodifies the scrambling code of DL DPCH to the original one.
62	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
63	←		RRC CONNECTION SETUP	
64	→		RRC CONNECTION SETUP COMPLETE	
65	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
66	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
67	→		RRC CONNECTION RELEASE COMPLETE	
68	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC CONNECTION release.
69	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
70	←		RRC CONNECTION SETUP	
71	→		RRC CONNECTION SETUP COMPLETE	
72	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
73	SS			performs step 53 and 54.
74	UE			performs step 55. If the UE supports speech, it is made to perform an emergency call.
75	→		RRC CONNECTION REQUEST	Establishment cause: Emergency call.
76	←		RRC CONNECTION SETUP	
77	→		RRC CONNECTION SETUP COMPLETE	
78	→		CM SERVICE REQUEST	CM service type = Emergency call establishment; CKSN = no key available; Mobile Identity = IMSI.
79	←		CM SERVICE ACCEPT	
80	→		EMERGENCY SETUP	
81	←		RELEASE COMPLETE	Cause = unassigned number.
82	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
83	→		RRC CONNECTION RELEASE COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
84	UE			If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
85	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 seconds.
86	UE			Depending on what has been performed in step 84 the UE is brought back to operation.
87	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
88	←		RRC CONNECTION SETUP	
89	→		RRC CONNECTION SETUP COMPLETE	
90	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
91	←		AUTHENTICATION REQUEST	CKSN = initial CKSN.
92	→		AUTHENTICATION RESPONSE	
92a	←		SECURITY MODE COMMAND	The SS starts deciphering.
92b	→		SECURITY MODE COMPLETE	The SS starts enciphering.
93	←		LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
94	→		TMSI REALLOCATION COMPLETE	
95	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. UE is now "idle, updated" in cell B.
96	→		RRC CONNECTION RELEASE COMPLETE	
97	UE			The RF level of cell B is lowered until the UE selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable.
98	→		RRC CONNECTION REQUEST	Establishment cause: Location updating.
99	←		RRC CONNECTION SETUP	
100	→		RRC CONNECTION SETUP COMPLETE	
101	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
102	←		LOCATION UPDATING REJECT	IE Reject cause is set to #38 in table 10.5.95 of TS 24.008, causes #2, #3, #6, #11, #12, and #13 being excluded.
103	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
104	→		RRC CONNECTION RELEASE COMPLETE	
105	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC CONNECTION release.
106	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
107	←		RRC CONNECTION SETUP	
108	→		RRC CONNECTION SETUP COMPLETE	
109	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
110	SS			The SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP).
111	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B within T3211 +RadioLinkTimeout seconds after the SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP).
111a	→		CELL UPDATE	CCCH.
111b	←		RRC CONNECTION RELEASE	CCCH.

Step	Direction		Message	Comments
	UE	SS		
111c		SS		SS remodifies the scrambling code of DL DPCH to the original one.
112	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
113	←		RRC CONNECTION SETUP	
114	→		RRC CONNECTION SETUP COMPLETE	
115	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
116	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
117	→		RRC CONNECTION RELEASE COMPLETE	
118		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC CONNECTION release.
119	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
120	←		RRC CONNECTION SETUP	
121	→		RRC CONNECTION SETUP COMPLETE	
122	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
123		SS		performs step 61.
123a		UE		performs step 61a.
123b	→		CELL UPDATE	CCCH.
123c	←		RRC CONNECTION RELEASE	CCCH.
123d		SS		performs step 61d.
124		UE		A MO CM connection is attempted.
125	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
126	←		RRC CONNECTION SETUP	
127	→		RRC CONNECTION SETUP COMPLETE	
128	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
129		SS		performs step 61.
129a		UE		performs step 61a.
129b	→		CELL UPDATE	CCCH.
129c	←		RRC CONNECTION RELEASE	CCCH.
129d		SS		performs step 61d.
130		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC CONNECTION release.
131	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
132	←		RRC CONNECTION SETUP	
133	→		RRC CONNECTION SETUP COMPLETE	
134	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
135	←		AUTHENTICATION REQUEST	CKSN = initial CKSN.
136	→		AUTHENTICATION RESPONSE	
136a	←		SECURITY MODE COMMAND	The SS starts deciphering.
136b	→		SECURITY MODE COMPLETE	The SS starts enciphering.
137	←		LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
138	→		TMSI REALLOCATION COMPLETE	
139	←		RRC CONNECTION RELEASE	

Step	Direction		Message	Comments
	UE	SS		
140	→		RRC CONNECTION RELEASE COMPLETE	UE is now "idle, updated" in cell A. The UE may or may not have memorised the request for CM connection. The steps 141 to 147 are therefore optional for the UE. The SS waits 10 second whether to decide to go directly to step 148.
141	→		RRC CONNECTION REQUEST	
142	←		RRC CONNECTION SETUP	
143	→		RRC CONNECTION SETUP COMPLETE	
144	→		CM SERVICE REQUEST	CKSN = initial value, Mobile identity = TMSI.
145	←		CM SERVICE REJECT	cause #17 (network failure).
146	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
147	→		RRC CONNECTION RELEASE COMPLETE	
148	UE			The RF level of cell A is lowered until the UE selects cell B. The RF level of cell A is set sufficiently low to ensure that cell A is not suitable.
149	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
150	←		RRC CONNECTION SETUP	
151	→		RRC CONNECTION SETUP COMPLETE	
152	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = a, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
153	←		LOCATION UPDATING REJECT	IE Reject cause is set to #38 in table 10.5.95 of TS 24.008, causes #2, #3, #6, #11, #12 and #13 being excluded.
154	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link
155	→		RRC CONNECTION RELEASE COMPLETE	
156	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC CONNECTION release.
157	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
158	←		RRC CONNECTION SETUP	
159	→		RRC CONNECTION SETUP COMPLETE	
160	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
161	SS			The SS stops any RF transmission on the dedicated RRC CONNECTION and waits until there is no more DPCH in the uplink.
162	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B within T3211 + RadioLinkTimeOut seconds after the SS stops RF transmission.
163	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
164	←		RRC CONNECTION SETUP	
165	→		RRC CONNECTION SETUP COMPLETE	
166	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
167	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
168	→		RRC CONNECTION RELEASE COMPLETE	
169	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC CONNECTION release.
170	→		RRC CONNECTION REQUEST	Establishment cause: Registration.

Step	Direction		Message	Comments
	UE	SS		
171	←		RRC CONNECTION SETUP	
172	→		RRC CONNECTION SETUP COMPLETE	
173	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
174	SS			performs steps 53 and 54.
174a	UE			performs step 55.
175	UE			The RF level of cell B is lowered until the UE selects cell A. The RF level of cell B is set sufficiently low to ensure that cell B is not suitable.
176	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
177	←		RRC CONNECTION SETUP	
178	→		RRC CONNECTION SETUP COMPLETE	
179	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available , LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
180	SS			performs the step 61.
181	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B until T3211 + RadioLinkTimeout after the SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP).
181a	→		CELL UPDATE	CCCH.
181b	←		RRC CONNECTION RELEASE	CCCH.
181c	SS			SS remodifies the scrambling code of DL DPCH to the original one.
182	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
183	←		RRC CONNECTION SETUP	
184	→		RRC CONNECTION SETUP COMPLETE	
185	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
186	←		AUTHENTICATION REQUEST	CKSN = initial CKSN.
187	→		AUTHENTICATION RESPONSE	
187a	←		SECURITY MODE COMMAND	The SS starts deciphering.
187b	→		SECURITY MODE COMPLETE	The SS starts enciphering.
188	←		LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
189	→		TMSI REALLOCATION COMPLETE	
190	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. UE is now "idle, updated" in cell A.
191	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.4.3.3.5 Test requirement

1) 1.1 At step 33 the UE shall perform location updating procedure.

1.2 At step 41 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

2) At step 80 the UE shall send an EMERGENCY SETUP messages.

3) 3.1 At step128 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating";

3.2 At step 134 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

4) 4.1 At step 179 the UE shall perform a normal location updating procedure if it enters a new cell;

4.2 At step 185 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

9.4.3.4 Location updating / abnormal cases / attempt counter less or equal to 4, stored LAI equal to broadcast LAI

9.4.3.4.1 Definition

9.4.3.4.2 Conformance requirement

1) When a failure such as cases f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during a periodic location updating procedure (the broadcast LAI is equal to the stored LAI):

1.1 the UE shall be able to establish an MM connection i.e. send a RRC CONNECTION Request and then a CM SERVICE REQUEST message, CKSN and LAI set to those which have been allocated to the UE, Mobile Identity IE set to the TMSI which has been allocated to the UE;

1.2 then the UE shall not attempt a location updating procedure.

2) When a failure such as cases f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during an IMSI attach procedure (the broadcast LAI is equal to the stored LAI):

2.1 the UE shall be able to establish an MM connection i.e. send a RRC CONNECTION Request and then aCM SERVICE REQUEST message, CKSN and LAI set to those which have been allocated to the UE, Mobile Identity IE set to the TMSI which has been allocated to the UE;

2.2 then the UE shall not attempt a location updating procedure.

3) When a failure such as cases f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during a periodic location updating procedure and the attempt counter is smaller than 4 the UE shall send, after T3211 expiry, a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to the TMSI which has been allocated to the UE, CKSN IE and LAI set to those which have been allocated to the UE and the Location Updating type set to "periodic updating".

3.1 When the UE's attempt counter reaches the value 4 (four failures such as cases f), g) and h) of clause 4.4.4.9 of TS 24.008 have occurred during a periodic location updating procedure) after T3212 expiry it shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "normal".

4) When the UE's attempt counter reaches the value 4 (four failures such as cases f), g) and h) of clause 4.4.4.9 of TS 24.008 have occurred during a periodic location updating procedure) it shall use a request for a CM connection other than emergency call as a trigger for a location updating procedure.

5) When a failure such as cases f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during an IMSI attach procedure and the attempt counter is smaller than 4 the UE shall send, after T3211 expiry, a LOCATION

UPDATING REQUEST message with the Mobile Identity IE set to the TMSI which has been allocated to the UE, CKSN IE and LAI set to those which have been allocated to the UE and the Location Updating type set to "IMSI attach".

5.1 When the UE's attempt counter reaches the value 4 (four failures such as cases f), g) and h) of clause 4.4.4.9 of TS 24.008 have occurred during an IMSI attach procedure) after T3212 expiry it shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "normal".

6) When the UE's attempt counter reaches the value 4 (four failures such as cases f), g) and h) of clause 4.4.4.9 of TS 24.008 have occurred during an IMSI attach procedure) it shall use a request for a CM connection other than emergency call as a trigger for a location updating procedure.

References

TS 24.008 Clause 4.4.4.9.

9.4.3.4.3 Test purpose

To verify that in the case when the attempt counter is smaller than 4 and the broadcast LAI is equal to the stored LAI, the UE is in the MM IDLE state and NORMAL SERVICE substate. To verify that timer T3211 is stopped after a MM connection establishment.

To verify that the UE uses the T3211 timer. and that it enters the MM IDLE state and NORMAL SERVICE substate when its attempt counter reaches value 4 even in the case where the stored LAI is equal to the broadcast LAI.

9.4.3.4.4 Method of test

Initial conditions

- System Simulator:
  - one cell: B, belonging to location area b;
  - IMSI attach/detach is allowed;
  - T3212 is set to 6 minutes.
- User Equipment:
  - the UE is "Idle updated" on cell B with a valid CKSN and a TMSI.

Related ICS/IXIT statements

USIM removal possible while UE is powered Yes/No.

Switch off on button Yes/No.

Test Procedure

A failure during the periodic location updating is triggered: as the broadcast LAI is equal to the stored LAI, the UE is still in the MM IDLE state and NORMAL SERVICE substate and timer T3211 is started. A CM connection other than for emergency call is attempted. It is checked that this is possible and that T3211 is stopped. Same test is performed with a failure during an IMSI attach procedure.

Then failures are triggered during the periodic location updating to let the attempt counter to reach the value of 4. The UE shall enter the MM IDLE LIMITED SERVICE state and delete any TMSI, stored LAI, ciphering key sequence number and ciphering key. When the attempt counter reaches the value of 4, timer T3212 shall be started. At timer T3212 expiry a location updating procedure is started. A request for CM connection other for than emergency call shall trigger a location updating procedure.

Same tests are performed when the failures are triggered during an IMSI attach procedure.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The SS shall wait at most T3212 + 45 seconds.
2	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
6		SS		performs step 6, of 9.4.3.2 with cause #17 and step 7 of 9.4.3.2.
6a		UE		performs step 8 of 9.4.3.2.
7		UE		A MO CM connection is attempted.
8	→		RRC CONNECTION REQUEST	
9	←		RRC CONNECTION SETUP	
10	→		RRC CONNECTION SETUP COMPLETE	
11	→		CM SERVICE REQUEST	CKSN = initial CKSN, Mobile Identity = TMSI.
12	←		CM SERVICE ACCEPT	
13	→		An initial CM message	
14			RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
15	→		RRC CONNECTION RELEASE COMPLETE	
16		SS		The UE shall not initiate an RRC connection establishment. This is checked during 2*T3211.
17		UE		If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
				Steps 18 to 24 are optional.
18	→		RRC CONNECTION REQUEST	Establishment Cause: Detach
19	←		RRC CONNECTION SETUP	
20	→		RRC CONNECTION SETUP COMPLETE	
21	→		IMSI DETACH INDICATION	
22	←		RRC CONNECTION RELEASE	
23	→		RRC CONNECTION RELEASE COMPLETE	
24		UE		Depending on what has been performed in step 17 the UE is brought back to operation.
25	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
26	←		RRC CONNECTION SETUP	
27	→		RRC CONNECTION SETUP COMPLETE	
28	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
29		SS		performs step 14 of 9.4.3.2.
29a		UE		performs step 15 of 9.4.3.2.
29b	→		CELL UPDATE	CCCH.
29c	←		RRC CONNECTION RELEASE	CCCH.
29d		SS		performs step 15c of 9.4.3.2.
30		UE		A MO CM connection is attempted.
31	→		RRC CONNECTION REQUEST	
32	←		RRC CONNECTION SETUP	
33	→		RRC CONNECTION SETUP COMPLETE	
34	→		CM SERVICE REQUEST	CKSN = initial CKSN, Mobile Identity = TMSI.
35	←		SECURITY MODE COMMAND	
36	→		SECURITY MODE COMPLETE	
37	→		An initial CM message	
38	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.

Step	Direction		Message	Comments
	UE	SS		
39	→		RRC CONNECTION RELEASE COMPLETE	
40	SS			The UE shall not initiate an RRC connection establishment. This is checked during 2*T3211 UE is "idle, updated" in cell B.
40/1	UE			If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
				Steps 40/2 to 40/6 are optional.
40/2	→		RRC CONNECTION REQUEST	Establishment Cause: Detach
40/3	←		RRC CONNECTION SETUP	
40/4	→		RRC CONNECTION SETUP COMPLETE	
40/5	→		IMSI DETACH INDICATION	
40/6	←		RRC CONNECTION RELEASE	
40/7	→		RRC CONNECTION RELEASE COMPLETE	
40/8	UE			Depending on what has been performed in step 40/1, the UE is brought back to operation.
40/9	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
40/10	←		RRC CONNECTION SETUP	
40/11	→		RRC CONNECTION SETUP COMPLETE	
40/12	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
40/13	←		LOCATION UPDATING ACCEPT	without mobile identity
40/14	←		RRC CONNECTION RELEASE	
40/15	→		RRC CONNECTION RELEASE COMPLETE	
41	SS			The SS shall wait at most T3212 + 15 seconds.
42	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
43	←		RRC CONNECTION SETUP	
44	→		RRC CONNECTION SETUP COMPLETE	
45	→		LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
46	SS			performs step 14 of 9.4.3.2.
46a	UE			performs step 15 of 9.4.3.2.
46b	→		CELL UPDATE	CCCH.
46c	←		RRC CONNECTION RELEASE	CCCH.
46d	SS			performs step 15c of 9.4.3.2.
47	UE			The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC CONNECTION release.
48	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
49	←		RRC CONNECTION SETUP	
50	→		RRC CONNECTION SETUP COMPLETE	
51	→		LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
52	SS			performs step 6 of 9.4.3.2 with cause #17 and step 7 of 9.4.3.2.
52a	UE			performs step 8 of 9.4.3.2.
53	UE			The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC CONNECTION release.
54	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
55	←		RRC CONNECTION SETUP	
56	→		RRC CONNECTION SETUP COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
57	→		LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
58		SS		performs step 14 of 9.4.3.2.
59		UE		The UE shall not initiate an RRC connection establishment within T3211 + RadioLinkTimeout after the SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP).
59a	→		CELL UPDATE	CCCH.
59b	←		RRC CONNECTION RELEASE	CCCH.
59c		SS		SS remodifies the scrambling code of DL DPCH to the original one.
60	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
61	←		RRC CONNECTION SETUP	
62	→		RRC CONNECTION SETUP COMPLETE	
63	→		LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
64		SS		performs step 14 of 9.4.3.2.
64a		UE		performs step 15 of 9.4.3.2.
64b	→		CELL UPDATE	CCCH.
64c	←		RRC CONNECTION RELEASE	CCCH.
64d		SS		performs step 15c of 9.4.3.2.
65		UE		The UE shall not initiate an RRC connection establishment during T3212 - 15 seconds at least after the RRC CONNECTION release.
66	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
67	←		RRC CONNECTION SETUP	
68	→		RRC CONNECTION SETUP COMPLETE	
69	→		LOCATION UPDATING REQUEST	location updating type = periodic or normal (see Note 1), CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
70	←		AUTHENTICATION REQUEST	
71	→		AUTHENTICATION RESPONSE	
72a	←		LOCATION UPDATING ACCEPT	IE mobile Identity = TMSI.
72b	→		TMSI REALLOCATION COMPLETE	
73	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
74	→		RRC CONNECTION RELEASE COMPLETE	
75		UE		The UE shall no initiate an RRC connection establishment earlier than T3212 - 15 seconds after the transmission of the RRC CONNECTION RELEASE in step 73.
76	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
77	←		RRC CONNECTION SETUP	
78	→		RRC CONNECTION SETUP COMPLETE	
79	→		LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
80		SS		performs step 6 of 9.4.3.2 with cause #17 and step 7 of 9.4.3.2.
80a		UE		performs step 8 of 9.4.3.2.
81		UE		The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC CONNECTION release.
82	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
83	←		RRC CONNECTION SETUP	

Step	Direction		Message	Comments
	UE	SS		
84	→		RRC CONNECTION SETUP COMPLETE	
85	→		LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
86		SS		performs step 14 of 9.4.3.2.
87		UE		The UE shall not initiate an RRC connection establishment within T3211 + RadioLinkTimeout after the SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP).
87a	→		CELL UPDATE	CCCH.
87b	←		RRC CONNECTION RELEASE	CCCH.
87c		SS		SS remodifies the scrambling code of DL DPCH to the original one.
88	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
89	←		RRC CONNECTION SETUP	
90	→		RRC CONNECTION SETUP COMPLETE	
91	→		LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
92		SS		performs step 14 of 9.4.3.2.
92a		UE		performs step 15 of 9.4.3.2.
92b	→		CELL UPDATE	CCCH.
92c	←		RRC CONNECTION RELEASE	CCCH.
92d		SS		performs step 15c of 9.4.3.2.
93		UE		The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC CONNECTION release.
94	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
95	←		RRC CONNECTION SETUP	
96	→		RRC CONNECTION SETUP COMPLETE	
97	→		LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
98		SS		performs step 6 of 9.4.3.2 with cause #17 and step 7 of 9.4.3.2.
98a		UE		performs step 8 of 9.4.3.2.
99		UE		A MO CM connection is attempted.
100	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
101	←		RRC CONNECTION SETUP	
102	→		RRC CONNECTION SETUP COMPLETE	
103	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
104	←		LOCATION UPDATING ACCEPT	IE mobile identity = TMSI.
105	→		TMSI REALLOCATION COMPLETE	
106	←		RRC CONNECTION RELEASE	
107	→		RRC CONNECTION RELEASE COMPLETE	
Steps 108 to 114 are optional Wait 10 s to decide whether to go directly to step 115.				
108	→		RRC CONNECTION REQUEST	
109	←		RRC CONNECTION SETUP	
110	→		RRC CONNECTION SETUP COMPLETE	
111	→		CM SERVICE REQUEST	CKSN = no key available, Mobile identity = TMSI
112	←		CM SERVICE REJECT	cause #17 (network failure).
113	←		RRC CONNECTION RELEASE	
114	→		RRC CONNECTION RELEASE COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
115	UE			If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
Steps 116 to 121 are optional.				
116	→		RRC CONNECTION REQUEST	Establishment Cause: Detach
117	←		RRC CONNECTION SETUP	
118	→		RRC CONNECTION SETUP COMPLETE	
119	→		IMSI DETACH INDICATION	
120	←		RRC CONNECTION RELEASE	
121	→		RRC CONNECTION RELEASE COMPLETE	
122	UE			Depending on what has been performed in step 115 the UE is brought back to operation.
123	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
124	←		RRC CONNECTION SETUP	
125	→		RRC CONNECTION SETUP COMPLETE	
126	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = no key available, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
127	SS			performs step 14 of 9.4.3.2.
128	UE			The UE shall not initiate an RRC connection establishment within T3211 + RadioLinkTimeout after the SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP).
128a	→		CELL UPDATE	CCCH.
128b	←		RRC CONNECTION RELEASE	CCCH.
128c	SS			SS remodifies the scrambling code of DL DPCH to the original one.
129	→		RRC CONNECTION REQUEST	Establishment cause: Location updating.
130	←		RRC CONNECTION SETUP	
131	→		RRC CONNECTION SETUP COMPLETE	
132	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = no key available, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
1322	←		RRC CONNECTION RELEASE	After the sending of the message the SS waits for the disconnection of the main signalling link.
134	→		RRC CONNECTION RELEASE COMPLETE	
135	UE			The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC CONNECTION release.
136	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
137	←		RRC CONNECTION SETUP	
138	→		RRC CONNECTION SETUP COMPLETE	
139	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = no key available, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
140a	←		LOCATION UPDATING REJECT	IE Reject cause is set to a value arbitrarily chosen: X in table 10.5.95 of TS 24.008, causes #2, #3, #6, #11, #12, and #13 being excluded.
140b	→		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
141	→		RRC CONNECTION RELEASE COMPLETE	
142	UE			The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC CONNECTION release.
143	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
144	←		RRC CONNECTION SETUP	
145	→		RRC CONNECTION SETUP COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
146	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = no key available, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
147	SS			performs step 14 of 9.4.3.2.
147a	UE			performs step 15 of 9.4.3.2.
147b	→		CELL UPDATE	CCCH.
147c	←		RRC CONNECTION RELEASE	CCCH.
147d	SS			performs step 15c of 9.4.3.2.
148	UE			The UE shall not initiate an RRC connection establishment during T3212 - 15 seconds at least after the RRC CONNECTION release.
149	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
150	←		RRC CONNECTION SETUP	
151	→		RRC CONNECTION SETUP COMPLETE	
152	→		LOCATION UPDATING REQUEST	location updating type = periodic or normal or IMSI attach (see Note 2), CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
153	←		AUTHENTICATION REQUEST	
154	→		AUTHENTICATION RESPONSE	
155	←		LOCATION UPDATING ACCEPT	IE mobile Identity = TMSI.
156	→		TMSI REALLOCATION COMPLETE	
157	←		RRC CONNECTION RELEASE	
158	→		RRC CONNECTION RELEASE COMPLETE	
159	UE			If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
Steps 160 to 165 are optional.				
160	→		RRC CONNECTION REQUEST	Establishment Cause: Detach
161	←		RRC CONNECTION SETUP	
162	→		RRC CONNECTION SETUP COMPLETE	
163	→		IMSI DETACH INDICATION	
164	←		RRC CONNECTION RELEASE	
165	→		RRC CONNECTION RELEASE COMPLETE	
166	UE			Depending on what has been performed in step 163 the UE is brought back to operation.
167	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
168	←		RRC CONNECTION SETUP	
169	→		RRC CONNECTION SETUP COMPLETE	
170	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
171	SS			performs step 14 of 9.4.3.2.
171a	UE			performs step 15 of 9.4.3.2.
171b	→		CELL UPDATE	CCCH.
171c	←		RRC CONNECTION RELEASE	CCCH.
171d	SS			performs step 15c of 9.4.3.2.
172	UE			The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC CONNECTION release.
173	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
174	←		RRC CONNECTION SETUP	
175	→		RRC CONNECTION SETUP COMPLETE	
176	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.

Step	Direction		Message	Comments
	UE	SS		
177		SS		performs step 6 of 9.4.3.2 with cause #17 and step 7 of 9.4.3.2.
177a		UE		performs step 8 of 9.4.3.2.
178		UE		The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC CONNECTION release.
179	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
180	←		RRC CONNECTION SETUP	
181	→		RRC CONNECTION SETUP COMPLETE	
182	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
183		SS		performs step 14 of 9.4.3.2.
184		UE		The UE shall not initiate an RRC connection establishment within T3211 + RadioLinkTimeout after the SS modifies the scrambling code of DL DPCH (using the CPHY_RL_Modify_REQ ASP).
184a	→		CELL UPDATE	CCCH.
184b	←		RRC CONNECTION RELEASE	CCCH.
184c		SS		SS remodifies the scrambling code of DL DPCH to the original one.
185	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
186	←		RRC CONNECTION SETUP	
187	→		RRC CONNECTION SETUP COMPLETE	
188	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
189		SS		performs step 14 of 9.4.3.2.
189a		UE		performs step 15 of 9.4.3.2.
189b	→		CELL UPDATE	CCCH.
189c	←		RRC CONNECTION RELEASE	CCCH.
189d		SS		performs step 15c of 9.4.3.2.
190		UE		The UE is made to perform a MO call.
191	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
192	←		RRC CONNECTION SETUP	
193	→		RRC CONNECTION SETUP COMPLETE	
194	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
195	←		AUTHENTICATION REQUEST	
196	→		AUTHENTICATION RESPONSE	
197	←		LOCATION UPDATING ACCEPT	IE mobile Identity = TMSI.
198	→		TMSI REALLOCATION COMPLETE	
199	←		RRC CONNECTION RELEASE	
200	→		RRC CONNECTION RELEASE COMPLETE	
Steps 201 to 208 are optional.				
201		UE		An MO CM connection is attempted.
202	→		RRC CONNECTION REQUEST	
203	←		RRC CONNECTION SETUP	
204	→		RRC CONNECTION SETUP COMPLETE	
205	→		CM SERVICE REQUEST	CKSN = initial value, Mobile identity = TMSI.
206	←		CM SERVICE REJECT	cause #17 (network failure).
207	←		RRC CONNECTION RELEASE	
208	→		RRC CONNECTION RELEASE COMPLETE	

NOTE 1: the UE can include both types of Location updating. As T3212 expires it can be a periodic location updating procedure and as there is no stored LAI it can be a normal one.

NOTE 2: same problem as in note 1. Three types of location updating procedures should be allowed.

Specific message contents

None.

9.4.3.4.5 Test requirement

1) 1.1 At step 48 the UE shall be able to establish an MM connection i.e. send a RRC CONNECTION Request and then a CM SERVICE REQUEST message, CKSN and LAI set to those which have been allocated to the UE, Mobile Identity IE set to the TMSI which has been allocated to the UE;

   1.2 At step 53 the UE shall not attempt a location updating procedure.

2) 2.1 At step 34 the UE shall send a CM SERVICE REQUEST message, CKSN and LAI set to those which have been allocated to the UE, Mobile Identity IE set to the TMSI which has been allocated to the UE;

   2.2 At step 39 the UE shall not attempt a location updating procedure.

3) 3.1 At step 69 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "normal".

4) At step 99 the UE shall attempt a MO CM connection.

   At step 103 the UE shall send a LOCATION UPDATING REQUEST message.

5) At step 132 the UE send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its TMSI, CKSN IE set to "no key is available" and the Location Updating type set to "IMSI".

   At step 139 the UE send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its TMSI, CKSN IE set to "no key is available" and the Location Updating type set to "IMSI".

   At step 146 the UE send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its TMSI, CKSN IE set to "no key is available" and the Location Updating type set to "IMSI".

   At step 152 the UE send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "normal".

6) At step 194 the UE shall send a LOCATION UPDATING REQUEST message.

   At step 201 the UE shall attempt a MO CM connection.

9.4.4 Location updating / release / expiry of T3240

9.4.4.1 Definition

9.4.4.2 Conformance requirement

The UE receiving a LOCATION UPDATING ACCEPT message shall start T3240: it shall abort the RRC connection at the expiry of timer T3240.

References

TS 24.008 Clauses 4.4.4.8 and 11.2.

9.4.4.3 Test purpose

To verify that the UE aborts the RRC-connection at the expiry of timer T3240.

9.4.4.4 Method of test

Initial conditions

- System Simulator:
  - two cells: A and B, belonging to different location areas a and b.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated" on cell A.

Related ICS/IXIT statements

None.

Test Procedure

A normal location updating procedure is performed. The RRC-connection is not released by the SS within the timer T3240. It is checked that the UE aborts the RRC-connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	SS			The RF level of cell A is lowered until the UE selects cell B.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	
6	←		LOCATION UPDATING ACCEPT	
7	SS			The SS waits T3240 expiry.
8	→		SIGNALLING CONNECTION RELEASE REQUEST	The UE shall abort the RRC. Note: At the expiration of T3240, as per TS 24.008, RR connection shall be aborted. In UMTS, UE cannot release RRC connection on its own. Instead, UE can send a Signalling Connection Release Request to the UTRAN, in order to initiate the release of RRC connection.
9	←		RRC CONNECTION RELEASE	SS disconnect the connection established.
10	→		RRC CONNECTION RELEASE COMPLETE	Send only if RRC Connection Release is send.

Specific message contents

None.

9.4.4.5 Test requirement

At step 10 the UE shall abort the RRC connection.

9.4.5 Location updating / periodic

9.4.5.1 Location updating / periodic spread

9.4.5.1.1 Definition

9.4.5.1.2 Conformance requirement

1) The UEs shall perform spreading of the time before performing a periodic location updating when the location updating timer value is reduced.

2) The UE shall reset timer T3212 when the UE is deactivated, and shall start with a value between zero and the broadcasted value when reactivated in the same cell, IMSI attach being forbidden.

3) When activated the UE shall start timer T3212 with a value randomly drawn in the allowed range.

NOTE: This conformance requirement is not covered by a test purpose. It is intended to be covered by a manufacturer declaration.

References

TS 24.008 Clause 4.4.2.

9.4.5.1.3 Test purpose

1) To check that when the location updating timer is reduced, the timer running in the UE is started with a value depending on the current timer value and the new broadcasted T3212 value.

2) To verify that when the UE is reactivated in the same cell (as the one in which it was deactivated), IMSI attach being forbidden, the UE starts the timer T3212 with a value between zero and the broadcasted value.

NOTE: It is not tested that the value is random.

9.4.5.1.4 Method of test

Initial conditions

- System Simulator:
  - one cell, T3212 is set to 30 minutes;
  - IMSI attach is allowed in the cell;
- User Equipment:
  - the UE is deactivated. The stored MCC, MNC and LAC correspond to the broadcasted values. The stored update status is "updated".

Related ICS/IXIT statements

None.

Test procedure

The UE is activated. It performs IMSI attach. 3 minutes after the end of the IMSI attach procedure, the value of T3212 is set to 6 minutes. The UE shall perform periodic location updating 6 minutes after the end of the IMSI attach procedure.

Then, the IMSI attach/detach is forbidden. T3212 is still set to 6 minutes.

The UE is deactivated. The UE is reactivated. It is checked that the UE performs a periodic location updating during the 6 minutes following activation.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is activated.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	"location updating type": IMSI attach.
6	←		LOCATION UPDATING ACCEPT	
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9	SS			3 minutes after step 8 the value of T3212 is set to 6 minutes.
10	→		RRC CONNECTION REQUEST	"Establishment cause": Registration. This message shall be sent by the UE between 5 minutes 45 s and 6 minutes 15 s after step 8.
11	←		RRC CONNECTION SETUP	
12	→		RRC CONNECTION SETUP COMPLETE	
13	→		LOCATION UPDATING REQUEST	"location updating type": periodic updating.
14	←		LOCATION UPDATING ACCEPT	
15	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
16	→		RRC CONNECTION RELEASE COMPLETE	
17	SS			IMSI attach/detach is not allowed.
18	UE			The UE is deactivated.
19	UE			The UE is activated.
20	SS			The SS waits until the periodic location updating.
21	→		RRC CONNECTION REQUEST	"Establishment cause": Registration. This message shall arrive during the 6 minutes following the UE activation.
22	←		RRC CONNECTION SETUP	
23	→		RRC CONNECTION SETUP COMPLETE	
24	→		LOCATION UPDATING REQUEST	"Location updating type" = periodic.
25	←		LOCATION UPDATING ACCEPT	
26	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
27	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.4.5.1.5 Test requirement

At step 10 the UE shall send an RRC CONNECTION REQUEST for a periodic location updating.

At step 21 the UE shall send an RRC CONNECTION REQUEST for a periodic location updating.

9.4.5.2 Location updating / periodic normal / test 1

9.4.5.2.1 Definition

9.4.5.2.2 Conformance requirement

1 The UE shall stop and reset the timer T3212 of the periodic location updating procedure when the first MM message is received or SECURITY mode setting is completed in the case of MM connection establishment.

2 The UE shall stop and reset the timer T3212 of the periodic location updating procedure when the UE has responded to paging and thereafter has received the first correct L3 message that is not an RRC message.

References

TS 24.008 Clause 4.4.2.

9.4.5.2.3 Test purpose

To verify that the UE stops and resets the timer T3212 of the periodic location updating procedure when:

- the first MM-message is received in the case of MM-connection establishment, security mode being not set;
- the UE has responded to paging and the first correct L3 message that is not an RRC message is received.

NOTE: T3212 is stopped when the MM-idle state is left and restarted when the MM sublayer returns to that state, substate NORMAL SERVICE or ATTEMPTING TO UPDATE. As a consequence, the exact time when T3212 is reset between those two events cannot be tested.

9.4.5.2.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters;
  - IMSI attach/detach is not allowed;
  - the T3212 time-out value is 2/10 hour.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated".

Related ICS/IXIT statements

None.

Test procedure

An UE originated MM connection is established and cleared. The RRC CONNECTION is released. It is checked that the UE performs a periodic location updating 12 minutes after the release of the RRC CONNECTION.

One minute after the periodic location updating, the UE is paged, it sends a RRC CONNECTION REQUEST message and the SS responds with an RRC CONNECTION SETUP message, a call is established and then cleared. It is checked that the UE performs a periodic location updating 12 minutes after the release of the link.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			A MO CM connection is attempted.
2	→		RRC CONNECTION REQUEST	
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		CM SERVICE REQUEST	
6	←		CM SERVICE REJECT	cause #17 (network failure).
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9	SS			The SS waits until the periodic location updating.
10	→		RRC CONNECTION REQUEST	"Establishment cause": Registration. This message shall arrive between 11 minutes 45 s and 12 minutes 15 s after the last release of the RRC connection by the SS.
11	←		RRC CONNECTION SETUP	
12	→		RRC CONNECTION SETUP COMPLETE	
13	→		LOCATION UPDATING REQUEST	"Location updating type" = periodic.
14	←		LOCATION UPDATING ACCEPT	
15	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
16	→		RRC CONNECTION RELEASE COMPLETE	
17	SS			The SS waits 1 minute.
18	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Mobile identity" = IMSI. "Establishment cause": Terminating Conversational Call.
19	→		PAGING RESPONSE	
20	←		AUTHENTICATION REQUEST	
21	→		AUTHENTICATION RESPONSE	
22	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
23	→		RRC CONNECTION RELEASE COMPLETE	
24	SS			The SS waits until the periodic location updating.
25	→		RRC CONNECTION REQUEST	"Establishment cause": Registration. This message shall arrive between 11 minutes 45 s and 12 minutes 15 s after the last release of the RRC connection by the SS.
26	←		RRC CONNECTION SETUP	
27	→		RRC CONNECTION SETUP COMPLETE	
28	→		LOCATION UPDATING REQUEST	"Location updating type" = periodic.
29	←		LOCATION UPDATING ACCEPT	
30	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
31	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.4.5.2.5 Test requirement

At step 10 the UE shall initiate an RRC CONNECTION REQUEST 12 minutes after the release of the RRC CONNECTION (at step 7).

At step 25 the UE shall initiate an RRC CONNECTION REQUEST 12 minutes after the release of the RRC CONNECTION (at step 22).

9.4.5.3 Location updating / periodic normal / test 2

9.4.5.3.1 Definition

9.4.5.3.2 Conformance requirement

When a LOCATION UPDATING ACCEPT or a LOCATION UPDATING REJECT message is received, the timer T3212 is stopped and reset and the UE shall perform a periodic location updating after T3212 expiry.

References

TS 24.008 Clause 4.4.2.

9.4.5.3.3 Test purpose

To verify that the UE stops and resets the timer T3212 of the periodic location updating procedure when a LOCATION UPDATING ACCEPT message is received.

NOTE: T3212 is stopped when the MM-idle state is left and restarted when the MM sublayer returns to that state, substate NORMAL SERVICE or ATTEMPTING TO UPDATE. As a consequence, the exact time when T3212 is reset between those two events cannot be tested.

9.4.5.3.4 Method of test

Initial conditions

- System Simulator:
  - 2 cells, IMSI attach/detach is allowed in both cells;
  - T3212 is set to 6 minutes.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated" on cell A.

Related ICS/IXIT statements

USIM removal possible while UE is powered Yes/No.

Switch off on button yes/No.

Test procedure

A normal location updating is performed. The RRC CONNECTION is released. One minute later, the UE is deactivated, then reactivated in the same cell. It is checked that the UE performs an IMSI attach and a periodic location updating 6 minutes after the IMSI attach.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell B.
1	SS			The RF level of cell A is lowered until the UE selects cell B.
2	→		RRC CONNECTION REQUEST	"establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	"location updating type" = normal.
6	←		LOCATION UPDATING ACCEPT	
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9	SS			The SS waits until the periodic location updating.
10	→		RRC CONNECTION REQUEST	"Establishment cause": Registration. This message shall arrive between 5 minutes 45s and 6 minutes 15 s after the last release of the RRC connection by the SS.
11	←		RRC CONNECTION SETUP	
12	→		RRC CONNECTION SETUP COMPLETE	
13	→		LOCATION UPDATING REQUEST	"Location updating type" = periodic.
14	←		LOCATION UPDATING ACCEPT	
15	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
16	→		RRC CONNECTION RELEASE COMPLETE	
17	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed. steps 18 to 23 may be performed or not depending on the action made in step 17.
18	→		RRC CONNECTION REQUEST	“Establishmet cause”: Detach
19	←		RRC CONNECTION SETUP	
20	→		RRC CONNECTION SETUP COMPLETE	
21	→		IMSI DETACH INDICATION	
22	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
23	→		RRC CONNECTION RELEASE COMPLETE	
24	UE			Depending on what has been performed in step 17 the UE is brought back to operation.
25	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
26	←		RRC CONNECTION SETUP	
27	→		RRC CONNECTION SETUP COMPLETE	
28	→		LOCATION UPDATING REQUEST	"Location updating type" = IMSI attach.
29	←		LOCATION UPDATING ACCEPT	
30	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
31	→		RRC CONNECTION RELEASE COMPLETE	
32	SS			The SS waits until the periodic location updating.
33	→		RRC CONNECTION REQUEST	"Establishment cause": Registration. This message shall arrive between 5 minutes 45 s and 6 minutes 15s after the last release of the RRC connection by the SS.
34	←		RRC CONNECTION SETUP	

35	→	RRC CONNECTION SETUP COMPLETE	
36	→	LOCATION UPDATING REQUEST	"Location updating type" = periodic.
37	←	LOCATION UPDATING ACCEPT	
38	←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
39	→	RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.4.5.3.5 Test requirement

After step 28 the UE shall performs an IMSI attach.

After step 33 the UE shall performs periodic location updating 6 minutes after step 28.

9.4.5.4 Location updating / periodic HPLMN search

9.4.5.4.1 Location updating / periodic HPLMN search / UE waits time T

9.4.5.4.1.1 Definition

9.4.5.4.1.2 Conformance requirement

When in automatic mode and roaming in the home country, the UE shall make an attempt to access the HPLMN, if the UE is on the VPLMN at time T after since the last attempt.

NOTE: This test is not intended to test every value in the range 6 minutes to 8 hours or the default of 30 minutes, but is intended to check that the mobile is capable of using the value stored on the USIM.

References

TS 22.011 Clause 3.2.2.5. and TS 23.122 4.4.3.3.

9.4.5.4.1.3 Test purpose

To verify that when a cell of the HPLMN becomes available, following the successful location request on the VPLMN of the home country and after the first search the mobile has failed to find its HPLMN, that the UE shall perform a location update request on the HPLMN after time T. Were T is the HPLMN Search Period stored in the USIM.

9.4.5.4.1.4 Method of test

Initial conditions

- System Simulator:
  - two cells A and B, belonging to different location areas with location identification a and b. Cell A shall be a cell of the HPLMN and Cell B shall be a cell of the VPLMN with a Country Code the same as that of Cell A. Initially Cell A shall not be broadcasting. IMSI attach/detach is not allowed on either cell.
- User Equipment:
  - the UE is switched off. The HPLMN Search Period on the USIM shall be set to 6 minutes. The location area information on the USIM is "deleted".

Related ICS/IXIT statements

Switch on/off button Yes/No.

Test Procedure

Only Cell B shall be broadcasting. The UE shall be switched on either by using the Power Switch or by applying power. A normal location updating is performed on Cell B. Cell A shall be made available after 8 minutes, thus ensuring the UE fails to find the HPLMN during its first attempt. It is verified that the UE performs a location update request on Cell A, within 6 minutes after broadcasting of Cell A.

Expected sequence

Step	Direction		Message	Contents
	UE	SS		
				The following messages shall be sent and received on Cell B.
1	UE			The UE is switched on by either using the Power Switch or by applying power.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	"Location Update Type": Normal.
6	←		LOCATION UPDATING ACCEPT	
7	←		RRC CONNECTION RELEASE	After sending this message the SS waits for the disconnection of the main signalling link. The SS waits a period of 8 minutes, this allowing the UE to make its first periodic search.
8	→		RRC CONNECTION RELEASE COMPLETE	
9	SS			Cell A is made available. Within 6 minutes after step 9 the following messages shall be sent and received on Cell A.
10	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
11	←		RRC CONNECTION SETUP	
12	→		RRC CONNECTION SETUP COMPLETE	
13	→		LOCATION UPDATING REQUEST	"Location Update Type": normal.
14	←		LOCATION UPDATING ACCEPT	
15	←		RRC CONNECTION RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
16	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.4.5.4.1.5 Test requirement

At step 13 the UE shall send a LOCATION UPDATING REQUEST message.

9.4.5.4.2 Location updating / periodic HPLMN search / UE in manual mode

9.4.5.4.2.1 Definition

9.4.5.4.2.2 Conformance requirement

The periodic attempts shall only be performed if in automatic mode when the UE is roaming in its home country.

References

TS 22.011 Clause 3.2.2.5. and TS 23.122 4.4.3.3.

9.4.5.4.2.3 Test purpose

To verify that no HPLMN Search is performed when the UE is not in automatic mode.

9.4.5.4.2.4 Method of test

Initial conditions

- System Simulator:
  - two cells A and B, belonging to different location areas with location identification a and b. Cell A shall be a cell of the HPLMN and Cell B shall be a cell of the VPLMN with a Country Code the same as that of Cell A. Initially Cell A shall not be broadcasting. IMSI attach/detach is not allowed on either cell.
- User Equipment:
  - the UE is switched off. The HPLMN Search Period on the USIM shall be set to 6 minutes. The location area information on the USIM is "deleted".

Related ICS/IXIT statements

Switch on/off button Yes/No.

Test Procedure

Only Cell B shall be broadcasting. The UE shall be switched on either by using the Power Switch or by applying power. A normal location updating is performed on Cell B. The UE is forced into manual selection mode. Cell A is made available. It is verified that the UE does not attempt to perform a location update on Cell A.

Expected sequence

Step	Direction		Message	Contents
	UE	SS		
				The following messages shall be sent and received on Cell B.
1	UE			The UE is switched on by either using the Power Switch or by applying power.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	"Location Update Type": Normal.
6	←		LOCATION UPDATING ACCEPT	
7	←		RRC CONNECTION RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9	UE			The UE is forced into manual selection mode.
10	SS			Cell A is made available.
11	SS			The SS waits a period of 6 minutes. During this time no messages shall be received on Cell A.

Specific message contents

None.

9.4.5.4.2.5 Test requirement

At step 11 the UE shall not attempt to perform a location update.

9.4.5.4.3 Location updating / periodic HPLMN search / UE waits at least two minutes and at most T minutes

9.4.5.4.3.1 Definition

9.4.5.4.3.2 Conformance requirement

After switch on, the UE waits at least 2 minutes and at most T minutes before the first HPLMN Search is attempted.

References

TS 22.011 Clause 3.2.2.5. and TS 23.122 4.4.3.3.

9.4.5.4.3.3 Test purpose

To verify that the UE waits at least 2 minutes and at most T minutes before attempting its first HPLMN Search.

9.4.5.4.3.4 Method of test

Initial Conditions

- System Simulator:
  - two cells A and B, belonging to different location areas with location identification a and b. Cell A shall be a cell of the HPLMN and Cell B shall be a cell of the VPLMN with a Country Code the same as that of Cell A. Initially Cell A shall not be broadcasting. IMSI attach/detach is not allowed on either cell.
- User Equipment:

- the UE is switched off. The HPLMN Search Period on the USIM shall be set to 6 minutes. The location area information on the USIM is "deleted".

Related ICS/IXIT statements

Switch on/off button Yes/No.

Test Procedure

Only Cell B shall be broadcasting. The UE shall be switched on either by using the Power Switch or by applying power. A normal location updating is performed on Cell B. Cell A is made available. It is verified that the UE attempts to perform a location update on Cell A, after at least 2 minutes and at most T minutes have passed following power on.

Expected sequence

Step	Direction		Message	Contents
	UE	SS		
				The following messages shall be sent and received on Cell B.
1	UE			The UE is switched on by either using the Power Switch or by applying power.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	"Location Update Type": Normal.
6	←		LOCATION UPDATING ACCEPT	
7	←		RRC CONNECTION RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9	SS			Cell A is made available.
10	SS			The SS waits a period of 2 minutes after the UE is switched on. During this time no messages shall be received on Cell A. The following messages shall be sent and received on cell A. Within T minutes after the UE is switched on the following messages shall be sent and received on cell A.
11	→		RRC CONNECTION REQUEST	"Establishment cause": Registration. This message shall be sent between 2 and 6 minutes after step 1
12	←		RRC CONNECTION SETUP	
13	→		RRC CONNECTION SETUP COMPLETE	
14	→		LOCATION UPDATING REQUEST	"Location Update Type": normal.
15	←		LOCATION UPDATING ACCEPT	
16	←		RRC CONNECTION RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
17	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.4.5.4.3.5 Test requirement

At step 11 the UE shall attempt to perform a location update.

9.4.6 Location updating / interworking of attach and periodic

9.4.6.1 Definition

9.4.6.2 Conformance requirement

1) If the UE is in service state NO CELL AVAILABLE, LIMITED SERVICE, PLMN SEARCH or PLMN SEARCH-NORMAL SERVICE when the timer expires the location updating procedure is delayed until this service state is left.

2) The T3212 time-out value shall not be changed in the NO CELL AVAILABLE, LIMITED SERVICE, PLMN SEARCH and PLMN SEARCH-NORMAL SERVICE states.

3) If the selected cell is in the location area where the UE is registered and IMSI ATTACH is not required and timer T3212 has not expired, then the state is NORMAL SERVICE.

References

1) TS 24.008 Clause 4.4.2.

2) TS 24.008 Clause 4.4.2.

3) TS 24.008 Clause 4.2.1.1.

9.4.6.3 Test purpose

1) To check that if the PLU timer expires while the UE is out of coverage, the UE informs the network of its return to coverage.

2) To check that the PLU timer is not disturbed by cells of forbidden PLMNs.

3) To check that if the PLU timer does not expire while out of coverage and if the mobile returns to the LA where it is updated, the UE does not inform the network of its return to coverage.

9.4.6.4 Method of test

Initial conditions

- System Simulator:
  - two cells, a and b, of different PLMNs;
  - T3212 is set to 12 minutes on cell a;
  - T3212 is set to 6 minutes on cell b;
  - IMSI attach is allowed in both cells.
- User Equipment:
  - the UE is deactivated. The PLMN of cell b is entered in the USIM's forbidden PLMN list.

Related ICS/IXIT statements

None.

Test procedure

The UE is activated and placed in automatic network selection mode. It performs IMSI attach. 1 minute after the end of the IMSI attach procedure, cell a is switched off. The UE shall not location update on cell b. 8 minutes after the end of the IMSI attach procedure, cell a is switched on. The UE shall not location update on cell a before 11,75 minutes after the end of the IMSI attach procedure. The UE shall perform a periodic location update on cell a between 11,75 minutes and 12,25 minutes after the end of the IMSI attach procedure.

3 minutes after the end of the periodic location updating procedure, cell a is switched off. The UE shall not location update on cell b. 14 minutes after the end of the periodic location updating procedure, cell a is switched on and cell b is switched off. The UE shall perform a location update on cell a before 17 minutes after the end of the periodic location updating procedure.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is activated in automatic network selection mode.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	"location updating type": IMSI attach.
6	←		LOCATION UPDATING ACCEPT	
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9		SS		1 minute after step 8, cell a is switched off.
10		SS		8 minutes after step 8, cell a is switched on.
11	→		RRC CONNECTION REQUEST	This message shall be sent by the UE between 11 minutes 45s and 12 minutes 15s after step 6.
12	←		RRC CONNECTION SETUP	
13	→		RRC CONNECTION SETUP COMPLETE	
14	→		LOCATION UPDATING REQUEST	"location updating type": periodic.
15	←		LOCATION UPDATING ACCEPT	
16	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
17	→		RRC CONNECTION RELEASE COMPLETE	
18		SS		3 minutes after step 17, cell a is switched off.
19		SS		14 minutes after step 17, cell a is switched on and cell b is switched off.
20	→		RRC CONNECTION REQUEST	This message shall be sent by the UE before 17 minutes after step 17.
21	←		RRC CONNECTION SETUP	
22	→		RRC CONNECTION SETUP COMPLETE	
23	→		LOCATION UPDATING REQUEST	"Location updating type" = periodic.
24	←		LOCATION UPDATING ACCEPT	
25	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
26	→		RRC CONNECTION RELEASE COMPLETE	
27	UE			The UE shall not initiate an RRC connection establishment. This is checked during 12 minutes.

Specific message contents

None.

9.4.6.5 Test requirement

1) At step 20 the UE shall send an RRC CONNECTION REQUEST and at step 23 the UE shall attempt to perform a location update.

2) At step 11 the UE shall send an RRC CONNECTION REQUEST and at step 14 the UE shall attempt to perform a location update.

3) At step 27 the UE shall not initiate an RRC connection during 12minutes.

9.5 MM connection

9.5.1 Introduction

[tbd]

9.5.2 MM connection / establishment in security mode

9.5.2.1 Definition

9.5.2.2 Conformance requirement

1) The UE shall be able to correctly set up an MM connection in a Mobile Originating CM connection attempt and send a CM SERVICE REQUEST message with CKSN information element as stored in the USIM and Mobile Identity information element set to the TMSI.

2) The UE shall be able to interpret security mode setting as acceptance of its CM service request i.e. send a CM message.

References

TS 24.008 Clause 4.5.1.1.

9.5.2.3 Test purpose

To verify that the UE can correctly set up an MM connection in an origination and interpret security mode setting as acceptance of its CM service request.

9.5.2.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated".

Related ICS/IXIT statements

None.

Test Procedure

A mobile originating CM connection is initiated. After the UE has sent the CM SERVICE REQUEST message to the SS, an authentication procedure and a security mode setting procedure are performed. Then, the UE sends a CM message and the SS clears the call and releases the RRC CONNECTION.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			A MO CM connection is attempted.
2	→		RRC CONNECTION REQUEST	
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		CM SERVICE REQUEST	
6	←		AUTHENTICATION REQUEST	
7	→		AUTHENTICATION RESPONSE	
8	←		SECURITY MODE COMMAND	
9	→		SECURITY MODE COMPLETE	
A10	→		SETUP	
A11	←		RELEASE COMPLETE	"Cause" IE: "unassigned number".
B10	→		REGISTER	
B11	←		RELEASE COMPLETE	
C10	→		CP-DATA	
C11	←		CP-ACK	
C12	←		CP-DATA	
C13	→		CP-ACK	
14	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
15	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.5.2.5 Test requirement

At step 5 the UE shall send the CM SERVICE REQUEST message to the SS.

At step A10 or B10 or C10 the UE shall send a CM message and the SS shall release the RRC connection (step 14).

9.5.3 MM connection / establishment in non-security mode

9.5.3.1 Definition

9.5.3.2 Conformance requirement

Upon reception of the CM SERVICE ACCEPT message, the UE shall send a CM message.

References

TS 24.008 Clause 4.5.1.1.

9.5.3.3 Test purpose

To verify that the UE can correctly set up an MM connection in an originating CM connection establishment when security mode setting is not required.

9.5.3.4 Method of test

Initial conditions

- System Simulator:

- 1 cell, default parameters.

- User Equipment:
  - the UE has a valid TMSI. It is "idle updated".

Related ICS/IXIT statements

None.

Test Procedure

A mobile originating CM connection is attempted. The MM-connection is established without invoking the security mode setting procedure.

Then, the UE sends a CM message and the SS releases the RRC CONNECTION.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			A MO CM connection is attempted.
2	→		RRC CONNECTION REQUEST	
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		CM SERVICE REQUEST	
6	←		CM SERVICE ACCEPT	
A7	→		SETUP	
B7	→		REGISTER	
C7	→		CP-DATA	
C8	←		CP-ACK	
C9	←		CP-DATA	
C10	→		CP-ACK	
11	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
12	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.5.3.5 Test requirement

At step 5 the UE shall send the CM SERVICE REQUEST message to the SS.

At step A7 or B7 or C7 the UE shall send a CM message and the SS shall release the RRC connection (step 12).

9.5.4 MM connection / establishment rejected

9.5.4.1 Definition

9.5.4.2 Conformance requirement

Upon reception of a CM SERVICE REJECT message, the UE shall not send any layer 3 message, start timer T3240 and enter the "wait for network command" state.

References

TS 24.008 Clause 4.5.1.1.

9.5.4.3 Test purpose

To verify that the UE does not send a layer 3 message when the service request is rejected by the SS.

9.5.4.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated".

Related ICS/IXIT statements

None.

Test Procedure

A mobile originating CM connection is attempted. After the UE has sent the CM SERVICE REQUEST message to the SS, the SS responds with a CM SERVICE REJECT message with reject cause "requested service option not subscribed". It is checked that the UE does not send a layer 3 message.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			A MO CM connection is attempted
2	→		RRC CONNECTION REQUEST	
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		CM SERVICE REQUEST	
6	←		CM SERVICE REJECT	"Reject cause" IE: "requested service option not subscribed".
7	SS			The UE shall not send a layer 3 message. This is checked during 5 seconds.
8	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
9	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.5.4.5 Test requirement

The UE shall attempt MO CM connection (step 1).

At step 7 the UE shall not send a layer 3 message and at step 9 the UE shall send an RRC CONNECTION RELEASE COMPLETE message.

9.5.5 MM connection / establishment rejected cause 4

9.5.5.1 Definition

9.5.5.2 Conformance requirement

1) The UE shall be able to correctly set up an MM connection in a Mobile Originating CM connection attempt and send a CM SERVICE REQUEST message with CKSN information element as stored in the USIM and Mobile Identity information element set to the TMSI.

2) The UE, when receiving a CM SERVICE REJECT message with reject cause "IMSI unknown in VLR" shall wait for the network to release the RRC connection.

3) The UE shall then be able to perform a location updating procedure.

References

TS 24.008 Clause 4.5.1.1.

9.5.5.3 Test purpose

To verify that the UE can correctly accept a CM SERVICE REJECT message with reject cause "IMSI unknown in VLR".

9.5.5.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated".

Related ICS/IXIT statements

None.

Test Procedure

A mobile originating CM connection is attempted. After the UE has sent the CM SERVICE REQUEST message to the SS, the SS responds with a CM SERVICE REJECT message with reject cause "IMSI unknown in VLR". On receipt of this message, the UE shall delete any TMSI, LAI, cipher key and cipher key sequence number. The RRC CONNECTION is released. It is checked that the UE performs a normal location updating procedure.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			A MO CM connection is attempted.
2	→		RRC CONNECTION REQUEST	
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		CM SERVICE REQUEST	CKSN = initial value, Mobile identity = TMSI.
6	←		CM SERVICE REJECT	"Reject cause" = "IMSI unknown in VLR".
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
10	←		RRC CONNECTION SETUP	
11	→		RRC CONNECTION SETUP COMPLETE	
12	→		LOCATION UPDATING REQUEST	"Ciphering key sequence number" = "No key is available". "Mobile identity" = IMSI. "Location area identification" = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE).
13	←		AUTHENTICATION REQUEST	
14	→		AUTHENTICATION RESPONSE	
14a	←		SECURITY MODE COMMAND	The SS starts deciphering.
14b	→		SECURITY MODE COMPLETE	The SS starts enciphering.
15	←		LOCATION UPDATING ACCEPT	"Mobile identity" = new TMSI.
16	→		TMSI REALLOCATION COMPLETE	
17	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
18	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.5.5.5 Test requirement

1) The UE shall attempt MO CM connection (at step 1) and at step 5 the UE shall send a CM SERVICE REQUEST message with CKSN information element as stored in the USIM and Mobile Identity information element set to the TMSI.

2) At step 6 the SS should send a CM SERVICE REJECT message with reject cause "IMSI unknown in VLR", and at step 8 the UE shall send an RRC CONNECTION RELEASE message.

3) At step 12 the UE send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "deleted LAI".

9.5.6 MM connection / expiry T3230

9.5.6.1 Definition

9.5.6.2 Conformance requirement

At T3230 expiry (i.e. no response is given but an RRC connection is available) the MM connection establishment shall be aborted.

References

TS 24.008 Clauses 4.5.1.2 and 11.2.

9.5.6.3 Test purpose

To verify that at T3230 expiry, the UE aborts the MM-connection establishment.

9.5.6.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated".

Related ICS/IXIT statements

None.

Test Procedure

A mobile originating CM connection is attempted. After the UE has sent the CM SERVICE REQUEST message to the SS, the SS waits for expiry of timer T3230. It is checked that the UE send a MM STATUS message and waits for the release of the RRC-connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			A MO CM connection is attempted.
2	→		RRC CONNECTION REQUEST	
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		CM SERVICE REQUEST	
6	SS			The SS waits for expiry of timer T3230.
7	←		CM SERVICE ACCEPT	
8	→		MM STATUS	"Reject cause" IE is "message type not compatible with protocol state".
9	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
10	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.5.6.5 Test requirement

The UE shall attempt MO CM connection (step 1).

At step 8 the UE shall send a MM STATUS message.

9.5.7 MM connection / abortion by the network

9.5.7.1 MM connection / abortion by the network / cause #6

9.5.7.1.1 Definition

9.5.7.1.2 Conformance requirement

1) Upon reception of an ABORT message, the UE shall release any ongoing MM connection and enter the "wait for network command" state.

2) If the cause in the ABORT message was cause #6, the UE shall:

   2.1 not perform normal location updating;

   2.2 not perform periodic location updating;

   2.3 not respond to paging with TMSI;

   2.4 reject any request for Mobile Originating call establishment except Emergency call;

   2.5 not perform IMSI detach if deactivated.

3) After reception of an ABORT message with cause #6, the UE, if it supports speech, shall accept a request for an emergency call by sending a RRC CONNECTION Request message with the establishment cause set to "emergency call".

4) After reception of an ABORT message with cause #6, the UE shall delete the stored LAI, CKSN and TMSI.

Reference(s)

TS 24.008 Clause 4.3.5.

9.5.7.1.3 Test purpose

To check that upon reception of an ABORT message with cause #6 during call establishment:

- the UE does not send any layer 3 message;
- after reception of an ABORT message and after having been deactivated and reactivated, the UE performs location updating using its IMSI as mobile identity and indicates deleted LAI and CKSN;
- the UE does not perform location updating, does not answer to paging with TMSI, rejects any request for mobile originating call except emergency call, does not perform IMSI detach;
- the UE accepts a request for emergency call.

9.5.7.1.4 Method of test

Initial Conditions

- System Simulator:
  - 2 cells, default parameters.
- User Equipment:
  - the UE has a valid TMSI, CKSN and CK, IK. It is "idle updated" on cell B.

Related ICS/IXIT Statement(s)

USIM removal possible while UE is powered Yes/No.

Switch off on button Yes/No.

Support of speech Yes/No.

Test procedure

A mobile originating CM connection is attempted. Upon reception of the AUTHENTICATION RESPONSE message, the SS sends an ABORT message with cause #6. The SS waits for 5 seconds. The UE shall not send any layer 3 message. The SS releases the RRC connection.

The SS checks that the UE has entered the state MM IDLE substate NO IMSI, i.e. does not perform normal location updating, does not perform periodic updating, does not respond to paging, rejects any requests from CM entities except emergency calls and does not perform IMSI detach if deactivated.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell B				
1	UE			A mobile originating CM connection is attempted.
2	→		RRC CONNECTION REQUEST	
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		CM SERVICE REQUEST	
6	←		AUTHENTICATION REQUEST	

Step	Direction		Message	Comments
	UE	SS		
7	→		AUTHENTICATION RESPONSE	
8	←		ABORT	"reject cause" = #6.
9		SS		The SS waits for 5 seconds.
10		UE		The UE shall not send any layer 3 message during that time.
11	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
12	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell A.				
13		SS		The RF levels are changed to make the UE reselect cell A.
14		UE		The UE performs cell reselection according to procedure as specified in (this however is not checked until step 27). The UE shall not initiate an RRC connection establishment on cell A or on cell B.
15		SS		The SS waits at least 7 minutes for a possible periodic updating.
16		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B.
17	←		PAGING TYPE 1	"UE identity" IE contains TMSI. Paging Cause: Terminating Conversational Call.
18		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is verified during 3 seconds.
19		UE		A MO CM connection is attempted.
20		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 seconds.
21		UE		If the UE supports speech (see ICS), an emergency call is attempted.
22	→		RRC CONNECTION REQUEST	"Establishment cause": Emergency call.
23	←		RRC CONNECTION SETUP	
24	→		RRC CONNECTION SETUP COMPLETE	
25	→		CM SERVICE REQUEST	"CM service type": Emergency call establishment.
26	←		CM SERVICE ACCEPT	
27	→		EMERGENCY SETUP	
28	←		RELEASE COMPLETE	"Cause" = unassigned number.
29	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
30	→		RRC CONNECTION RELEASE COMPLETE	
31		UE		If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
32		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 seconds.
33		UE		Depending on what has been performed in step 31 the UE is brought back to operation.
34	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
35	←		RRC CONNECTION SETUP	
36	→		RRC CONNECTION SETUP COMPLETE	
37	→		LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "Mobile Identity" = IMSI, "LAI" = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE).
38	←		AUTHENTICATION REQUEST	"CKSN" = CKSN1.
39	→		AUTHENTICATION RESPONSE	
40	←		LOCATION UPDATING ACCEPT	"Mobile Identity" = TMSI.
41	→		TMSI REALLOCATION COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
42	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
43	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.5.7.1.5 Test requirement

1) At step 10 the UE shall not send any layer 3 message and at step 12 the UE shall send an RRC CONNECTION RELEASE COMPLETE message.

2) 2.1 At step 14 the UE shall not initiate an RRC connection establishment (not perform normal location updating).

   2.2 At step 16 the UE shall not initiate an RRC connection establishment.(not perform periodic location updating).

   2.3 At step 18 the UE shall not initiate an RRC connection establishment (not respond to paging with TMSI).

   2.4 At step 20 the UE shall not initiate an RRC connection establishment (reject any request for Mobile Originating call establishment).

   2.5 At step 32 the UE shall not initiate an RRC connection establishment.(not perform IMSI detach).

3) At step 22 the UE shall send an RRC CONNECTION REQUEST message with the establishment cause set to "emergency call".

4) At step 37 the UE send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "deleted LAI".

9.5.7.2 MM connection / abortion by the network / cause not equal to #6

9.5.7.2.1 Definition

9.5.7.2.2 Conformance requirement

Upon reception of an ABORT message, the UE shall release any ongoing MM connection and enter the "wait for network command" state.

Reference(s)

TS 24.008 Clause 4.3.5.

9.5.7.2.3 Test purpose

To check that when multiple MM connections are established, the UE releases all MM connections upon reception of an ABORT message, in the case when the two MM connections are established for a mobile terminating call and a non call related supplementary service operation.

9.5.7.2.4 Method of test

Initial Conditions

- System Simulator:

- 1 cell, default parameters.

- User Equipment:
  - the UE is in state U10 of a mobile terminating call.

Related ICS/IXIT Statement(s)

The UE supports a non call related supplementary service operation during an active call Yes/No.

Test procedure

A non call related supplementary service operation is attempted at the UE. Upon reception of the REGISTER message, the SS sends an ABORT message with cause # 17. The SS sends a DISCONNECT using the TI of the mobile terminating call. The UE shall send a RELEASE COMPLETE message with the PD and TI of the DISCONNECT message and with cause #81. The SS releases the RRC connection.

Expected Sequence

This procedure is performed if the UE supports non call related supplementary service operation.

Step	Direction		Message	Comments
	UE	SS		
1	UE			A non call related supplementary service operation is attempted at the UE.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Originating Background Call.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		CM SERVICE REQUEST	
6	←		CM SERVICE ACCEPT	
7	→		REGISTER	
8	←		ABORT	"reject cause" = #17.
9	←		DISCONNECT	with the TI of the mobile terminating call.
9a	→		RELEASE	
10	←		RELEASE COMPLETE	"cause" = #81. Same PD and TI as the DISCONNECT message.
11	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
12	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.5.7.2.5 Test requirement

At step 10 the UE shall send a RELEASE COMPLETE message and at step 12 the UE shall send an RRC CONNECTION RELEASE COMPLETE message.

9.5.8 MM connection / follow-on request pending

9.5.8.1 MM connection / follow-on request pending / test 1

9.5.8.1.1 Definition

9.5.8.1.2 Conformance requirement

The UE shall not attempt to establish a new MM connection after location updating on the same RRC connection if not allowed by the network.

Reference(s)

TS 24.008 Clause 4.4.4.6.

9.5.8.1.3 Test purpose

To check that when the network does not include the follow on proceed IE in a LOCATION UPDATING ACCEPT message, a UE that has a CM application request pending does not attempt to establish a new MM connection on that RRC connection.

9.5.8.1.4 Method of test

Initial Conditions

- System Simulator:
  - 1 cell, ATT flag is set to "MSs in the cell shall apply IMSI attach and detach procedure".
- User Equipment:
  - the UE has a valid TMSI and is deactivated.

Related ICS/IXIT Statement(s)

None.

Test procedure

The UE is activated and a CM connection is attempted during the location updating procedure. The SS does not include the follow on proceed information element in the LOCATION UPDATING ACCEPT message. The SS waits for at least 8 seconds. The UE shall not send any layer 3 message for 8 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is activated.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach. Then the SS waits for 15 s. During this delay a CM connection is attempted.
6	←		LOCATION UPDATING ACCEPT	follow on proceed IE not included.
7	SS			The SS wait for at least 8 seconds.
8	UE			The UE shall not send any layer 3 message for 8 seconds after reception of the LOCATION UPDATING ACCEPT message.
9	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
10	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.5.8.1.5 Test requirement

After step 8 the UE shall not send any layer 3 messages.

9.5.8.2 MM connection / follow-on request pending / test 2

9.5.8.2.1 Definition

9.5.8.2.2 Conformance requirement

A UE supporting the follow-on request procedure and having a CM connection request pending shall correctly establish an MM connection following a location update when allowed by the network.

Reference(s)

TS 24.008 Clause 4.4.4.6.

9.5.8.2.3 Test purpose

To check that when the network includes the follow on proceed IE in a LOCATION UPDATING ACCEPT message, a UE that supports the follow on request procedure and that has a CM application request pending establishes successfully a new MM connection on that RRC connection.

9.5.8.2.4 Method of test

Initial Conditions

- System Simulator:
  - 1 cell, ATT flag is set to "MSs in the cell shall apply IMSI attach and detach procedure".
- User Equipment:
  - the UE has a valid TMSI and is deactivated.

Related ICS/IXIT Statement(s)

UE supports the follow on request procedure Yes/No.

Test procedure

The UE is activated and a CM connection is attempted during the location updating procedure. The SS includes the follow on proceed information element in the LOCATION UPDATING ACCEPT message. The SS waits for at least 8 seconds.

If the UE supports the follow on request procedure:

- the UE shall send a CM SERVICE REQUEST. Upon reception of that message, the SS sends a CM SERVICE ACCEPT message. The UE shall send an initial CM message. Upon reception of that message, the SS releases the RRC connection.

If the UE does not support the follow on request procedure:

- the UE shall not send any layer 3 message for 8 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is activated.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	Location updating type = IMSI attach. Then the SS waits for 15 s. During this delay a CM connection is attempted.
6	←		LOCATION UPDATING ACCEPT	follow on proceed IE included.
				If the UE supports the follow on request procedure (see ICS) steps A7 to A9 are performed, otherwise steps B7 to B8 are performed.
A7	→		CM SERVICE REQUEST	
A8	←		CM SERVICE ACCEPT	
A9	→		An initial CM message	
B7	SS			The SS wait for at least 8 seconds.
B8	UE			The UE shall not send any layer 3 message for 8 seconds after reception of the LOCATION UPDATING ACCEPT message.
10	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
11	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.5.8.2.5 Test requirement

After step 6:

The UE shall send a CM SERVICE REQUEST if the UE supports the follow on request procedure.

The UE shall not send any layer 3 message if the UE does not support the follow on request procedure.

9.5.8.3 MM connection / follow-on request pending / test 3

9.5.8.3.1 Definition

9.5.8.3.2 Conformance requirement

1) The UE shall not set the follow on proceed IE in a LOCATION UPDATING REQUEST message if no MM connection request is pending.

2) When the network includes the follow on proceed IE in a LOCATION UPDATING ACCEPT message, a UE that has no CM application request pending shall not attempt to establish a new MM connection on that RRC connection.

3) The UE shall correctly handle a CM connection established by the network on the RRC connection that was used for the location updating procedure.

Reference(s)

TS 24.008 Clause 4.4.4.6.

9.5.8.3.3 Test purpose

1) To check that a UE that has no CM application request pending sets the follow on proceed IE to No follow-on request pending in a LOCATION UPDATING REQUEST message.

2) To check that when the network includes the follow on proceed IE in a LOCATION UPDATING ACCEPT message, a UE that has no CM application request pending does not attempt to establish a new MM connection on that RRC connection.

3) To check that the UE accepts establishment by the network of a new MM connection on the existing RRC connection.

9.5.8.3.4 Method of test

Initial Conditions

- System Simulator:
  - 1 cell, ATT flag is set to "MSs in the cell shall apply IMSI attach and detach procedure".
- User Equipment:
  - the UE has a valid TMSI and is deactivated.

Related ICS/IXIT Statement(s)

Supported services on TCH.

Test procedure

The UE is activated. The UE performs location updating. The UE shall set the follow on proceed IE to No follow-on request pending in the LOCATION UPDATING REQUEST message. The SS includes the follow on proceed IE in the LOCATION UPDATING ACCEPT message. The SS waits for 5 seconds. The UE shall not send any layer 3 message for 5 seconds. The SS sends a SETUP message to the UE requesting a basic service supported by the UE. The UE shall send either a CALL CONFIRMED message if it supports a service on TCH or a RELEASE COMPLETE with cause #88.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is activated.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	"Location updating type" = IMSI attach. The FOR bit is set to No follow-on request pending.
6	←		LOCATION UPDATING ACCEPT	follow on proceed IE is included.
7	SS			The SS wait for 5 seconds.
8	UE			The UE shall not send any layer 3 message for 5 seconds after reception of the LOCATION UPDATING ACCEPT message.
9	←		SETUP	
A10	→		CALL CONFIRMED	If the UE supports a basic service on TCH.
B10	→		RELEASE COMPLETE	If the UE does not support any basic service on TCH. cause #88.
11	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
12	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.5.8.3.5 Test requirement

At step 8 the UE shall not send any layer 3 message.

After step 9:

The UE shall send CALL CONFIRMED message if the UE supports a basic service on TCH.

The UE shall send RELEASE COMPLETE message if the UE does not support a basic service on TCH.

10 Circuit Switched Call Control (CC)

10.1 Circuit switched Call Control (CC) state machine verification

10.1.1 General on CC state machine verification

The principle of checking the call control functions consists in the validation of each call control identified state.

State U0 as an initial state is not verified in the tests of 10.1.2 (establishment of an outgoing call).

State U0.1 is never verified.

The steps to be followed within each performed test are:

- bring the UE into the required state;
- trigger the tested event;
- check the UE response and new state.

In clauses 10.1.2 and 10.1.3 different tables are defined to bring the UE into the required initial state. The exact table to be chosen is specified individually in clause "Initial conditions" of "Method of test" for each test case.

For each test, unless otherwise specified, a circuit switched basic service among those supported by the UE but excluding the emergency call teleservice shall be chosen arbitrarily, and the test shall be performed according to that basic service. If the only circuit switched basic service supported by the mobile is emergency call, then the incoming call tests shall not be performed and the other call control tests shall be performed with the EMERGENCY SETUP message replacing the SETUP message.

The initial states are to be checked through STATUS ENQUIRY messages sent by the SS, when feasible. This is not explicitly stated in the tables of expected sequences of signalling messages. The checking of final states are explicitly included into the expected sequences of signalling messages.

The following postamble may be used by the SS to bring UE back to idle mode in those test cases, in which it is not already included into expected sequence of signalling messages:

Table 10.1.1/1: A postamble to bring the UE back to idle mode.

Step	Direction		Message	Comments
	UE	SS		
N	<--		RRC CONNECTION RELEASE	
n+1	-->		RRC CONNECTION RELEASE COMPLETE	
n+2	UE			the UE shall release the main signalling link

The postamble has not been included into the all of the tests in order to leave an option to concatenate the procedures in the future by using a final state of a test case as an initial state to another one.

For the special case of U0, the state is checked by sending STATUS ENQUIRY message with all possible values of transaction identifier (seven values) as U0 is the only state in which for every TI the UE will answer with release complete with cause #81. If U0 is to be verified when no RRC connection exists, first a mobile terminating radio connection must be established.

The UE responses are either call management messages received by the SS or lower layers functions activated within the UE or MMI actions (e.g. the buzzing of an alerting tone).

A time-out within the UE is triggered by the SS when it does not answer back an UE expected response.

The test sequences may be split in 3 main groups:

- establishment and release of an outgoing call;
- establishment and release of an incoming call;
- in-call functions.

Some test cases use Basic Generic Procedures, “Mobile terminated establishment of Radio Resource Connection” and “Radio Bearer Setup Procedure” defined in TS34.108 clause 7.

General tolerance value on protocol timers defined in TS34.108 is used in some test cases if no specific tolerance on timer is defined in a test case.

Remark on verification of transient states:

Some call control states of the user equipment may be transient, depending on implementation, configuration of the UE and previous messages.

If a test starts in a transient state, then the test is executed without verification of the starting state.

10.1.2 Establishment of an outgoing call

Initial conditions

As a minimum requirement the UE is updated and has been given a TMSI, a ciphering key and cipher key sequence number, and the layer 2, RRC and MM functionalities have been verified.

There are as many CM initial conditions as states to be checked.

The tables below describe message exchanges which bring the UE in the requested initial states.

A state may be taken as initial only when all the states which lead to this initial states have been validated. The order followed in the test procedure will be U0, U0.1, U1, U3, U4, U10, U12, U19, U11 as seen in the table underneath.

The UE is brought again in the initial state starting with U0 at each new test performed.

Table 10.1.2/1: Establishment of an outgoing call, procedure 1 (late assignment)

Step	Direction		Message	Comments
	UE	SS		
1		->	RRC CONNECTION REQUEST	Initiate outgoing call
2		<-	RRC CONNECTION SETUP	
3		->	RRC CONNECTION SETUP COMPLETE	
4		->	CM SERVICE REQUEST	U0.1
5		<-	AUTHENTICATION REQUEST	
6		->	AUTHENTICATION RESPONSE	
7		<-	SECURITY MODE COMMAND	
8		->	SECURITY MODE COMPLETE	
9		->	SETUP	U1
10		<-	CALL PROCEEDING	U3
11		<-	ALERTING	U4
12			Radio Bearer Setup Procedure	DTCH, See TS34.108
13		<-	CONNECT	
14		->	CONNECT ACKNOWLEDGE	U10
A15		<-	DISCONNECT	U12 (note 1)
B15		<-	DISCONNECT	U12 (note 2)
B16		->	RELEASE	U19
C15				MMI action, terminate call
C16		->	DISCONNECT	U11

NOTE 1: The Progress Indicator IE with progress description #8 "in band information or appropriate pattern now available" is included.

NOTE 2: The Progress Indication IE is not included.

Table 10.1.2/2: Void

Table 10.1.2/3: Establishment of an outgoing call, procedure 3

Step	Direction		Message	Comments
	UE	SS		
1		->	RRC CONNECTION REQUEST	Initiate outgoing call
2		<-	RRC CONNECTION SETUP	
3		->	RRC CONNECTION SETUP COMPLETE	
4		->	CM SERVICE REQUEST	U0.1
5		<-	SECURITY MODE COMMAND	
6		->	SECURITY MODE COMPLETE	
7		->	SETUP	U1
8		<-	AUTHENTICATION REQUEST	
9		->	AUTHENTICATION RESPONSE	
10		<-	CALL PROCEEDING	U3
11			Radio Bearer Setup Procedure	DTCH, See TS34.108
12		<-	ALERTING	U4
13		->	CONNECT	
14		<-	CONNECT ACKNOWLEDGE	U10
A15		<-	DISCONNECT	U12 (note 6)
B15		<-	DISCONNECT	U12 (note 7)
B16		->	RELEASE	U19
C15				MMI action, terminate call
C16		->	DISCONNECT	U11

NOTE 6: The Progress Indicator IE with progress description #8 "in band information or appropriate pattern now available" is included.

NOTE 7: The Progress indicator IE is not included.

Table 10.1.2/4: Establishment of an outgoing call, procedure 4

Step	Direction		Message	Comments
	UE	SS		
1		->	RRC CONNECTION REQUEST	Initiate outgoing call
2		<-	RRC CONNECTION SETUP	
3		->	RRC CONNECTION SETUP COMPLETE	
4		->	CM SERVICE REQUEST	U0.1
5		<-	IDENTITY REQUEST	
6		->	IDENTITY RESPONSE	
7		<-	SECURITY MODE COMMAND	
8		->	SECURITY MODE COMPLETE	
9		->	SETUP	U1
10		<-	Radio Bearer Setup Procedure	DTCH (note 8), See TS34.108
11		<-	CALL PROCEEDING	U3
12		<-	ALERTING	U4
13		<-	CONNECT	
14		->	CONNECT ACKNOWLEDGE	U10
A15		<-	DISCONNECT	U12 (note 9)
B15		<-	DISCONNECT	U12 (note 10)
B16		->	RELEASE	U19
C15				MMI action, terminate call
C16		->	DISCONNECT	U11

NOTE 8: Assigned channel is appropriate for the chosen bearer capability (see 10.1).

NOTE 9: The Progress Indicator IE with progress description #8 "in band information or appropriate pattern now available" is included.

NOTE 10: The Progress Indicator IE is not included.

10.1.2.1 Outgoing call / U0 null state

10.1.2.1.1 Outgoing call / U0 null state / MM connection requested

10.1.2.1.1.1 Definition

The call control entity of the User Equipment requests the MM-sublayer to establish a mobile originating MM-connection.

10.1.2.1.1.2 Conformance requirement

1) Upon initiation of an outgoing basic call by user the UE shall initiate establishment of an MM connection, using as first MM message a CM SERVICE REQUEST message with CM service type "Mobile originating call establishment or packet mode connection establishment".

References

TS 24.008 clause 5.2.1.1, TS24.008 clause 4.5.1.1, TS 25.331 clause 8.1.3.

10.1.2.1.1.3 Test purpose

To verify that upon initiation of an outgoing basic call by user the UE initiates establishment of an MM connection, using as first MM message a CM SERVICE REQUEST message with CM service type "Mobile originating call establishment or packet mode connection establishment".

10.1.2.1.1.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. When the SS receives CM SERVICE REQUEST, the contents of it shall be checked.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	->		RRC CONNECTION REQUEST	initiate outgoing call
2	<-		RRC CONNECTION SETUP	
3	->		RRC CONNECTION SETUP COMPLETE	
4	->		CM SERVICE REQUEST	verify the type of call which is asked for "basic" or "emergency by the UE
5	<-		RRC CONNECTION RELEASE	
6	->		RRC CONNECTION RELEASE COMPLETE	
7	UE			the UE shall release the main signalling link

Specific message contents:

None.

10.1.2.1.1.5 Test requirements

After step 3 the UE shall initiate establishment of an MM connection, using as first MM message a CM SERVICE REQUEST message with CM service type "Mobile originating call establishment or packet mode connection establishment".

10.1.2.2 Outgoing call / U0.1 MM connection pending

10.1.2.2.1 Outgoing call / U0.1 MM connection pending / CM service rejected

10.1.2.2.1.1 Definition

A request for MM connection is rejected by the SS.

10.1.2.2.1.2 Conformance requirement

Upon receiving indication of an MM-connection establishment being rejected, CC entity should inform upper layer of this rejection.

References

TS 24.008, clause 4.5.1.1 , TS 24.007, clause 6.2.2.

10.1.2.2.1.3 Test purpose

To verify that a CC entity of the UE in CC-state U0.1, "MM-connection pending", upon the UE receiving a CM SERVICE REJECT message, returns to CC state U0, "Null".

10.1.2.2.1.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U0.1 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. When the SS receives CM SERVICE REQUEST, the contents of it shall be checked. The SS rejects it by CM SERVICE REJECT. Then the SS will check the state of the UE by using STATUS ENQUIRY with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	CM SERVICE REJECT	
2		<-	STATUS ENQUIRY	
3		->	RELEASE COMPLETE	cause shall be 81# (invalid TI value)
4	SS			repeat steps 2-3 to cover all the transaction identifiers from 000 ...110
5		<-	RRC CONNECTION RELEASE	
6		->	RRC CONNECTION RELEASE COMPLETE	
7	UE			the UE shall release the main signalling link

Specific message contents:

None.

10.1.2.2.1.5 Test requirements

After step 2 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.2.2.2 Outgoing call / U0.1 MM connection pending / CM service accepted

10.1.2.2.2.1 Definition

A CM request is accepted for the MM-connection by the SS.

10.1.2.2.2.2 Conformance requirement

A CC entity of the UE in CC-state U0.1, "MM-connection pending", upon the UE receiving a CM SERVICE ACCEPT message, shall send a SETUP message specifying the Called party BCD number that was entered into the UE and then enter CC state U1, "Call initiated".

References

TS 24.008, clause 4.5.1.1, TS24.008, clause 5.2.1.1.

10.1.2.2.2.3 Test purpose

To verify that a CC entity of the UE in CC-state U0.1, "MM-connection pending", upon the UE receiving a CM SERVICE ACCEPT message, sends a SETUP message specifying the Called party BCD number that was entered into the UE and then enters CC state U1, "Call initiated".

10.1.2.2.2.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U0.1 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. When the UE is requesting a MM-connection, the SS will indicate acceptance by sending a CM SERVICE ACCEPT message. The UE shall respond with SETUP. Then the SS will check the state of the call control entity by STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	CM SERVICE ACCEPT	
2		->	SETUP	with called party BCD number.
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause shall be 30# (response to enq.) and state U1 call initiated.

Specific message contents:

None.

10.1.2.2.2.5 Test requirements

After step 1 a CC entity of the UE in CC-state U0.1, "MM-connection pending", shall send a SETUP message specifying the Called party BCD number that was entered into the UE and then enter CC state U1, "Call initiated".

10.1.2.2.3 Outgoing call / U0.1 MM connection pending / lower layer failure

10.1.2.2.3.1 Definition

The call control entity of the UE being in the state, U0.1, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

10.1.2.2.3.2 Conformance requirement

1) Upon a lower layer failure the UE releases the MM connection in progress and returns to idle mode. In that state no call exists, and the CC entity is in state U0, "Null".

References

TS 24.008, clause 4.5.1.2, TS 24.008, clause 5.2.1.1., TS 24.008 clause 5.5.3.2. and TS 24.008 clause 8.3, TS 25.331 clause 8.3.1, TS 25.331 clause 8.5.6.

10.1.2.2.3.3 Test purpose

To verify that after the UE with a CC entity in state U0.1, "MM-connection pending", has detected a lower layer failure and has returned to idle mode, the CC entity is in state U0, "Null".

10.1.2.2.3.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U0.1 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. When the UE has sent a CM SERVICE REQUEST message, the SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission(DL DPCH) to the original one and waits 60 seconds. The SS will check that the UE will not send any message during 60 seconds.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 seconds. UE shall send no message on DCCH

Specific message contents:

None.

10.1.2.2.3.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 seconds..

10.1.2.3 Outgoing call / U1 call initiated

10.1.2.3.1 Outgoing call / U1 call initiated / receiving CALL PROCEEDING

10.1.2.3.1.1 Definition

The call control entity of the UE being in the state, U1, a CALL PROCEEDING message is sent by the SS.

10.1.2.3.1.2 Conformance requirement

1) A CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a CALL PROCEEDING message, shall enter CC state U3, "Mobile originating call proceeding".

References

TS 24.008, clauses 5.2.1.1, 5.2.1.2 and 5.2.1.3.

10.1.2.3.1.3 Test purpose

To verify that a CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a CALL PROCEEDING message, enters CC state U3, "Mobile originating call proceeding".

10.1.2.3.1.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U1 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U1. The SS sends a CALL PROCEEDING message to the UE. The SS checks by using the status enquiry procedure that the CC entity has entered the state U3.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	CALL PROCEEDING	tone generation not mandatory
2		<-	STATUS ENQUIRY	
3		->	STATUS	cause 30#, state U3

Specific message contents:

None.

10.1.2.3.1.5 Test requirements

After step 1 a CC entity of the UE in CC-state U1, "Call initiated", shall enter CC state U3, "Mobile originating call proceeding".

10.1.2.3.2 Outgoing call / U1 call initiated / rejecting with RELEASE COMPLETE

10.1.2.3.2.1 Definition

The call control entity of the UE being in the state, U1, the call is rejected by a RELEASE COMPLETE message sent by the SS.

10.1.2.3.2.2 Conformance requirement

1) A CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a RELEASE COMPLETE message with valid cause value, shall enter CC state U0, "Null".

2) On returning to idle mode, the CC entities relating to the seven mobile originating transaction identifiers shall be in state U0, "Null".

3) On releasing the MM-connection, the UE shall wait for MM layer release initiated by the network.

References

Conformance requirement 1: TS 24.008, clause 5.4.2, TS 24.008, clause 5.4.4.

Conformance requirement 2: TS 24.008, clause 5.5.3.2.

Conformance requirement 3: TS 24.008, clause 5.4.4.1.3, TS 24.008, clause 4.5.3, TS 25.331, clause 8.1.4.

10.1.2.3.2.3 Test purpose

1) To verify that a CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a RELEASE COMPLETE message with valid cause value, enters CC state U0, "Null".

2) To verify that in returning to idle mode, the CC entities relating to the seven mobile originating transaction identifiers are in state U0, "Null".

3) To verify that in releasing the MM-connection, the UE shall wait for MM layer release initiated by SS.

10.1.2.3.2.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U1 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U1. The SS sends a RELEASE COMPLETE message to the UE. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE COMPLETE	See specific message content below.
2	<-		STATUS ENQUIRY	
3	->		RELEASE COMPLETE	cause 81# (invalid TI value)
4	SS			repeat steps 2-3 to cover all the transaction identifiers from 000...110
5	<-		RRC CONNECTION RELEASE	the main signalling link shall be released.
6	->		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

RELEASE COMPLETE

1) With a valid cause value among:

related to numbering,

#1 unallocated number

#3 no route to destination

#22 number changed

#28 invalid number format

related to bearer capabilities,

#8 operator determined barring

#57 bearer capability not authorized

#58 bearer capability not presently available

#63 service or option not available

#65 bearer service not implemented

#34 no circuit/channel available (call queuing).

10.1.2.3.2.5 Test requirements

After step 2 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.2.3.3 Outgoing call / U1 call initiated / T303 expiry

10.1.2.3.3.1 Definition

The call control entity of the UE being in the state, U1, if no response is then received from the SS, timer T303 expires at the UE side.

10.1.2.3.3.2 Conformance requirement

1) A CC entity of the UE in CC-state U1, "Call initiated", upon expiry of T303 shall send a DISCONNECT message to its peer entity and enter state U11, "Disconnect request".

References

TS 24.008, clause 5.2.1.1, TS 24.008, clause 5.4.

10.1.2.3.3.3 Test purpose

1) To verify that a CC entity of the UE in CC-state U1, "Call initiated", upon expiry of T303 sends a DISCONNECT message to its peer entity and enters state U11, "Disconnect request".

10.1.2.3.3.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U1 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U1. When T303 expires at the UE, the UE shall send DISCONNECT. The SS checks by using the status enquiry procedure that the CC entity has entered the state U11, disconnect request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS waits for T303 expiry.
2	->		DISCONNECT	Shall be transmitted between 24 s and 36 s after the CM SERVICE REQUEST.
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, status U11

Specific message contents:

None.

10.1.2.3.3.5 Test requirements

Upon expiry of timer T303, a CC entity of the UE in CC-state U1, "Call initiated", shall send a DISCONNECT message and enter state U11, "Disconnect request".

10.1.2.3.4 Outgoing call / U1 call initiated / lower layer failure

10.1.2.3.4.1 Definition

The call control entity of the UE being in the state, U1, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

10.1.2.3.4.2 Conformance requirement

Upon a lower layer failure MM informs the relevant CM entities that the MM connection has been interrupted. As call re-establishment is not allowed, the CC entity must perform a local release. The UE returns to idle mode. In that state no call exists, and the CC entity is in state U0, "Null".

References

TS 24.008, clause 4.5.2.3, TS 24.008, clause 5.2.1.1, TS 24.008 clause 5.5.3.2, TS 25.331 clause 8.3.1, TS 25.331 clause 8.5.6.

10.1.2.3.4.3 Test purpose

To verify that after the UE with a CC entity in state U1 "Call initiated", has detected a lower layer failure and has returned to idle mode, the CC entity is in state U0, "Null".

10.1.2.3.4.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U1 by using table 10.1.2/4.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The UE is brought to the state U1. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 seconds. The SS will check that the UE will not send any message during 60 seconds.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 seconds. UE shall send no message on DCCH

Specific message contents:

None.

10.1.2.3.4.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 seconds.

10.1.2.3.5 Outgoing call / U1 call initiated / receiving ALERTING

10.1.2.3.5.1 Definition

The call control entity of the UE being in the state, U1, an ALERTING message is sent to the UE as a indication that a call is being alerted at a called end.

10.1.2.3.5.2 Conformance requirement

1) A CC entity of the UE in CC-state U1, "Call initiated", upon receipt of an ALERTING message, shall enter CC state U4, "Call delivered".

References

TS 24.008, clause 5.2.1.1.

10.1.2.3.5.3 Test purpose

To verify that a CC entity of the UE in CC-state U1, "Call initiated", upon receipt of an ALERTING message, enters CC state U4, "Call delivered".

10.1.2.3.5.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U1 by using table 10.1.2/4.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U1. The SS sends an ALERTING message to the UE. The SS checks by using the status enquiry procedure that the CC entity has entered the state U4, call delivered.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		ALERTING	
2	<-		STATUS ENQUIRY	
3	->		STATUS	cause 30#, state U4

Specific message contents:

None.

10.1.2.3.5.5 Test requirements

After step 1 a CC entity of the UE in CC-state U1, "Call initiated", shall enter CC state U4, "Call delivered".

10.1.2.3.6 Outgoing call / U1 call initiated / entering state U10

10.1.2.3.6.1 Definition

The call control entity of the UE being in the state, U1, a CONNECT message is received by the UE.

10.1.2.3.6.2 Conformance requirement

1) A CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a CONNECT message, shall send a CONNECT ACKNOWLEDGE message to its peer entity and enter CC state U10, "Active".

References

TS 24.008, clause 5.2.1.1, TS 24.008, clause 5.2.1.6.

10.1.2.3.6.3 Test purpose

To verify that a CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a CONNECT message, sends a CONNECT ACKNOWLEDGE message to its peer entity and enters CC state U10, "Active".

10.1.2.3.6.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U1 by using table 10.1.2/4.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U1. The SS sends a CONNECT message to the UE. The UE shall respond by sending a CONNECT ACKNOWLEDGE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U10, active.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	CONNECT	
2		->	CONNECT ACKNOWLEDGE	
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause 30#, state U10

Specific message contents:

None.

10.1.2.3.6.5 Test requirements

After step 1 a CC entity of the UE in CC-state U1, "Call initiated", shall send a CONNECT ACKNOWLEDGE message and shall enter CC state U10, "Active".

10.1.2.3.7 Outgoing call / U1 call initiated / unknown message received

10.1.2.3.7.1 Definition

The call control entity of the UE being in the state, U1, an unknown message is received by the UE.

10.1.2.3.7.2 Conformance requirement

1) A CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a message with message type not defined for the protocol discriminator from its peer entity shall return a STATUS message.

References

TS 24.008 clause 8.4.

10.1.2.3.7.3 Test purpose

To verify that a CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a message with message type not defined for the protocol discriminator unknown message from its peer entity returns a STATUS message.

10.1.2.3.7.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U1 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U1. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		unknown message	message type not defined for PD
2	->		STATUS	cause 97#, state U1
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U1

Specific message contents:

None.

10.1.2.3.7.5 Test requirements

After step 1 and step 3 a CC entity of the UE in CC-state U1, "Call initiated", shall return a STATUS message.

10.1.2.4 Outgoing call / U3 UE originating call proceeding

10.1.2.4.1 Outgoing call / U3 UE originating call proceeding / ALERTING received

10.1.2.4.1.1 Definition

The call control entity of the UE being in the state, U3, an ALERTING message is sent to the UE as a indication that a call is being alerted at a called end.

10.1.2.4.1.2 Conformance requirement

1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a ALERTING message shall enter CC-state U4, "Call Delivered".

References

TS 24.008 clause 5.2.1.5.

10.1.2.4.1.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a ALERTING message enters CC-state U4, "Call Delivered".

10.1.2.4.1.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends an ALERTING message to the UE. The SS checks by using the status enquiry procedure that the CC entity has entered the state U4, call delivered.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	ALERTING	
2		<-	STATUS ENQUIRY	
3		->	STATUS	cause 30#, state U4

Specific message contents:

None.

10.1.2.4.1.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall enter CC-state U4, "Call Delivered".

10.1.2.4.2 Outgoing call / U3 UE originating call proceeding / CONNECT received

10.1.2.4.2.1 Definition

The call control entity of the UE being in the state, U3, a CONNECT message is received by the UE.

10.1.2.4.2.2 Conformance requirement

1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a CONNECT message shall return a "CONNECT ACKNOWLEDGE" message to its peer entity and enter the CC state U10, "Active".

2) The UE shall then stop any locally generated indication.

References

Conformance requirement 1: TS 24.008 clause 5.2.1.6.

Conformance requirement 2: TS 24.008 clause 5.2.1.6.

10.1.2.4.2.3 Test purpose

1) To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a CONNECT message returns a "CONNECT ACKNOWLEDGE" message to its peer entity and enters the CC state U10, "Active".

2) To verify that the UE stops locally generated indication, if any.

10.1.2.4.2.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The SS sends a CONNECT message to the UE. The UE shall respond by sending a CONNECT ACKNOWLEDGE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U10, active.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	(DTCH), SeeTS34.108
2	<-		CONNECT	the UE shall stop tone generation, if any
3	->		CONNECT ACKNOWLEDGE	
4	<-		STATUS ENQUIRY	
5	->		STATUS	cause 30#, state U10

Specific message contents:

None.

10.1.2.4.2.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall return a "CONNECT ACKNOWLEDGE" message and enter the CC state U10, "Active".

The UE shall stop locally generated indication.

10.1.2.4.3 Outgoing call / U3 UE originating call proceeding / PROGRESS received without in band information

10.1.2.4.3.1 Definition

The call control entity of the UE being in the state, U3, a PROGRESS message is received by the UE. The PROGRESS message does not contain indication of in-band information availability.

10.1.2.4.3.2 Conformance requirement

1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a PROGRESS message with valid cause values shall stay in CC-state U3.

2) After receipt of the PROGRESS message timer T310 shall be stopped.

References

Conformance requirement 1: TS 24.008 clause 5.2.1.4.

Conformance requirement 2: TS 24.008 clause 11.3.

10.1.2.4.3.3 Test purpose

1) To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a PROGRESS message with valid cause values stays in CC-state U3.

2) To verify that after receipt of the PROGRESS message timer T310 is stopped.

10.1.2.4.3.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a PROGRESS message not containing indication of in-band information availability to the UE. The SS checks that the UE has stopped T310, i.e. at T310 time-out no DISCONNECT message is sent by the UE. Then the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		PROGRESS	(note)
2	<-		STATUS ENQUIRY	
3	->		STATUS	cause 30#, state U3
4		SS		SS waits at least 45 seconds and checks no DISCONNECT is sent by the UE
5	<-		STATUS ENQUIRY	
6	->		STATUS	cause 30#, state U3

NOTE: Tested with a valid cause value among:

#4 call has returned to PLMN/ISDN

#32 call is end-to-end PLMN/ISDN or

any value in the set #(21-127)

Specific message contents:

None.

10.1.2.4.3.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall stay in CC-state U3.

After step 3 SS waits at least 45 seconds and checks no DISCONNECT is sent by the UE

10.1.2.4.4 Outgoing call / U3 UE originating call proceeding / PROGRESS with in band information

10.1.2.4.4.1 Definition

The call control entity of the UE being in the state, U3, a PROGRESS message indicating availability of in band information is received by the UE.

10.1.2.4.4.2 Conformance requirement

1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a PROGRESS message indicating in-band announcement shall through-connect the traffic channel for speech, if DTCH is in a speech mode. If DTCH is not in speech mode, the UE shall not through-connect the DTCH.

2) After receipt of the PROGRESS message, T310 shall be stopped.

References

TS 25.331 clause 8.2.1, TS 24.008 clause 5.2.1.4., TS 24.008 clause 5.2.1.9, TS 24.008 clause 5.5.1., TS 24.008 clause 11.3.

10.1.2.4.4.3 Test purpose

1) To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a PROGRESS message indicating in-band announcement through-connects the traffic channel for speech, if DTCH is in speech mode. If DTCH is not in a speech mode, the UE does not through-connect the DTCH.

2) To verify that after receipt of the PROGRESS message, T310 is stopped.

10.1.2.4.4.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The SS sends a PROGRESS message containing indication of in-band information availability to the UE. The SS checks that if channel mode is speech, the DTCH shall be through connected. If channel mode is not speech, the DTCH shall not be through connected. Also the SS checks that the UE has stopped T310, i.e. at T310 time-out no DISCONNECT message is sent by the UE. Then the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	(DTCH), See TS34.108
2	<-		PROGRESS	(note) the UE shall stop all the CC timers , if channel mode is speech, the DTCH shall be through connected. If channel mode is not speech, the DTCH shall not be through connected.
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U3
5		SS		SS waits at least 45 seconds and checks no DISCONNECT is sent by the UE.
6	<-		STATUS ENQUIRY	
7	->		STATUS	cause 30#, state U3
8		SS		If the channel mode is speech the SS will check that the user connection for speech is attached (both downlink and uplink).

Specific message contents:

NOTE: Tested with a valid cause value among:

#1 call is not end to end PLMN/ISDN

#2 destination address is non PLMN/ISDN

#3 originating address is non PLMN/ISDN

#8 in band information or appropriate pattern now available or any value in the set #(6-20).

10.1.2.4.4.5 Test requirements

After step 2 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall through-connect the traffic channel for speech, if DTCH is in a speech mode. If DTCH is not in speech mode, the UE shall not through-connect the DTCH.

After step 2 the SS waits at least 45 seconds and checks no DISCONNECT is sent by the UE

After step 5 the SS checks that the user connection for speech is attached (both downlink and uplink), if the channel mode is speech.

10.1.2.4.5 Outgoing call / U3 UE originating call proceeding / DISCONNECT with in band tones

10.1.2.4.5.1 Definition

The call control entity of the UE being in the state, U3, a DISCONNECT message indicating availability of in band information is received by the UE.

10.1.2.4.5.2 Conformance requirement

1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a DISCONNECT with progress indicator #8, shall through-connect the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE shall send a RELEASE message.

References

TS 24.008 clause 5.2.1.4., TS 24.008 clause 5.4.4.

10.1.2.4.5.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a DISCONNECT with progress indicator #8 through-connects the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE sends a RELEASE message.

10.1.2.4.5.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The SS sends a DISCONNECT message containing indication of in-band information availability to the UE. The SS checks that if channel mode is speech, the DTCH shall be through connected and the UE enters state U12, disconnect indication. If channel mode is not speech, the DTCH shall not be through connected and the UE shall enter state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	(DTCH), See TS34.108
2	<-		DISCONNECT	(note)
A3	SS			DTCH in speech mode: the SS will check that the audio path for in band tones is attached.
A4	<-		STATUS ENQUIRY	
A5	->		STATUS	cause 30#, state U12
B3	->		RELEASE	DTCH is not in speech mode:
B4	<-		STATUS ENQUIRY	
B5	->		STATUS	cause 30#, state U19

Specific message contents:

NOTE: the cause value:

#8 in band information or appropriate pattern now available.

10.1.2.4.5.5 Test requirements

After step 2 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall through-connect the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE shall send a RELEASE message.

10.1.2.4.6 Outgoing call / U3 UE originating call proceeding / DISCONNECT without in band tones

10.1.2.4.6.1 Definition

The call control entity of the UE being in the state, U3, a DISCONNECT message is received by the UE. The DISCONNECT message does not contain indication of in-band information availability.

10.1.2.4.6.2 Conformance requirement

1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a DISCONNECT without progress indicator shall return a RELEASE message and enter the CC-state U19, "Release Request"

References

TS 24.008 clause 5.4.4.

10.1.2.4.6.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a DISCONNECT without progress indicator returns a RELEASE message and enters the CC-state U19, "Release Request".

10.1.2.4.6.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a DISCONNECT message not containing indication of in-band information availability to the UE. The UE shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the UE has entered the state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	DISCONNECT	
2		->	RELEASE	
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause 30#, state U19

Specific message contents:

None.

10.1.2.4.6.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall send a RELEASE message and enter the CC-state U19, "Release Request".

10.1.2.4.7 Outgoing call / U3 UE originating call proceeding / RELEASE received

10.1.2.4.7.1 Definition

The call control entity of the UE being in the state, U3, a RELEASE message is received by the UE.

10.1.2.4.7.2 Conformance requirement

1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) The UE on returning to the idle mode shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null".

3) On releasing the MM-connection, the UE shall wait for MM layer release initiated by the network.

References

Conformance requirement 1: TS 24.008 clause 5.4.2., TS 24.008 clause 5.4.4.

Conformance requirement 2: TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2.

Conformance requirement 3: TS 24.008, clause 5.4.4.1.3, TS 24.008, clause 4.5.3, TS 25.331, clause 8.1.4.

10.1.2.4.7.3 Test purpose

1) To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) To verify that the UE on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null".

3) To verify that in releasing the MM-connection, the UE shall wait for MM layer release initiated by SS.

10.1.2.4.7.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a RELEASE message to the UE. The UE shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	RELEASE	with cause "Normal, unspecified"
2		->	RELEASE COMPLETE	
3		<-	STATUS ENQUIRY	
4		->	RELEASE COMPLETE	cause 81# (invalid TI value)
5		SS		repeat steps 3-4 to cover all the transaction identifiers from 000...110
6		<-	RRC CONNECTION RELEASE	the main signalling link shall be released.
7		->	RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

10.1.2.4.7.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall send a RELEASE COMPLETE message.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.2.4.8 Outgoing call / U3 UE originating call proceeding / termination requested by the user

10.1.2.4.8.1 Definition

The call control entity of the UE being in the state, U3, the user requests to terminate the call.

10.1.2.4.8.2 Conformance requirement

1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

References

TS 24.007 clause 6.2.2., TS 24.008 clause 5.4.3.

10.1.2.4.8.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

10.1.2.4.8.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator: 1 cell, default parameters.

User Equipment: The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The user requests termination of the call. The UE shall send a DISCONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U11, disconnect request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				MMI action, terminate call
2	->		DISCONNECT	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U11

Specific message contents:

None.

10.1.2.4.8.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

10.1.2.4.9 Outgoing call / U3 UE originating call proceeding / traffic channel allocation

10.1.2.4.9.1 Definition

The call control entity of the UE being in the state, U3, a radio bearer establishment procedure is performed.

10.1.2.4.9.2 Conformance requirement

1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, shall stay in CC-state U3.

References

TS 25.331 clause 8.2.1., TS 24.008 clause 5.2.1.9.

10.1.2.4.9.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, stays in CC-state U3.

10.1.2.4.9.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	(DTCH), See TS34.108
2	<-		STATUS ENQUIRY	
3	->		STATUS	cause 30#, state U3

Specific message contents:

None.

10.1.2.4.9.5 Test requirements

After step 1 the CC state U3, "Mobile Originating Call Proceeding", shall remain unchanged.

10.1.2.4.10 Outgoing call / U3 UE originating call proceeding / timer T310 time-out

10.1.2.4.10.1 Definition

The call control entity of the UE being in the state, U3, if no response is then received from the SS, timer T310 expires at the UE side.

10.1.2.4.10.2 Conformance requirement

1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding" shall, upon expiry of timer T310, and not before, initiate call release by sending DISCONNECT and enter the CC-state U11, "Disconnect Request".

References

TS 24.008 clause 5.2.1.3./Abnormal case, TS24.008 clause 5.4.3, TS 24.008 clause 11.3.

10.1.2.4.10.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding" will, upon expiry of timer T310, initiate call release by sending DISCONNECT and enter the CC-state U11, "Disconnect Request".

10.1.2.4.10.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The T310 expires at the UE and the UE shall send DISCONNECT. The SS checks timer T310 accuracy and that the CC entity has entered the state U11, disconnect request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		the SS waits for T310 time-out
2	->		DISCONNECT	check the timer T310 accuracy
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U11

Specific message contents:

None.

10.1.2.4.10.5 Test requirements

Upon expiry of timer T310, a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding" shall initiate call release by sending a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

10.1.2.4.11 Outgoing call / U3 UE originating call proceeding / lower layer failure

10.1.2.4.11.1 Definition

The call control entity of the UE being in the state, U3, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

10.1.2.4.11.2 Conformance requirement

1) If a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding" has detected a lower layer failure and has returned to idle mode, the CC entity is in state U0, "Null".

References

TS 24.008 clause 4.5.2.3., TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2., TS 25.331 clause 8.3.1, TS 25.331 clause 8.5.6.

10.1.2.4.11.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding" having detected a lower layer failure and having returned to idle mode, the CC entity is in state U0, "Null".

10.1.2.4.11.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/4.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The UE is brought to the state U3. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 seconds. The SS will check that the UE will not send any message during 60 seconds.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 seconds. UE shall send no message on DCCH

Specific message contents:

None.

10.1.2.4.11.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 seconds.

10.1.2.4.12 Outgoing call / U3 UE originating call proceeding / unknown message received

10.1.2.4.12.1 Definition

The call control entity of the UE being in the state, U3, an unknown message is received by the UE.

10.1.2.4.12.2 Conformance requirement

1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding" having received an unknown message from its peer entity shall return a STATUS message.

References

TS 24.008 clause 8.5.

10.1.2.4.12.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding" having received an unknown message from its peer entity returns a STATUS message.

10.1.2.4.12.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		unknown message	message type not defined for PD
2	->		STATUS	cause 97#, state U3
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U3

Specific message contents:

None.

10.1.2.4.12.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall return a STATUS message.

10.1.2.4.13 Outgoing call / U3 UE originating call proceeding / Internal alerting indication

10.1.2.4.13.1 Definition

The call control entity of the UE being in the state, U3, an ALERTING message is sent to the UE when the user connection is not attached to the radio path.

10.1.2.4.13.2 Conformance requirement

1) When the call control entity of the UE in the "mobile originating call proceeding" state receives an ALERTING message then it shall enter "call delivered" state and, for speech calls, if the user connection is not attached to the radio path, the UE shall internally generate an alerting indication.

References

TS 24.008 clause 5.2.1.5.

10.1.2.4.13.3 Test purpose

When the call control entity of the UE in the "mobile originating call proceeding" state receives an ALERTING message then it enters "call delivered" state and, for speech calls, if the user connection is not attached to the radio path, the UE generates internally an alerting indication.

10.1.2.4.13.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.
- way to give internally generated alerting indication for outgoing calls

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/1.

Test procedure

The SS sends an ALERTING message to the UE. The SS checks by using the status enquiry procedure that the CC entity has entered the state U4, call delivered. Also it is checked that the UE generates internally alerting indication to the user in the way described in the ICS/IXIT statements.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		ALERTING	the UE shall generate an alerting indication to the user in the way described in the ICS/IXIT statements
2	<-		STATUS ENQUIRY	
3	->		STATUS	cause 30#, state U4

Specific message contents:

None.

10.1.2.4.13.5 Test requirements

After step 1 CC entity of the UE in CC state U3, the "Mobile Originating Call Proceeding" shall enter "Call Delivered" state and, for speech calls, if the user connection is not attached to the radio path, the UE shall internally generate an alerting indication.

10.1.2.5 Outgoing call / U4 call delivered

10.1.2.5.1 Outgoing call / U4 call delivered / CONNECT received

10.1.2.5.1.1 Definition

The call control entity of the UE being in the state, U4, a CONNECT message is received by the UE.

10.1.2.5.1.2 Conformance requirement

1) A CC-entity of the UE in CC-state U4, "Call Delivered", upon receipt of the CONNECT message shall return a CONNECT ACKNOWLEDGE to its peer entity and enter the CC-state U10, "Active".

References

TS 24.008 clause 5.2.1.6.

10.1.2.5.1.3 Test purpose

To verify that a CC-entity of the UE in CC-state U4, "Call Delivered", upon receipt of the CONNECT message returns a CONNECT ACKNOWLEDGE to its peer entity and enters the CC-state U10, "Active".

10.1.2.5.1.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U4. The SS sends a CONNECT message to the UE. The UE shall respond by sending a CONNECT ACKNOWLEDGE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U10, active.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	CONNECT	
2		->	CONNECT ACKNOWLEDGE	UE stops alerting, if applicable
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause 30#, state U10

Specific message contents:

None.

10.1.2.5.1.5 Test requirements

After step 1 a CC entity of the UE in CC state U4, "Call Delivered", shall return a CONNECT ACKNOWLEDGE message and enter the CC state U10, "Active".

10.1.2.5.2 Outgoing call / U4 call delivered / termination requested by the user

10.1.2.5.2.1 Definition

The call control entity of the UE being in the state, U4, the user requests to terminate the call.

10.1.2.5.2.2 Conformance requirement

1) A CC-entity of the UE in CC-state U4, "Call Delivered", upon request by the user to terminate shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

References

TS 24.007 clause 6.2.2.,TS 24.008 clause 5.4.3.

10.1.2.5.2.3 Test purpose

To verify that a CC-entity of the UE in CC-state U4, "Call Delivered", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

10.1.2.5.2.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U4. The user requests termination of the call. The UE shall send a DISCONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U11, disconnect request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				MMI action, terminate call
2	->		DISCONNECT	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U11

Specific message contents:

None.

10.1.2.5.2.5 Test requirements

After step 1 a CC entity of the UE in CC state U4, "Call Delivered", shall send a DISCONNECT message and enter the CC state U11, "Disconnect Request".

10.1.2.5.3 Outgoing call / U4 call delivered / DISCONNECT with in band tones

10.1.2.5.3.1 Definition

The call control entity of the UE being in the state, U4, a DISCONNECT message indicating availability of in band information is received by the UE.

10.1.2.5.3.2 Conformance requirement

1) A CC-entity of the UE in CC-state U4, "Call Delivered" shall, upon receipt of a DISCONNECT with a progress indicator indicating in-band information, shall through-connect the speech channel to make in-band

announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE shall send a RELEASE message.

References

TS 25.331 clause 8.2.1., TS 24.008 clause 5.4.4.1.1., TS 24.008 clause 5.5.1., TS 24.008 clause 5.2.1.9.

10.1.2.5.3.3 Test purpose

To verify that a CC-entity of the UE in CC-state U4, "Call Delivered", upon receipt of a DISCONNECT with a progress indicator indicating in-band information, through-connects the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE shall send a RELEASE message.

10.1.2.5.3.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U4. The SS sends a DISCONNECT message containing indication of in-band information availability to the UE. The SS checks that if channel mode is MO telephony, the DTCH shall be through connected and the UE enters state U12, disconnect indication. If channel mode is not speech, the DTCH shall not be through connected and the UE shall enter state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		DISCONNECT	(note)
A2	SS			DTCH in speech mode: the SS will check that the audio path for in band tones is attached.
A3	<-		STATUS ENQUIRY	
A4	->		STATUS	cause 30#, state U12
B2	->		RELEASE	DTCH is not in speech mode:
B3	<-		STATUS ENQUIRY	
B4	->		STATUS	cause 30#, state U19

Specific message contents:

NOTE: the Progress Indicator, Progress Description:

#8 in band information or appropriate pattern now available.

10.1.2.5.3.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U4, "Call Delivered", shall through-connect the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE shall send a RELEASE message.

10.1.2.5.4 Outgoing call / U4 call delivered / DISCONNECT without in band tones

10.1.2.5.4.1 Definition

The call control entity of the UE being in the state, U4, a DISCONNECT message is received by the UE. The DISCONNECT message does not contain indication of in-band information availability.

10.1.2.5.4.2 Conformance requirement

1) A CC-entity of the UE in CC-state U4, "Call Delivered", upon receipt of a DISCONNECT without progress indicator, shall return a RELEASE message and enter the CC-state U19, "Release Request".

References

TS 24.008 clause 5.4.4.

10.1.2.5.4.3 Test purpose

To verify that a CC-entity of the UE in CC-state U4, "Call Delivered", upon receipt of a DISCONNECT without progress indicator, returns a RELEASE message and enters the CC-state U19, "Release Request".

10.1.2.5.4.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U4. The SS sends a DISCONNECT message not containing indication of in-band information availability to the UE. The UE shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the UE has entered the state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		DISCONNECT	without progress indicator
2	->		RELEASE	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U19

Specific message contents:

None.

10.1.2.5.4.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U4, "Call Delivered", shall return a RELEASE message and enter the CC-state U19, "Release Request".

10.1.2.5.5 Outgoing call / U4 call delivered / RELEASE received

10.1.2.5.5.1 Definition

The call control entity of the UE being in the state, U4, a RELEASE message is received by the UE.

10.1.2.5.5.2 Conformance requirement

1) A CC-entity of the UE in CC-state U4, "Call Delivered", upon receipt of the RELEASE message shall respond with the RELEASE COMPLETE message and enter the CC-state U0, "Null".

2) The UE on returning to idle mode shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null".

References

Conformance requirement 1: TS 24.008 clause 5.4.2., TS 24.008 clause 5.4.4.

Conformance requirement 2: TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2.

10.1.2.5.5.3 Test purpose

1) To verify that a CC-entity of the UE in CC-state U4, "Call Delivered", upon receipt of the RELEASE message will respond with the RELEASE COMPLETE message and enter the CC-state U0, "Null".

2) To verify that the UE on returning the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null".

10.1.2.5.5.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U4. The SS sends a RELEASE message to the UE. The UE shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	RELEASE	with cause "Normal, unspecified"
2		->	RELEASE COMPLETE	
3		<-	STATUS ENQUIRY	
4		->	RELEASE COMPLETE	cause 81# (invalid TI value)
5		SS		repeat steps 3-4 to cover all the transaction identifiers from 000...110
6		<-	RRC CONNECTION RELEASE	the main signalling link shall be released.
7		->	RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

10.1.2.5.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U4, "Call Delivered", shall respond with the RELEASE COMPLETE message.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.2.5.6 Outgoing call / U4 call delivered / lower layer failure

10.1.2.5.6.1 Definition

The call control entity of the UE being in the state, U4, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

10.1.2.5.6.2 Conformance requirement

1) When CC-entity of the UE in CC-state U4, "Call Delivered" has detected a lower layer failure and has returned to idle mode, the CC-entity is in CC-state U0, "Null".

References

TS 24.008 clause 4.5.2.3., TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2., TS 25.331 clause 8.3.1, TS 25.331 clause 8.5.6.

10.1.2.5.6.3 Test purpose

To verify that a CC-entity of the UE in CC-state U4, "Call Delivered" having detected a lower layer failure and has returned to idle mode, the CC-entity is in CC-state U0, "Null".

10.1.2.5.6.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The UE is brought to the state U4. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 seconds. The SS will check that the UE will not send any message during 60 seconds.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 seconds. UE shall send no message on the DCCH

Specific message contents:

None.

10.1.2.5.6.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 seconds.

10.1.2.5.7 Outgoing call / U4 call delivered / traffic channel allocation

10.1.2.5.7.1 Definition

The call control entity of the UE being in the state, U4, a radio bearer establishment procedure is performed.

10.1.2.5.7.2 Conformance requirement

1) A CC-entity of the UE in CC-state U4, "Call Delivered", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, shall stay in CC-state U4.

References

TS 25.331 clause 8.2.1., TS 24.008 clause 5.2.1.9.

10.1.2.5.7.3 Test purpose

To verify that a CC-entity of the UE in CC-state U4, "Call Delivered", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, stays in CC-state U4.

10.1.2.5.7.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U4. The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	DTCH, See TS34.108
2	<-		STATUS ENQUIRY	
3	->		STATUS	cause 30#, state U4

Specific message contents:

None.

10.1.2.5.7.5 Test requirements

After step 1 the CC state U4, "Call delivered", shall remain unchanged.

10.1.2.5.8 Outgoing call / U4 call delivered / unknown message received

10.1.2.5.8.1 Definition

The call control entity of the UE being in the state, U4, an unknown message is received by the UE.

10.1.2.5.8.2 Conformance requirement

1) A CC-entity of the UE in CC-state U4, "Call Delivered", having received an unknown message from its peer entity shall return a STATUS message.

References

TS 24.008 clause 8.4.

10.1.2.5.8.3 Test purpose

To verify that a CC-entity of the UE in CC-state U4, "Call Delivered", having received an unknown message from its peer entity returns a STATUS message.

10.1.2.5.8.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table 10.1.2/4.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U4. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		unknown message	message type not defined for PD
2	->		STATUS	cause 97#, state U4
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U4

Specific message contents:

None.

10.1.2.5.8.5 Test requirements

After step 1 a CC entity of the UE in CC state U3, "Mobile Originating Call Proceeding", shall return a STATUS message.

10.1.2.6 U10 call active

10.1.2.6.1 U10 call active / termination requested by the user

10.1.2.6.1.1 Definition

The call control entity of the UE being in the state, U10, the user requests to terminate the call.

10.1.2.6.1.2 Conformance requirement

1) A CC-entity of the UE in CC-state U10, "Call Active", upon request by the user to terminate shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

References

TS 24.007 clause 6.2.2., TS 24.008 clause 5.4.3.

10.1.2.6.1.3 Test purpose

To verify that the a CC-entity of the UE in CC-state U10, "Call Active", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

10.1.2.6.1.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U10. The user requests termination of the call. The UE shall send a DISCONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U11, disconnect request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				MMI action, terminate call
2	->		DISCONNECT	U11
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U11

Specific message contents:

None.

10.1.2.6.1.5 Test requirements

After step 1 a CC entity of the UE in CC state U10, "Call Active", shall send a DISCONNECT message and enter the CC state U11, "Disconnect Request".

10.1.2.6.2 U10 call active / RELEASE received

10.1.2.6.2.1 Definition

The call control entity of the UE being in the state, U10, a RELEASE message is received by the UE.

10.1.2.6.2.2 Conformance requirement

1) A CC-entity of the UE in CC-state U10, "Call Active", upon receipt of the RELEASE shall respond with the RELEASE COMPLETE message and enter the CC-state U0, "Null"

2) When the UE returns to the idle mode it shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null"

References

Conformance requirement 1: TS 24.008 clause 5.4.2., TS 24.008 clause 5.4.4.

Conformance requirement 2: TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2.

10.1.2.6.2.3 Test purpose

1) To verify that the a CC-entity of the UE in CC-state U10, "Call Active", upon receive of the RELEASE will respond with the RELEASE COMPLETE message and enter the CC-state U0, "Null"

2) To verify that the UE on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null"

10.1.2.6.2.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U10. The SS sends a RELEASE message to the UE. The UE shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	RELEASE	with cause "Normal, unspecified"
2		->	RELEASE COMPLETE	the UE starts T3240
3		<-	STATUS ENQUIRY	
4		->	RELEASE COMPLETE	cause 81# (invalid TI value)
5		SS		repeat steps 3-4 to cover all the transaction identifiers from 000...110
6		<-	RRC CONNECTION RELEASE	the main signalling link shall be released.
7		->	RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

10.1.2.6.2.5 Test requirements

After step 1 a CC entity of the UE in CC state U10, "Call Active", shall return a RELEASE COMPLETE message.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.2.6.3 U10 call active / DISCONNECT with in band tones

10.1.2.6.3.1 Definition

The call control entity of the UE being in the state, U10, a DISCONNECT message indicating availability of in band information is received by the UE.

10.1.2.6.3.2 Conformance requirement

1) A CC-entity of the UE in CC-state U10, "Call Active", upon receipt of a DISCONNECT message with a Progress Indicator indicating in-band information, shall through-connect the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE shall send a RELEASE message.

References

TS 24.008 clause 5.4.4.1.1., TS 24.008 clause 5.5.1.

10.1.2.6.3.3 Test purpose

To verify that a CC-entity of the UE in CC-state U10, "Call Active", upon receipt of a DISCONNECT message with a Progress Indicator indicating in-band information, through-connects the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE sends a RELEASE message.

10.1.2.6.3.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U10. The SS sends a DISCONNECT message containing indication of in-band information availability to the UE. The SS checks that if channel mode is speech, the DTCH shall be through connected and the UE enters state U12, disconnect indication. If channel mode is not speech, the DTCH shall not be through connected and the UE enters state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		DISCONNECT	(note)
A2	SS			DTCH in speech mode: the SS will check that the audio path for in band tones is attached.
A3	<-		STATUS ENQUIRY	
A4	->		STATUS	cause 30#, state U12
				DTCH is not in speech mode:
B2	->		RELEASE	
B3	<-		STATUS ENQUIRY	
B4	->		STATUS	cause 30#, state U19

Specific message contents:

NOTE: the Progress Indicator, Progress Description:

#8 in band information or appropriate pattern now available.

10.1.2.6.3.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U10, "Call Active", shall through-connect the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE shall send a RELEASE message.

10.1.2.6.4 U10 call active / DISCONNECT without in band tones

10.1.2.6.4.1 Definition

The call control entity of the UE being in the state, U10, a DISCONNECT message is received by the UE. The DISCONNECT message does not contain indication of in-band information availability.

10.1.2.6.4.2 Conformance requirement

1) A CC-entity of the UE in CC-state U10, "Call Active", upon receipt of a DISCONNECT message without progress indicator, shall return a RELEASE message and enter the CC-state U19, "Release Request".

References

TS 24.008 clause 5.4.4.

10.1.2.6.4.3 Test purpose

To verify that the a CC-entity of the UE in CC-state U10, "Call Active", upon receipt of a DISCONNECT message without progress indicator, returns a RELEASE message and enters the CC-state U19, "Release Request".

10.1.2.6.4.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U10. The SS sends a DISCONNECT message not containing indication of in-band information availability to the UE. The UE shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the UE has entered the state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	DISCONNECT	without progress indicator
2		->	RELEASE	
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause 30#, state U19

Specific message contents:

None.

10.1.2.6.4.5 Test requirements

A CC-entity of the UE in CC-state U10, "Call Active", shall return a RELEASE message and enter the CC-state U19, "Release Request".

10.1.2.6.5 U10 call active / RELEASE COMPLETE received

10.1.2.6.5.1 Definition

The call control entity of the UE being in the state, U10, the call is cleared by a RELEASE COMPLETE message sent by the SS.

10.1.2.6.5.2 Conformance requirement

1) A CC entity of the UE in CC-state U10, "active", upon receipt of a RELEASE COMPLETE message with valid cause value, shall enter CC state U0, "Null".

2) On returning to idle mode, the CC entities relating to the seven mobile originating transaction identifiers shall be in state U0, "Null".

References

Conformance requirement 1: TS 24.008, clause 5.4.2, TS 24.008, clause 5.4.4.

Conformance requirement 2: TS 24.008, clause 5.4.4.1.3.

10.1.2.6.5.3 Test purpose

1) To verify that a CC entity of the UE in CC-state U10, "Call active" upon receipt of a RELEASE COMPLETE message with valid cause value, enters CC state U0, "Null".

2) To verify that in returning to idle mode, the CC entities relating to the seven mobile originating transaction identifiers are in state U0, "Null".

10.1.2.6.5.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 by using table 10.1.2/1.

Test procedure

The SS sends a RELEASE COMPLETE message to the UE. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE COMPLETE	note 1
2	<-		STATUS ENQUIRY	note 2
3	->		RELEASE COMPLETE	cause 81# (invalid TI value),
4	SS			repeat steps 2-3 to cover all the transaction identifiers from 000...110
5	<-		RRC CONNECTION RELEASE	the main signalling link shall be released.
6	->		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

NOTE 1: With the cause value chosen arbitrarily.

NOTE 2: TI flag has the value indicating the UE as a originator of the call.

10.1.2.6.5.5 Test requirements

After step 2 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.2.6.6 U10 call active / SETUP received

10.1.2.6.6.1 Definition

If the UE does not react correctly when receiving a SETUP message on a new Transaction Identifier during an active call, the active call may be lost.

10.1.2.6.6.2 Conformance requirement

1) A UE that has a call established when receiving a SETUP message shall respond either with a CALL CONFIRMED message or a RELEASE COMPLETE message, both with cause #17 "user busy".

2) The call control state of the existing transaction shall not be affected by the incoming SETUP message.

Reference(s):

Conformance requirement 1: TS 24.008, clause 5.2.2.3.1.

Conformance requirement 2: TS 24.008, clause 5.1.1.

10.1.2.6.6.3 Test purpose

1) To verify that a User Equipment that has a call established and receives a SETUP message answers either with a CALL CONFIRMED message with cause "user busy" if it supports call waiting, or with a RELEASE COMPLETE message with cause "user busy" otherwise.

2) To verify that after having sent this message, the UE is still in state U10 for the established call.

10.1.2.6.6.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is idle updated with valid TMSI and CKSN.

The UE is brought into the state U10 by using table 10.1.2/1.

Related ICS/IXIT statement(s)

- supported MO circuit switched basic services.

- support of call waiting Y/N.

Test Procedure

The UE has a mobile originated call in the U10 state. When UE sends a SETUP message and SS receives it in the first call establishment, SS sends a CALL PROCEEDING message without Network Call Control Capability IE.

The SS sends a SETUP message to the UE (with signal IE indicating "call waiting tone on" and without Network Call Control Capability IE).

If the UE does not support call waiting it shall answer by a RELEASE COMPLETE message.

If the UE supports call waiting it shall answer by a CALL CONFIRMED message followed by an ALERTING. The second transaction is then released by the SS with a RELEASE COMPLETE message.

In both cases the SS checks by using the status enquiry procedure that the CC entity of the UE is still in state U10, active call for the original call.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	SETUP	this message establishes a second transaction The TI value shall be the same as the one that is in use for the MO call. The TI flag shall have the value specified for an MT call.
A2		->	RELEASE COMPLETE	if the UE does not support call waiting with cause user busy" with the TI of the second transaction
B2		->	CALL CONFIRMED	if the UE supports call waiting with cause user busy" with the TI of the second transaction
B3		->	ALERTING	with the TI of the second transaction
B4		<-	RELEASE COMPLETE	with the TI of the second transaction
5		<-	STATUS ENQUIRY	with the TI of the original transaction
6		->	STATUS	cause 30#, state U10 with the TI of the original transaction

NOTE: The Transaction Identifier of the second transaction shall be different from the one of the already established transaction.

Specific message contents

SETUP message contains a Signal IE with value "call waiting tone on" (H'07).

10.1.2.6.6.5 Test requirements

After step 1 a UE that has a call established shall answer either with a CALL CONFIRMED message with cause "user busy" if it supports call waiting, or with a RELEASE COMPLETE message with cause "user busy" otherwise.

After step A2 or B2 the UE is still in state U10 for the established call.

10.1.2.7 U11 disconnect request

10.1.2.7.1 U11 disconnect request / clear collision

10.1.2.7.1.1 Definition

The call control entity of the UE being in the state, U11, a DISCONNECT message is received by the UE.

10.1.2.7.1.2 Conformance requirement

1) A CC-entity of the UE in CC-state U11, "Disconnect Request", upon receipt of a DISCONNECT message, shall return to its peer entity the RELEASE message and enter the CC-state U19, "Release Request".

References

TS 24.008 clause 5.4.4.2.5.1

10.1.2.7.1.3 Test purpose

To verify that the a CC-entity of the UE in CC-state U11, "Disconnect Request", upon receipt of a DISCONNECT message, returns to its peer entity the RELEASE message and enters the CC-state U19, "Release Request".

10.1.2.7.1.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U11 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U11. The SS sends a DISCONNECT message to the UE. The UE shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the UE has entered the state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	DISCONNECT	
2		->	RELEASE	
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause 30#, state U19

Specific message contents:

None.

10.1.2.7.1.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U11, "Disconnect Request", shall return the RELEASE message and enter the CC-state U19, "Release Request".

10.1.2.7.2 U11 disconnect request / RELEASE received

10.1.2.7.2.1 Definition

The call control entity of the UE being in the state, U11, a RELEASE message is received by the UE.

10.1.2.7.2.2 Conformance requirement

1) A CC-entity of the UE in CC-state U11, "Disconnect Request", upon receipt of the RELEASE message shall return RELEASE COMPLETE and enter the CC-state U0, "Null".

2) On returning to the idle mode the UE shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null".

References

Conformance requirement 1: TS 24.008 clause 5.4.3.

Conformance requirement 2: TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2., TS 24.008 clause 8.3.

10.1.2.7.2.3 Test purpose

1) To verify that the a CC-entity of the UE in CC-state U11, "Disconnect Request", upon receipt of the RELEASE message shall return RELEASE COMPLETE and enter the CC-state U0, "Null".

2) To verify that the UE on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null".

10.1.2.7.2.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U11 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U11. The SS sends a RELEASE message to the UE. The UE shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE	
2	->		RELEASE COMPLETE	
3	<-		STATUS ENQUIRY	
4	->		RELEASE COMPLETE	cause 81# (invalid TI value)
5	SS			repeat steps 3-4 to cover all the transaction identifiers from 000...110
6	<-		RRC CONNECTION RELEASE	the main signalling link shall be released.
7	->		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

10.1.2.7.2.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U11, "Disconnect Request", shall return the RELEASE COMPLETE.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.2.7.3 U11 disconnect request / timer T305 time-out

10.1.2.7.3.1 Definition

The call control entity of the UE being in the state, U11, if no response is then received from the SS, timer T305 expires at the UE side.

10.1.2.7.3.2 Conformance requirement

1) A CC-entity of the UE in CC-state U11, "Disconnect Request" shall on expiry of T305, proceed with the connection release procedure by sending the RELEASE message to its peer entity and shall enter the CC-state U19, "Release Request".

References

TS 24.008 clause 5.4.3., TS 24.008 clause 11.3.

10.1.2.7.3.3 Test purpose

To verify that the CC-entity of the UE in CC-state U11, "Disconnect Request" shall on expiry of T305, proceed with the connection release procedure by sending the RELEASE message to its peer entity and enters the CC-state U19, "Release Request".

10.1.2.7.3.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U11 by using table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U11. Then T305 expires at the UE and the UE shall send a RELEASE message. The SS checks timer T305 accuracy and that the CC entity has entered the state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS waits until T305 expires at the UE
2	->		RELEASE	SS checks the time between DISCONNECT and RELEASE (note), check the timer T305 accuracy
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U19

Specific message contents:

NOTE: With the same cause value as originally contained in the DISCONNECT message. An additional cause information element (#102 recovery on timer expiry) may be included.

10.1.2.7.3.5 Test requirements

Upon expiry of timer T305 a CC-entity of the UE in CC-state U11, "Disconnect Request", shall proceed with the connection release procedure by sending the RELEASE message and enter the CC-state U19, "Release Request".

10.1.2.7.4 U11 disconnect request / lower layer failure

10.1.2.7.4.1 Definition

The call control entity of the UE being in the state, U11, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

10.1.2.7.4.2 Conformance requirement

1) A CC-entity of the UE in CC-state U11, "Disconnect Request" having detected a lower layer failure shall return to the idle mode. The CC entity is in state U0, "Null".

References

TS 24.008 clause 4.5.2.3., TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2., TS 24.008 clause 8.3, TS 25.331 clause 8.3.1, TS 25.331 clause 8.5.6.

10.1.2.7.4.3 Test purpose

To verify that the a CC-entity of the UE in CC-state U11, "Disconnect Request" having detected a lower layer failure returns to the idle mode. The CC entity is thus in state U0, "Null".

10.1.2.7.4.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U11 by using table 10.1.2/4.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The UE is brought to the state U11. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 seconds. The SS will check that the UE will not send any message during 60 seconds.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 seconds.

Specific message contents:

None.

10.1.2.7.4.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 seconds.

10.1.2.7.5 U11 disconnect request / unknown message received

10.1.2.7.5.1 Definition

The call control entity of the UE being in the state, U11, an unknown message is received by the UE.

10.1.2.7.5.2 Conformance requirement

1) A CC-entity of the UE in CC-state U11, "Disconnect Request", having received an unknown message from its peer entity shall return a STATUS message.

References

TS 24.008 clause 8.4.

10.1.2.7.5.3 Test purpose

To verify that a CC-entity of the UE in CC-state U11, "Disconnect Request", having received an unknown message from its peer entity returns a STATUS message.

10.1.2.7.5.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U11 by using table 10.1.2/4.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U11. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		unknown message	message type not defined for PD
2	->		STATUS	cause 97#, state U11
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U11

Specific message contents:

None.

10.1.2.7.5.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U11, "Disconnect Request", shall return a STATUS message.

10.1.2.8 U12 disconnect indication

10.1.2.8.1 U12 disconnect indication / call releasing requested by the user

10.1.2.8.1.1 Definition

The call control entity of the UE being in the state, U12, the user requests to terminate the call.

10.1.2.8.1.2 Conformance requirement

1) A CC-entity of the UE in CC-state U12, "Disconnect Indication" being in network initiated call release phase, shall, upon receiving a call release request from the user send a RELEASE to its peer entity and enter CC-state U19, "Release Request".

References

TS 24.007 clause 6.2.2., TS 24.008 clause 5.4.4.

10.1.2.8.1.3 Test purpose

To verify that a CC-entity of the UE in CC-state U12, "Disconnect Indication" being in network initiated call release phase, shall, upon receiving a call release request from the user sends a RELEASE to its peer entity and enters CC-state U19, "Release Request"

10.1.2.8.1.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U12 by using Option A of table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U12. The user requests termination of the call. The UE shall send a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				MMI action, "on hook"
2	->		RELEASE	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U19

Specific message contents:

None.

10.1.2.8.1.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U12, "Disconnect Indication" being in network initiated call release phase, shall send a RELEASE message and enter CC-state U19, "Release Request".

10.1.2.8.2 U12 disconnect indication / RELEASE received

10.1.2.8.2.1 Definition

The call control entity of the UE being in the state, U12, a RELEASE message is received by the UE.

10.1.2.8.2.2 Conformance requirement

1) A CC-entity of the UE in CC-state U12, "Disconnect Indication", upon receipt of a RELEASE message shall return to its peer entity the RELEASE COMPLETE message and enter the CC-state U0, "Null".

2) On returning to the idle mode the UE shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null".

References

Conformance requirement 1: TS 24.008 clause 5.4.2

Conformance requirement 2: TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2., TS 24.008 clause 8.3.

10.1.2.8.2.3 Test purpose

1) To verify that a CC-entity of the UE in CC-state U12, "Disconnect Indication", upon receipt of a RELEASE message returns to its peer entity the RELEASE COMPLETE message and enters the CC-state U0, "Null".

2) To verify that the UE on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null".

10.1.2.8.2.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U12 by using Option A of table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U12. The SS sends a RELEASE message to the UE. The UE shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	RELEASE	
2		->	RELEASE COMPLETE	
3		<-	STATUS ENQUIRY	
4		->	RELEASE COMPLETE	cause 81# (invalid TI value)
5	SS			repeat steps 3-4 to cover all the transaction identifiers from 000...110
6		<-	RRC CONNECTION RELEASE	the main signalling link shall be released.
7		->	RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

10.1.2.8.2.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U12, "Disconnect Indication", shall return the RELEASE COMPLETE message.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.2.8.3 U12 disconnect indication / lower layer failure

10.1.2.8.3.1 Definition

The call control entity of the UE being in the state, U12, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

10.1.2.8.3.2 Conformance requirement

1) A CC-entity of the UE in CC-state U12, "Disconnect Indication" having detected a lower layer failure shall return to idle mode. The CC-entity is in state U0, "Null".

References

TS 24.008 clause 5.4.4.2.5.1, TS 24.008 clause 4.5.3, TS 24.008 clause 5.5.3.2, TS 24.008 clause 8.3, TS 25.331 clause 8.3.1, TS 25.331 clause 8.5.6.

10.1.2.8.3.3 Test purpose

To verify that a CC-entity of the UE in CC-state U12, "Disconnect Indication" having detected a lower layer failure returns to idle mode. The CC-entity is thus in state U0, "Null".

10.1.2.8.3.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U12 by using Option A of table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The UE is brought to the state U12. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 seconds. The SS will check that the UE will not send any message during 60 seconds.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 seconds. UE shall send no message on the DCCH

Specific message contents:

None.

10.1.2.8.3.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 seconds.

10.1.2.8.4 U12 disconnect indication / unknown message received

10.1.2.8.4.1 Definition

The call control entity of the UE being in the state, U12, an unknown message is received by the UE.

10.1.2.8.4.2 Conformance requirement

A CC-entity of the UE in CC-state U12, "Disconnect Indication" having received an unknown message from its peer entity shall return a STATUS message.

References

TS 24.008 clause 8.4.

10.1.2.8.4.3 Test purpose

To verify that a CC-entity of the UE in CC-state U12, "Disconnect Indication" having received an unknown message from its peer entity returns a STATUS message.

10.1.2.8.4.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U12 by using Option A of table 10.1.2/3.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U12. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		unknown message	message type not defined for PD
2	->		STATUS	cause 97#, state U12
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U12

Specific message contents:

None.

10.1.2.8.4.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U12, "Disconnect Indication", shall return a STATUS message.

10.1.2.9 Outgoing call / U19 release request

10.1.2.9.1 Outgoing call / U19 release request / timer T308 time-out

10.1.2.9.1.1 Definition

The call control entity of the UE being in the state, U19, if no response is then received from the SS, timer T308 expires at the UE side.

10.1.2.9.1.2 Conformance requirement

1) A CC-entity of the UE in CC-state U19, "Release Request" will, upon the first expiry of timer T308 send the RELEASE message to its peer entity and remain in the CC-state U19.

References

TS 24.008 clause 5.4.4.1.3.1, TS 24.008 clause 11.3.

10.1.2.9.1.3 Test purpose

To verify that a CC-entity of the UE in CC-state U19, "Release Request" will, upon the first expiry of timer T308 send the RELEASE message to its peer entity and remain in the CC-state U19.

10.1.2.9.1.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U19 by using table 10.1.2/4.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U19. When T308 expires at the UE, the UE shall send a RELEASE message. The SS checks timer T308 accuracy and that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS waits until T308 at the UE
2	->		RELEASE	SS checks the time between the two RELEASE messages check the timer T308 accuracy
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U19

Specific message contents:

None.

10.1.2.9.1.5 Test requirements

Upon the first expiry of timer T308 (after step 1) a CC-entity of the UE in CC-state U19, "Release Request", shall send the RELEASE message and remain in the CC-state U19.

10.1.2.9.2 Outgoing call / U19 release request / 2nd timer T308 time-out

10.1.2.9.2.1 Definition

The call control entity of the UE being in the state, U19, if no response is then received after timer T308 has expired two times in success at the UE.

10.1.2.9.2.2 Conformance requirement

1) A CC-entity of the UE in CC-state U19, "Release Request", upon the 2nd expiry of the timer T308, shall enter the CC-state U0, "Null".

2) Subsequently the UE shall proceed with releasing the MM-connection and enter the idle mode with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

References

Conformance requirement 1: TS 24.008 clause 5.4.4.1.3.1., TS 24.008 clause 11.3.

Conformance requirement 2: TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2.

10.1.2.9.2.3 Test purpose

1) To verify that a CC-entity of the UE in CC-state U19, "Release Request", upon the 2nd expiry of the timer T308, enters the CC-state U0, "Null".

2) To verify that subsequently the UE proceeds with releasing the MM-connection and enters the idle mode with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

10.1.2.9.2.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U19 by using table 10.1.2/4.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U19. The SS allows T308 expiry at the UE, and the UE shall repeat sending the RELEASE message and start timer T308 again. The SS allows again T308 expiry at the UE. The UE shall abort the RRC connection. The SS waits long enough to enable the UE to return to idle state listening to paging, and then pages UE to create RRC connection. Finally, the SS will check the state of the UE by using STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS waits until T308 expiry at the UE
2	->		RELEASE	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U19
5		SS		SS waits until the second T308 expiry at the UE
6		SS		SS waits T3240 expiry at the UE
7	UE			the main signalling link shall be released.
8		SS		SS waits 10 s for the UE to return to listening to paging
9			Mobile terminated establishment of Radio Resource Connection	See TS34.108
10	<-		STATUS ENQUIRY	
11	->		RELEASE COMPLETE	cause 81# (invalid TI value)
12		SS		repeat steps 10-11 to cover all the transaction identifiers from 000...110
13	<-		RRC CONNECTION RELEASE	the main signalling link shall be released.
14	->		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

10.1.2.9.2.5 Test requirements

Upon the 2nd expiry of the timer T308 (after step 5) a CC-entity of the UE in CC-state U19, "Release Request", shall enter the CC-state U0, "Null".

After step 10 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.2.9.3 Outgoing call / U19 release request / RELEASE received

10.1.2.9.3.1 Definition

The call control entity of the UE being in the state, U19, a RELEASE message is received by the UE.

10.1.2.9.3.2 Conformance requirement

1) A CC-entity of the UE in CC-state U19, "Release Request", upon receipt of a RELEASE, shall release the MM-connection and enter the CC-state U0, "Null" with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

References

TS 24.008 clause 5.4.4.2.5.1, TS 24.008 clause 11.3, TS 24.008 clause 5.5.3.2.

10.1.2.9.3.3 Test purpose

To verify that a CC-entity of the UE in CC-state U19, "Release Request", upon receipt of a RELEASE, shall release the MM-connection and enters the CC-state U0, "Null" with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

10.1.2.9.3.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U19 by using table 10.1.2/4.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U19. The SS sends a RELEASE message to the UE. The UE shall release the MM-connection. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE	(note)
2	<-		STATUS ENQUIRY	
3	->		RELEASE COMPLETE	cause 81# (invalid TI value)
4	SS			repeat steps 2-3 to cover all the transaction identifiers from 000...110
5	<-		RRC CONNECTION RELEASE	the main signalling link shall be released.
6	->		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

NOTE: With the same cause number as originally contained in DISC and optional cause #102 recovery on timer expiry.

10.1.2.9.3.5 Test requirements

After step 2 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.2.9.4 Outgoing call / U19 release request / RELEASE COMPLETE received

10.1.2.9.4.1 Definition

The call control entity of the UE being in the state, U19, a RELEASE COMPLETE message is received by the UE.

10.1.2.9.4.2 Conformance requirement

1) A CC-entity of the UE in CC-state U19, "Release Request", upon receipt of a RELEASE COMPLETE, shall release the MM-connection and enter the CC-state U0, "Null" with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

References

TS 24.008 clause 5.4.4.1.3., TS 24.;008 clause 4.5.3, TS 24.008 clause 8.3.

10.1.2.9.4.3 Test purpose

To verify that a CC-entity of the UE in CC-state U19, "Release Request", upon receipt of a RELEASE COMPLETE, shall release the MM-connection and enters the CC-state U0, "Null" with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

10.1.2.9.4.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U19 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U19. The SS sends a RELEASE COMPLETE message to the UE. The UE shall release the MM-connection. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE COMPLETE	
2	<-		STATUS ENQUIRY	
3	->		RELEASE COMPLETE	cause 81# (invalid TI value)
4	SS			repeat steps 2-3 to cover all the transaction identifiers from 000...110
5	<-		RRC CONNECTION RELEASE	the main signalling link shall be released.
6	->		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

10.1.2.9.4.5 Test requirements

After step 2 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.2.9.5 Outgoing call / U19 release request / lower layer failure

10.1.2.9.5.1 Definition

The call control entity of the UE being in the state, U19, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

10.1.2.9.5.2 Conformance requirement

A CC-entity of the UE in CC-state U19, "Release Request", having detected a lower layer failure, shall return to the idle mode, the CC entity is in state U0, "Null".

References

TS 24.008 clause 4.5.2.3., TS 24.008 clause 4.5.3, TS 24.008 clause 5.5.3.2, TS 24.008 clause 8.3, TS 25.331 clause 8.3.1, TS 25.331 clause 8.5.6.

10.1.2.9.5.3 Test purpose

To verify that a CC-entity of the UE in CC-state U19, "Release Request", having detected a lower layer failure, returns to the idle mode, the CC entity is in state U0, "Null".

10.1.2.9.5.4 Method of test

Related ICS/IXIT statements

- supported MO circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U19 by using table 10.1.2/1.

Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The UE is brought to the state U19. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 seconds. The SS will check that the UE will not send any message during 60 seconds.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 seconds. UE shall send no message on the DCCH

Specific message contents:

None.

10.1.2.9.5.5 Test requirements

After step 4 CC the UE shall not send any message to the SS during 60 seconds.

10.1.3 Establishment of an incoming call / Initial conditions

The tables below describe message exchanges which bring the UE in the requested initial states in case of an incoming call.

A state may be taken as initial only when all the states which lead to this initial states have been validated. The order will be U0, U6, U9, U7, U8, U10, U26 etc. as in the following tables.

Table 10.1.3/1: Establishment of an incoming call, procedure 1

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See TS34.108
2		->	PAGING RESPONSE	
3		<-	AUTHENTICATION REQUEST	
4		->	AUTHENTICATION RESPONSE	
5		<-	SECURITY MODE COMMAND	
6		->	SECURITY MODE COMPLETE	
7		<-	SETUP	U6, (note 1)
8		->	CALL CONFIRMED	U9
A9		->	CONNECT	U8, p = Y, (note 2)
B9		->	ALERTING	U7, p = N, (note 2)
B10	UE			(note 3)
B11		->	CONNECT	U8
12			Radio Bearer Setup Procedure	DTCH, See TS34.108
13		<-	CONNECT ACKNOWLEDGE	U10

NOTE 1: With signal information included in the SETUP message.

NOTE 2: The UE is supporting immediate connect (p = Y/N). See ICS/IXIT statement.

NOTE 3: If necessary (see ICS/IXIT statement), the UE is made to accept the call in the way described in a ICS/IXIT statement.

Table 10.1.3/2: Establishment of an incoming call, procedure 2

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See TS34.108
2		->	PAGING RESPONSE	
3		<-	SECURITY MODE COMMAND	
4		->	SECURITY MODE COMPLETE	
5		<-	SETUP	U6, (note 4)
6		->	CALL CONFIRMED	U9
A7		->	CONNECT	U8, p = Y, (note 5)
A8			Radio Bearer Setup Procedure	DTCH, See TS34.108
B7		->	ALERTING	U7, p = N, (note 5)
B8			Radio Bearer Setup Procedure	DTCH, See TS34.108
B9	UE			(note 6)
B10		->	CONNECT	U8
11		<-	AUTHENTICATION REQUEST	
12		->	AUTHENTICATION RESPONSE	
13		<-	CONNECT ACKNOWLEDGE	U10

NOTE 4: With signal information included in the SETUP message.

NOTE 5: The UE is supporting immediate connect (p = Y/N). See ICS/IXIT statement.

NOTE 6: If necessary (see ICS/IXIT statement), the UE is made to accept the call in the way described in a ICS/IXIT statement.

Table 10.1.3/3: Void

Table 10.1.3/4: Establishment of an incoming call, procedure 4

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See TS34.108
2	->		PAGING RESPONSE	
3	<-		SECURITY MODE COMMAND	
4	->		SECURITY MODE COMPLETE	
5	<-		SETUP	U6, (note 11)
6	->		CALL CONFIRMED	U9
7			Radio Bearer Setup Procedure	DTCH, See TS34.108
A8	->		CONNECT	U8, p = Y, (note 12)
B8	->		ALERTING	U7, p = N, (note 12)
B9	UE			(note 13)
B10	->		CONNECT	U8
11	<-		AUTHENTICATION REQUEST	
12	->		AUTHENTICATION RESPONSE	
13	<-		CONNECT ACKNOWLEDGE	U10

NOTE 11: The signal information element is not included in the SETUP message.

NOTE 12: The UE is supporting immediate connect (p = Y/N). See ICS/IXIT statement.

NOTE 13: If necessary (see ICS/IXIT statement), the UE is made to accept the call in the way described in a ICS/IXIT statement.

10.1.3.1 Incoming call / U0 null state

10.1.3.1.1 Incoming call / U0 null state / SETUP received with a non supported bearer capability

10.1.3.1.1.1 Definition

The call control entity of the UE being in the state, U0, a SETUP message is received with only one bearer capability and this bearer capability is not supported by the UE.

10.1.3.1.1.2 Conformance requirement

1) A CC entity of the UE, upon receipt of SETUP containing one bearer capability and this bearer capability is not supported, shall return a RELEASE COMPLETE with correct cause value to its peer entity and return to the idle mode. The CC-entities relating to the seven mobile terminating transaction identifiers shall be in the state U0,"Null".

References

TS 24.008 clause 5.2.2.2., TS 24.008 annex B.

10.1.3.1.1.3 Test purpose

To verify that a CC entity of the UE, upon receipt of SETUP containing one bearer capability and this bearer capability is not supported, returns a RELEASE COMPLETE with correct cause value to its peer entity, and returns to the idle mode. To verify that the CC-entities relating to the seven mobile terminating transaction identifiers are then in the state U0,"Null".

10.1.3.1.1.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

Test procedure

A mobile terminated call is initiated. The UE receives a SETUP message that contains a bearer capability not supported by the UE. The UE returns a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity is still in the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	SS sends paging, See TS34.108
2	->		PAGING RESPONSE	
3	<-		AUTHENTICATION REQUEST	
4	->		AUTHENTICATION RESPONSE	
5	<-		SECURITY MODE COMMAND	
6	->		SECURITY MODE COMPLETE	
7	<-		SETUP	(note 1)
8	->		RELEASE COMPLETE	(note 2)
9	<-		STATUS ENQUIRY	
10	->		RELEASE COMPLETE	Cause #81 (invalid TI value).
11	SS			Repeat steps 9-10 to cover all the transaction identifiers from 000... 110.

Specific message contents:

NOTE 1: With one bearer capability and that bearer capability is not supported by the UE.

NOTE 2: With cause #88 incompatible destination.

10.1.3.1.1.5 Test requirements

After step 7 a CC entity of the UE shall return a RELEASE COMPLETE message with cause value #88 (incompatible destination) and return to the idle mode.

After step 9 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.3.2 Incoming call / U6 call present

10.1.3.2.1 Incoming call / U6 call present / automatic call rejection

10.1.3.2.1.1 Definition

Although the state U6 is transient, the ability to refuse a call (automatically) in this state is tested, if it is implemented at the UE.

10.1.3.2.1.2 Conformance requirement

1) A CC entity of the UE in CC-state U6, "Call Present", upon receipt of a rejection indication of the incoming call from the user, send RELEASE COMPLETE with the appropriate cause value to its peer entity and enter the CC-state U0, "Null". The CC entities relating to the seven mobile terminating transaction identifiers shall be in state U0, "Null".

References

TS 24.007 clause 6.2.2., TS 24.008 clause 5.2.2.3.1., TS 24.008 clause 5.5.3.2, TS 24.008 clause 8.3.

10.1.3.2.1.3 Test purpose

To verify that a CC entity of the UE in CC-state U6, "Call Present", shall upon receipt of a rejection indication of the incoming call from the user, shall send RELEASE COMPLETE with the appropriate cause value to its peer entity and enter the CC-state U0, "Null". The CC entities relating to the seven mobile terminating transaction identifiers are then in state U0, "Null".

10.1.3.2.1.4 Method of test

Related ICS/IXIT statements

- supported teleservices;
- the UE supports an ability to refuse a call after receipt of a SETUP message.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U6 by using table 10.1.3/2.

Test procedure

A teleservice is selected that is supported by the UE; if the UE supports speech, the selected teleservice is speech. If necessary, the UE is configured for that teleservice. Then a mobile terminated call is initiated. The call control entire of the UE is brought to the state U6 (Note: The state U6 is not checked, since it is not stable). The UE is made to refuse the call (the refusal may require some preliminary preparations in order to achieve refusal at this point). The UE shall send a RELEASE COMPLETE message and enter a call control state U0. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				the UE is made to refuse the call
2	->		RELEASE COMPLETE	(note)
3	<-		STATUS ENQUIRY	
4	->		RELEASE COMPLETE	cause 81# (invalid TI value)
5	SS			repeat steps 3-4 to cover all the transaction identifiers from 000...110
6	<-		RRC CONNECTION RELEASE	the main signalling link shall be released.
7	->		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

NOTE: With cause value #21 call rejected.

10.1.3.2.1.5 Test requirements

After step 1 a CC entity of the UE shall return a RELEASE COMPLETE message with cause value #21 (call rejected) and return to the idle mode.

After step 11 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.3.3 Incoming call / U9 mobile terminating call confirmed

10.1.3.3.1 Incoming call / U9 mobile terminating call confirmed / alerting or immediate connecting

10.1.3.3.1.1 Definition

The call control entity of the UE having entered the state, U9, with signal information received in the preceding SETUP message, the subsequent behaviour of the UE is tested.

10.1.3.3.1.2 Conformance requirement

1) A CC entity in CC-state U9, "Mobile Terminating Call Confirmed", (if signalled by the network in previous SETUP message that it may alert) shall either send a ALERTING message to its peer entity and enter state U7, or send a CONNECT message to its peer entity and enter U8.

References

TS 24.008 clause 5.2.2.3.2, TS 24.008 clause 5.2.2.5.

10.1.3.3.1.3 Test purpose

To verify that a CC entity in CC-state U9, "Mobile Terminating Call Confirmed", (if signalled by the network in previous SETUP message that it may alert) will either send a ALERTING message to its peer entity and enter state U7, or send a CONNECT message to its peer entity and enter U8.

10.1.3.3.1.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U9 by using table 10.1.3/2.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U9 by using a SETUP message containing signalling information element. (The state U9 is not a stable state in this case, and consequently it is not checked as an initial state.) If the UE supports immediate connect for the selected basic service (p = Y), it sends a CONNECT message and enters the state U8, connect request. Otherwise (p = N) the UE sends an ALERTING message and enters the state U7, call receiving. The SS checks by using the status enquiry procedure that the CC entity has entered its state as described.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
A1		->	CONNECT	p = Y
A2		<-	STATUS ENQUIRY	
A3		->	STATUS	cause 30#, state U8
B1		->	ALERTING	p = N
B2		<-	STATUS ENQUIRY	
B3		->	STATUS	cause 30#, state U7

Specific message contents:

None.

10.1.3.3.1.5 Test requirements

A CC entity in CC-state U9, "Mobile Terminating Call Confirmed", (if signalled by the network in previous SETUP message that it may alert) shall either send an ALERTING message and enter state U7, or send a CONNECT message and enter U8.

10.1.3.3.2 Incoming call / U9 mobile terminating call confirmed / DTCH assignment

10.1.3.3.2.1 Definition

The call control entity of the UE being in the state, U9, a radio bearer establishment procedure is performed for traffic channel.

10.1.3.3.2.2 Conformance requirement

1) A CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, shall send a ALERTING message and enter state U7.

References

TS 25.331 clause 8.2,1, TS 24.008 clause 5.2.2.7., TS 24.008 clause 5.2.2.3.2.

10.1.3.3.2.3 Test purpose

To verify that a CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, shall sends a ALERTING message and enters state U7.

10.1.3.3.2.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U9 by using table 10.1.3/4.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U9 (by using a SETUP message not containing the signal information element). The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The UE sends an ALERTING message and enters state U7, call received. The SS verifies by using the status enquiry procedure that the UE has entered the correct state.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	DTCH, See TS34.108
2	->		ALERTING	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U7

Specific message contents:

None.

10.1.3.3.2.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed" shall send a ALERTING message and enter state U7.

10.1.3.3.3 Incoming call / U9 mobile terminating call confirmed / termination requested by the user

10.1.3.3.3.1 Definition

The call control entity of the UE being in the state, U9, the user requests for releasing of the call.

10.1.3.3.3.2 Conformance requirement

1) A CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", upon request by the user to terminate shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

References

TS 24.007 clause 6.2.2., TS 24.008 clause 5.4.3.

10.1.3.3.3.3 Test purpose

To verify that a CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

10.1.3.3.3.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used;
- the UE supports user requested call clearing in the state U9.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U9 by using table 10.1.3/4.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U9 (by using a SETUP message not containing the signal information element). Then the user requests termination of the call, if possible. The UE sends a DISCONNECT message and enters state U11, disconnect request. The SS verifies by using the status enquiry procedure that the UE has entered the correct state.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				the UE is made to clear the call
2	->		DISCONNECT	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U11

Specific message contents:

None.

10.1.3.3.3.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

10.1.3.3.4 Incoming call / U9 mobile terminating call confirmed / DISCONNECT received

10.1.3.3.4.1 Definition

The call control entity of the UE being in the state, U9, a DISCONNECT message is received by the UE.

10.1.3.3.4.2 Conformance requirement

1) A CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", upon receipt of a DISCONNECT shall return a RELEASE message and enter the CC-state U19, "Release Request".

References

TS 24.008 clause 5.4.4.

10.1.3.3.4.3 Test purpose

To verify that a CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", upon receipt of a DISCONNECT returns a RELEASE message and enters the CC-state U19, "Release Request".

10.1.3.3.4.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U9 by using table 10.1.3/4.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U9. The SS sends a DISCONNECT message to the UE. The UE responds by sending a RELEASE message and enters state U19, release request. The SS verifies by using the status enquiry procedure that the UE has entered the correct state.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	DISCONNECT	
2		->	RELEASE	
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause 30#, state U19

Specific message contents:

None.

10.1.3.3.4.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U9, "UE Terminating Call Confirmed", shall return a RELEASE message and enter the CC-state U19, "Release Request".

10.1.3.3.5 Incoming call / U9 mobile terminating call confirmed / RELEASE received

10.1.3.3.5.1 Definition

The call control entity of the UE being in the state, U9, a RELEASE message is received by the UE.

10.1.3.3.5.2 Conformance requirement

1) A CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", upon receipt of a RELEASE shall return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) On returning to the idle mode the UE shall release the MM-connection and the CC-entities relating to the seven mobile terminating transaction identifiers shall be in CC-state U0, "Null".

References

Conformance requirement 1: TS 24.008 clause 5.4.4.

Conformance requirement 2: TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2., TS 24.008 clause 8.3.

10.1.3.3.5.3 Test purpose

1) To verify that a CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) To verify that the UE on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile terminating transaction identifiers are in CC-state U0, "Null".

10.1.3.3.5.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U9 by using table 10.1.3/4.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U9. The SS sends a RELEASE message to the UE. The UE responds by sending a RELEASE COMPLETE message and enters state U0, null. The SS verifies by using the status enquiry procedure that the UE has entered the correct state with the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE	with cause "Normal, unspecified"
2	->		RELEASE COMPLETE	
3	<-		STATUS ENQUIRY	
4	->		RELEASE COMPLETE	cause 81# (invalid TI value)
5	SS			repeat steps 3-4 to cover all the transaction identifiers from 000...110
6	<-		RRC CONNECTION RELEASE	the main signalling link shall be released.
7	->		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

10.1.3.3.5.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U9, "UE Terminating Call Confirmed", shall return a RELEASE COMPLETE message.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.3.3.6 Incoming call / U9 mobile terminating call confirmed / lower layer failure

10.1.3.3.6.1 Definition

The call control entity of the UE being in the state, U9, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

10.1.3.3.6.2 Conformance requirement

1) A CC entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", having detected a lower layer failure shall return to idle mode, the CC entity is in state U0, "Null".

References

TS 24.008 clause 4.5.2.3., TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2., TS 24.008 clause 8.3, TS 25.331 clause 8.3.1, TS 25.331 clause 8.5.6.

10.1.3.3.6.3 Test purpose

To verify that a CC entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", having detected a lower layer failure returns to idle mode, the CC entity is in state U0, "Null".

10.1.3.3.6.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U9 by using table 10.1.3/4.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The UE is brought to the state U9. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 seconds. The SS will check that the UE will not send any message during 60 seconds.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 seconds. UE shall send no message on the DCCH

Specific message contents:

None.

10.1.3.3.6.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 seconds.

10.1.3.3.7 Incoming call / U9 mobile terminating call confirmed / unknown message received

10.1.3.3.7.1 Definition

The call control entity of the UE being in the state, U9, an unknown message is received by the UE.

10.1.3.3.7.2 Conformance requirement

1) A CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed" having received an unknown message from its peer entity shall return a STATUS message.

References

TS 24.008 clause 8.4.

10.1.3.3.7.3 Test purpose

To verify that a CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed" having received an unknown message from its peer entity returns a STATUS message.

10.1.3.3.7.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U9 by using table 10.1.3/4.

Test procedure

A MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U9. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	unknown message	message type not defined for PD
2		->	STATUS	cause 97#, state U9
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause 30#, state U9

Specific message contents:

None.

10.1.3.3.7.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U9, "UE Terminating Call Confirmed", shall return a STATUS message.

10.1.3.4 Incoming call / U7 call received

10.1.3.4.1 Incoming call / U7 call received / call accepted

10.1.3.4.1.1 Definition

The call control entity of the UE being in the state, U7, a user accepts the incoming call.

10.1.3.4.1.2 Conformance requirement

1) A CC entity of a UE in CC-state U7, "Call Received", upon a user accepting the incoming call, shall send a CONNECT message to its peer entity and enter the CC-state U8, "Connect Request".

References

TS 24.007 clause 6.2.2., TS 24.008 clause 5.2.2.5.

10.1.3.4.1.3 Test purpose

To verify that a CC entity of a UE in CC-state U7, "Call Received", upon a user accepting the incoming call, shall send a CONNECT message to its peer entity and enter the CC-state U8, "Connect Request"

10.1.3.4.1.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table 10.1.3/1.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U7. The user accepts the incoming call. The UE sends a CONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered state U8, connect request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				the UE is made to accept the call by the user
2	->		CONNECT	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U8

Specific message contents:

None.

10.1.3.4.1.5 Test requirements

After step 1 a CC entity of a UE in CC-state U7, "Call Received", shall send a CONNECT message and enter the CC-state U8, "Connect Request".

10.1.3.4.2 Incoming call / U7 call received / termination requested by the user

10.1.3.4.2.1 Definition

The call control entity of the UE being in the state, U7, a user requests to terminate incoming call.

10.1.3.4.2.2 Conformance requirement

1) A CC entity of a UE in CC-state U7, "Call Received", upon request by the user to terminate shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

References

TS 24.007 clause 6.2.2., TS 24.008 clause 5.4.3.

10.1.3.4.2.3 Test purpose

To verify that a CC entity of a UE in CC-state U7, "Call Received", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

10.1.3.4.2.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table10.1.3/1.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U7. The user initiates clearing the incoming call. The UE sends a DISCONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered state U11, disconnect request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				the UE is made to terminate/reject the call
2		->	DISCONNECT	
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause 30#, state U11

Specific message contents:

None.

10.1.3.4.2.5 Test requirements

After step 1 a CC entity of a UE in CC-state U7, "Call Received", shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

10.1.3.4.3 Incoming call / U7 call received / DISCONNECT received

10.1.3.4.3.1 Definition

The call control entity of the UE being in the state, U7, a DISCONNECT message is received by the UE.

10.1.3.4.3.2 Conformance requirement

1) A CC entity of a UE in CC-state U7, "Call Received", upon receipt of a DISCONNECT with a progress indicator indicating in-band information from network, if a DTCH was not assigned, shall return a RELEASE message and enter the CC-state U19, "Release Request".

References

TS 24.008 clause 5.4.4.

10.1.3.4.3.3 Test purpose

To verify that a CC entity of a UE in CC-state U7, "Call Received", upon receipt of a DISCONNECT with a progress indicator indicating in-band information from network, if a DTCH was not assigned, returns a RELEASE message and enters the CC-state U19, "Release Request".

10.1.3.4.3.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table 10.1.3/1.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U7. The SS sends a DISCONNECT message. The UE responds with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity has entered state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	DISCONNECT	(note)
2		->	RELEASE	
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause 30#, state U19

Specific message contents:

NOTE: With a progress indicator indicating in-band information; Progress Indicator, Progress Description #8.

10.1.3.4.3.5 Test requirements

After step 1 a CC entity of a UE in CC-state U7, "Call Received", if a DTCH was not assigned, shall return a RELEASE message and enter the CC-state U19, "Release Request".

10.1.3.4.4 Incoming call / U7 call received / RELEASE received

10.1.3.4.4.1 Definition

The call control entity of the UE being in the state, U7, a RELEASE message is received by the UE.

10.1.3.4.4.2 Conformance requirement

1) A CC entity of a UE in CC-state U7, "Call Received", upon receipt of a RELEASE shall return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) On returning to the idle mode the UE shall release the MM-connection and the CC-entities relating to the seven mobile terminating transaction identifiers shall be in CC-state U0, "Null".

References

Conformance requirement 1: TS 24.008 clause 5.4.4.

Conformance requirement 2: TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2.

10.1.3.4.4.3 Test purpose

1) To verify that a CC entity of a UE in CC-state U7, "Call Received", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) To verify that the UE on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile terminating transaction identifiers are in CC-state U0, "Null".

10.1.3.4.4.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table 10.1.3/1.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U7. The SS sends a RELEASE message. The UE responds with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered state U0, null, with the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE	with cause "Normal, unspecified"
2	->		RELEASE COMPLETE	
3	<-		STATUS ENQUIRY	
4	->		RELEASE COMPLETE	cause 81# (invalid TI value)
5	SS			repeat steps 3-4 to cover all the transaction identifiers from 000...110
6	<-		RRC CONNECTION RELEASE	the main signalling link shall be released.
7	->		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

10.1.3.4.4.5 Test requirements

After step 1 a CC entity of a UE in CC-state U7, "Call Received", shall return a RELEASE COMPLETE message.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.3.4.5 Incoming call / U7 call received / lower layer failure

10.1.3.4.5.1 Definition

The call control entity of the UE being in the state, U7, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

10.1.3.4.5.2 Conformance requirement

1) A CC entity of a UE in CC-state U7, "Call Received", having detected a lower layer failure shall return to idle mode, the CC entity is in state U0, "Null".

References

TS 24.008 clause 4.5.2.3., TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2., TS 24.008 clause 8.3, TS 25.331 clause 8.3.1, TS 25.331 clause 8.5.6.

10.1.3.4.5.3 Test purpose

To verify that a CC entity of a UE in CC-state U7, "Call Received", having detected a lower layer failure returns to idle mode, the CC entity is in state U0, "Null".

10.1.3.4.5.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table 10.1.3/2.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The UE is brought to the state U7. The SS modifies the scrambling code of downlink transmission(DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission(DL DPCH) to the original one and waits 60 seconds. The SS will check that the UE will not send any message during 60 seconds.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 seconds. UE shall send no message on the DCCH

Specific message contents:

None.

10.1.3.4.5.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 seconds.

10.1.3.4.6 Incoming call / U7 call received / unknown message received

10.1.3.4.6.1 Definition

The call control entity of the UE being in the state, U7, an unknown message is received by the UE.

10.1.3.4.6.2 Conformance requirement

1) A CC entity of a UE in CC-state U7, "Call Received", having received an unknown message from its peer entity shall return a STATUS message.

References

TS 24.008 clause 8.4.

10.1.3.4.6.3 Test purpose

To verify that a CC entity of a UE in CC-state U7, "Call Received", having received an unknown message from its peer entity returns a STATUS message.

10.1.3.4.6.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table 10.1.3/1.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U7. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	unknown message	message type not defined for PD
2		->	STATUS	cause 97#, state U7
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause 30#, state U7

Specific message contents:

None.

10.1.3.4.6.5 Test requirements

After step 1 a CC entity of a UE in CC-state U7, "Call Received", shall return a STATUS message.

10.1.3.4.7 Incoming call / U7 call received / DTCH assignment

10.1.3.4.7.1 Definition

The call control entity of the UE being in the state, U7, a radio bearer establishment procedure is performed for traffic channel.

10.1.3.4.7.2 Conformance requirement

1) A CC entity of a UE in CC-state U7, "Call Received", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, shall stay in CC-state U7.

References

TS25.331 clause 8.2.1, TS 24.008 clause 5.2.2.7.

10.1.3.4.7.3 Test purpose

To verify that a CC entity of a UE in CC-state U7, "Call Received", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, stays in CC-state U7.

10.1.3.4.7.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table 10.1.3/1.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U7. The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The SS verifies by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	DTCH, See TS34.108
2	<-		STATUS ENQUIRY	
3	->		STATUS	cause 30#, state U7

Specific message contents:

None.

10.1.3.4.7.5 Test requirements

After step 1 the CC state U7, "Call Received", shall remain unchanged.

10.1.3.4.8 Incoming call / U7 call received / RELEASE COMPLETE received

10.1.3.4.8.1 Definition

The call control entity of the UE being in the state, U7, the call is cleared by a RELEASE COMPLETE message sent by the SS.

10.1.3.4.8.2 Conformance requirement

1) A CC entity of the UE in CC-state U7, "call received", upon receipt of a RELEASE COMPLETE message with valid cause value, shall enter CC state U0, "Null".

2) On returning to idle mode, the CC entities relating to the seven mobile terminating transaction identifiers shall be in state U0, "Null".

References

Conformance requirement 1: TS 24.008, clause 5.4.2, TS 24.008, clause 5.4.4.

Conformance requirement 2: TS 24.008, clause 5.4.4.1.3.

10.1.3.4.8.3 Test purpose

1) To verify that a CC entity of the UE in CC-state U7, "Call received", upon receipt of a RELEASE COMPLETE message with valid cause value, enters CC state U0, "Null".

2) To verify that in returning to idle mode, the CC entities relating to the seven mobile terminating transaction identifiers are in state U0, "Null".

10.1.3.4.8.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;

  MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table 10.1.3/1.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected service is telephony. If necessary, the UE is configured for that basic service. The mobile terminated call is initiated. the CC entity of the UE is brought to U7. The SS sends a RELEASE COMPLETE message to the UE. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	RELEASE COMPLETE	note 1
2		<-	STATUS ENQUIRY	
3		->	RELEASE COMPLETE	cause 81# (invalid TI value), note 2
4		SS		repeat steps 2-3 to cover all the transaction identifiers from 000...110
5		<-	RRC CONNECTION RELEASE	the main signalling link shall be released.
6		->	RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

NOTE 1: With the cause value chosen arbitrarily.

NOTE 2: TI flag has the value indicating the SS as a originator of the call.

10.1.3.4.8.5 Test requirements

After step 2 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.3.5 Incoming call / U8 connect request

10.1.3.5.1 Incoming call / U8 connect request / CONNECT acknowledged

10.1.3.5.1.1 Definition

The call control entity of the UE being in the state, U8, a CONNECT ACKNOWLEDGE message is received by the UE.

10.1.3.5.1.2 Conformance requirement

A CC entity of a UE in CC-state U8, "Connect Request", upon receipt of CONNECT ACKNOWLEDGE shall enter the CC-state U10, "Call Active".

References

TS 24.008 clause 5.2.2.6.

10.1.3.5.1.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", upon receipt of CONNECT ACKNOWLEDGE shall enter the CC-state U10, "Call Active".

10.1.3.5.1.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/2.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8 (if the UE uses immediate connection for the selected basic service then p = Y, otherwise p = N). The SS sends a CONNECT ACKNOWLEDGE message. The SS checks by using the status enquiry procedure that the CC entity of the UE has entered state U10, active.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
A1			Radio Bearer Setup Procedure	p = Y, See TS34.108
2	<-		CONNECT ACKNOWLEDGE	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U10

Specific message contents:

None.

10.1.3.5.1.5 Test requirements

After step 2 a CC entity of a UE in CC-state U8, "Connect Request", shall enter the CC-state U10, "Call Active".

10.1.3.5.2 Incoming call / U8 connect request / timer T313 time-out

10.1.3.5.2.1 Definition

The call control entity of the UE being in the state, U8, if no response is then received from the SS, timer T313 expires at the UE side.

10.1.3.5.2.2 Conformance requirement

A CC entity of a UE in CC-state U8, "Connect Request", having waited for a reasonable length of time (e.g. expiry of timer T313) without receiving the appropriate protocol message to complete the incoming call, shall initiate the clearing of that incoming call by sending the CC message DISCONNECT and enter the CC-state U11, "Disconnect Request".

If an UE disconnects too early then, in the case of very late assignment of a traffic channel, systematic waste of radio resources may occur.

References

TS 24.008 clause 5.2.2.6., TS 24.008 clause 5.4.3.

10.1.3.5.2.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", having waited for a reasonable length of time (e.g. expiry of timer T313) without receiving the appropriate protocol message to complete the incoming call, shall initiate the clearing of that incoming call by sending the CC message DISCONNECT and enter the CC-state U11, "Disconnect Request"

10.1.3.5.2.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/2.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8 (if the UE uses immediate connection for the

selected basic service then p = Y, otherwise p = N). The T313 expires at the UE and the UE sends a DISCONNECT message and enters state U11, disconnect request. The SS checks by using the status enquiry procedure that the UE has entered the correct state.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
A1			Radio Bearer Setup Procedure	p = Y, See TS34.108
2	->		DISCONNECT	Shall not be sent before 15 seconds after entry into state U8. But, shall be sent before 1,1 * T313 after entry into state U8.
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U11

Specific message contents:

None.

10.1.3.5.2.5 Test requirements

Upon expiry of timer T313 without receiving the appropriate protocol message to complete the incoming call a CC entity of a UE in CC-state U8, "Connect Request", shall initiate the clearing of that incoming call by sending a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

10.1.3.5.3 Incoming call / U8 connect request / termination requested by the user

10.1.3.5.3.1 Definition

The call control entity of the UE being in the state, U8, the user requests for releasing of the call.

10.1.3.5.3.2 Conformance requirement

1) A CC entity of a UE in CC-state U8, "Connect Request", upon request by the user to terminate shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

References

TS 24.007 clause 6.2.2., TS 24.008 clause 5.4.3.

10.1.3.5.3.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

10.1.3.5.3.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/2.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8 (if the UE uses immediate connection for the selected basic service then p = Y, otherwise p = N). Then the user requests termination of the call. The UE sends a DISCONNECT message and enters state U11, disconnect request. The SS verifies by using the status enquiry procedure that the UE has entered the correct state.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
A1			Radio Bearer Setup Procedure	p = Y, See TS34.108
2				the user requests to clear the call
3	->		DISCONNECT	
4	<-		STATUS ENQUIRY	
5	->		STATUS	cause 30#, state U11

Specific message contents:

None.

10.1.3.5.3.5 Test requirements

After step 2 a CC entity of a UE in CC-state U8, "Connect Request", shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

10.1.3.5.4 Incoming call / U8 connect request / DISCONNECT received with in-band information

10.1.3.5.4.1 Definition

The call control entity of the UE being in the state, U8, a DISCONNECT message indicating availability of in band information is received by the UE.

10.1.3.5.4.2 Conformance requirement

A CC entity of a UE in CC-state U8, "Connect Request", upon receipt of a DISCONNECT with progress indicator #8 shall enter CC-state U12, if the traffic channel is in speech mode. If the DTCH is not in speech mode, the UE shall send a RELEASE message and enter CC-state U19.

References

TS 24.008 clause 5.4.4., TS 24.008 clause 5.5.1.

10.1.3.5.4.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", upon receipt of a DISCONNECT with progress indicator #8 enters CC-state U12, if the traffic channel is in speech mode, and that the UE sends a RELEASE message and enters CC-state U19 if the DTCH is not in speech mode.

10.1.3.5.4.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/4.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8. The SS sends a DISCONNECT message containing indication of in-band information availability to the UE. If channel mode is speech, the UE enters state U12, disconnect indication. If channel mode is not speech, the UE sends a RELEASE message and enters state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		DISCONNECT	(note)
A2 A3	<- ->		STATUS ENQUIRY STATUS	DTCH in speech mode: cause 30#, state U12
B2 B3 B4	-> <- ->		RELEASE STATUS ENQUIRY STATUS	DTCH is not in speech mode: cause 30#, state U19

Specific message contents:

NOTE: With a progress indicator indicating in-band information; Progress Indicator, Progress description #8.

10.1.3.5.4.5 Test requirements

After step 1 a CC entity of a UE in CC-state U8, "Connect Request", shall enter CC-state U12, if the traffic channel is in speech mode. If the DTCH is not in speech mode, the UE shall send a RELEASE message and enter CC-state U19.

10.1.3.5.5 Incoming call / U8 connect request / DISCONNECT received without in-band information

10.1.3.5.5.1 Definition

The call control entity of the UE being in the state, U8, a DISCONNECT message is received by the UE. The DISCONNECT message does not contain indication of in-band information availability.

10.1.3.5.5.2 Conformance requirement

1) A CC entity of a UE in CC-state U8, "Connect Request", upon receipt of a DISCONNECT without progress indicator, shall return a RELEASE message and enter the CC-state U19, "Release Request".

References

TS 24.008 clause 5.4.4., TS 24.008 clause 5.4.4.1.2.

10.1.3.5.5.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", upon receipt of a DISCONNECT without progress indicator, returns a RELEASE message and enters the CC-state U19, "Release Request".

10.1.3.5.5.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/4.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8. The SS sends a DISCONNECT message not containing indication of in-band information availability to the UE. The UE shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the UE has entered the state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	DISCONNECT	(note)
2		->	RELEASE	
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause 30#, state U19

Specific message contents:

NOTE: Without a progress indicator indicating in-band information.

10.1.3.5.5.5 Test requirements

After step 1 a CC entity of a UE in CC-state U8, "Connect Request", shall return a RELEASE message and enter the CC-state U19, "Release Request".

10.1.3.5.6 Incoming call / U8 connect request / RELEASE received

10.1.3.5.6.1 Definition

The call control entity of the UE being in the state, U8, a RELEASE message is received by the UE.

10.1.3.5.6.2 Conformance requirement

1) A CC entity of a UE in CC-state U8, "Connect Request", upon receipt of a RELEASE shall return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) On returning to the idle mode the UE shall release the MM-connection and the CC-entities relating to the seven mobile terminating transaction identifiers shall be in CC-state U0, "Null".

References

Conformance requirement 1: TS 24.008 clause 5.4.4.

Conformance requirement 2: TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2.

10.1.3.5.6.3 Test purpose

1) To verify that a CC entity of a UE in CC-state U8, "Connect Request", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".

2) To verify that the UE on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile terminating transaction identifiers are in CC-state U0, "Null".

10.1.3.5.6.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/1.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8. The SS sends a RELEASE message. The UE responds with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered state U0, null, with the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	RELEASE	with cause "Normal, unspecified"
2		->	RELEASE COMPLETE	
3		<-	STATUS ENQUIRY	
4		->	RELEASE COMPLETE	cause 81# (invalid TI value)
5		SS		repeat steps 3-4 to cover all the transaction identifiers from 000...110
6		<-	RRC CONNECTION RELEASE	the main signalling link shall be released.
7		->	RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

10.1.3.5.6.5 Test requirements

After step 1 a CC entity of a UE in CC-state U8, "Connect Request", shall return a RELEASE COMPLETE message.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

10.1.3.5.7 Incoming call / U8 connect request / lower layer failure

10.1.3.5.7.1 Definition

The call control entity of the UE being in the state, U8, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

10.1.3.5.7.2 Conformance requirement

1) A CC entity of a UE in CC-state U8, "Connect Request", having detected a lower layer failure shall return to idle mode, the CC entity is in state U0, "Null".

References

TS 24.008 clause 4.5.2.3., TS 24.008 clause 4.5.3., TS 24.008 clause 5.5.3.2, TS 25.331 clause 8.3.1, TS 25.331 clause 8.5.6.

10.1.3.5.7.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", having detected a lower layer failure returns to idle mode, the CC entity is in state U0, "Null".

10.1.3.5.7.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/1.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The UE is brought to the state U8. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 seconds. The SS will check that the UE will not send any message during 60 seconds.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 seconds. UE shall send no message on the DCCH

Specific message contents:

None.

10.1.3.5.7.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 seconds.

10.1.3.5.8 Incoming call / U8 connect request / DTCH assignment

10.1.3.5.8.1 Definition

The call control entity of the UE being in the state, U8, a radio bearer establishment procedure is performed for traffic channel.

10.1.3.5.8.2 Conformance requirement

1) A CC entity of a UE in CC-state U8, "Connect Request", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, shall stay in the CC-state U8.

References

TS 25.331 clause 8.2.1., TS 24.008 clause 5.2.2.7.

10.1.3.5.8.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, stays in the CC-state U8.s

10.1.3.5.8.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/1.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8. The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The SS verifies by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	DTCH, See TS34.108
2		<-	STATUS ENQUIRY	
3		->	STATUS	cause 30#, state U8

Specific message contents:

None.

10.1.3.5.8.5 Test requirements

After step 1 the CC-state U8, "Connect Request", shall remain unchanged.

10.1.3.5.9 Incoming call / U8 connect request / unknown message received

10.1.3.5.9.1 Definition

The call control entity of the UE being in the state, U8, an unknown message is received by the UE.

10.1.3.5.9.2 Conformance requirement

1) A CC entity of a UE in CC-state U8, "Connect Request", having received an unknown message from its peer entity shall return a STATUS message.

References

TS 24.008 clause 8.4.

10.1.3.5.9.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", having received an unknown message from its peer entity returns a STATUS message.

10.1.3.5.9.4 Method of test

Related ICS/IXIT statements

- supported MT circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/1.

Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		unknown message	message type not defined for PD
2	->		STATUS	cause 97#, state U8
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U8

Specific message contents:

None.

10.1.3.5.9.5 Test requirements

After step 1 a CC entity of a UE in CC-state U8, "Connect Request", shall return a STATUS message.

10.1.4 In call functions

10.1.4.1 In-call functions / DTMF information transfer

10.1.4.1.1 In-call functions / DTMF information transfer / basic procedures

10.1.4.1.1.1 Definition

Dual Tone Multi Frequency (DTMF) is an inband one out of four plus one out of four signalling system primarily used from terminal instruments in telecommunication networks.

10.1.4.1.1.2 Conformance requirement

1) An UE supporting the Mobile originating DTMF protocol control procedure, having a CC entity for speech in state U10, "Active": when made to send a DTMF tone, shall send a START DTMF message on the correct DCCH.

2) An UE supporting the Mobile originating DTMF protocol control procedure, having a CC entity for speech in state U10, "Active": when made to send a DTMF tone (the corresponding IA5 character being selected from among the ones supported), shall send a START DTMF message specifying the correct IA5 character in the "keypad information" field of the keypad facility information element.

References

TS 24.008 clause 5.5.7.

10.1.4.1.1.3 Test purpose

1) To verify that an UE supporting the Mobile originating DTMF protocol control procedure, having a CC entity for speech in state U10, "Active": when made to send a DTMF tone, sends a START DTMF message on the correct DCCH.

2) To verify that an UE supporting the Mobile originating DTMF protocol control procedure, having a CC entity for speech in state U10, "Active": when made to send a DTMF tone (the corresponding IA5 character being selected from among the ones supported), sends a START DTMF message specifying the correct IA5 character in the "keypad information" field of the keypad facility information element.

10.1.4.1.1.4 Method of test

Related ICS/IXIT statements

- supported teleservices;
- supported character set (e.g. 0-9, #, *, A, B, C, D);
- if and how DTMF tone is indicated to the user.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 “Active” for speech by using Generic call setup procedure for mobile originating circuit switched call defined in TS34.108.

Test procedure

The UE being in the call active state, a user causes a DTMF tone to be generated e.g. by depression of a key in the UE. A DTMF digit corresponding to the digit indicated by the user is sent in a START DTMF message by the UE. The SS will return a START DTMF ACKNOWLEDGE message to the UE. This acknowledgement may be used in the UE to generate an indication as a feedback for a successful transmission. Then the user indicates that the DTMF sending should cease e.g. by releasing the key. The UE will send a STOP DTMF message to the network which is acknowledged with STOP DTMF ACKNOWLEDGE by the SS.

The sequence described above is repeated for each of the applicable characters 0-9, #, *, A, B, C, and D.

Then a case of rejecting a DTMF tone is tested and the state of the UE is verified.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		Request the user to cause a DTMF tone to be generated
	->		START DTMF	the SS will verify that the transmitted information corresponds to the digit pressed
2	<-		START DTMF ACKNOWLEDGE	possible indication of a DTMF tone depending the ICS/IXIT statements
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U10
5	->		STOP DTMF	
6	<-		STOP DTMF ACKNOWLEDGE	the DTMF tone indication shall be stopped
7				the steps 1-6 shall be repeated for each of the applicable characters 0-9, #, *, A, B, C, D.
8	<-		STATUS ENQUIRY	
9	->		STATUS	cause 30#, state U10
10		SS		Request the user to cause a DTMF tone to be generated.
11	->		START DTMF	
12	<-		START DTMF REJECT	
13	<-		STATUS ENQUIRY	
14	->		STATUS	cause 30#, state U10

Specific message contents:

None.

10.1.4.1.1.5 Test requirements

Upon a user making to send a DTMF tone a CC entity for speech in the CC state U10, "Active", shall send a START DTMF message on the DCCH to SS.

The SS will verify that the transmitted information corresponds to the digit pressed in the UE.

After step 7 (successful DTMF transmission) the CC-state U10, "Active", shall remain unchanged.

After step 11 (unsuccessful DTMF transmission) the CC-state U10, "Active", shall remain unchanged.

10.1.4.2 In-call functions / user notification

User notification procedure allows the network to notify a UE of any call-related event during the "active" state of a call. It also may allow a UE to notify the remote user of any appropriate call-related event during the "active" state of a call by sending a NOTIFY message containing a notification indicator to the network. No state change occurs at any of the interface sides during this procedure.

10.1.4.2.1 In-call functions / User notification / UE terminated

10.1.4.2.1.1 Definition

This is a case for testing user notification procedure terminated by the user equipment.

10.1.4.2.1.2 Conformance requirement

1) A CC entity of a UE in CC-state U10, "active", upon receiving of a NOTIFY message shall remain in the active state.

References

TS 24.008 clause 5.3.1.

10.1.4.2.1.3 Test purpose

To verify that a CC entity of a UE in CC-state U10, "active", upon receiving of a NOTIFY message remains in the active state.

10.1.4.2.1.4 Method of test

Related ICS/IXIT statements

- supported circuit switched basic services.

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state “idle, updated” with valid TMSI and CKSN.

The UE is brought into the state U10 “Active” by using Generic call setup procedure for mobile originating circuit switched calls defined in TS34.108.

Test procedure

The UE being in the call active state, the SS will send a NOTIFY message to the UE. The state of the UE is checked after that.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		NOTIFY	
2	<-		STATUS ENQUIRY	
3	->		STATUS	cause 30#, state U10

Specific message contents:

None.

10.1.4.2.1.5 Test requirements

After step 1 a CC entity of the UE in the CC-state U10, "active", shall remain in the active state.

10.1.4.3 In-call functions / channel changes

The two following test cases are for testing some elementary radio resource level procedures during an active state of a call to ensure call maintenance also during Hard handover.

10.1.4.3.1 In-call functions / channel changes / a successful channel change in active state/ Hard handover

10.1.4.3.1.1 Definition

This is a case to test a change of the frequency of a physical channel during active state of a call.

10.1.4.3.1.2 Conformance requirement

1) The UE being in the call active state after having successful completed a physical channel reconfiguration, shall remain in the call active state.

References

TS 24.008 clause 5.3.4.3.2, and TS 25.331 clause 8.3.5.

10.1.4.3.1.3 Test purpose

To verify that the UE being in the call active state after having successful completed a physical channel reconfiguration remains in the call active state.

10.1.4.3.1.4 Method of test

Related ICS/IXIT statements

- supported circuit switched basic services;

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 "Active" by using Generic call setup procedure for mobile originating circuit switched calls defined in TS34.108.

Test procedure

The UE being in the call active state, the SS initiated physical channel reconfiguration procedure causing an intracell change of channel by sending a PHYSICAL CHANNEL RECONFIGURATION message to the UE. The UE performs physical channel reconfiguration procedure and after the main signalling link is successfully established, the UE returns a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC. The state of the UE is then checked.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	PHYSICAL CHANNEL RECONFIGURATION	
2		->	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause 30#, state U10

Specific message contents:

None.

10.1.4.3.1.5 Test requirements

The UE being in the call active state after having successful completed a physical channel reconfiguration, shall remain in the call active state.

10.1.4.3.2 In-call functions / channel changes / an unsuccessful channel change in active mode/Hard handover

10.1.4.3.2.1 Definition

This is a case to test an unsuccessful change of the frequency of a physical channel during active state of a call.

10.1.4.3.2.2 Conformance requirement

1) The UE, when returning to the old channel after physical channel reconfiguration failure, shall remain in the call active state.

References

TS 24.008 clause 5.3.4.3.

10.1.4.3.2.3 Test purpose

To verify that the UE, when returning to the old channel after physical channel reconfiguration failure, will remain in the call active state.

10.1.4.3.2.4 Method of test

Related ICS/IXIT statements

- supported circuit switched basic services;

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state “idle, updated” with valid TMSI and CKSN.

The UE is brought into the state U10 “Active” by using Generic call setup procedure for mobile originating circuit switched calls defined in TS34.108.

Test procedure

The SS sends a PHYSICAL CHANNEL RECONFIGURATION message, but does not activate the assigned physical channel. The UE shall attempt try to activate the new channel (this is not verified) and shall then reactivate the "old" channel. The UE shall send a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC and shall set the cause value in IE "failure cause" to "physical channel failure". The state of the UE is then checked.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		PHYSICAL CHANNEL RECONFIGURATION	The UE attempts and fails to re-configure the physical channel.
2	->		PHYSICAL CHANNEL RECONFIGURATION FAILURE	NOTE
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause 30#, state U10

Specific message contents:

NOTE: With the cause value "physical channel failure".

10.1.4.3.2.5 Test requirements

The UE being in the call active state after physical channel reconfiguration failure, shall remain in the call active state.

10.1.4.4 In-call functions / UE terminated in-call modification

10.1.4.4.1 In-call functions / UE terminated in-call modification / modify when new mode is not supported

This test is not applicable for R99.

10.1.4.5 In-call functions / UE originated in-call modification

10.1.4.5.1 In-call functions / UE originated in-call modification / a successful case of modifying

This test is not applicable for R99.

10.1.4.5.2 In-call functions / UE originated in-call modification / modify rejected

This test is not applicable for R99.

10.1.4.5.3 In-call functions / UE originated in-call modification / an abnormal case of acceptance

This test is not applicable for R99.

10.1.4.5.4 In-call functions / UE originated in-call modification / an abnormal case of rejection

This test is not applicable for R99.

10.1.4.5.5 In-call functions / UE originated in-call modification / time-out of timer T323

This test is not applicable for R99.

10.1.4.5.6 In-call functions / UE originated in-call modification / a successful channel change in state mobile originating modify

This test is not applicable for R99.

10.1.4.5.7 In-call functions / UE originated in-call modification / an unsuccessful channel change in state mobile originating modify

This test is not applicable for R99.

10.1.4.5.8 In-call functions / UE originated in-call modification / unknown message received

This test is not applicable for R99.

10.1.4.5.9 In-call functions / UE originated in-call modification / a release complete received

This test is not applicable for R99.

10.2 Call Re-establishment

10.2.1 Call Re-establishment/call present, re-establishment allowed

10.2.1.1 Definition

This is to test a successful case of a call re-establishment procedure.

10.2.1.2 Conformance requirement

1) If the call is in the "active" state or "mobile originating modify" state, the indication from MM that re-establishment is possible shall cause call control to request re-establishment from the MM-connection, suspend any further message to be sent and await the completion of the re-establishment procedure.

2) When the call control entity is notified that the MM-connection is re-established, it shall then resume the transmission of possibly suspended messages and resume user data exchange when an appropriate channel is available.

References

1) TS 24.008 clause 4.5.1.6 and 5.5.4.2, TS 25.331 clause 8.3.1, TS 25.331 clause 8.5.6.

2) TS 24.008 clause 4.5.1.6 and 5.5.4.3.

10.2.1.3 Test purpose

The purpose of this test is to verify that the UE can correctly perform a call re-establishment procedure.

10.2.1.4 Method of test

Related ICS/IXIT statements

- supported teleservices.

Initial conditions

System Simulator:

1cell, default parameters

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN on cell A.

Test procedure

The UE is brought into the state U10 “Active” by using Generic call setup procedure for mobile originating circuit switched calls defined in TS34.108. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE as a response message to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one. The UE shall re-establish the call using CM RE-ESTABLISHMENT message. The SS performs security mode control and radio bearer establishment procedures. The UE shall through-connect the appropriate bearer channel. Then, the call is cleared by the SS.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				The UE is brought into the state U10 “Active” by using Generic call setup procedure for mobile originating circuit switched calls defined in TS34.108 (the appropriate bearer channel is through connected in both directions in DTCH)
2		SS		SS modifies the scrambling code of DPCH for generating lower layer failure.
3	->		CELL UPDATE	CCCH
4	<-		RRC CONNECTION RELEASE	CCCH
5		SS		SS re-modifies the scrambling code of DPCH to the original one.
6	->		RRC CONNECTION REQUEST	
7	<-		RRC CONNECTION SETUP	
8	->		RRC CONNECTION SETUP COMPLETE	
9	->		CM REESTABLISHMENT REQUEST	note specific message contents
10	<-		SECURITY MODE COMMAND	
11	->		SECURITY MODE COMPLETE	
12			Radio Bearer Setup Procedure	See TS34.108
13		UE		The appropriate bearer channel is through connected in both directions.
14	<-		DISCONNECT	with cause value "Normal"
15	->		RELEASE	
16	<-		RELEASE COMPLETE	
17	<-		RRC CONNECTION RELEASE	
18	->		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

CM RE-ESTABLISHMENT REQUEST message contains Ciphering key sequence number IE with the value which the UE was allocated in .

10.2.1.5 Test requirements

After step 2 a CC entity of the UE in the "active" state, shall suspend any further message to be sent and await the completion of the re-establishment procedure.

After step 12 the UE resume user data exchange when an appropriate channel is available.

10.3 User to user signalling

10.3.1 Definition

The "user to user" information element is used to convey information between the mobile user and a remote ISDN user.

NOTE: There is no test for an UE originating call including a "user-user" information element since it is not a mandatory UE feature.

10.3.2 Conformance requirement

The inclusion of the "user-user" information element in downlink call control messages shall cause no adverse effects on the operation of the UE.

References

TS 24.008 clauses 5.2.2, 9.3.7, 9.3.23.1 and 10.5.4.25

10.3.3 Purpose of the test

The purpose of this test is to verify that inclusion of the "user-user" information element in either of the down link messages, SETUP or DISCONNECT causes no adverse effects on the operation of the UE.

10.3.4 Method of test

Related ICS/IXIT statement(s)

- Supported MT circuit switched basic services.
- Support of user-user information element, and details of suitable codings.

Initial conditions.

System Simulator:

The SS simulates 1 cell, with default parameters.

User Equipment:

The UE is in MM-state "idle updated", with a valid TMSI and CKSN.

Test procedure

The SS attempts to set up a mobile terminated call, with one of the supported circuit switched basic services which has been arbitrarily chosen, the generic call set up procedures for mobile terminating circuit switched calls,(either speech or data) as specified in TS34.108 clause 7. The default SETUP message contents are modified to include the user-user Information Element. The UE shall not respond adversely to the inclusion of the user-user information element.

After 30 seconds the SS sends a DISCONNECT message, again the UE shall not respond adversely to the inclusion of the user-user information element, but shall continue to clear down the call normally.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				Generic Call Setup procedure for mobile terminating circuit switched calls defined in TS 34.108, depending on choice of Bearer Capability. The SETUP message contains the user-user IE, see Specific message contents.
2				The SS waits 30 seconds.
3		<-	DISCONNECT	Message contains the user-user IE, see Specific message contents
4		->	RELEASE	
5		<-	RELEASE COMPLETE	
6		<-	RRC CONNECTION RELEASE	
7		->	RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

SETUP message contains user-user IE with the string coded in IA5 characters: for example "Call Setup".

DISCONNECT message contains user-user IE with the string coded in IA5 characters: for example "Call Disconnect". (The codings above are for example only. For the case of an UE which supports "user-user" signalling it may be necessary to add meaning to the data fields, see ICS/IXIT statement(s).)

NOTE: The codings above are for example only. For the case of an UE which supports "user-user" signalling it may be necessary to add meaning to the data fields, see ICS/IXIT statement(s).

10.3.5 Test requirements

The inclusion of the "user-user" information element in downlink call control messages shall cause no adverse effects on the operation of the UE.

11 Session Management Procedures

11.1 PDP context activation

11.1.1 Initiated by the UE

11.1.1.1 Attach initiated by context activation/QoS Offered by Network is the QoS Requested

11.1.1.1.1 Definition

11.1.1.1.2 Conformance requirement

PDP context activation shall initiate PS Attach by the UE to establish a GMM context, when the UE is PS Detached.

In order to request a PDP context activation, the UE sends an ACTIVATE PDP CONTEXT REQUEST message to the network, enters the state PDP-ACTIVE-PENDING and starts timer T3380. The message contains the selected NSAPI, PDP type, requested QoS and, if the UE requests a static address, the PDP address.

If the QoS offered by the network is the same as the QoS requested by the UE, then upon receipt of the message ACTIVATE PDP CONTEXT ACCEPT the UE shall stop timer T3380.

In GSM, the MS shall initiate establishment of the logical link for the LLC SAPI indicated by the network with the offered QoS and selected radio priority level if no logical link has been already established for that SAPI.

In UMTS, both the network and the MS shall store the LLC SAPI and the radio priority in the PDP context.

A UE, which is capable of operating in both GSM and UMTS, shall use a valid LLC SAPI, while a UE which is capable of operating only in UMTS shall indicate the LLC SAPI value as "LLC SAPI not assigned" in order to avoid unnecessary value range checking and any other possible confusion in the network.

NOTE: The radio priority level and the LLC SAPI parameters, though not used in UMTS, shall be included in the messages, in order to support handover between UMTS and GSM networks.

Reference

3G TS 24.008 sub-clauses 6.1.3.1 and 6.1.3.1.1.

11.1.1.1.3 Test purpose

To check that the UE initiates a PS attach, if one is not already active, when PDP context activation is requested.

To test the behaviour of the UE when SS responds to the PDP context activation request with the requested QoS.

11.1.1.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-DEREGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- Auto Detach supported yes / no
- Method of context activation

Test procedure

If the UE is attached, then the Detach Request is originated from the UE indicating "GPRS detach without switching off". The network responds with a Detach Accept after completing the security mode procedures. A PDP context activation is then requested by the user. The PS attach (ATTACH REQUEST) is then indirectly caused by a requested PDP context activation. The SS returns the ATTACH ACCEPT message to the UE. Now session management can proceed with PDP context activation.

On receipt of the ACTIVATE PDP CONTEXT REQUEST message an ACTIVATE PDP CONTEXT ACCEPT is returned by the SS with the same requested QoS. The contents of the ACTIVATE PDP CONTEXT REQUEST message shall then be checked. The SS then waits for T3380 seconds to ensure T3380 has been stopped and no more ACTIVATE PDP CONTEXT REQUEST messages are sent by the UE. The SS then sends a MODIFY PDP CONTEXT REQUEST message to which the UE shall reply with a MODIFY PDP CONTEXT ACCEPT message to ensure the context has been set up.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	→		DETACH REQUEST	Only sent if the UE attaches at power-up, if not go to step 3. Detach is performed by the UE using MMI or AT Commands
2	←		DETACH ACCEPT	SS sends Detach Accept message.
3	UE			Initiate a context activation
4	→		ATTACH REQUEST	Request attach
5	←		ATTACH ACCEPT	Accept attach
6	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
7	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation
8	SS			Wait for T3380 seconds to ensure no further activate request messages come from the UE
9	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	SS sends a modify request to UE for the activated context
10	→		MODIFY PDP CONTEXT ACCEPT (UE TO NETWORK DIRECTION)	UE accepts the modification request from the network to show context is activated

Specific message contents

None.

11.1.1.1.5 Test requirements

When requesting a PDP context activation, the UE shall:

- initiate a PS ATTACH if one is not already active
- when the SS responds to a PDP context activation request, initiated by the UE, with the requested QoS, the UE shall complete the PDP context activation procedure. To check if the PDP context activation was successful, SS shall request PDP context modification and UE shall accept it.

11.1.1.2 QoS offered by the network is a lower QoS

11.1.1.2.1 QoS accepted by UE

11.1.1.2.1.1 Definition

11.1.1.2.1.2 Conformance requirement

In order to request a PDP context activation, the UE sends an ACTIVATE PDP CONTEXT REQUEST message to the network, enters the state PDP-ACTIVE-PENDING and starts timer T3380. If the QoS offered by the network is acceptable to UE, then upon receipt of the message ACTIVATE PDP CONTEXT ACCEPT, the UE shall stop timer T3380.

In GSM, the MS shall initiate establishment of the logical link for the LLC SAPI indicated by the network with the offered QoS and selected radio priority level, if no logical link has been already established for that SAPI.

In UMTS, both the network and the MS shall store the LLC SAPI and the radio priority in the PDP context.

Reference

3G TS 24.008 sub-clause 6.1.3.1.1.

11.1.1.2.1.3 Test purpose

To test the behaviour of the UE when the SS responds to a PDP context activation request with a lower QoS than that requested.

11.1.1.2.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of context activation

Test procedure

The requested QoS and Minimum QoS are set. A context activation is requested by the user. On receipt of the ACTIVATE PDP CONTEXT REQUEST message an ACTIVATE PDP CONTEXT ACCEPT is returned by the SS with QoS lower than the requested but higher than or equal to the minimum. The SS then sends a MODIFY PDP CONTEXT REQUEST message and the UE shall respond with a MODIFY PDP CONTEXT ACCEPT message to confirm the context is active.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept a PDP context activation
4	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Send a modify request to UE for the activated context
5	→		MODIFY PDP CONTEXT ACCEPT (UE TO NETWORK DIRECTION)	Accept the modification request from network to show context is activated

Specific message contents

None.

11.1.1.2.1.5 Test requirements

To pass the test UE shall:

- when the SS responds to a PDP context activation request, initiated by the UE, with the QoS lower than the requested but higher than or equal to the minimum, the UE shall complete the PDP context activation procedure.
- to see if the PDP context activation was successful, SS shall request PDP context modification and UE shall accept it.

11.1.1.2.2 QoS rejected by UE

11.1.1.2.2.1 Definition

11.1.1.2.2.2 Conformance requirement

In order to request a PDP context activation, the UE sends an ACTIVATE PDP CONTEXT REQUEST message to the network.

Upon receipt of the message ACTIVATE PDP CONTEXT ACCEPT offering a QoS which is not acceptable to the UE, the UE shall initiate the PDP context deactivation procedure.

Reference

3G TS 24.008 sub-clause 6.1.3.1.1.

11.1.1.2.2.3 Test purpose

To test the behaviour of the UE when the QoS offered by SS in response to a PDP context activation request is not acceptable to the UE.

11.1.1.2.2.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of context activation

Test procedure

The requested QoS and Minimum QoS are set. A context activation is requested by the user. On receipt of the ACTIVATE PDP CONTEXT REQUEST message an ACTIVATE PDP CONTEXT ACCEPT message is returned by the SS with a QoS lower than the minimum. The UE shall then send a DEACTIVATE PDP CONTEXT REQUEST message. A DEACTIVATE PDP CONTEXT ACCEPT message will be sent in return by the SS.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation
4	→		DEACTIVATE PDP CONTEXT REQUEST	Deactivate the PDP context
5	←		DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation

Specific message contents

None.

11.1.1.2.2.5 Test requirements

The UE shall reject the QoS offered by the SS in response to a PDP context activation request, if the QoS is not acceptable to the UE.

11.1.2 PDP context activation requested by the network, successful and unsuccessful

11.1.2.1 Definition

This test needs to take into account the number of active PDP contexts supported simultaneously by the UE, to be able to test the response when all contexts are activated and the network tries to initiate a new context.

11.1.2.2 Conformance requirement

1) Upon receipt of a REQUEST PDP CONTEXT ACTIVATION message:

- If the UE accepts the request the UE shall then initiate the PDP context activation procedure.
- If the UE rejects the request, the UE shall send a REQUEST PDP CONTEXT ACTIVATION REJECT message with one of the following causes:

  #26: insufficient resources;

  #31: activation rejected, unspecified;

  #40: feature not supported; or

  #95 – 111: protocol errors.

2) The UE shall not ignore the request.

3) If the UE accepts the request, the ACTIVATE PDP CONTEXT REQUEST message sent by the UE shall contain the parameters requested by the network in the REQUEST PDP CONTEXT ACTIVATION message, except for the offered QoS which may be changed by the UE.

4) Whenever a REQUEST PDP CONTEXT ACTIVATION message is received by the UE specifying a transaction identifier relating to a PDP context not in state PDP-INACTIVE, the UE shall locally deactivate the old PDP context relating to the received transaction identifier. Furthermore, the UE shall continue with the activation procedure of a new PDP context as indicated in the received message.

Reference

3G TS 24.008 sub-clauses 6.1.3.1.2, 6.1.3.1.4 and 8.3.2.f)

3G TS 27.060 sub-clause 7.3.3.

11.1.2.3 Test purpose

To test the behaviour of the UE upon receipt of a context activation request from the SS.

11.1.2.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- Network requested PDP context activation supportedyes/no
- Number of network initiated PDP contexts supported

Case 1

For a UE that supports PDP context activation requested by the network.

Test procedure

A REQUEST PDP CONTEXT ACTIVATION message is sent by the SS. On receipt of the ACTIVATE PDP CONTEXT REQUEST message an ACTIVATE PDP CONTEXT ACCEPT message is returned by the SS. This is repeated until the maximum number of contexts supported by the UE are activated.

If all 256 PDP contexts are supported by the UE (extended TI mechanism in SM allows 256 PDP contexts), skip to step 7, request PDP context activation for an existing PDP context.

If maximum number of PDP contexts supported by the UE is less than 256, one more context should be requested by the SS. In response to this activation request the UE shall return a REQUEST PDP CONTEXT ACTIVATION REJECT message with cause set to 'insufficient resources'.

A REQUEST PDP CONTEXT ACTIVATION message is then sent by the SS using a currently activated context transaction identifier. The UE shall activate this context in place of the previous context.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		REQUEST PDP CONTEXT ACTIVATION	SS sends Request a PDP context activation to UE
2	→		ACTIVATE PDP CONTEXT REQUEST	UE replies with a Request PDP context activation
3	←		ACTIVATE PDP CONTEXT ACCEPT	SS accepts the PDP context activation
4	SS			Steps 1-3 are repeated for the number of Network Initiated contexts supported. NOTE: If all 256 contexts are supported steps 5 and 6 should not be performed.
5	←		REQUEST PDP CONTEXT ACTIVATION	SS requests a PDP context activation
6	→		REQUEST PDP CONTEXT ACTIVATION REJECT	The context activation request is rejected with cause 'insufficient resources'.
7	←		REQUEST PDP CONTEXT ACTIVATION	SS requests a PDP context activation for an existing context with TI the same as one of the active PDP contexts
8	UE			UE locally deactivates the old PDP context with the same TI value
9	→		ACTIVATE PDP CONTEXT REQUEST	UE continues with the activation of a new PDP context to replace deactivated context
10	←		ACTIVATE PDP CONTEXT ACCEPT	SS accepts the PDP context activation

Case 2

For an UE that does not support PDP context activation requested by the network.

Test procedure

A REQUEST PDP CONTEXT ACTIVATION message is sent by the SS. The UE shall then send a REQUEST PDP CONTEXT ACTIVATION REJECT message.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		REQUEST PDP CONTEXT ACTIVATION	Request a PDP context activation
2	→		REQUEST PDP CONTEXT ACTIVATION REJECT	Reject the PDP context activation request with cause 'insufficient resources' or 'feature not supported'.

Specific message contents

In Case 1 step 7, TI IE value is equal to the TI value of one of the active PDP contexts, Offered PDP address IE value and/or Access point name IE value are (is) different from the corresponding IE value(s) in the existing PDP context.

11.1.2.5 Test requirements

The UE that is configured to support one or more PDP contexts simultaneously shall:

- accept PDP context activation initiated by the SS if number of active contexts is lower than the maximum.
- locally deactivate the old PDP context when a REQUEST PDP CONTEXT ACTIVATION message is received, specifying a transaction identifier relating to an active PDP context and continue with the activation procedure of a new PDP context as indicated in the received message.

The UE that does not support PDP Context Activation (a number of active contexts supported by the UE is equal to maximum or UE does not support PDP context) shall reject PDP context activation initiated by the SS.

11.1.3 Abnormal Cases

11.1.3.1 T3380 Expiry

11.1.3.1.1 Definition

11.1.3.1.2 Conformance requirement

1) On the first expiry of the timer T3380, the UE shall re-send the PDP CONTEXT ACTIVATION REQUEST
2) On the second expiry of the timer T3380, the UE shall re-send the PDP CONTEXT ACTIVATION REQUEST
3) On the third expiry of the timer T3380, the UE shall re-send the PDP CONTEXT ACTIVATION REQUEST
4) On the fourth expiry of the timer T3380, the UE shall re-send the PDP CONTEXT ACTIVATION REQUEST
5) On the fifth expiry of the timer T3380, the UE shall release all resources possibly allocated for this invocation and shall abort the procedure; no automatic PDP context activation re-attempt shall be performed.

Reference

3G TS 24.008 sub-clause 6.1.3.1.5 a).

11.1.3.1.3 Test purpose

To test the behaviour of the UE when the SS does not reply to PDP CONTEXT ACTIVATION REQUEST.

11.1.3.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no

- Method of activating a context

Test procedure

A context activation is requested by the user. The UE shall send the ACTIVATE PDP CONTEXT REQUEST message five times with T3380 seconds between each message. After this, no further ACTIVATE PDP CONTEXT REQUEST messages shall be sent by the UE.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
3	SS			T3380 seconds
4	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
5	SS			T3380 seconds
6	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
7	SS			T3380 seconds
8	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
9	SS			T3380 seconds
10	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
11	SS			Wait for T3380 seconds to ensure no further ACTIVATE PDP CONTEXT REQUEST messages are sent by the UE

Specific message contents

None.

11.1.3.1.5 Test requirements

UE shall re-send the ACTIVATE PDP CONTEXT REQUEST to SS five times in order to initiate PDP context, with expiry of timer T3380 between messages. After fifth try, UE shall send no more ACTIVATE PDP CONTEXT REQUEST to SS.

11.1.3.2 Collision of UE initiated and network requested PDP context activation

11.1.3.2.1 Definition

This test needs to take into account the number of PDP contexts supported by the UE, to be able to test the response when the network tries to initiate a new context.

11.1.3.2.2 Conformance requirement

A collision of a UE initiated and a network requested PDP context activation procedure is identified by the UE if a REQUEST PDP CONTEXT ACTIVATION message is received from the network after the UE has sent an ACTIVATE PDP CONTEXT REQUEST message, and the UE has not yet received an ACTIVATE PDP CONTEXT ACCEPT or ACTIVATE PDP CONTEXT REJECT message.

Reference

3G TS 24.008 sub-clause 6.1.3.1.5 b), case: Static PDP address collision detected within the UE.

11.1.3.2.3 Test purpose

To test the behaviour of the UE when there is a collision between an UE initiated and network requested PDP context activation detected by the UE.

11.1.3.2.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- Method of PDP context activation

Case 1

For an UE that supports PDP context activation requested by the network.

Test procedure

A context activation is requested by the user. After receipt of the ACTIVATE PDP CONTEXT REQUEST message the SS sends a REQUEST PDP CONTEXT ACTIVATION message followed by an ACTIVATE PDP CONTEXT ACCEPT message in a time less than T3380 (Use T3380/2). The UE shall send no messages within this time.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
3	←		REQUEST PDP CONTEXT ACTIVATION	Request a PDP context activation request
4	SS			Wait for T3380/2 seconds to ensure UE does not re-send ACTIVATE PDP CONTEXT REQUEST
5	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation

Case 2

For a UE that does not support PDP context activation requested by the network.

Test procedure

A context activation is requested by the user. After receipt of the ACTIVATE PDP CONTEXT REQUEST message the SS sends a REQUEST PDP CONTEXT ACTIVATION message. The UE shall send a REQUEST PDP CONTEXT ACTIVATION REJECT message with cause set to ‘insufficient resources’ or ‘feature not supported’. The SS then sends an ACTIVATE PDP CONTEXT ACCEPT.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
3	←		REQUEST PDP CONTEXT ACTIVATION	Request a PDP context activation
4	→		REQUEST PDP CONTEXT ACTIVATION REJECT	Cause set to 'insufficient resources' or 'feature not supported'.
5	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation

Specific message contents

None.

11.1.3.2.5 Test requirements

In the case of such collision,

- the UE that supports PDP context activation requested by the network shall discard the REQUEST PDP CONTEXT ACTIVATION message from SS and wait for an ACTIVATE PDP CONTEXT ACCEPT message.
- the UE that does not support PDP context activation requested by the network shall reject PDP context activation initiated by the SS.

11.1.3.3 Network initiated PDP context activation request for an already activated PDP context (on the UE side)

11.1.3.3.1 Definition

11.1.3.3.2 Conformance requirement

If the UE receives a REQUEST PDP CONTEXT ACTIVATION message with the same combination of APN, PDP type and PDP address as an already activated PDP context, the UE shall deactivate the existing PDP context and, if any, all the linked PDP contexts (matching the combination of APN, PDP type and PDP address) locally without notification to the network and proceed with the requested PDP context activation.

Reference

3G TS 24.008 sub-clause 6.1.3.1.5 d).

11.1.3.3.3 Test purpose

To test the behaviour of the UE when it detects a network initiated PDP context activation for the PDP context already activated on the UE side.

11.1.3.3.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

PS Supported yes/no

Method of PDP context activation

Test procedure

A PDP context activation is requested by the user. SS accepts PDP context activation. A secondary PDP context activation is requested by the user. SS accepts secondary PDP context activation. SS sends a REQUEST PDP CONTEXT ACTIVATION message with the same combination of APN, PDP type and PDP address as an already activated PDP context. The UE deactivates the existing PDP context and linked secondary PDP context (matching the combination of APN, PDP type and PDP address) locally without notification to the SS and proceeds with the requested PDP context activation.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	UE requests a PDP context activation
3	←		ACTIVATE PDP CONTEXT ACCEPT	SS accepts the PDP context activation
4	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	UE requests a secondary PDP context activation
5	←		ACTIVATE SECONDARY PDP CONTEXT ACCEPT	SS accepts the secondary PDP context activation
6	←		REQUEST PDP CONTEXT ACTIVATION	SS requests a PDP context activation with the same combination of APN, PDP type and PDP address as the activated PDP context
7	UE			UE locally deactivates the activated PDP context and the secondary PDP context
9	→		ACTIVATE PDP CONTEXT REQUEST	UE replies with a Request PDP context activation
10	←		ACTIVATE PDP CONTEXT ACCEPT	SS accepts the PDP context activation

Specific message contents

None.

11.1.3.3.5 Test requirements

When inconsistency of PDP context between the UE and network is detected by the UE, then local synchronisation procedure shall be initiated in the UE. The PDP context and all (if any) linked contexts are implicitly deactivated and the new request shall be proceeded.

11.1.4 Secondary PDP context activation procedures

11.1.4.1 Successful Secondary PDP Context Activation Procedure Initiated by the UE

11.1.4.1.1 QoS Offered by Network is the QoS Requested

11.1.4.1.1.1 Definition

11.1.4.1.1.2 Conformance requirement

In order to request a secondary PDP context activation, the UE sends an ACTIVATE SECONDARY PDP CONTEXT REQUEST message to the network, enters the state PDP-ACTIVE-PENDING and starts timer T3380. The message contains the selected NSAPI, a QoS profile, a requested LLC SAPI and the linked TI.

If the QoS offered by the network is the same as the QoS requested by the UE, then upon receipt of the message ACTIVATE SECONDARY PDP CONTEXT ACCEPT, the UE shall stop timer T3380.

In GSM the UE shall initiate establishment of the logical link for the LLC SAPI indicated by the network, with the offered QoS and selected radio priority level, if no logical link has been already established for that SAPI.

Although not used in UMTS, LLC SAPI shall be included in the messages, in order to support handover between UMTS and GSM networks.

Reference

3G TS 24.008 sub-clauses 6.1.3.2 and 6.1.3.2.1.

11.1.4.1.1.3 Test purpose

To test the behaviour of the UE when SS responds to a Secondary PDP context activation request with the requested QoS.

11.1.4.1.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE and is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- Method of context activation

Test procedure

A PDP context activation is requested by the user and accepted by the SS. A secondary PDP context activation is requested by the user. On receipt of the ACTIVATE SECONDARY PDP CONTEXT REQUEST message an ACTIVATE SECONDARY PDP CONTEXT ACCEPT is returned by the SS with the same requested QoS. The SS then waits for T3380 seconds to ensure T3380 has been stopped and no more ACTIVATE SECONDARY PDP CONREXT REQUEST messages are sent by the UE. The SS then sends a MODIFY PDP CONTEXT REQUEST message to which the UE shall reply with a MODIFY PDP CONTEXT ACCEPT message to ensure the context has been set up.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	UE			Initiate a secondary PDP context activation
5	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request a Secondary PDP context activation
6	←		ACTIVATE SECONDARY PDP CONTEXT ACCEPT	Accept the Secondary PDP context activation
7	SS			Wait for T3380 seconds to ensure no further activate request messages come from the UE
8	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	SS sends a modify request to UE for the activated context
9	→		MODIFY PDP CONTEXT ACCEPT (UE TO NETWORK DIRECTION)	UE accepts the modification request from the network to show context is activated

Specific message contents

The Linked TI information element in ACTIVATE SECONDARY PDP CONTEXT REQUEST message specifies the TI for the PDP context already activated. The PDP address for the secondary PDP context can be derived from Linked TI by the SS.

11.1.4.1.1.5 Test requirements

To pass the test the UE shall:

- when the SS responds to a Secondary PDP context activation request initiated by the UE, with the requested QoS, the UE shall complete the Secondary PDP context activation procedure. To check if the Secondary PDP context activation was successful, SS shall request PDP context modification and UE shall accept it.

11.1.4.1.2 QoS Offered by Network is a lower QoS

11.1.4.1.2.1 QoS accepted by UE

11.1.4.1.2.1.1 Definition

11.1.4.1.2.1.2 Conformance requirement

In order to request a Secondary PDP context activation, the UE sends an ACTIVATE SECONDARY PDP CONTEXT REQUEST message to the network, enters the state PDP-ACTIVE-PENDING and starts timer T3380. If the QoS offered by the network is acceptable to UE, then upon receipt of the message ACTIVATE SECONDARY PDP CONTEXT ACCEPT the UE shall stop timer T3380.

In GSM the UE shall initiate establishment of the logical link for the LLC SAPI indicated by the network, with the offered QoS and selected radio priority level, if no logical link has been already established for that SAPI.

Reference

3G TS 24.008 sub-clauses 6.1.3.2 and 6.1.3.2.1.

11.1.4.1.2.1.3 Test purpose

To test the behaviour of the UE when the SS responds to a Secondary PDP context activation request with a lower QoS than that requested.

11.1.4.1.2.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of context activation

Test procedure

The requested QoS and Minimum QoS are set. A PDP context activation is requested by the user and accepted by the SS. A secondary context activation is requested by the user. On receipt of the ACTIVATE SECONDARY PDP CONTEXT REQUEST message an ACTIVATE SECONDARY PDP CONTEXT ACCEPT is returned by the SS with a QoS lower than the requested but higher than or equal to the minimum. The SS then sends a MODIFY PDP CONTEXT REQUEST message and the UE shall respond with a MODIFY PDP CONTEXT ACCEPT message to confirm the context is active.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	UE			Initiate a secondary PDP context activation
5	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request a Secondary PDP context activation
6	←		ACTIVATE SECONDARY PDP CONTEXT ACCEPT	Accept a Secondary PDP context activation
7	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Send a modify request to UE for the activated context
8	→		MODIFY PDP CONTEXT ACCEPT (UE TO NETWORK DIRECTION)	Accept the modification request from network to show context is activated

Specific message contents

None.

11.1.4.1.2.1.5 Test requirements

To pass the test when the SS responds to a Secondary PDP context activation request, initiated by the UE, with the QoS lower than the requested but higher than or equal to the minimum, the UE shall complete the Secondary PDP context activation procedure. To see if the PDP context activation was successful, SS shall request PDP context modification and UE shall accept it.

11.1.4.1.2.2 QoS rejected by UE

11.1.4.1.2.2.1 Definition

11.1.4.1.2.2.2 Conformance requirement

In order to request a Secondary PDP context activation, the UE sends an ACTIVATE SECONDARY PDP CONTEXT REQUEST message to the network.

Upon receipt of the message ACTIVATE SECONDARY PDP CONTEXT ACCEPT offering a QoS which is not acceptable to the UE, the UE shall initiate the PDP context deactivation procedure.

Reference

3G TS 24.008 sub-clauses 6.1.3.2 and 6.1.3.2.1.

11.1.4.1.2.2.3 Test purpose

To test the behaviour of the UE when the QoS, offered by SS in response to a Secondary PDP context activation request is not acceptable to the UE.

11.1.4.1.2.2.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS

  Method of context activation

Test procedure

The requested QoS and Minimum QoS are set. A PDP context activation is requested by the user and accepted by the SS. A secondary PDP context activation is requested by the user. On receipt of the ACTIVATE SECONDARY PDP CONTEXT REQUEST message an ACTIVATE SECONDARY PDP CONTEXT ACCEPT message is returned by the SS with the QoS lower than the minimum. The UE shall then send a DEACTIVATE PDP CONTEXT REQUEST message for the secondary PDP context. A DEACTIVATE PDP CONTEXT ACCEPT message will be sent in return by the SS.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	UE			Initiate a secondary PDP context activation
5	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request a Secondary PDP context activation
6	←		ACTIVATE SECONDARY PDP CONTEXT ACCEPT	Accept the Secondary PDP context activation with QoS lower than Minimum QoS
7	→		DEACTIVATE PDP CONTEXT REQUEST	Request deactivation of the secondary PDP context
8	←		DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation

Specific message contents

Tear down indicator IE shall not be included in the DEACTIVATE PDP CONTEXT REQUEST message because only the PDP context for this specific TI shall be deactivated.

11.1.4.1.2.2.5 Test requirements

The UE shall reject the QoS offered by the SS in response to a Secondary PDP context activation request, if the QoS is not acceptable to the UE.

11.1.4.2 Unsuccessful Secondary PDP Context Activation Procedure Initiated by the UE

11.1.4.2.1 Definition

11.1.4.2.2 Conformance requirement

Upon receipt of an ACTIVATE SECONDARY PDP CONTEXT REQUEST message, the network may reject the UE initiated PDP context activation by sending an ACTIVATE SECONDARY PDP CONTEXT REJECT message to the UE. Upon receipt of an ACTIVATE SECONDARY PDP CONTEXT REJECT message, the UE shall stop timer T3380 and enter the state PDP-INACTIVE.

Reference

3G TS 24.008 sub-clauses 6.1.3.2 and 6.1.3.2.2.

11.1.4.2.3 Test purpose

To test the behaviour of the UE when network rejects the UE initiated Secondary PDP context activation.

11.1.4.2.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE and is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- Method of context activation

Test procedure

A PDP context activation is requested by the user and accepted by the SS. A secondary context activation is requested by the user. On receipt of the ACTIVATE SECONDARY PDP CONTEXT REQUEST message from the UE, an ACTIVATE SECONDARY PDP CONTEXT REJECT with cause #43 'unknown PDP context' is returned by the SS. SS shall wait for T3380 seconds to ensure that the UE sends no more ACTIVATE SECONDARY PDP CONTEXT REQUEST messages.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	UE			Initiate a secondary PDP context activation
5	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request a Secondary PDP context activation
6	←		ACTIVATE SECONDARY PDP CONTEXT REJECT	SS rejects the Secondary PDP context activation with cause '#43: unknown PDP context'
7	SS			Wait for T3380 seconds to ensure no further activate request messages come from the UE

Specific message contents

Step 5. The *Linked TI* information element specifies the TI which is different from the TI in the PDP context activated in steps 1-3.

11.1.4.2.5 Test requirements

After a secondary PDP context activation being rejected by the network, the UE shall not re-send the ACTIVATE SECONDARY PDP CONTEXT REQUEST message.

11.1.4.3 Abnormal cases

11.1.4.3.1 T3380 Expiry

11.1.4.3.1.1 Definition

11.1.4.3.1.2 Conformance requirement

1) On the first expiry of the timer T3380, the UE shall re-send the ACTIVATE SECONDARY PDP CONTEXT REQUEST
2) On the second expiry of the timer T3380, the UE shall re-send the ACTIVATE SECONDARY PDP CONTEXT REQUEST

3) On the third expiry of the timer T3380, the UE shall re-send the ACTIVATE SECONDARY PDP CONTEXT REQUEST

4) On the fourth expiry of the timer T3380, the UE shall re-send the ACTIVATE SECONDARY PDP CONTEXT REQUEST

5) On the fifth expiry of the timer T3380, the UE shall release all resources possibly allocated for this invocation and shall abort the procedure; no automatic secondary PDP context activation re-attempt shall be performed.

Reference

3G TS 24.008 sub-clause 6.1.3.2.3 a).

11.1.4.3.1.3 Test purpose

To test the behaviour of the UE when the SS does not reply to ACTIVATE SECONDARY PDP CONTEXT REQUEST message.

11.1.4.3.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- Method of activating a context

Test procedure

A PDP context is activated by the user and accepted by the SS. A secondary PDP context activation is requested by the user. The UE shall send ACTIVATE SECONDARY PDP CONTEXT REQUEST message five times with T3380 seconds between each message. After this no further ACTIVATE SECONDARY PDP CONTEXT REQUEST messages shall be sent by the UE.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	UE			Initiate a secondary PDP context activation
5	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request a Secondary PDP context activation
6		SS		T3380 seconds
7	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request the Secondary PDP context activation
8		SS		T3380 seconds
9	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request the Secondary PDP context activation
10		SS		T3380 seconds
11	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request the Secondary PDP context activation
12		SS		T3380 seconds
13	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request the Secondary PDP context activation
14		SS		Wait for T3380 seconds to ensure no further ACTIVATE SECONDARY PDP CONTEXT REQUEST messages are sent by the UE

Specific message contents

None.

11.1.4.3.1.5 Test requirements

UE shall re-send the ACTIVATE SECONDARY PDP CONTEXT REQUEST to SS five times in order to initiate a Secondary PDP context, with expiry of timer T3380 between messages. After fifth try, UE shall send no more ACTIVATE SECONDARY PDP CONTEXT REQUEST messages to SS.

11.2 PDP context modification procedure

11.2.1 Network initiated PDP context modification

11.2.1.1 Definition

This test can only be performed if minimum QoS can be set by the user.

11.2.1.2 Conformance requirement

1) Upon receipt of a MODIFY PDP CONTEXT REQUEST message

- If the UE can accept the modification requested, the UE shall reply with the MODIFY PDP CONTEXT ACCEPT message.
- If the UE is unable to accept the modification requested, the UE shall initiate the PDP context deactivation procedure for the NSAPI that has been indicated in the message MODIFY PDP CONTEXT REQUEST - the reject cause IE value of the DEACTIVATE PDP CONTEXT REQUEST message shall indicate “QoS not accepted”.

2) The UE shall either accept the modification request or deactivate the PDP context, it shall not ignore the modification request.

Reference

3G TS 24.008 sub-clauses 6.1.3.3 and 6.1.3.3.1.

11.2.1.3 Test purpose

To test the behaviour of the UE upon receipt of a MODIFY PDP CONTEXT REQUEST message from SS.

11.2.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of activating a PDP context

Test procedure

A PDP context is activated by the user and accepted by the SS. A MODIFY PDP CONTEXT REQUEST message is then sent to the UE with a QoS that is acceptable to the UE (higher than or equal to the minimum QoS set in the UE). The UE shall send a MODIFY PDP CONTEXT ACCEPT message in return. A MODIFY PDP CONTEXT REQUEST message is then sent to the UE with a QoS that is not acceptable to the UE (lower than the minimum QoS set in the UE). The UE shall send a DEACTIVATE PDP CONTEXT REQUEST message in return.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate the PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Request the modification of a PDP context, with QoS higher than or equal to the minimum QoS set in the UE
5	→		MODIFY PDP CONTEXT ACCEPT (UE TO NETWORK DIRECTION)	Accept the PDP context modification
6	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Request the modification of a PDP context, QoS lower than the minimum QoS set in the UE
7	→		DEACTIVATE PDP CONTEXT REQUEST	Initiate the PDP context deactivation. Cause set to 'QoS not acceptable'
8	←		DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation

Specific message contents

None.

11.2.1.5 Test requirements

The UE shall:

- Accept PDP context modification initiated by the SS if QoS is higher than or equal to the minimum QoS set in the UE
- Reject PDP context modification initiated by the SS if QoS is lower than the minimum QoS set in the UE.

11.2.2 UE initiated PDP context modification

11.2.2.1 UE initiated PDP Context Modification accepted by network

11.2.2.1.1 Definition

This test can only be performed if minimum QoS can be set by the user.

11.2.2.1.2 Conformance requirement

In order to initiate the procedure, the UE sends the MODIFY PDP CONTEXT REQUEST message to the network, enters the state PDP-MODIFY-PENDING and starts timer T3381. The message may contain the requested new QoS and/or the TFT and the requested LLC SAPI (used in GSM).

Upon receipt of the MODIFY PDP CONTEXT REQUEST message, the network may reply with the MODIFY PDP CONTEXT ACCEPT message in order to accept the context modification. The reply message may contain the negotiated QoS and the radio priority level based on the new QoS profile and the negotiated LLC SAPI, that shall be used in GSM by the logical link.

Upon receipt of the MODIFY PDP CONTEXT ACCEPT message, the UE shall stop the timer T3381. If the offered QoS parameters received from the network differs from the QoS requested by the UE, the UE shall either accept the negotiated QoS or initiate the PDP context deactivation procedure.

Reference

3G TS 24.008 sub-clauses 6.1.3.3 and 6.1.3.3.2.

11.2.2.1.3 Test purpose

To test the behaviour of the UE upon receipt of a MODIFY PDP CONTEXT ACCEPT message from the network with

Requested QoS,

QoS higher than or equal to the minimum QoS set in the UE

QoS lower than the minimum QoS set in the UE.

11.2.2.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of activating a PDP context

Test procedure

A PDP context is activated by the user and accepted by the SS. The UE initiates a PDP context modification by sending a MODIFY PDP CONTEXT REQUEST message with new QoS. The SS accepts the context modification and replies with the MODIFY PDP CONTEXT ACCEPT message with the QoS requested.

Than the UE initiates new PDP context modification with higher QoS. The SS is unable to provide requested QoS, so it repies by sending MODIFY PDP CONTEXT ACCEPT message with new QoS that is lower than requested but still acceptable to the UE (higher than or equal to the minimum QoS set in the UE).

Than the UE initiates new PDP context modification with new QoS. The SS is unable to provide requested QoS, so it replies by sending MODIFY PDP CONTEXT ACCEPT message with QoS that is not acceptable to the UE (lower than the minimum QoS set in the UE). The UE shall send a DEACTIVATE PDP CONTEXT REQUEST message in return and SS shall respond with a DEACTIVATE PDP CONTEXT ACCEPT message.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request the modification of a PDP context, with new QoS
5	←		MODIFY PDP CONTEXT ACCEPT (NETWORK TO UE DIRECTION)	Accept the PDP context modification with QoS requested
6	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request the modification of a PDP context, with new QoS
7	←		MODIFY PDP CONTEXT ACCEPT (NETWORK TO UE DIRECTION)	Accept the PDP context modification with QoS higher than the minimum QoS set in UE
8	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request the modification of a PDP context, with new QoS
9	←		MODIFY PDP CONTEXT ACCEPT (NETWORK TO UE DIRECTION)	Accept the PDP context modification with QoS lower than the minimum QoS set in UE
10	→		DEACTIVATE PDP CONTEXT REQUEST	Initiate the PDP context deactivation. Cause set to 'QoS not acceptable'
11	←		DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation

Specific message contents

None.

11.2.2.1.5 Test requirements

When requesting the PDP context modification, the UE shall:

Modify the PDP context if SS replied with the requested QoS

Modify the PDP context if SS replied with the acceptable QoS

Deactivate the PDP context if SS replied with the QoS not acceptable to UE,

11.2.2.2 UE initiated PDP Context Modification not accepted by the network

11.2.2.2.1 Definition

This test can only be performed if minimum QoS can be set by the user.

Conformance requirement

In order to initiate the procedure, the MS sends the MODIFY PDP CONTEXT REQUEST message to the network, enters the state PDP-MODIFY-PENDING and starts timer T3381. The message may contain the requested new QoS and/or the TFT and the requested LLC SAPI (used in GSM).

Upon receipt of a MODIFY PDP CONTEXT REQUEST message, the network may reject the MS initiated PDP context modification request by sending a MODIFY PDP CONTEXT REJECT message to the MS. The message shall contain a cause code that typically indicates one of the following:

26: insufficient resources;

32: Service option not supported;

41: semantic error in the TFT operation;

42: syntactical error in the TFT operation;

44: semantic errors in packet filter(s);

45: syntactical errors in packet filter(s);

95 - 111: protocol errors.

Upon receipt of a MODIFY PDP CONTEXT REJECT message, the MS shall stop timer T3381 and enter the state PDP-ACTIVE.

Reference

3G TS 24.008 sub-clauses 6.1.3.3, 6.1.3.3.2 and 6.1.3.3.3.

11.2.2.2.3 Test purpose

To test the behaviour of the UE upon receipt of a MODIFY PDP CONTEXT REJECT message from the network.

11.2.2.2.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of activating a PDP context

Test procedure

A PDP context is activated by the user and accepted by the SS. The UE initiates a PDP context modification by sending a MODIFY PDP CONTEXT REQUEST message. The SS rejects the context modification and replies with the MODIFY PDP CONTEXT REJECT with cause set to (FFS).

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request the modification of a PDP context
5	←		MODIFY PDP CONTEXT REJECT	SS rejects PDP context modification

Specific message contents

Step 4. FFS.

Step 5. FFS.

11.2.2.2.5 Test requirements

FFS.

11.2.3 Abnormal cases

11.2.3.1 T3381 Expiry

11.2.3.1.1 Definition

11.2.3.1.2 Conformance requirement

On the first expiry of timer T3381, the UE shall re-send the MODIFY PDP CONTEXT REQUEST message, reset and restart timer T3381. This retransmission is repeated four times, i.e. on the fifth expiry of timer T3381, the MS may UE continue to use the previously negotiated QoS or it may initiate the PDP context deactivation procedure.

Reference

3G TS 24.008 sub-clause 6.1.3.3.4 a) case: In the UE.

Test purpose

To test the behaviour of the UE when network does not reply to MODIFY PDP CONTEXT REQUEST message.

11.2.3.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- Method of activating a PDP context

Test procedure

A PDP context activation is requested by the user and accepted by the SS. The UE shall send MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION) message five times with T3381 seconds between each message. After this no further MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION) messages shall be sent by the UE.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation
4	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request modification of the PDP context, with new QoS
5		SS		T3381 seconds
6	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request modification of the PDP context, with new QoS
7		SS		T3381 seconds
8	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request modification of the PDP context, with new QoS
9		SS		T3381 seconds
10	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request modification of the PDP context, with new QoS
11		SS		T3381 seconds
12	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request modification of the PDP context, with new QoS
13		SS		Wait for T3381 seconds to ensure no further MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION) messages are sent by the UE

Specific message contents

None.

11.1.4.3.1.5 Test requirements

UE shall re-send the MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION) to SS five times in order to initiate the PDP context modification, with expiry of timer T3381 between messages. After fifth try, UE shall send no more MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION) messages to SS.

11.2.3.2 Collision of UE and network initiated PDP context modification procedures

11.2.3.2.1 Definition

11.2.3.2.2 Conformance requirement

A collision of a UE and network initiated PDP context modification procedures is identified by the UE if a MODIFY PDP CONTEXT REQUEST message is received from the network after the UE has sent a MODIFY PDP CONTEXT REQUEST message itself, and both messages contain the same TI and the UE has not yet received a MODIFY PDP CONTEXT ACCEPT message from the network.

In the case of such a collision, the network initiated PDP context modification shall take precedence over the UE initiated PDP context modification. The UE shall terminate internally the UE initiated PDP context modification procedure, enter the state PDP-ACTIVE and proceed with the network initiated PDP context modification procedure by sending a MODIFY PDP CONTEXT ACCEPT message.

Reference

3G TS 24.008 sub-clause 6.1.3.3.4 b).

11.2.3.2.3 Test purpose

To test behaviour of the UE when it identifies collision of the UE and network initiated PDP context modification with the same TI.

11.2.3.2.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- Method of activating a PDP context

Test procedure

A PDP context is activated by the user and accepted by the SS. The UE initiates a PDP context modification by sending a MODIFY PDP CONTEXT REQUEST message. Then the SS initiates the PDP context modification by sending MODIFY PDP CONTEXT REQUEST message with the same TI. The UE shall reply to the SS initiated PDP context modification procedure by sending MODIFY PDP CONTEXT ACCEPT message with the same TI.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation
4	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request modification of the PDP context
5	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Request modification of the PDP context with the same TI
6	UE			UE identifies collision, terminates internally the UE initiated PDP context modification procedure
7	→		MODIFY PDP CONTEXT ACCEPT (UE TO NETWORK DIRECTION)	Accept SS initiated PDP context modification

Specific message contents

Steps 4 and 5 - The TI IE value is the same, with TI flag set to “0” identifying both, the UE and the network, as transaction initiator. TI flag indicates to the UE that it is attempting to allocate the same TI value simultaneously with the SS.

Step 7 - The TI flag set to “1” indicating that the message belongs to the transaction initiated by the other side, in this case SS.

Steps 4, 5 and 7 - Bit7, Bit6 and Bit5 of the TI IE are the same.

Editor’s Note: The transaction identifier and its use are defined in TS 24.007.

11.2.3.2.5 Test requirements

In step 6, the UE shall terminate internally the UE initiated PDP context modification procedure and proceed with SS initiated PDP context modification.

11.3 PDP context deactivation procedure

11.3.1 PDP context deactivation initiated by the UE

11.3.1.1 Definition

11.3.1.2 Conformance requirement

The DEACTIVATE PDP CONTEXT REQUEST message sent by UE contains the transaction identifier in use for the PDP context to be deactivated and a cause code that typically indicates one of the following causes:

- #25: LLC or SNDCP failure(GSM only);
- #26: insufficient resources;
- #36: regular PDP context deactivation; or
- #37: QoS not accepted.

Upon receipt of the DEACTIVATE PDP CONTEXT ACCEPT message, the UE shall stop timer T3390.

- Whenever any session management message except REQUEST PDP CONTEXT ACTIVATION or SM-STATUS is received by the UE specifying a transaction identifier which is not recognised as relating to an active context or to a context that is in the process of activation or deactivation or has been [recently] deactivated, the UE shall send a SM-STATUS message with cause #81 “invalid transaction identifier value” using the received transaction identifier value including the extension octet and remain in the PDP-INACTIVE state.

Reference

3G TS 24.008 sub-clauses 6.1.3.4, 6.1.3.4.1 and 8.3.2 (b).

11.3.1.3 Test purpose

To test the behaviour of the UE upon receipt of a DEACTIVATE PDP CONTEXT ACCEPT message from the SS in PDP context deactivation procedure initiated by the UE.

11.3.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- Method of activating a PDP context
- Method of deactivating the PDP context

Test procedure

A PDP context is activated by the user and accepted by the SS. The context deactivation is then requested by the user. The UE shall send a DEACTIVATE PDP CONTEXT REQUEST message to the SS. The SS shall then reply with a DEACTIVATE PDP CONTEXT ACCEPT message. The SS shall then wait for T3390 seconds to ensure T3390 has been stopped and that no further messages are sent from the UE. The SS shall then send a MODIFY PDP CONTEXT REQUEST for the deactivated context and the UE shall reply with an SM STATUS message with cause #81 ’transaction identifier not known’.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	UE			Initiate a context deactivation
5	→		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
6	←		DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation
7	SS			Wait for T3390 seconds to ensure no further deactivate request messages are sent
8	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Send a modify request to UE for the deactivated context.
9	→		SM STATUS	Cause set to #81

Specific message contents

None.

11.3.1.5 Test requirements

In PDP context deactivation procedure initiated by the UE, upon receipt of a DEACTIVATE PDP CONTEXT ACCEPT message from the SS, the UE shall deactivate PDP context associated with given PDP address and TI.

Then, upon modification procedure initiated by the network, for deactivated PDP context, UE shall reply with SM STATUS message with cause #81.

11.3.2 PDP context deactivation initiated by the network

11.3.2.1 Definition

11.3.2.2 Conformance requirement

The DEACTIVATE PDP CONTEXT REQUEST message sent by SS contains the transaction identifier in use for the PDP context to be deactivated and a cause code that typically indicates one of the following causes:

25: LLC or SNDCP failure (GSM only);
36: regular PDP context deactivation;
38: network failure; or
39: reactivation requested.

The UE shall, upon receipt of the DEACTIVATE PDP CONTEXT REQUEST message from network, reply with a DEACTIVATE PDP CONTEXT ACCEPT message.

- Whenever any session management message except REQUEST PDP CONTEXT ACTIVATION or SM-STATUS is received by the UE specifying a transaction identifier which is not recognised as relating to an active context or to a context that is in the process of activation or deactivation or has been [recently] deactivated, the UE shall send a SM-STATUS message with cause #81 “invalid transaction identifier value” using the received transaction identifier value and remain in the PDP-INACTIVE state.

Reference

3G TS 24.008 sub-clauses 6.1.3.4, 6.1.3.4.2 and 8.3.2 (b).

11.3.2.3 Test purpose

To test the behaviour of the UE upon receipt of a DEACTIVATE PDP CONTEXT REQUEST message from the SS.

11.3.2.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- Method of activating a PDP context

Test procedure

A PDP context is activated by the user and accepted by the SS. A DEACTIVATE PDP CONTEXT REQUEST message is then sent by the SS. The UE shall reply with a DEACTIVATE PDP CONTEXT ACCEPT message. The SS shall then send a MODIFY PDP CONTEXT REQUEST for the deactivated context and the UE shall reply with an SM STATUS message with cause #81 'transaction identifier not known'.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	←		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
5	→		DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation.
6	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Send a modify request to UE for the deactivated context.
7	→		SM STATUS	Cause set to #81

Specific message contents

None.

11.3.2.5 Test requirements

Upon receipt of a request for deactivation of a PDP context from the SS, the UE shall deactivate PDP context. Then, upon modification procedure initiated by the network, for deactivated PDP context, UE shall reply with SM STATUS message with cause #81.

11.3.3 Abnormal cases

11.3.3.1 T3390 Expiry

11.3.3.1.1 Definition

11.3.3.1.2 Conformance requirement

On the first expiry of timer T3390, the UE shall resend the message DEACTIVATE PDP CONTEXT REQUEST

On the second expiry of timer T3390, the UE shall resend the message DEACTIVATE PDP CONTEXT REQUEST

On the third expiry of timer T3390, the UE shall resend the message DEACTIVATE PDP CONTEXT REQUEST

On the fourth expiry of timer T3390, the UE shall resend the message DEACTIVATE PDP CONTEXT REQUEST

On the fifth expiry of timer T3390, the UE shall release all resources allocated and shall erase the PDP context related data.

Reference

3G TS 24.008 sub-clause 6.1.3.4.3 a) case In the UE.

11.3.3.1.3 Test purpose

To test the behaviour of the UE when the SS does not reply to a DEACTIVATE PDP CONTEXT REQUEST message from the UE.

11.3.3.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- Method of activating a PDP context
- Method of deactivating a PDP context

Test procedure

A PDP context is activated by the user and accepted by the SS. A context deactivation is then requested by the user. The UE shall send a DEACTIVATE PDP CONTEXT REQUEST message five times with T3390 seconds between each message. T3390 seconds after the fifth message the SS shall send a MODIFY PDP CONTEXT REQUEST message for the deactivated context and the UE shall reply with SM STATUS with cause set to #81 'Transaction identifier not known'.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	UE			Initiate a context deactivation
5	→		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
6	SS			T3390 seconds
7	→		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
8	SS			T3390 seconds
9	→		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
10	SS			T3390 seconds
11	→		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
12	SS			T3390 seconds
13	→		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
14	SS			Wait T3390 seconds
15	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Try to modify the deactivated context.
16	→		SM STATUS	Cause set to #81

Specific message contents

None.

11.3.3.1.5 Test requirements

If SS does not reply to UE initiated PDP context deactivation procedure, the UE shall retransmit a DEACTIVATE PDP CONTEXT REQUEST five times, with T3390 timer expiry between the successive messages, before releasing resources allocated to the PDP context and deleting PDP context related data.

11.3.3.2 Collision of UE and network initiated PDP context deactivation requests

11.3.3.2.1 Definition

11.3.3.2.2 Conformance requirement

If the UE and the network initiated PDP context deactivation requests collide, the UE and the network shall each reply with the message DEACTIVATE PDP CONTEXT ACCEPT and shall stop timer T3390 and T3395, respectively.

Reference

3G TS 24.008 sub-clause 6.1.3.4.3 b).

11.3.3.2.3 Test purpose

To test the behaviour of the UE when there is a collision between an UE initiated and network initiated context deactivation.

11.3.3.2.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN

Related ICS/IXIT statements

- PS Supported yes/no
- Method of activating a PDP context
- Method of deactivating a PDP context

Test procedure

A PDP context is activated by the user and accepted by the SS. A context deactivation is then requested by the user. Upon receipt of the DEACTIVATE PDP CONTEXT REQUEST message the SS sends a DEACTIVATE PDP CONTEXT REQUEST message. The UE shall reply with only one DEACTIVATE PDP CONTEXT ACCEPT message. Upon receipt of this message the SS sends a DEACTIVATE PDP CONTEXT ACCEPT message.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	UE			Initiate a context deactivation
5	→		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
6	←		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
7	→		DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation
8	←		DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation

Specific message contents

None.

11.3.3.2.5 Test requirements

When UE and SS initiated PDP context deactivation requests collide, the UE shall reply with DEACTIVATE PDP CONTEXT ACCEPT to the SS.

11.4 Unknown or Unforeseen Transaction Identifier/Non-semantical Mandatory Information Element Errors

11.4.1 Error cases

11.4.1.1 Definition

11.4.1.2 Conformance requirement

The mobile station shall ignore a session management message with TI EXT bit = 0. Otherwise, the following procedures shall apply:

- Whenever any session management message, except REQUEST PDP CONTEXT ACTIVATION or SM-STATUS, is received by the UE specifying a transaction identifier which is not recognized as relating to an active context or to a context that is in the process of activation or deactivation or has been [recently] deactivated, the UE shall send a SM-STATUS message with cause #81 “invalid transaction identifier value” using the received transaction identifier value including the extension octet and remain in the PDP-INACTIVE state.

- When a REQUEST PDP CONTEXT ACTIVATION message is received with a transaction identifier flag set to “1”, this message shall be ignored.

When on receipt of a message,

- an “imperative message part” error; or

- a “missing mandatory IE “ error

is diagnosed or when a message containing:

- a syntactically incorrect mandatory IE; or

- an IE unknown in the message, but encoded as “comprehension required” or

- an out of sequence IE encoded as “comprehension required”

is received, the UE shall proceed as follows:

If the message was a SM message the SM-STATUS message with cause # 96 “invalid mandatory information” shall be returned.

If a mobile station receives a GMM message or SM message with message type not defined for the PD or not implemented by the receiver, it shall return a status message (GMM STATUS or SM STATUS depending on the protocol descriminator) with cause #97 ‘message type non-existent or not implemented’.

If the mobile station receives a message not compatible with the protocol state, the mobile station shall ignore the message except for the fact that when the message was a SM message the SM-STATUS message with cause #98 ‘Message type not compatible with protocol state’ shall be returned.

Other syntactic errors

This section applies to the analysis of the value part of an information element. It defines the following terminology:

- An IE is defined to be syntactically incorrect in a message if it contains at least one value defined as ‘reserved’, or if its value part violates syntactic rules given in the specification of the value part. However it is not a syntactical error that a type 4 standard IE specifies in its length indicator a greater length than possible according to the value part specification: extra bits are ignored.

Reference

3G TS 24.008 clauses 8.3.2 and 8.5 and 3G TS 24.007 clause 11.4.2.

11.4.1.3 Test purpose

To test the behaviour of the UE when messages with unknown or unforeseen transaction identifiers or non-semantical mandatory information element errors occur.

11.4.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

-

Test procedure

A PDP context activation is requested by the SS with the transaction identifier set to ’1’. The UE shall not respond to this request.

A PDP context is then activated from the UE. Two invalid accept messages are then sent by the SS with T3380 seconds between them. After a further T3380 seconds a valid accept message is sent by the SS.

A deactivate message is then sent from the SS with the transaction identifier set to ’111’. The UE shall reply with a SM STATUS message with transaction identifier set to ’111’.

A deactivate message is then sent from the SS with a different transaction identifier to the one used in the activate request message sent by the UE. The UE shall reply with a SM STATUS message with cause #81 ’invalid transaction identifier value’.

Three invalid modification messages are then sent to the UE in turn. The UE shall respond each time with a SM-STATUS message with cause # 96 ”invalid mandatory information”.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		REQUEST PDP CONTEXT ACTIVATION	Request the activation of a PDP context with the transaction identifier flag set to “1”
2		SS		Wait 30 seconds to ensure UE does not request context activation
3		UE		Initiate a context request
4	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the UE
5	←		ACTIVATE PDP CONTEXT ACCEPT	Unknown IE encoded as ‘comprehension required’
6	→		SM STATUS	Cause set to #96
7		SS		Wait T3380 seconds
8	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the UE (auto-generated)
9	←		ACTIVATE PDP CONTEXT ACCEPT	Out of sequence IE encoded as ‘comprehension required’
10	→		SM STATUS	Cause set to #96
11		SS		Wait T3380 seconds
12	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the UE (auto-generated)
13	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
16	←		DEACTIVATE PDP CONTEXT REQUEST	Try to deactivate the context with a different transaction identifier to that used to activate the context
17	→		SM STATUS	Cause set to # 81
18	←		MODIFY PDP CONTEXT REQUEST(NETWORK TO UE DIRECTION)	Request the modification of the PDP context
19	→		SM STATUS	Cause set to # 96
20	←		MODIFY PDP CONTEXT REQUEST(NETWORK TO UE DIRECTION)	Request the modification of the PDP context
21	→		SM STATUS	Cause set to # 96
22	←		MODIFY PDP CONTEXT REQUEST(NETWORK TO UE DIRECTION)	Request the modification of the PDP context
23	→		SM STATUS	Cause set to # 96

11.4.1.5 Test requirements

TBD.

12 Elementary procedure for Packet Switched Mobility Management

12.1 Applicability, default conditions and default messages

All test cases for PS mobility management apply for all PS mobiles unless otherwise stated in a specific test. Within each test case, the ICS statement indicates whether the test shall be performed for mobiles that can only operate in mode - class A, only in mode - class C , or in both mode - class A and C. For some procedures, the mobile class is of no importance.

Note that only the layer 3 messages are described in the document. The mapping of the layer 3 messages to lower layers and the use of logical channels is not described in this document.

The terms 'PS/CS mode of operation' and 'PS mode of operation' are not used in this specification with some exceptions. Instead the terms 'UE operation mode A' and 'UE operation mode C' are used.

The default conditions and default message contents not specified in this clause must be set as in "PS default conditions"

Below is a list of the RAI values and the corresponding RAC, LAC and MCC used in the test cases:

RAI-1: MCC1/MNC1/LAC1/RAC1 (Used if only one cell)

RAI-2: MCC2/MNC1/LAC1/RAC1

RAI-3: MCC1/MNC1/LAC2/RAC1

RAI-4: MCC1/MNC1/LAC1/RAC2

RAI-5: MCC1/MNC1/LAC1/RAC3

If the User Equipment initial condition specifies that the mobile has a valid IMSI but the initial condition does not mention P-TMSI, than that shall be interpreted as that the mobile has no valid P-TMSI.

The tests are based on 3GPP TS 24.008.

12.2 PS attach procedure

This procedure is used to indicate for the network that the IMSI is available for traffic by establishment of a GMM context.

12.2.1 Normal PS attach

The normal PS attach procedure is a GMM procedure used by PS UEs of UE operation mode A or C to IMSI attach for PS services only.

12.2.1.1 PS attach / accepted

12.2.1.1.1 Definition

12.2.1.1.2 Conformance requirement

1) If the network accepts the PS attach procedure (signalled by an IMSI) and allocates a P-TMSI, the UE shall acknowledge the P-TMSI and continue communication with the P-TMSI.

2) If the network accepts the PS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.

3) If the network accepts the PS attach procedure (signalled by a P-TMSI) from the UE without reallocation of the old P-TMSI, the UE shall continue communication with the old P-TMSI.

Reference

3GPP TS 24.008 clause 4.7.3.1

12.2.1.1.3 Test purpose

To test the behaviour of the UE if the network accepts the PS attach procedure.

The following cases are identified:

1) P-TMSI / P-TMSI signature is allocated

2) P-TMSI / P-TMSI signature is reallocated

3) Old P-TMSI / P-TMSI signature is not changed

12.2.1.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

1) The UE sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. The UE acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI.

2) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS reallocates a new P-TMSI and returns ATTACH ACCEPT message with the new P-TMSI. The UE acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. The UE will not answer signalling addressed to the old P-TMSI.

3) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS accepts the P-TMSI and returns ATTACH ACCEPT message without any P-TMSI. Further communication UE - SS is performed by the old P-TMSI.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 26.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
6a	->		RRC CONNECTION REQUEST	
6b	<-		RRC CONNECTION SETUP	
6c	->		RRC CONNECTION SETUP COMPLETE	
7	->		SERVICE REQUEST	Service type = "paging response"
7a	<-		RRC CONNECTION RELEASE	
7b	->		RRC CONNECTION RELEASE COMPLETE	
8	UE			The UE is switched off or power is removed (see ICS).
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
10	UE			The UE is powered up or switched on and initiates an attach (see ICS).
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
13	->		ATTACH COMPLETE	
14	<-		GMM INFORMATION	Message sent with P-TMSI-1
14b	->		GMM STATUS	Message sent in case the UE does not support reception of GMM information message Cause #97
15	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
16	UE			No response from the UE to the request. This is checked for 10 seconds.
17	UE			The UE is switched off or power is removed (see ICS).
18	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
19	UE			The UE is powered up or switched on and initiates an attach (see ICS).
20	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
21	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
22	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. PAGING TYPE 1 (used for NW-mode II).
22a	->		RRC CONNECTION REQUEST	

22b	<-	RRC CONNECTION SETUP	
22c	->	RRC CONNECTION SETUP COMPLETE	
23	->	SERVICE REQUEST	Service type = “paging response”
23a	<-	RRC CONNECTION RELEASE	
23b	->	RRC CONNECTION RELEASE COMPLETE	
24	UE		The UE is switched off or power is removed (see ICS).
25	->	DETACH REQUEST	Message not sent if power is removed. Detach type = ‘power switched off, PS detach’
26	UE		The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 25.

Specific message contents

None.

12.2.1.1.5 Test requirements

UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on
- perform the following actions depending on the Mobile identity in the ATTACH REQUEST message and on the Mobile identity in the ATTACH ACCEPT message.

  Case 1) The Mobile identity in the ATTACH REQUEST is the IMSI and the Mobile identity in the ATTACH ACCEPT message is the P-TMSI.

  UE shall:

  - acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the P-TMSI.

  Case 2) The Mobile identity in the ATTACH REQUEST is the P-TMSI and the Mobile identity in the ATTACH ACCEPT message is the new P-TMSI.

  UE shall:

  - acknowledge the new P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the other P-TMSI.

  Case 3) The Mobile identity in the ATTACH REQUEST is the P-TMSI and the Mobile identity in the ATTACH ACCEPT message is the same P-TMSI.

  UE shall:

  - acknowledge the same P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the same P-TMSI.

12.2.1.2 PS attach / rejected / IMSI invalid / illegal UE

12.2.1.2.1 Definition

12.2.1.2.2 Conformance requirement

1) If the network rejects a PS attach procedure from the User Equipment with the cause 'Illegal UE', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.

2) If the network rejects a PS attach procedure from the User Equipment with the cause 'Illegal UE' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Reference

3GPP TS 24.008 clause 4.7.3.1

12.2.1.2.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'illegal UE'.

12.2.1.2.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A with MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2).

All three cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Illegal UE'. The SS checks that the UE does not perform PS attach in the same or another PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH REJECT	GMM cause = 'Illegal UE'.
				The following messages are sent and shall be received on cell B.
6	SS			The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
9	UE			The UE initiates an attach by MMI or by AT command.
10	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell C.
11	SS			The SS deactivates cell B and activates cell C.
12	UE			Cell C is preferred by the UE.
13	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
14	UE			The UE initiates an attach by MMI or by AT command.
15	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
16	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.
17	UE			The UE is powered up or switched on and initiates an attach (see ICS).
18	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
19	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
20	->		ATTACH COMPLETE	
21	UE			The UE is switched off or power is removed (see ICS).
22	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.2.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on

- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.
- set the PS update state to GU3 ROAMING NOT ALLOWD and delete stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.
- not send the ATTACH REQUEST message to SS, even if there is an instruction of attach request from MMI or from AT command.

12.2.1.3 PS attach / rejected / IMSI invalid / PS services not allowed

12.2.1.3.1 Definition

12.2.1.3.2 Conformance requirement

1) If the network rejects a PS attach procedure from the User Equipment with the cause 'PS services not allowed', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.
2) If the network rejects a PS attach procedure from the User Equipment with the cause 'PS services not allowed' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Reference

3GPP TS 24.008 clause 4.7.3.1

12.2.1.3.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'PS services not allowed' (no valid PS-subscription for the IMSI).

12.2.1.3.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (HPLMN, RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No

USIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a normal attach with the cause value 'PS services not allowed'. The SS checks that the UE does not perform PS attach in another PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 16.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		<-	ATTACH REJECT	GMM cause = 'PS services not allowed'
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
9	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
10	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
11		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
12		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
13		->	ATTACH COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
16				The SS deactivates cell B and activates cell A.
17	UE			The UE is set in UE operation mode A(see ICS) and the test is repeated from step 3 to step 15.

Specific message contents

None.

12.2.1.3.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.
- set the PS update state to GU3 ROAMING NOT ALLOWD.
- delete stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.

12.2.1.4 PS attach / rejected / PLMN not allowed

12.2.1.4.1 Definition

12.2.1.4.2 Conformance requirement

1) If the network rejects a PS attach procedure from the User Equipment with the cause 'PLMN not allowed' the User Equipment shall:

   1.1 not perform PS attach when switched on in the same routing area or location area.

   1.2 not perform PS attach when in the same PLMN and when that PLMN is not selected manually.

   1.3 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.4 store the PLMN in the 'forbidden PLMN' list.

2) If the network rejects a PS attach procedure from the User Equipment with the cause 'PLMN not allowed' the User Equipment shall perform PS attach when a new PLMN is entered.

3) If the network rejects a PS attach procedure from the User Equipment with the cause 'PLMN not allowed' and if after that the PLMN from which this rejection was received, is manually selected, the User Equipment shall perform a PS attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.1

12.2.1.4.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'PLMN not allowed'.

12.2.1.4.4 Method of test

12.2.1.4.4.1 Test procedure 1

Initial condition

System Simulator:

Four cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell C in MCC1/MNC1/LAC2/RAC1 (RAI-3) and cell D in MCC2/MNC1/LAC1/RAC1 (RAI-2).
All four cells are operating in network operation mode II (in case of UE operation mode A). The PLMN of the four cells should NOT be that of the UE Home PLMN.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'PLMN not allowed'. The SS checks that the UE does not perform PS attach if activated in the same routing area or location area and performs PS attach only when a new PLMN is entered.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		<-	ATTACH REJECT	GMM cause = 'PLMN not allowed'
6	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell B.
7	UE			The UE is switched off.
8		SS		The SS deactivates cell A and activates cell B.
9	UE			The UE is powered up or switched on.
10	UE			Cell B is preferred by the UE.
11	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell C.
12		SS		The SS deactivates cell B and activates cell C.
13	UE			Cell C is preferred by the UE.
14	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell D.
15		SS		The SS deactivates cell C and activates cell D.
16	UE			Cell D is preferred by the UE.
17	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
18	UE			The UE initiates an attach automatically, by MMI or by AT command.
19		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
20		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
21		->	ATTACH COMPLETE	
22	UE			The UE is switched off or power is removed (see ICS).
23		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

12.2.1.4.4.2 Test procedure 2

Initial condition

System Simurator:

One cell operating in network operation mode II. The PLMN of the cell should NOT be that of the Mobile Station Home PLMN.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1. UE is Idle Updated.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'PLMN not allowed'. The subscribers access rights is changed to allow PS attach. Then the PLMN from which this rejection was received is manually selected and the SS check that a PS attach is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C or A (see PICS).
2	UE			The UE is powered up or switched on and initiates an attach (see PICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH REJECT	GMM cause = 'PLMN not allowed'
5	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
6	UE			The current PLMN is selected manually.
7	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
8	UE			The UE initiates an attach automatically, by MMI or by AT command.
9	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
10	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
11	->		ATTACH COMPLETE	
12	UE			The UE is switched off or power is removed (see PICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.4.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered on or switched on.
- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.
- delete the stored RAI, PS CKSN, P-TMSI and P-TMSI signature.

- store the PLMN in the 'forbidden PLMN list'
- perform the following actions depending on the PLMN or the routing area or the location area

  Case 1) UE is in the same routing area or location area when the power is switched on,

  UE shall:

  - not perform PS attach.

  Case2) UE is in the same PLMN, and this PLMN is not selected manually

  UE shall:

  - not perform PS attach.

  Case3) UE is in a new PLMN.

  UE shall:

  - perform PS attach.

  Case4) UE is in the new PLMN, and this PLMN is selected manually

  UE shall

  - perform PS attach.

12.2.1.5 PS attach / rejected / roaming not allowed in this location area

12.2.1.5.1 Definition

12.2.1.5.2 Conformance requirement

1) If the network rejects a PS attach procedure from the User Equipment with the cause 'roaming not allowed in this location area' the User Equipment shall:

   1.1 not perform PS attach when in the same location area.

   1.2 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.3 store the LA in the 'forbidden location areas for roaming' list.

   1.4 perform PS attach when a new location area is entered.

   1.5 Periodically search for its HPLMN.

2) The User Equipment shall reset the list of 'Forbidden location areas for roaming' when switched off or when the USIM is removed.

3) The UE shall be capable of storing at least 6 entries in the list of 'Forbidden location areas for roaming'.

Reference

3GPP TS 24.008 clause 4.7.3.1

12.2.1.5.3 Test purpose

Test purpose 1

To test that on receipt of a rejection using the 'roaming not allowed in this location area' cause code, the UE ceases trying to attach on that location area. Successful PS attach procedure is possible in other location areas.

Test purpose 2

To test that if the UE is switched off or the USIM is removed the list of 'forbidden location areas for roaming' is cleared.

Test purpose 3

To test that at least 6 entries can be held in the list of 'forbidden location areas for roaming' (the requirement in 3GPP TS 24.008 is to store at least 10 entries. This is not fully tested by the third procedure).

Test purpose 4

To test that if a cell of the Home PLMN is available then the UE returns to it in preference to any other available cell.

12.2.1.5.4 Method of test

12.2.1.5.4.1 Test procedure 1

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1, cell B in

MCC1/MNC1/LAC2/RAC1 (RAI-3) and cell C in MCC1/MNC1/LAC1/RAC2 (RAI-4).

All three cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Roaming not allowed in this area'. A new attempt for a PS attach is not possible. Successful PS attach / detach procedures are performed in another location area. A new attempt for a PS attach is performed in the 1st location area. This attempt shall not succeed, as the LA is on the forbidden list.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 19.
2		SS		The SS activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
6	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell B.
7		SS		The SS Deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
10	UE			The UE initiates an attach automatically, by MMI or by AT command.
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
13	->		ATTACH COMPLETE	
14	UE			The UE initiates a PS detach (without power off) by MMI or by AT command .
15	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
16	<-		DETACH ACCEPT	
				The following messages are sent and shall be received on cell C.
17		SS		The SS deactivates cell B and activates cell C.
18	UE			Cell C is preferred by the UE.
19	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds). The UE is switched off or power is removed (see ICS)
20	UE			UE is switched off.
21		SS		The SS deactivates cell C.
22	UE			The UE is set in UE operation mode A if supported (see ICS) and the test is repeated from step 2 to step 20.

12.2.1.5.4.2 Test procedure 2

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

TheUE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach updating with the cause value 'Roaming not allowed in this area'. The UE is switched off for 10 seconds and switched on again. The SS check that a PS attach is possible on the cell on which the PS attach had been rejected.

If USIM removal is possible without switching off:The SS rejects a PS attachupdating with the cause value 'Roaming not allowed in this area'. The USIM is removed and inserted in the UE. The SS check that a PS attach is possible on the cell on which the PS attach had been rejected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			If UE operation mode C is supported, the UE is set in UE operation mode C (see PICS). If UE operation mode C is not supported, the UE is set in UE operation mode A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
5	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
6	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.
7	UE			The UE is powered up or switched on and initiates an attach (see ICS).
8	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
9	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
10	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
11	->		ATTACH COMPLETE	
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

12.2.1.5.4.3 Test procedure 3

Initial condition

System Simulator:

Six cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC1/MNC1/LAC3/RAC1, cell D in

MCC1/MNC1/LAC4/RAC1, cell E in MCC1/MNC1/LAC5/RAC1, cell F in MCC1/MNC1/LAC6/RAC1. All six cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Roaming not allowed in this area'. This is done for 6 different location areas. Then the SS checks that the UE does not attempt to perform an attach procedure on the non-allowed location areas.

Different types of UE may use different methods to periodically clear the list of forbidden areas (e.g. every day at 12am) for roaming. If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS is set in network operation mode II and activates cell A.
2		UE		The UE is set in UE operation mode C (see ICS).
3		UE		The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
6		UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds)
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8		UE		Cell B is preferred by the UE.
9		UE	Registrarion on CS	See TS 34.108 This is applied only in case of UE operation mode A.
10		UE		The UE initiates an attach automatically, by MMI or by AT command.
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
12	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
13		UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell C.
14		SS		The SS deactivates cell B and activates cell C.
15		UE		Cell C is preferred by the UE.
16		UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
17		UE		The UE initiates an attach automatically, by MMI or by AT command.
18	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
19	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
20		UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell D.
21		SS		The SS deactivates cell C and activates cell D.
22		UE		Cell D is preferred by the UE.
23		UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
24		UE		The UE initiates an attach automatically, by MMI or by AT command.
25	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
26	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
27		UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell E.

28	SS		The SS deactivates cell D and activates cell E.
29	UE		Cell E is preferred by the UE.
30	UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
31	UE		The UE initiates an attach automatically, by MMI or by AT command.
32	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
33	<-	ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
34	UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
			The following messages are sent and shall be received on cell F.
35	SS		The SS deactivates cell E and activates cell F.
36	UE		Cell F is preferred by the UE.
37	UE		The UE initiates an attach automatically, by MMI or by AT command.
38	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
39	<-	ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
40	UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds)
			The following messages are sent and shall be received on cell E.
41	SS		The SS deactivates cell F and activates cell E.
42	SS		Cell E is preferred by the UE.
43	UE		The UE initiates an attach automatically, by MMI or by AT command.
44	UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
			The following messages are sent and shall be received on cell C.
45	SS		The SS deactivates cell E and activates cell C.
46	SS		Cell C is preferred by the UE.
47	UE		The UE initiates an attach automatically, by MMI or by AT command.
48	UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
			The following messages are sent and shall be received on cell A.
49	SS		The SS deactivates cell C and activates cell A.
50	SS		Cell A will be preferred by the UE.
51	UE		The UE initiates an attach automatically, by MMI or by AT command.
52	UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).

12.2.1.5.4.4 Test procedure4

Initial condition

System Simulator:

Two cells, cell A in MCC2/MNC1/LAC1/RAC1 (not HPLMN, RAI-2) and cell B in MCC1/MNC1/LAC1/RAC1 (HPLMN, RAI-1).
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-2.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Roaming not allowed in this area A second cell belonging to the HPLMN is activated. It is checked that the UE returns to its HPLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
5		<-	ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
6	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
				The following messages are sent and shall be received on cell B.
7		SS		Activate cell B.
8	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
9	UE			The UE initiates an attach automatically, by MMI or by AT command.
10	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
11		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
12	->		ATTACH COMPLETE	
13	UE			The UE is switched off or power is removed (see ICS).
14	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.5.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

- check the GMM cause which is contained in the ATTACH REJECT message and stop timer T3310.
- not perform PS attach when UE is in the same location area.
- delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.
- store the LA in the 'forbidden location areas for roaming' list.
- perform PS attach when a new location area is entered.
- search for its HPLMN periodically.

When Switched off or when the USIM is removed,

UE shall:

- reset the 'forbidden location areas for roaming' list.

12.2.1.6 PS attach / abnormal cases / access barred due to access class control

12.2.1.6.1 Definition

12.2.1.6.2 Conformance requirement

1) The UE shall not perform PS attach procedure, but stays in the current serving cell and applies normal cell reselection process.
2) The User Equipment shall perform the PS attach procedure when:
   2.1 Access is granted.
   2.2 Cell is changed.

Reference

3GPP TS 24.008 clause 4.7.3.1

12.2.1.6.3 Test purpose

Test purpose1

To test the behaviour of the UE in case of access class control (access is granted).

Test purpose2

To test the behaviour of the UE in case of access class control (access is granted).

12.2.1.6.4 Method of test

12.2.1.6.4.1 Test procedure1

Initial condition

A random access class x (0-15) is selected. The USIM is programmed with this access class x. Communication with User Equipments using access class x is initially indicated to be barred.

System Simulator:

One cell operating in network operation mode II.
Access class x barred.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS indicates access class x barred. A PS attach procedure is not performed.

The SS indicates that access class x is not barred. A PS attach procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The USIM is programmed with access class x.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 12.
3	UE			The UE is powered up or switched on and attempts to initiate an attach (see ICS).
4	UE			No ATTACH REQUEST sent to SS, as access class X is barred (SS waits 30 seconds).
5		SS		The access class x is not barred anymore.
6	UE			The UE automatically initiates a PS attach.
7	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
8	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
9	->		ATTACH COMPLETE	
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
12		SS		The SS is set in network operation mode II.
13	UE			The UE is set in UE operation mode A(see ICS) and the test is repeated from step 2 to step 11.

12.2.1.6.4.2 Test procedure2

Initial condition

A random access class x (0-15) is selected. The USIM is programmed with this access class x. Communication with User Equipments using access class x is indicated to be barred on cell A.

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) has access class x barred, cell B in MCC1/MNC1/LAC1/RAC1 (RAI-1) has access class x not barred.
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-2 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS indicates access class x barred. A PS attach procedure is not performed.

A cell change is performed into a cell where access class x is not barred. A PS attach procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE SS			The USIM is programmed with access class x. The following messages are sent and shall be received on cell A.
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is set in UE operation mode C (see ICS).
4	UE			The UE is powered up or switched on and attempts to initiate an attach (see ICS).
5	UE			No ATTACH REQUEST sent to SS, as access class X is barred (SS waits 30 seconds).
				The following messages are sent and shall be received on cell B.
6	SS			Activate cell B.
7	UE			The UE automatically initiates an attach.
8	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
9	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
10	->		ATTACH COMPLETE	
11	UE			The UE is switched off or power is removed (see ICS).
12	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.6.5 Test requirements

UE shall:

- perform the following actions depending on the UE access class X.

  Case 1) The UE access class X is barred,

  UE shall:

  - not perform a PS attach procedure.
  - stay in the current serving cell.
  - apply normal cell reselection process.

  Case 2) The UE access class X is granted or serving cell is changed,

  UE shall:

  - initiate PS attach procedure..

12.2.1.7 PS attach / abnormal cases / change of cell into new routing area

12.2.1.7.1 Definition

12.2.1.7.2 Conformance requirement

When a change of cell into a new routing area is performed before ATTACH ACCEPT message is received by the UE, the UE shall abort the PS attach procedure and re-initiate it immediately.

Reference

3GPP TS 24.008 clause 4.7.3.1

12.2.1.7.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.2.1.7.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure. The ATTACH ACCEPT message is delayed from the SS. The UE performs a cell reselection to a cell in a new routing area. The UE shall re-initiate a PS attach procedure in the new routing area.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		SS		No response to the ATTACH REQUEST message is given by the SS.
		SS		The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B. Cell B is preferred by the UE.
7	UE			The UE automatically re-initiates the attach in the new cell.
8	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
9	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-4
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.7.5 Test requirements

UE shall:

- abort a PS attach procedure when a change of cell into a new routing area is performed before ATTACH ACCEPT or ATTACH REJECT message is received by the UE.

- re-initiate a PS attach procedure immediately with new information elements.

12.2.1.8 PS attach / abnormal cases / power off

12.2.1.8.1 Definition

12.2.1.8.2 Conformance requirement

When power is switched off before ATTACH ACCEPT message is received by the UE, the UE shall abort the PS attach procedure and perform a PS detach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.

12.2.1.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.2.1.8.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE is switched off after initiating an attach procedure. A PS detach is automatically performed by the UE before power is switched off.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 7.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	SS			No response to the ATTACH REQUEST message is given by the SS.
5	UE			The UE is powered off and initiates a PS detach (with power off) by
6	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
7	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 6.

Specific message contents

None.

12.2.1.8.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

When power is switched off before ATTACH ACCEPT message is received,

UE shall:

- abort the PS attach procedure and perform the PS detach procedure.

12.2.1.9 PS attach / abnormal cases / PS detach procedure collision

12.2.1.9.1 Definition

12.2.1.9.2 Conformance requirement

1) When a DETACH REQUEST message is received by the UE (any cause except re-attach) while waiting for an ATTACH ACCEPT message, the UE shall terminate the PS attach procedure and continue with the PS detach procedure.

2) When a DETACH REQUEST message is received by the UE (cause re-attach) while waiting for an ATTACH ACCEPT message, the UE shall ignore the PS detach procedure and continue with the PS attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.1

12.2.1.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.2.1.9.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure. The SS does not answer the PS attach procedure, but initiates a PS detach procedure (any cause except re-attach). The UE shall terminate the PS attach procedure and continue with the PS detach procedure**.**

The UE initiates a PS attach procedure. The SS does not answer the PS attach procedure, but initiates a PS detach procedure (cause re-attach). The UE shall ignore the PS detach procedure and continue with the PS attach.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
5	<-		DETACH REQUEST	Detach type = 're-attach not required'
6	->		DETACH ACCEPT	
7	UE			The UE initiates the attach procedure by MMI or AT command.
8	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
9	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
10	<-		DETACH REQUEST	Detach type = 're-attach required'
11	UE			The UE ignores the DETACH REQUEST message and continue with the attach procedure.
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
13	->		ATTACH COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.1.9.5 Test requirements

UE shall:

initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

Case1) GMM cause is not re-attach

When a DETACH REQUEST message is received by the UE while waiting for an ATTACH ACCEPT message,

UE shall:

- terminate the PS attach procedure and continue with the PS detach procedure.

Case2) GMM cause is re-attach

When a DETACH REQUEST message is received by the UE while waiting for an ATTACH ACCEPT message,

UE shall:

- ignore the PS detach procedure and continue with the PS attach procedure.

12.2.2 Combined PS attach

12.2.2.1 Combined PS attach / PS and non-PS attach accepted

12.2.2.1.1 Definition

12.2.2.1.2 Conformance requirement

1) If the network accepts the combined PS attach procedure (signalled by an IMSI) and allocates a P-TMSI, the UE shall acknowledge the P-TMSI and continue communication with the P-TMSI.

2) If the network accepts the combined PS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.

3) If the network accepts the combined PS attach procedure (signalled by a P-TMSI) from the UE without reallocation of the previously used P-TMSI, the UE shall continue communication with the previously used P-TMSI.

4) If the network accepts the combined PS attach procedure and determines that IMSI shall be used in CS operations, the UE shall continue communication with the IMSI for CS operations.

5) If the network accepts the combined PS attach procedure and determines that a TMSI shall be used in CS operations, the UE shall continue communication with the TMSI for CS operations.

Reference

3GPP TS 24.008 clause 4.7.3.2

12.2.2.1.3 Test purpose

To test the behaviour of the UE if the network accepts the PS attach procedure.

The following cases are identified:

1) P-TMSI / P-TMSI signature is allocated

2) P-TMSI / P-TMSI signature is reallocated

3) Old P-TMSI / P-TMSI signature is not changed

4) Mobile terminating CS call is allowed with IMSI

5) Mobile terminating CS call is not allowed with TMSI

12.2.2.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No

Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

1) The UE sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. The UE acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. For CS calls, the IMSI is used.

2) The UE is CS paged in order to verify that the IMSI is used for CS calls.

3) The UE is PS paged in order to verify that the new P-TMSI is used for PS services.

4) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS allocates a new P-TMSI and returns ATTACH ACCEPT message with the new P-TMSI and a new TMSI. The UE acknowledge the P-TMSI and the TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. For CS calls, the new TMSI is used. The UE is CS paged in order to verify that the new TMSI is used for CS services.

5) The UE is PS paged in order to verify that the new P-TMSI is used for PS services. The UE will not answer signalling addressed to the old P-TMSI.

6) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS accepts the P-TMSI and returns ATTACH ACCEPT message without any P-TMSI. Further communication UE - SS is performed by the previously used P-TMSI.

7) The UE is PS paged in order to verify that the previously used P-TMSI is used for PS services.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity =IMSI Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
7	->		RRC CONNECTION REQUEST	
8	<-		RRC CONNECTION SETUP	
9	->		RRC CONNECTION SETUP COMPLETE	
10	->		PAGING RESPONSE	Mobile identity = IMSI
11	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
12	->		RRC CONNECTION RELEASE COMPLETE	
13	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging for PS services
13a	->		RRC CONNECTION REQUEST	
13b	<-		RRC CONNECTION SETUP	
13c	->		RRC CONNECTION SETUP COMPLETE	
14	->		SERVICE REQUEST	service type = "paging response"
14a	<-		RRC CONNECTION RELEASE	
14b	->		RRC CONNECTION RELEASE COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
17	UE			The UE is powered up or switched on and initiates an attach (see ICS).
18	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature TMSI status = no valid TMSI available Routing area identity = RAI-1
19	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
20	->		ATTACH COMPLETE	
21	<-		GMM INFORMATION	
21b	->		GMM STATUS	Message sent in case the UE does not support reception of GMM information message Cause #97
22	<-		PAGING TYPE 1	Mobile identity = TMSI-1 Paging order is for CS services.
23	->		RRC CONNECTION REQUEST	
24	<-		RRC CONNECTION SETUP	
25	->		RRC CONNECTION SETUP COMPLETE	
26	->		PAGING RESPONSE	Mobile identity = TMSI-1

27	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
28	->	RRC CONNECTION RELEASE COMPLETE	
29	<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging for PS services
29a	->	RRC CONNECTION REQUEST	
29b	<-	RRC CONNECTION SETUP	
29c	->	RRC CONNECTION SETUP COMPLETE	
30	->	SERVICE REQUEST	service type = “paging response”
30a	<-	RRC CONNECTION RELEASE	
30b	->	RRC CONNECTION RELEASE COMPLETE	
31	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging for PS services
32	UE		No response from the UE to the request. This is checked for 10 seconds.
33	UE		The UE is switched off or power is removed (see ICS).
34	->	DETACH REQUEST	Message not sent if power is removed. Detach type = ‘power switched off, combined PS / IMSI detach’
35	UE		The UE is powered up or switched on and initiates an attach (see ICS).
36	->	ATTACH REQUEST	Attach type = ‘Combined PS / IMSI attach’ Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
37	<-	ATTACH ACCEPT	No new mobile identity assigned. TMSI and P-TMSI not included. Attach result = ‘Combined PS / IMSI attached’ P-TMSI-3 signature Routing area identity = RAI-1
38	<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging for PS services
38a	->	RRC CONNECTION REQUEST	
38b	<-	RRC CONNECTION SETUP	
38c	->	RRC CONNECTION SETUP COMPLETE	
39	->	SERVICE REQUEST	service type = “paging response”
39a	<-	RRC CONNECTION RELEASE	
39b	->	RRC CONNECTION RELEASE COMPLETE	
40	UE		The UE is switched off or power is removed (see ICS).
41	->	DETACH REQUEST	Message not sent if power is removed. Detach type = ‘power switched off, combined PS / IMSI detach’

Specific message contents

None.

12.2.2.1.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

Case 1) SS accept the combined PS attach procedure (signalled by an IMSI) and allocates a P-TMSI.

UE shall

- acknowledge the P-TMSI and continue communication with the P-TMSI.

Case 2) SS accepts the combined PS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI.

UE shall:

- acknowledge the new P-TMSI and continue communication with the new P-TMSI.

Case 3) SS accepts the combined PS attach procedure (signalled by a P-TMSI) from the UE without reallocation of the previously used P-TMSI.

UE shall:

- continue communication with the previously used P-TMSI.

Case 4) SS accepts the combined PS attach procedure and determines that IMSI shall be used in CS operations.

UE shall:

- continue communication with the IMSI for CS operations.

Case 5) SS accepts the combined PS attach procedure and determines that a TMSI shall be used in CS operations.

UE shall:

- continue communication with the TMSI for CS operations.

12.2.2.2 Combined PS attach / PS only attach accepted

12.2.2.2.1 Definition

12.2.2.2.2 Conformance requirement

1) If the network accepts the combined PS attach procedure, but GMM cause code 'IMSI unknown in HLR' is sent to the UE the User Equipment shall delete the stored TMSI, LAI and CKSN. The User Equipment shall consider USIM invalid for non-PS services until power is switched off or USIM is removed.

2) If the network accepts the combined PS attach procedure, but GMM cause code 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is sent to the UE, an UE operation mode A UE may perform an MM IMSI attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.2

12.2.2.2.3 Test purpose

Test propose1

To test the behaviour of the UE if the network accepts the PS attach procedure with indication PS only, GMM cause 'IMSI unknown in HLR'.

Test porpose2

To test the behaviour of the UE if the network accepts the PS attach procedure with indication PS only, GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.

12.2.2.2.4 Method of test

12.2.2.2.4.1 Test porpose1

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. GMM cause 'IMSI unknown in HLR' is indicated from SS. Further communication UE - SS is performed by the P-TMSI. CS services are not possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature GMM cause = 'IMSI unknown in HLR'
5	->		ATTACH COMPLETE	
6	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
7	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
8	UE			The UE is switched off or power is removed (see ICS).
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

12.2.2.2.4.2 Test porpose2

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Automatic MM IMSI attach procedure for UE operation mode A UE Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE sends an ATTACH REQUEST message. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. GMM cause ‘MSC temporarily not reachable’, ‘Network failure’ or ‘Congestion’ is indicated from SS. The cause code is arbitrarily chosen. This procedure is repeated four times. An UE operation mode A UE may then perform an MM IMSI attach procedure (according to the ICS statement). Further communication UE - SS is performed by the P-TMSI. The existence of a signalling channel is verified by a request for mobile identity. CS services are not possible as an IMSI attach procedure is not performed.

Expected Sequence

Dependent whether the option ‘Automatic MM IMSI attach procedure for UE operation mode A UE’ is supported or not, the steps 1-22 or 23-53 apply depending on manufacturer (see ICS).

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A and no automatic MM IMSI attach procedure is indicated (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
5	->		ATTACH COMPLETE	
7	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
10	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-3 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
11	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-4 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
12	SS			The SS verifies that the time between the requests are T3311
13	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-4 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
14	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-5 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
16	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-5 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available

17	<-	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-6 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
19	<-	PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
20	UE		The UE shall not initiate an RRC connection. This is checked during 3 seconds.
21	UE		The UE is switched off or power is removed (see ICS).
22	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'. Stop the sequence.
23	UE		Automatic MM IMSI attach procedure is indicated (see ICS).
24	UE		The UE is powered up or switched on and initiates an attach (see ICS).
25	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
26	<-	ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-2 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
28	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
29	<-	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
31	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-3 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
32	<-	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-4 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
33	SS		The SS verifies that the time between the requests are T3311
34	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-4 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available

35	<-	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-5 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
37	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-5 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
38	<-	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-6 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
39	SS		The SS verifies that the time between the requests are T3311
40	UE		An automatic MM IMSI attach procedure is initiated.
41	->	RRC CONNECTION REQUEST	
42	<-	RRC CONNECTION SETUP	
43	->	RRC CONNECTION SETUP COMPLETE	
44	->	LOCATION UPDATING REQ	Location updating type = IMSI attach.
45	<-	LOCATION UPDATING ACC	The SS allocates a new TMSI.
46	->	TMSI REALLOCATION COMP	Location updating type = IMSI attach.
47	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
48	->	RRC CONNECTION RELEASE COMPLETE	
49	<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
50	->	RRC CONNECTION REQUEST	
51	<-	RRC CONNECTION SETUP	
52	->	RRC CONNECTION SETUP COMPLETE	
53	->	PAGING RESPONSE	Mobile identity = TMSI-1
54	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
55	->	RRC CONNECTION RELEASE COMPLETE	
56	UE		The UE is switched off or power is removed (see ICS).
57	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.2.2.2.5 Test requirements

UE shall:

- initiate a Combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

- check the GMM cause which is contained in the ATTACH ACCEPT message received from SS.
- perform the following actions depending on the GMM cause.

  Case1) GMM cause = 'IMSI unknown in HLR'

  UE shall

  - delete stored TMSI, LAI, and ciphering key sequence number.
  - consider USIM invalid for non-PS service until power is switching off or USIM is removed.

  Case2) GMM cause = 'MSC temporarily not reachable' or 'Network failure' or 'Congestion',

  UE shall:

  - stop the timer T3310(if running), and shall increment the routing area update attempt counter.
  - perform the following actions depending on the conditions described below.

    Case 2-1) the routing area updating attempt counter is less than 5 and the stored RAI is equal to the RAI of the current serving cell and the GMM update status is equal to GU1 UPDATED:

    UE shall

    - keep the GMM update status GU1 UPDATED.
    - change state to GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM.
    - start timer T3311. When timer T3311 expires, the combined routing area update procedure indicating "combined RA/LA updating with IMSI attach" is triggered again.

    Case 2-2) the routing area updating attempt counter is greater than or equal to 5

    UE shall

    - start timer T3302 and change state to GMM-REGISTERED.ATTEMPTING-TO-UPDATE-MM

12.2.2.3 Combined PS attach / PS attach while IMSI attach

12.2.2.3.1 Definition

12.2.2.3.2 Conformance requirement

If the PS UE is already attached for non-PS services by the MM specific attach procedure, but wants to perform an attach for PS services, the combined PS attach procedure is performed.

Reference

3GPP TS 24.008 clause 4.7.3.2

12.2.2.3.3 Test purpose

To test the behaviour of the UE if PS attach performed while IMSI attached.

12.2.2.3.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I. ATT flag is set.

User Equipment:

The UE has a valid TMSI-1, P-TMSI-1, P-TMSI signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE is forced to register for CS services but not to PS services. The SS verifies that the UE does not respond to paging messages for PS domain. Then the UE is triggered to perform the PS attach procedure and the SS verifies that it responds to PS paging messages.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS) and configured not to perform an automatic PS attach at switch on.
2	UE			The UE is powered up or switched on. No PS attach is performed (see ICS).
3	->		RRC CONNECTION REQUEST	
4	<-		RRC CONNECTION SETUP	
5	->		RRC CONNECTION SETUP COMPLETE	
6	->		LOCATION UPDATING REQ	Location updating type = IMSI attach.
7	<-		LOCATION UPDATING ACC	The SS allocates a new TMSI.
8	->		TMSI REALLOCATION COMP	Location updating type = IMSI attach.
9	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
10	->		RRC CONNECTION RELEASE COMPLETE	
11	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
12	UE			No response from the UE to the request. This is checked for 10 seconds.
13	UE			The UE is triggered to perform a PS attach.
14	->		ATTACH REQUEST	Attach type = 'PS attach while IMSI attached' Mobile identity =P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
15	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' No new mobile identity assigned. TMSI and P-TMSI not included P-TMSI-2 signature Routing area identity = RAI-1
16	->		ATTACH COMPLETE	
17	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
17a	->		RRC CONNECTION REQUEST	
17b	<-		RRC CONNECTION SETUP	
17c	->		RRC CONNECTION SETUP COMPLETE	
18	->		SERVICE REQUEST	service type = "paging response"
18a	<-		RRC CONNECTION RELEASE	
18b	->		RRC CONNECTION RELEASE COMPLETE	
19	UE			The UE is switched off or power is removed (see ICS).
20	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.3.5 Test requirements

UE is already attached for non-PS service with the MM specific attach procedure.

UE shall:

- perform the combined PS attach procedure when UE is requested to attach for PS services.

12.2.2.4 Combined PS attach / rejected / IMSI invalid / illegal ME

12.2.2.4.1 Definition

12.2.2.4.2 Conformance requirement

1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall consider USIM invalid for PS and non-PS services until power is switched off or USIM is removed.

2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall delete the stored TMSI, LAI, CSKN, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

3) The UE in the UE operation mode A shall perform an MM IMSI attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.2

12.2.2.4.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure of the UE with the cause 'Illegal ME'.

12.2.2.4.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Illegal ME'. The SS checks that the UE does not perform PS attach in the same or another PLMN. PS services are not possible as the USIM is blocked for PS services. An UE operation mode A UE shall perform an MM IMSI attach.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
5	<-		ATTACH REJECT	GMM cause 'Illegal ME'.
6	UE			An automatic MM IMSI attach procedure is initiated.
7	UE		Registration on CS	See TS.34.108 Location updating type = IMSI attach. The SS allocates TMSI-2.
8	<-		PAGING TYPE1	Mobile identity = P-TMSI-1Paging order is for PS services
9	UE			No response from the UE to the request. This is checked for 10 seconds.
10	<-		PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
11	->		RRC CONNECTION REQUEST	
12	->		RRC CONNECTION SETUP	
13	<-		RRC CONNECTION SETUP COMPLETE	
14	->		PAGING RESPONSE	Mobile identity = TMSI-2
15	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signaling link.
16	->		RRC CONNECTION RELEASE COMPLETE	
				The following messages are sent and shall be received on cell B.
17		SS		The SS deactivates cell A and activates cell B.
18	UE			Cell B is preferred by the UE.
19	UE			A location updating procedure is initiated.
20	UE		Registration on CS	See TS34.108 Location updating type = normal. The SS allocates TMSI-1.
21			PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
22			RRC CONNECTION REQUEST	
23			RRC CONNECTION SETUP	
24			RRC CONNECTION SETUP COMPLETE	
25			PAGING RESPONSE	Mobile identity = TMSI-1
26			RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signaling link.
27			RRC CONNECTION RELEASE COMPLETE	
28	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is forPS services.
29	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
30	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).

31	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
32	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-2 Routing area identity = RAI-2
33	->	ATTACH COMPLETE	
34	<-	PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
35	->	RRC CONNECTION REQUEST	
36	<-	RRC CONNECTION SETUP	
37	->	RRC CONNECTION SETUP COMPLETE	
38	->	PAGING RESPONSE	Mobile identity = TMSI-2
39	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
40	->	RRC CONNECTION RELEASE COMPLETE	
41	UE		The UE is switched off or power is removed (see ICS).
42	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.4.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- check the GMM cause which is contained in the ATTACH REJECT message and stop the timer T3310.
- set the PS update status to GU3 ROAMING NOT ALLOWED.
- delete the stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.
- consider USIM invalid for PS and non-PS services until power is switched off or USIM is removed.
- perform an MM IMSI attach procedure, if the UE is PS class A

12.2.2.5 Combined PS attach / rejected / PS services and non-PS services not allowed

12.2.2.5.1 Definition

12.2.2.5.2 Conformance requirement

1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'PS services and non-PS services not allowed', the User Equipment shall consider USIM invalid for PS and non-PS services until power is switched off or USIM is removed.

2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'PS services and non-PS services not allowed', the User Equipment shall delete the stored TMSI, LAI, CSKN, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Reference

3GPP TS 24.008 clause 4.7.3.2

12.2.2.5.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure of the UE with the cause 'PS services and non-PS services not allowed'.

12.2.2.5.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'PS services and non-PS services not allowed'. The SS checks that the UE does not perform PS attach in the same or another PLMN. CS services are not possible as the USIM is blocked for CS services. PS services are not possible as the USIM is blocked for PS services.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH REJECT	GMM cause 'PS services and non-PS services not allowed'
6	UE			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds).
7	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services..
8	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS Paging.
10	->			No response from the UE to the request. This is checked for 10 seconds
11	UE			Cell A is deactivated and cell B is activated.
12			(void)	
13	UE			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds).
14	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
15	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
16	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
17	UE			No response from the UE to the request. This is checked for 10seconds.
18	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.
19	UE			The UE is powered up or switched on and initiates an attach (see ICS).
20	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
21	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-2
22	->		ATTACH COMPLETE	
23	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
24	->		RRC CONNECTION REQUEST	
25	<-		RRC CONNECTION SETUP	
26	->		RRC CONNECTION SETUP COMPLETE	
27	->		PAGING RESPONSE	Mobile identity = TMSI-1
28	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
29	->		RRC CONNECTION RELEASE COMPLETE	
30	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging is for PS services.

30a	->	RRC CONNECTION REQUEST	
30b	<-	RRC CONNECTION SETUP	
30c	->	RRC CONNECTION SETUP COMPLETE	
31	->	SERVICE REQUEST	Service type = “paging response”
31a	<-	RRC CONNECTION RELEASE	
31b	->	RRC CONNECTION RELEASE COMPLETE	
32	UE		The UE is switched off or power is removed (see ICS).
33	->	DETACH REQUEST	Message not sent if power is removed. Detach type = ‘power switched off, combined PS / IMSI detach’

Specific message contents

None.

12.2.2.5.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- check the GMM cause which is contained in the ATTACH REJECT message and stop the timer T3310.
- set the PS update status to GU3 ROAMING NOT ALLOWED.
- delete the stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.
- consider USIM invalid for PS and non-PS services until power is switched off or USIM is removed.

12.2.2.6 Combined PS attach / rejected / PS services not allowed

12.2.2.6.1 Definition

12.2.2.6.2 Conformance requirement

1) If the network rejects a combined PS attach procedure from the User Equipment with the cause ‘PS services not allowed’, the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.
2) If the network rejects a combined PS attach procedure from the User Equipment with the cause ‘PS services not allowed’ the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.
3) A PS class AUE shall perform an MM IMSI attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.2

12.2.2.6.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause ‘PS services not allowed’.

12.2.2.6.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a normal attach with the cause value ‘PS services not allowed’. The SS checks that the UE does not perform PS attach. PS services are not possible. An UE operation mode A UE shall perform an MM IMSI attach.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2 TMSI status = valid TMSI available
4	<-		ATTACH REJECT	GMM cause 'PS services not allowed'
5	UE			An automatic MM IMSI attach procedure is initiated.
6	->		RRC CONNECTION REQUEST	
7	<-		RRC CONNECTION SETUP	
8	->		RRC CONNECTION SETUP COMPLETE	
9	->		LOCATION UPDATING REQ	Location updating type = IMSI attach.
10	<-		LOCATION UPDATING ACC	The SS allocates TMSI-2.
11	->		TMSI REALLOCATION COMP	Location updating type = IMSI attach.
12	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
13	->		RRC CONNECTION RELEASE COMPLETE	
14	<-		PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
15	->		RRC CONNECTION REQUEST	
16	<-		RRC CONNECTION SETUP	
17	->		RRC CONNECTION SETUP COMPLETE	
18	->		PAGING RESPONSE	Mobile identity = TMSI-2
19	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signaling link.
20	->		RRC CONNECTION RELEASE COMPLETE	
				The following messages are sent and shall be received on cell B.
21		SS		The SS deactivates cell A and activates cell B.
22	UE			Cell B is preferred by the UE.
23	UE			A location updating procedure is initiated.
24	->		RRC CONNECTION REQUEST	
25	<-		RRC CONNECTION SETUP	
26	->		RRC CONNECTION SETUP COMPLETE	
27	->		LOCATION UPDATING REQ	Location updating type = normal.
28	<-		LOCATION UPDATING ACC	The SS allocates TMSI-1.
29	->		TMSI REALLOCATION COMP	
30	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
31	->		RRC CONNECTION RELEASE COMPLETE	
32	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
33	->		RRC CONNECTION REQUEST	
34	<-		RRC CONNECTION SETUP	
35	->		RRC CONNECTION SETUP COMPLETE	
36	->		PAGING RESPONSE	Mobile identity = TMSI-1
37	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
38	->		RRC CONNECTION RELEASE COMPLETE	
39	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging is for PS services

40	UE		No response from the UE to the request. This is checked for 10seconds.
41	UE		If possible (see ICS) switch off is performed. Otherwise the power is removed.
42	UE		The UE is powered up or switched on and initiates an attach (see ICS).
43	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
44	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-2 Routing area identity = RAI-2
45	->	ATTACH COMPLETE	
46	<-	PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
47	->	RRC CONNECTION REQUEST	
48	<-	RRC CONNECTION SETUP	
49	->	RRC CONNECTION SETUP COMPLETE	
50	->	PAGING RESPONSE	Mobile identity = TMSI-2
51	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
52	->	RRC CONNECTION RELEASE COMPLETE	
53	UE		The UE is switched off or power is removed (see ICS).
54	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.6.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- check the GMM cause which is contained in the ATTACH REJECT message and stop the timer T3310.
- set the PS update status to GU3 ROAMING NOT ALLOWED.
- delete stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.
- consider USIM invalid for PS services until power is switched off or USIM is removed.
- perform an MM IMSI attach procedure, if the UE is PS class A.

12.2.2.7 Combined PS attach / rejected / location area not allowed

12.2.2.7.1 Definition

12.2.2.7.2 Conformance requirement

1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:

1.1 not perform combined PS attach when in the same location area.

1.2 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

1.3 store the LA in the 'forbidden location areas for regional provision of service'.

2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:

2.1 perform combined PS attach when a new location area is entered.

2.2 delete the list of forbidden LAs when power is switched off.

Reference

3GPP TS 24.008 clauses 4.7.3.2

12.2.2.7.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure with the cause 'Location Area not allowed'.

To test that the UE deletes the list of forbidden LAs when power is switched off.

12.2.2.7.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC2/RAC1 (RAI-3).
All cells are operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined PS attach with the cause value 'Location Area not allowed'. The SS checks that the UE does not perform combined PS attach while in the location area, performs PS attach when a new location area is entered and deletes the list of forbidden LAs when switched off. CS services are not possible unless an IMSI attach procedure is performed.

Different types of UE may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		<-	ATTACH REJECT	GMM cause 'Location Area not allowed'
6	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
7		<-	PAGING TYPE1	Mobile identity = TMSI Paging order is for CS services.
8	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
9		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging oder is for PS services.
10		->		No response from the UE to the request. This is checked for 10 seconds
				The following messages are sent and shall be received on cell B.
11		SS		The SS deactivates cell A and activates cell B.
12	UE			Cell B is preferred by the UE.
13	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
14	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
15		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging oder is for CS services.
16	UE			No response from the UE to the request. This is checked for 10seconds.
17	UE			The UE initiates an attach by MMI or AT command.
18				No attach is performed by the UE. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell C.
19		SS		The SS deactivates cell B and activates cell C.
20	UE			Cell C is preferred by the UE.
21		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
22		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-3
23		->	ATTACH COMPLETE	
24		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
25		->	RRC CONNECTION REQUEST	
26		<-	RRC CONNECTION SETUP	
27		->	RRC CONNECTION SETUP COMPLETE	
28		->	PAGING RESPONSE	Mobile identity = TMSI-1
29		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.

30	->	RRC CONNECTION RELEASE COMPLETE	
31	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
31a	->	RRC CONNECTION REQUEST	
31b	<-	RRC CONNECTION SETUP	
31c	->	RRC CONNECTION SETUP COMPLETE	
32	->	SERVICE REQUEST	Service type = “paging response”
32a	<-	RRC CONNECTION RELEASE	
32b	->	RRC CONNECTION RELEASE COMPLETE	
35	UE		The UE is switched off or power is removed (see ICS).
36	->	DETACH REQUEST	Message not sent if power is removed. Detach type = ‘power switched off, combined PS / IMSI detach’
			The following messages are sent and shall be received on cell B.
37	UE		The SS deactivates cell C and activates cell B. Cell B is preferred by the UE.
38	UE		The UE is powered up or switched on and initiates an attach (see ICS).
39	->	ATTACH REQUEST	Attach type = ‘Combined PS / IMSI attach’ Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
40	<-	ATTACH ACCEPT	Attach result = ‘Combined PS / IMSI attached’ Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-4
41	->	ATTACH COMPLETE	
42	<-	PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
43	->	RRC CONNECTION REQUEST	
44	<-	RRC CONNECTION SETUP	
45	->	RRC CONNECTION SETUP COMPLETE	
46	->	PAGING RESPONSE	Mobile identity = TMSI-2
47	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
48	->	RRC CONNECTION RELEASE COMPLETE	
49	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
49a	->	RRC CONNECTION REQUEST	
49b	<-	RRC CONNECTION SETUP	
49c	->	RRC CONNECTION SETUP COMPLETE	
50	->	SERVICE REQUEST	service type = “paging response”
50a	<-	RRC CONNECTION RELEASE	
50b	->	RRC CONNECTION RELEASE COMPLETE	
51	UE		The UE is switched off or power is removed (see ICS).
52	->	DETACH REQUEST	Message not sent if power is removed. Detach type = ‘power switched off, combined PS / IMSI detach’

Specific message contents

None.

12.2.2.7.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- perform the following action depending on UE location.

When in the same location area, UE shall

- check the CMM cause which is contained in the ATTACH REJECT message and stop timer T3310.
- delete any stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.
- store the LAI or the PLMN identity in the appropriate forbidden list("forbidden location areas for regional provision of service").

When a new location area is entered, UE shall

- perform combined PS attach when UE entered a new location area.
- delete the list of forbidden LAs when power is switched off.

12.2.2.8 Combined PS attach / abnormal cases / attempt counter check / miscellaneous reject causes

12.2.2.8.1 Definition

12.2.2.8.2 Conformance requirement

1) When a combined PS attach procedure is rejected with the attempt counter less than five, the User Equipment shall repeat the combined PS attach procedure after T3311 timeout.
2) When a combined PS attach procedure is rejected with the attempt counter five, the User Equipment shall delete the stored TMSI, LAI, CKSN, P-TMSI, P-TMSI signature, PS CKSN and RAI and start T3302.
3) When the T3302 expire, a new combined PS attach procedure shall be initiated.

GMM cause codes that can be selected are:
‘IMSI unknown in HLR’
‘IMEI not accepted’
‘Illegal ME’
‘UE identity cannot be derived by the network’
‘Network failure’
‘Congestion’
‘retry upon entry into a new cell’
‘Semantically incorrect message’
‘Invalid mandatory information’
‘Message type non-existent or not implemented’
‘Message type not compatible with the protocol state’
‘Information element non-existent or not implemented’
‘Conditional IE error’
‘Message not compatible with the protocol state‘
‘Protocol error, unspecified’

Reference

3GPP TS 24.008 clause 4.7.3.2

12.2.2.8.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

12.2.2.8.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a combined PS attach procedure (attempt counter zero).

The SS rejects the attach with a random cause code.

The UE initiates a new combined PS attach procedure (attempt counter one) after T3311 expires.

The SS rejects the attach with a random cause code.

The UE initiates a new combined PS attach procedure (attempt counter two) after T3311 expires.

The SS rejects the attach with a random cause code.

The UE initiates a new combined PS attach procedure (attempt counter three) after T3311 expires.

The SS rejects the attach with a random cause code.

The UE initiates a new combined PS attach procedure (attempt counter four) after T3311 expires.

The SS rejects the attach with a random cause code.

The UE initiates a new combined PS attach procedure with attempt counter five (after T3311 expires).

The SS rejects the attach with a random cause code. The UE shall not perform a new successful attach procedure after 15 seconds.

The UE initiates a combined PS attach procedure with attempt counter zero after T3302 expires without P-TMSI, P-TMSI signature, PS CKSN and RAI.

T3302; set to 10 minutes.

T3311; 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
4	<-		ATTACH REJECT	Random GMM cause T3302 with value 10 min.
5	SS			The SS verifies that the time between the attach requests is T3311
6	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
7	<-		ATTACH REJECT	Random GMM cause T3302 with value 10 min.
8	SS			The SS verifies that the time between the attach requests is T3311
9	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
10	<-		ATTACH REJECT	Random GMM cause T3302 with value 10 min.
11	SS			The SS verifies that the time between the attach requests is T3311
12	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
13	<-		ATTACH REJECT	Random GMM cause T3302 with value 10 min.
14	SS			The SS verifies that the time between the attach requests is T3311
15	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
16	<-		ATTACH REJECT	Random GMM cause T3302 with value 10 min.
17	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
18	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
19	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
20	<-		PAGING TYPE1	Paging order is for PS services. Mobile identity = P-TMSI-1
21	UE			No response from the UE to the request. This is checked for 10seconds.
22	SS			The SS verifies that the UE does not attempt to attach for T3302 .
23	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available

24	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity P-TMSI-1 P-TMSI signature Mobile identity = TMSI-1 Routing area identity = RAI-1
25	->	ATTACH COMPLETE	
26	<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services..
27	->	RRC CONNECTION REQUEST	
28	<-	RRC CONNECTION SETUP	
29	->	RRC CONNECTION SETUP COMPLETE	
30	->	PAGING RESPONSE	Mobile identity = TMSI-1
31	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
32	->	RRC CONNECTION RELEASE COMPLETE	
33	<-	PAGING TYPE1	Mobile identity = P-TMSI-1
33a	->	RRC CONNECTION REQUEST	
33b	<-	RRC CONNECTION SETUP	
33c	->	RRC CONNECTION SETUP COMPLETE	
34	->	SERVICE REQUEST	Service type = "paging response"
34a	<-	RRC CONNECTION RELEASE	
34b	->	RRC CONNECTION RELEASE COMPLETE	
35	UE		The UE is switched off or power is removed (see ICS).
36	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.8.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- perform the following actions depending on the conditions described below.

  Case1) A combined PS attach procedure is rejected with the attempt counter less than five

  UE shall:

  - repeat the combine PS attach procedure after the timer T3311 timeout.

  Case2) A combined PS attach procedure is rejected with the attempt counter five

  UE shall:

  - delete the stored TMSI, LAI, CKSN, P-TMSI, P-TMSI signature, PS CKSN and RAI and
  - start the timer T3302.

  Case3) The T3302 expires

  UE shall:

- re-initiate a new combined PS attach procedure.

12.2.2.9 Combined PS attach / abnormal cases / PS detach procedure collision

12.2.2.9.1 Definition

12.2.2.9.2 Conformance requirement

1) When a DETACH REQUEST message is received by the UE (any cause except re-attach) while waiting for an ATTACH ACCEPT message or ATTACH REJECT message, the UE shall terminate the combined PS attach procedure and continue with the combined PS detach procedure.

2) When a DETACH REQUEST message is received by the UE (cause re-attach) while waiting for an ATTACH ACCEPT message or ATTACH REJECT message, the UE shall ignore the combined PS detach procedure and continue with the combined PS attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.2

12.2.2.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.2.2.9.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a combined PS attach procedure. The SS does not answer the combined PS attach procedure, but initiates a combined PS detach procedure (any cause except re-attach). The UE shall terminate the combined PS attach procedure and continue with the combined PS detach procedure. CS services are not possible as an IMSI attach procedure is not performed.

The UE initiates a combined PS attach procedure. The SS does not answer the combined PS attach procedure, but initiates a combined PS detach procedure (cause re-attach). The UE shall ignore the combined PS detach procedure and continue with the combined PS attach. CS services are also possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
4	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
5	<-		DETACH REQUEST	Detach type = 're-attach not required'
6	->		DETACH ACCEPT	
7	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for PS services.
8	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
9	UE			The UE is attached by MMI or AT command
10	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
11	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
12	<-		DETACH REQUEST	Detach type = 're-attach required'
13	UE			The UE ignores the DETACH REQUEST message and continue with the attach procedure
14	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-1 TMSI status = valid TMSI available
15	->		ATTACH COMPLETE	
16	<-		PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
17	->		RRC CONNECTION REQUEST	
18	<-		RRC CONNECTION SETUP	
19	->		RRC CONNECTION SETUP COMPLETE	
20	->		PAGING RESPONSE	Mobile identity = TMSI-2
21	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
22	->		RRC CONNECTION RELEASE COMPLETE	
23	<-		PAGING TYPE1	Paging order is for PS services. Mobile identity = P-TMSI-2
23a	->		RRC CONNECTION REQUEST	
23b	<-		RRC CONNECTION SETUP	
23c	->		RRC CONNECTION SETUP COMPLETE	
24	->		SERVICE REQUEST	Service type = "paging response"
24a	<-		RRC CONNECTION RELEASE	
24b	->		RRC CONNECTION RELEASE COMPLETE	
25	UE			The UE is switched off or power is removed (see ICS).
26	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.2.2.9.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- perform the following actions depending on the Detach type described below.

  Case1) Detach type is not re-attach

  UE shall:

  - terminate the combined PS attach procedure.
  - continue with the combined PS detach procedure.

  Case2) Detach type is re-attach

  UE shall:

  - ignore the combined PS detach procedure.
  - continue with the combined PS attach procedure.

12.3 PS detach procedure

12.3.1 UE initiated PS detach procedure

12.3.1.1 PS detach / power off / accepted

12.3.1.1.1 Definition

12.3.1.1.2 Conformance requirement

The UE detaches the IMSI for PS services if the UE is switched off.

Reference

3GPP TS 24.008 clause 4.7.4.1

12.3.1.1.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a PS attach procedure.

The UE sends a DETACH REQUEST message to the SS.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 8.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE is switched off (see ICS).
7	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
8	UE			The UE is set in UE operation mode A(see ICS) and the test is repeated from step 2 to step 7.

Specific message contents

None.

12.3.1.1.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the PS attach procedure is completed, UE shall:

- send the DETACH REQUEST message to SS with the Detach type = 'power switched off, PS detach'.

12.3.1.2 PS detach / accepted

12.3.1.2.1 Definition

12.3.1.2.2 Conformance requirement

The UE detaches the IMSI for PS services if the UE is ordered to do so with MMI or AT commands.

Reference

3GPP TS 24.008 clause 4.7.4.1

12.3.1.2.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.2.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a PS attach procedure and activates a PDP context.

The UE sends a DETACH REQUEST message to the SS.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 11.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-1
5			(void)	
6	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
7	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
8	<-		DETACH ACCEPT	
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10	UE			No response from the UE to the request. This is checked for 10 seconds.
11			(void)	
12	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 10.

Specific message contents

None.

12.3.1.2.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the PS attach procedure is completed, UE shall:

- sends the DETACH REQUEST message(without power off) to SS.
- start timer T3321.

When UE receives the DETACH ACCEPT message from SS before the timer T3321 is not expired, UE shall:

- stop timer T3321.

12.3.1.3 PS detach / abnormal cases / attempt counter check / procedure timeout

12.3.1.3.1 Definition

12.3.1.3.2 Conformance requirement

1) When a T3321 timeout has occurred during a PS detach procedure with the attempt counter less than five, the User Equipment shall repeat the PS detach procedure.

2) When a T3321 timeout has occurred during a PS detach procedure with the attempt counter five, the User Equipment shall not repeat the procedure.

Reference

3GPP TS 24.008 clause 4.7.4.1

12.3.1.3.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

12.3.1.3.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a PS attach procedure.

The UE initiates a PS detach procedure (attempt counter zero). The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter one) after T3321 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter two) after T3321expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter three) after T3321 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter four) after T3321 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure with attempt counter five (after T3321expires). The SS does not answer with DETACH ACCEPT message before T3321 timeout.

At T3321 timeout in the UE, the UE then deletes the logical link since the retransmissions have been repeated four times.

The UE performs a new PS attach procedure.

T3321; 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 22.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-1
5	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
6	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
7		SS		No response is given from the SS.
8		SS		The SS verifies that the time between the detach requests is 15 seconds
9	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
10		SS		No response is given from the SS.
11		SS		The SS verifies that the time between the detach requests is 15 seconds
12	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
13		SS		No response is given from the SS.
14		SS		The SS verifies that the time between the detach requests is 15 seconds
15	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
16		SS		No response is given from the SS.
17		SS		The SS verifies that the time between the detach requests is 15 seconds
18	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
19		SS		No response is given from the SS within 40 seconds and SS verifies that the UE will not send a DETACH REQUEST again.
20	UE			Initialte a PS attach
21	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
22	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-1
23				UE is switched off or power is removed (see ICS)
24	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
25	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 24.

Specific message contents

None.

12.3.1.3.5 Test requirements

UE shall:

- initiate a PS attaché procedure with the information elements specified in the above Expected Sequence when the UE is powered up or switched on.

After the PS attach procedure is completed, UE shall:

- initiate a PS detach procedure(without power off).
- start timer T3321.

When a T3221 expires with the attempt counter less than five, UE shall:

- initiate a new PS detach procedure.
- increment the attempt counter.
- re-start timer T3321.

When a T3221 expires with the attempt counter five, UE shall:

- not repeat the procedure.

12.3.1.4 PS detach / abnormal cases / GMM common procedure collision

12.3.1.4.1 Definition

12.3.1.4.2 Conformance requirement

When any of the GMM common messages P-TMSI REALLOCATION COMMAND, GMM STATUS or GMM INFORMATION is received by the UE while waiting for a DETACH ACCEPT message with detach cause different from “power off”, the UE shall ignore the GMM common message.

Reference

3GPP TS 24.008 clause 4.7.4.1

12.3.1.4.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.3.1.4.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a PS attach.

The UE initiates a PS detach. The SS initiates a P-TMSI REALLOCATION COMMAND message, a GMM STATUS message and a GMM INFORMATION message. The UE shall ignore the GMM common messages and continue with the PS detach procedure.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates a detach (without power off) by MMI or AT command.
7	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
8	SS			The SS sends a P-TMSI REALLOCATION COMMAND message
9	<-		P-TMSI REALLOCATION COMMAND	
10	UE			The UE ignores the message.
11	SS			The SS sends a GMM STATUS message
12	<-		GMM STATUS	
13	UE			The UE ignores the message.
14	SS			The SS sends a GMM INFORMATION message
15	<-		GMM INFORMATION	
16	UE			The UE ignores the message.
17	<-		DETACH ACCEPT	The SS responds to the DETACH REQUEST
18	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
19	UE			No response from the UE to the request. This is checked for 10 seconds.

Specific message contents

None.

12.3.1.4.5 Test requirements

UE shall:

- initiate a PS attaché procedure with the information elements specified in the above Expected Sequence when the UE is powered up or switched on.

After the PS attach procedure is completed, UE shall:

- initiate a PS detach procedure(without power off).

When any of the GMM common messages P-TMSI REALLOCATION COMMAND, GMM STATUS or GMM INFORMATION is received by the UE while waiting for a DETACH ACCEPT message with detach cause different from “power off, UE shall: .

- ignore any of the GMM common.

12.3.1.5 PS detach / power off / accepted

12.3.1.5.1 Definition

12.3.1.5.2 Conformance requirement

The UE detach the IMSI for PS and non-PS services.

Reference

3GPP TS 24.008 clause 4.7.4.1

12.3.1.5.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.5.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE sends a DETACH REQUEST message to the SS. The UE then deletes the logical link.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE is switched off (see ICS).
7	->		DETACH REQUEST	Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.1.5.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the PS attach procedure is completed, UE shall:

- send the DETACH REQUEST message to SS with the Detach type = 'power switched off, combined PS / IMSI detach' after the PS attach procedure is completed.

12.3.1.6 PS detach / accepted / PS/IMSI detach

12.3.1.6.1 Definition

12.3.1.6.2 Conformance requirement

The UE detach the IMSI for PS and non-PS services.

Reference

3GPP TS 24.008 clause 4.7.4.1

12.3.1.6.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.6.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE sends a DETACH REQUEST message to the SS. When the UE receives the DETACH ACCEPT, the UE then deletes the logical link.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A(see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates a detach (without power off) by MMI or AT command.
7	->		DETACH REQUEST	Detach type = 'normal detach, combined PS / IMSI detach'
8	<-		DETACH ACCEPT	
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10	UE			No response from the UE to the request. This is checked for 10 seconds.
11	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
12	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.

Specific message contents

None.

12.3.1.6.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the combined PS attach procedure is completed, UE shall:

- sends the DETACH REQUEST message(UE not switched off) to SS.
- shall start timer T3321.

When the UE receive the DETACH ACCEPT message from SS before the timer T3321 is not expired, the UE shall:

- stop timer T3321.

12.3.1.7 PS detach / accepted / IMSI detach

12.3.1.7.1 Definition

12.3.1.7.2 Conformance requirement

The UE shall detach for CS services.

Reference

3GPP TS 24.008 clause 4.7.4.1

12.3.1.7.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.1.7.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No
MMI controlled attach / detach procedures for non-PS services Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE performs an PS detach (for non-PS services).

CS services are not possible.

The UE attach for non-PS services by a routing area update procedure and CS services are again possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates a detach for non-PS services (without power off) (see ICS).
7	->		DETACH REQUEST	Detach type = 'normal detach, IMSI detach'
8	<-		DETACH ACCEPT	
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
9a	->		RRC CONNECTION REQUEST	
9b	<-		RRC CONNECTION SETUP	
9c	->		RRC CONNECTION SETUP COMPLETE	
10	->		SERVICE REQUEST	service type = "paging response"
10a	<-		RRC CONNECTION RELEASE	
10b	->		RRC CONNECTION RELEASE COMPLETE	
11	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services. Paging order is for RRC connection.
12	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
13	UE			The UE initiates an attach for non-PS services by a RA update procedure (see ICS).
14	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating'' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
15	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated'' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
16	->		ROUTING AREA UPDATE COMPLETE	
17	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
18	->		RRC CONNECTION REQUEST	
19	<-		RRC CONNECTION SETUP	
20	->		RRC CONNECTION SETUP COMPLETE	
21	->		PAGING RESPONSE	Mobile identity = TMSI-1
22	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
23	->		RRC CONNECTION RELEASE COMPLETE	
24	UE			The UE is switched off or power is removed (see ICS).
25	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.1.7.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the combined PS attach procedure is completed, UE shall:

- sends the DETACH REQUEST message(UE not switched off) to SS.
- start timer T3321.

When the UE receives the DETACH ACCEPT message from SS before the timer T3321 is not expired, the UE shall:

- stop timer T3321.

12.3.1.8 PS detach / abnormal cases / change of cell into new routing area

12.3.1.8.1 Definition

12.3.1.8.2 Conformance requirement

When a change of cell into a new routing area is performed before DETACH ACCEPT message is received by the UE, the UE shall abort the PS detach procedure and re-initiate it after the routing area update procedure.

Reference

3GPP TS 24.008 clause 4.7.4.1

12.3.1.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.3.1.8.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE initiates a PS detach procedure. The DETACH ACCEPT message is delayed from the SS.

The UE performs a cell update into a new routing area.

The UE shall re-initiate a PS detach procedure when the routing area update procedure is finished.

The UE deletes the logical link.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
5	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
7	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
8	->		DETACH REQUEST	Detach type = 'normal detach, combined PS / IMSI detach'
9		SS		No response to the DETACH REQUEST message is given by the SS
				The following messages are sent and shall be received on cell B.
10		SS		The SS deactivates cell A and activates cell B. Cell B is preferred by the UE.
11	UE			The UE performs a RA update in the new cell.
12	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
13	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
14	->		ROUTING AREA UPDATE COMPLETE	
15	->		DETACH REQUEST	The detach is automatically re-attempted. Detach type = 'normal detach, combined PS / IMSI detach'
16	->		DETACH ACCEPT	

Specific message contents

None.

12.3.1.8.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the combined PS attach procedure is completed, UE shall:

- initiate a PS detach.

When a change of cell into a new routing area is performed before DETACH ACCEPT message by the UE, UE shall:

- abort a PS detach procedure.
- re-initiate a PS detach procedure after successfully performing a routing area updating procedure.

12.3.1.9 PS detach / abnormal cases / PS detach procedure collision

12.3.1.9.1 Definition

12.3.1.9.2 Conformance requirement

When a DETACH REQUEST is received by the UE while waiting for a DETACH ACCEPT message, the UE shall answer the network initiated PS detach procedure.

Reference

3GPP TS 24.008 clause 4.7.4.1

12.3.1.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.3.1.9.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE initiates a PS detach. The SS does not answer the detach procedure, but initiates a detach procedure (cause re-attach not required). The UE shall continue with the network initiated detach procedure.

The UE deletes the logical link.

PS and CS services are not possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A(see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
7	->		DETACH REQUEST	Detach type = 'normal detach, combined PS / IMSI detach'
8	<-		DETACH REQUEST	Detach type = 're-attach not required'
9	->		DETACH ACCEPT	The UE answers the network initiated detach.
10	<-		DETACH ACCEPT	The SS answers the UE initiated detach.
11	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
12	UE			No response from the UE to the request. This is checked for 10 seconds.
13	<-		PAGING TYPE 1	Mobile identity = TMSI-1 Paging order is for CS services.
14	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.

Specific message contents

None.

12.3.1.9.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the combined PS attach procedure is completed, UE shall:

- initiate a PS detach procedure.

When the UE receive DETACH REQUEST message from SS before UE initiated PS detach procedure has been completed, UE shall:

- send the DETACH ACCEPT message to SS

12.3.2 Network initiated PS detach procedure

12.3.2.1 PS detach / re-attach not required / accepted

12.3.2.1.1 Definition

12.3.2.1.2 Conformance requirement

The UE detach the IMSI for PS services.

Reference

3GPP TS 24.008 clause 4.7.4.2

12.3.2.1.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.2.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a PS attach procedure.

The SS sends a DETACH REQUEST message to the UE. The UE then deletes the logical link.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The SS is set in network operation mode II.
2	UE			The UE is set in UE operation mode A or C (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
7	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
8	<-		DETACH REQUEST	Detach type = 're-attach not required'
9	->		DETACH ACCEPT	
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. PAGING TYPE1 (used for NW-mode II).
11	UE			No response from the UE to the request. This is checked for 10 seconds.

Specific message contents

None.

12.3.2.1.5 Test requirements

UE shall:

- initiate PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

When UE receives the DETACH REQUEST message from SS and the detach type IE indicates 're-attach not required', the UE shall

- deactivate the PDP context and the logical link(s).
- send DETACH ACCEPT message to SS.

12.3.2.2 PS detach / rejected / IMSI invalid / PS services not allowed

12.3.2.2.1 Definition

12.3.2.2.2 Conformance requirement

1) If the network performs a PS detach procedure with the cause 'PS services not allowed', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.

2) If the network performs a PS detach procedure with the cause 'PS services not allowed' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Reference

3GPP TS 24.008 clause 4.7.4.2

12.3.2.2.3 Test purpose

To test the behaviour of the UE if the network order a PS detach procedure with the cause 'PS services not allowed' (no valid PS-subscription for the IMSI).

12.3.2.2.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (HPLMN, RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS performs a detach with the cause value 'PS services not allowed'. The SS checks that the UE does not perform PS attach in another PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 19.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
7	<-		DETACH REQUEST	Detach type = 're-attach not required' Cause = 'PS services not allowed'
8	->		DETACH ACCEPT	
				The following messages are sent and shall be received on cell B.
9		SS		The SS deactivates cell A and activates cell B.
10	UE			Cell B is preferred by the UE.
11	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
12	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
13	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
14	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
15	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
16	->		ATTACH COMPLETE	
17	UE			The UE is switched off or power is removed (see ICS).
18	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
19				The SS deactivates cell B and activates cell A.
20	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 3 to step 18.

Specific message contents

None.

12.3.2.2.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the completion of the PS attach procedure, and when UE receives the DETACH REQUEST message (Detach type = 're-attach not required', Cause = 'PS services not allowed') from SS, UE shall:

- delete the stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.
- consider the USIM as invalid for PS service until power is switched off or USIM is removed.

12.3.2.3 PS detach / IMSI detach / accepted

12.3.2.3.1 Definition

12.3.2.3.2 Conformance requirement

The UE detach the IMSI for PS services.

Reference

3GPP TS 24.008 clause 4.7.4.2

12.3.2.3.3 Test purpose

To test the behaviour of the UE for the detach procedure.

12.3.2.3.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No
MMI controlled attach / detach procedures for non-PS services Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The SS sends a DETACH REQUEST message to the UE. The UE then performs an IMSI detach (detach for non-PS services) .

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

The UE attach for non-PS services by a routing area update procedure. Both PS and CS services are possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	SS			The SS initiates a detach for non-PS services.
7	<-		DETACH REQUEST	Detach type = 'IMSI detach'
8	->		DETACH ACCEPT	
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
9a	->		RRC CONNECTION REQUEST	
9b	<-		RRC CONNECTION SETUP	
9c	->		RRC CONNECTION SETUP COMPLETE	
10	->		SERVICE REQUEST	service type = "paging response"
10a	<-		RRC CONNECTION RELEASE	
10b	->		RRC CONNECTION RELEASE COMPLETE	
11	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
12	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
13	UE			The UE initiates an attach for non-PS services (see ICS).
14	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
15	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updating' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
16	->		ROUTING AREA UPDATE COMPLETE	
17	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
18	->		RRC CONNECTION REQUEST	
19	<-		RRC CONNECTION SETUP	
20	->		RRC CONNECTION SETUP COMPLETE	
21	->		PAGING RESPONSE	Mobile identity = TMSI-1
22	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
23	->		RRC CONNECTION RELEASE COMPLETE	
24	UE			The UE is switched off or power is removed (see ICS).
25	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.2.3.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the completion of the PS attach procedure, UE shall:

- receive DETACH REQUEST message(Detach type = 'IMSI detach') from SS.
- not deactivate the PDP context.
- and send the DETACH ACCEPT message to SS.

12.3.2.4 PS detach / re-attach requested / accepted

12.3.2.4.1 Definition

12.3.2.4.2 Conformance requirement

The UE shall deactivate the logical link and re-activate it.

Reference

3GPP TS 24.008 clause 4.7.4.2

12.3.2.4.3 Test purpose

To test the behaviour of the UE for the detach procedure in case automatic re-attach.

12.3.2.4.4 Method of test

Initial condition

System Simulator:

One cell in operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The SS sends a DETACH REQUEST message to the UE with cause re-attach. The UE then detach for PS and non-PS services. The UE automatically performs a new combined PS attach procedure (for PS and non-PS services) and PS and CS services are again possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = TMSI-1 Routing area identity = RAI-1 No new P-TMSI and P-TMSI signature assigned
5	->		ATTACH COMPLETE	
6	SS			The SS initiates a detach with re-attach.
7	<-		DETACH REQUEST	Detach type = 're-attach required'
8	->		DETACH ACCEPT	
9	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1 TMSI status = valid TMSI available
10	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = TMSI-1 Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
11	->		ATTACH COMPLETE	
12	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
12a	->		RRC CONNECTION REQUEST	
12b	<-		RRC CONNECTION SETUP	
12c	->		RRC CONNECTION SETUP COMPLETE	
13	->		SERVICE REQUEST	service type = "paging response"
13a	<-		RRC CONNECTION RELEASE	
13b	->		RRC CONNECTION RELEASE COMPLETE	
14	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
15	->		RRC CONNECTION REQUEST	
16	<-		RRC CONNECTION SETUP	
17	->		RRC CONNECTION SETUP COMPLETE	
18	->		PAGING RESPONSE	Mobile identity = TMSI-1
19	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
20	->		RRC CONNECTION RELEASE COMPLETE	
21	UE			The UE is switched off or power is removed (see ICS).
22	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.2.4.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the completion of the combined PS attach procedure, UE shall:

- deactivate the PDP context and the logical link(s).
- send DETACH ACCEPT message to SS.

After UE completed PS detach procedure, UE shall:

- initiate a combined PS attach procedure.

12.3.2.5 PS detach / rejected / location area not allowed

12.3.2.5.1 Definition

12.3.2.5.2 Conformance requirement

1) If the network performs a PS detach procedure with the cause 'location area not allowed' the User Equipment shall:

   1.1 not perform combined PS attach when in the same location area.

   1.2 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.3 store the LA in the 'forbidden location areas for regional provision of service'.

2) If the network performs a PS detach procedure with the cause 'location area not allowed' the User Equipment shall:

   2.1 perform combined PS attach when a new location area is entered.

   2.2 delete the list of forbidden LAs when power is switched off.

Reference

3GPP TS 24.008 clauses 4.7.4.2

12.3.2.5.3 Test purpose

To test the behaviour of the UE if the network orders the PS detach procedure with the cause 'Location Area not allowed'.

To test that the UE deletes the list of forbidden LAs when power is switched off.

12.3.2.5.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC2/RAC1 (RAI-3).
All cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS orders a PS detach with the cause value 'Location Area not allowed'. The SS checks that the UE does not perform combined PS attach while in the location area, performs PS attach when a new location area is entered and deletes the list of forbidden LAs when switched off. CS services are not possible unless an IMSI attach procedure is performed.

Different types of UE may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
5	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
7	<-		DETACH REQUEST	Detach type = 're-attach not required' Cause 'Location Area not allowed'
8	->		DETACH COMPLETE	
9	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
10	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
11	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
12	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
13	->			No response from the UE to the request. This is checked for 10 seconds
				The following messages are sent and shall be received on cell B.
14		SS		The SS deactivates cell A and activates cell B.
15	UE			Cell B is preferred by the UE.
16	UE			The UE initiates an attach automatically, by MMI or by AT command.
17	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
18	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
19	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
20	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
21	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
22				No response from the UE to the request. This is checked for 10 seconds
				The following messages are sent and shall be received on cell C.
23		SS		The SS deactivates cell B and activates cell C.
24	UE			Cell C is preferred by the UE.
25	UE			The UE initiates an attach automatically, by MMI or by AT command.
26	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
27	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-3

28	->	ATTACH COMPLETE	
29	<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
30	->	RRC CONNECTION REQUEST	
31	<-	RRC CONNECTION SETUP	
32	->	RRC CONNECTION SETUP COMPLETE	
33	->	PAGING RESPONSE	Mobile identity = TMSI-1
34	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
35	->	RRC CONNECTION RELEASE COMPLETE	
36	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
36a	->	RRC CONNECTION REQUEST	
36b	<-	RRC CONNECTION SETUP	
36c	->	RRC CONNECTION SETUP COMPLETE	
37	->	SERVICE REQUEST	service type = “paging response”
37a	<-	RRC CONNECTION RELEASE	
38b	->	RRC CONNECTION RELEASE COMPLETE	
38	UE		The UE is switched off or power is removed (see ICS).
39	->	DETACH REQUEST	Message not sent if power is removed. Detach type = ‘power switched off, combined PS / IMSI detach’
			The following messages are sent and shall be received on cell B.
40	UE		The SS deactivates cell C and activates cell B. Cell B is preferred by the UE.
41	UE		The UE is powered up or switched on and initiates an attach (see ICS).
42	->	ATTACH REQUEST	Attach type = ‘Combined PS / IMSI attach’ Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3 TMSI status = valid TMSI available
43	<-	ATTACH ACCEPT	Attach result = ‘Combined PS / IMSI attached’ Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-4
44	->	ATTACH COMPLETE	
45	<-	PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
46	->	RRC CONNECTION REQUEST	
47	<-	RRC CONNECTION SETUP	
48	->	RRC CONNECTION SETUP COMPLETE	
49	->	PAGING RESPONSE	Mobile identity = TMSI-2
50	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
51	->	RRC CONNECTION RELEASE COMPLETE	
52	<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
52a	->	RRC CONNECTION REQUEST	
52b	<-	RRC CONNECTION SETUP	
52c	->	RRC CONNECTION SETUP COMPLETE	
53	->	SERVICE REQUEST	service type = “paging response”
53a	<-	RRC CONNECTION RELEASE	
53b	->	RRC CONNECTION RELEASE COMPLETE	

54	UE		The UE is switched off or power is removed (see ICS).
55	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.3.2.5.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After the completion of the PS attach procedure, and when UE receive the DETACH REQUEST message (Detach type = 're-attach not required', Cause = 'Location Area not allowed') from SS, UE shall:.

- perform the following action depending on UE location.

  When in the same location area, UE shall:

  - not perform combined PS attach.
  - delete the stored RAI or LAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number
  - store the LA in the 'forbidden location areas for regional provision of service'.

  When a new location area is entered, UE shall:

  - perform combined PS attach.
  - delete the list of forbidden LAs when power is switched off.

12.4 Routing area updating procedure

This procedure is used to update the actual routing area of an UE in the network.

12.4.1 Normal routing area updating

The routing area updating procedure is a GMM procedure used by PS UEs of UE operation mode A or C that are IMSI attached for PS services only.

12.4.1.1 Routing area updating / accepted

12.4.1.1.1 Definition

12.4.1.1.2 Conformance requirement

1) If the network accepts the routing area updating procedure and reallocates a P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.

2) If the network accepts the routing area updating procedure from the UE without reallocation of the old P-TMSI, the UE shall continue communication with the old P-TMSI.

Reference

3GPP TS 24.008 clause 4.7.5.1

12.4.1.1.3 Test purpose

To test the behaviour of the UE if the network accepts the routing area updating procedure.

The following cases are identified:

1) P-TMSI / P-TMSI signature is reallocated

2) Old P-TMSI / P-TMSI signature is not changed

12.4.1.1.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

1) The UE sends a ROUTING AREA UPDATE REQUEST message. The SS reallocates the P-TMSI and returns ROUTING AREA UPDATE ACCEPT message with a new P-TMSI. The UE acknowledge the new P-TMSI by sending ROUTING AREA UPDATING COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. The UE will not answer signalling addressed to the old P-TMSI.

2) The UE sends a ROUTING AREA UPDATING REQUEST message. The SS accepts the P-TMSI and returns ROUTING AREA UPDATING ACCEPT message without any P-TMSI. Further communication UE - SS is performed by the P-TMSI.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 22.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
10	->		ROUTING AREA UPDATING COMPLETE	
11	<-		GMM INFORMATION	Message sent with P-TMSI-1
11b	->		GMM STATUS	Message sent in case the UE does not support reception of GMM information message Cause #97
12	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
13	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell A.
14		SS		Set the signal strength of cell A to a lower signal strength than cell B The RF level of cell B is lowered until cell A is preferred by the UE.
15	UE			Cell A is preferred by the UE.
16	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-4
17	<-		ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-2 signature Routing area identity = RAI-1
18	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. PAGING TYPE 1 (used for NW-mode II).
18a	->		RRC CONNECTION REQUEST	
18b	<-		RRC CONNECTION SETUP	
18c	->		RRC CONNECTION SETUP COMPLETE	
19	->		SERVICE REQUEST	service type = "paging response"
19a	<-		RRC CONNECTION RELEASE	
19b	->		RRC CONNECTION RELEASE COMPLETE	

20 21	UE ->	 DETACH REQUEST	The UE is switched off or power is removed (see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach'
22	UE		The UE is set in UE operation mode A (see ICS) and the test is repeated from step 3 to step 21.

Specific message contents

None.

12.4.1.1.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:,

- initiate a routing area updating procedure with the information elements specified in the above Expected Sequence when the RF level of the attached cell is lower than the RF level of the new cell.
- use the P-TMSI which is included in the ROUTING AREA UPDATING ACCEPT message.
- acknowledge the new P-TMSI and continue communication with the new P-TMSI.
- continue communication with the old P-TMSI.

12.4.1.2 Routing area updating / rejected / IMSI invalid / illegal ME

12.4.1.2.1 Definition

12.4.1.2.2 Conformance requirement

1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.
2) If the network rejects a routing area updating procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Reference

3GPP TS 24.008 clause 4.7.5.1

12.4.1.2.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'Illegal ME'.

12.4.1.2.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2).
All three cells are operating in network operation mode II (in case of UE operation mode A)

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a routing area updating with the cause value ‘Illegal ME’. The SS checks that the UE does not perform PS attach in the same or another PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned.P-TMSI and P-TMSI signature not included.Attach result = 'PS only attached' Routing area identity = RAI-1
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' Routing area identity = RAI-1
9	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'Illegal ME'
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
11	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell C.
12		SS		The SS deactivates cell B and activates cell C.
13	UE			Cell C is preferred by the UE.
14	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
15	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
16	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
17	->		ATTACH REQUEST	Attach type = 'PS only attached' Mobile identity = IMSI
18	<-		ATTACH ACCEPT	Attach result = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
19	->		ATTACH COMPLETE	
20	UE			The UE is switched off or power is removed (see ICS).
21	->		DETACH REQUEST	Message not sent if power is removed.

Specific message contents

None.

12.4.1.2.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a routing area updating procedure with the information elements specified in the above Expected Sequence.
- delete the stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number .
- consider the USIM as invalid for PS services until the UE is switched off or the USIM is removed.

12.4.1.3 Routing area updating / rejected / UE identity cannot be derived by the network

12.4.1.3.1 Definition

12.4.1.3.2 Conformance requirement

If the network rejects a routing area updating procedure from the User Equipment with the cause 'UE identity cannot be derived by the network', the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Depending on the manufacturer the UE may or may not perform a PS attach procedure.

Reference

3GPP TS 24.008 clause 4.7.5.1

12.4.1.3.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'UE identity cannot be derived by the network'.

12.4.1.3.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Automatic attach procedure when UE identity cannot be derived by the network Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a normal routing area updating with the cause value 'UE identity cannot be derived by the network'. The UE detach locally. A new PS attach may be performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1	SS			The SS is set in network operation mode II and activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity =P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7	SS			The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
10	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'UE identity cannot be derived by the network'
11	UE			If an automatic attach procedure by the UE is not possible when the UE identity cannot be derived by the network (see ICS) goto step 19.
12	UE			An Automatic PS attach procedure is initiated (see ICS).
13	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
14	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
15	->		ATTACH COMPLETE	
16	UE			The UE is switched off or power is removed (see ICS).
17	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
18				Stop the sequence
19	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
20	UE			No response from the UE to the request, as the UE has detached locally. This is checked for 10 seconds.

Specific message contents

None.

12.4.1.3.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a routing area updating procedure with the information elements specified in the above Expected Sequence.
- delete stored P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number.

12.4.1.4 Routing area updating / rejected / location area not allowed

12.4.1.4.1 Definition

12.4.1.4.2 Conformance requirement

1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:

   1.1 not perform PS attach when in the same location area.

   1.2 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

   1.3 store the LA in the 'forbidden location areas for regional provision of service'.

2) If the network rejects a routing area updating procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:

   2.1 perform PS attach when a new location area is entered.

   2.2 delete the list of forbidden LAs after switch off (power off).

Reference

3GPP TS 24.008 clauses 4.7.5.1

12.4.1.4.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'Location Area not allowed'.

To test that the UE deletes the list of forbidden LAs when power is switched off.

12.4.1.4.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) , cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC2/RAC1 (RAI-3).
All cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a routing area updating with the cause value 'Location Area not allowed'. The SS checks that the UE does not perform PS attach while in the location area, performs PS attach when a new location area is entered and deletes the list of forbidden LAs when switched off.

Different types of UE may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell C.
1		SS		The SS activates cell C.
2		UE		The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 33.
3		UE		The UE is powered up or switched on and initiates an attach (see ICS). Cell C is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
6	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7				The SS deactivates cell C and activates cell B.
8		SS		Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-3
10	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'Location Area not allowed'
11	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
12		UE		No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell A.
13		SS		The SS deactivates cell B and activates cell A.
14		UE		Cell A is preferred by the UE.
15		UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds)
				The following messages are sent and shall be received on cell C.
16		SS		The SS deactivates cell B and activates cell C.
17		UE		Cell C is preferred by the UE.
18	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
19	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-3
20	->		ATTACH COMPLETE	
21		UE		If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
22	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
23		UE		The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
24	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-3
25	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3

26	->	ATTACH COMPLETE	
	SS		The following messages are sent and shall be received on cell A.
27			The SS deactivates cell C and activates cell A.
28			Cell A is preferred by the UE.
29	->	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-3
30	<-	ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned.P-TMSI and P-TMSI signature not included.Update result = 'RA updated' Routing area identity = RAI-1
31	UE		The UE is switched off or power is removed (see ICS).
32	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
33	SS		The SS is set in network operation mode II.
34	UE		The UE is set in UE operation mode A (see ICS), cell A is switched off and the test is repeated from step 2 to step 32.

Specific message contents

None.

12.4.1.4.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a routing area updating procedure with the information elements specified in the above Expected Sequence.

When in the same location area, UE shall

- not perform PS attach..
- store the LA in the 'forbidden location areas for regional provision of service'.

When a new location area is entered, UE shall

- perform PS attach when a.
- delete the list of forbidden LAs when power is switched off.

12.4.1.5 Routing area updating / abnormal cases / attempt counter check / miscellaneous reject causes

12.4.1.5.1 Definition

12.4.1.5.2 Conformance requirement

When a routing area updating procedure is rejected with the attempt counter less than five, the UE shall repeat the routing area updating procedure after T3330 timeout.

When a T3330 timeout has occurred during a routing area updating procedure with the attempt counter five, the UE shall start timer T3302.

When the T3302 expire, a new routing area updating procedure shall be initiated.

GMM cause codes that can be selected are:
'IMSI unknown in HLR'
'IMEI not accepted'
'Illegal ME'
'UE identity cannot be derived by the network'
'Network failure'
'Congestion'
'retry upon entry into a new cell'
'Semantically incorrect message'
'Invalid mandatory information'
'Message type non-existent or not implemented'
'Message type not compatible with the protocol state'
'Information element non-existent or not implemented'
'Conditional IE error'
'Message not compatible with the protocol state'
'Protocol error, unspecified'

Reference

3GPP TS 24.008 clause 4.7.5.1

12.4.1.5.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

12.4.1.5.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure (attempt counter zero).

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure (attempt counter one) after T3311 expires.

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure (attempt counter two) after T3311 expires.

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure (attempt counter three) after T3311 expires.

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure (attempt counter four) after T3311 expires.

The SS rejects the routing area updating procedure with a random cause code.

The UE initiates a new routing area updating procedure with attempt counter five (after T3311 expires).

The SS rejects the routing area updating procedure with a random cause code.

The UE shall not perform a new successful routing area updating procedure after T3311 seconds.

The UE initiates a routing area updating procedure with attempt counter zero after T3302 expires with the stored P-TMSI, P-TMSI signature, PS CKSN and RAI.

T3302; set to 10 minutes.

T3330; 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-2 signature Routing area identity = RAI-1
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7		SS		Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9	<-		ROUTING AREA UPDATING REJECT	Random GMM cause
10		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
11	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
12	<-		ROUTING AREA UPDATING REJECT	Random GMM cause
13		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
14	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
15	<-		ROUTING AREA UPDATING REJECT	Random GMM cause
16		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
17	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
18	<-		ROUTING AREA UPDATING REJECT	Random GMM cause
19		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
20	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
21	<-		ROUTING AREA UPDATING REJECT	Random GMM cause
22		SS		The SS verifies that the UE does not attempt to attach for 10 minutes .
23		SS		The SS shall release the PS signalling connection.

24	->	ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
25	<-	ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4
26	->	ROUTING AREA UPDATING COMPLETE	
27	UE		The UE is switched off or power is removed (see ICS).
28	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.1.5.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- perform the following actions depending on the conditions described below.

  Case 1) A routing area updating procedure is rejected from SS with the attempt counter less than five

  UE shall:

  - repeat the routing area updating procedure after T3330 timeout

  Case2) A timer T3330 timeout has occurred during a routing area updating procedure with the attempt counter five

  UE shall:

- start timer T3302

  Case3) The T3302 expires

  UE shall:

  - initiate a new routing area updating procedure

12.4.1.6 Routing area updating / abnormal cases / change of cell into new routing area

12.4.1.6.1 Definition

12.4.1.6.2 Conformance requirement

When a change of cell into a new routing area is performed before the routing area updating procedure is finished, the UE shall abort the routing area updating procedure and re-initiate it in the new routing area.

Reference

3GPP TS 24.008 clause 4.7.5.1

12.4.1.6.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.1.6.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) and cell C In MCC1/MNC1/LAC1/RAC3 (RAI-5).
All cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update into a new routing area. The UE shall re-initiate a routing area updating procedure in the new routing area.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 18.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8		SS		Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
10		SS		No response to the ROUTING AREA UPDATING REQUEST message is given by the SS
				The following messages are sent and shall be received on cell C.
11		SS		The SS deactivates cell B and activates cell C.
12		SS		Cell C is preferred by the UE.
13	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
14	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-5
15	->		ROUTING AREA UPDATING COMPLETE	
16	UE			The UE is switched off or power is removed (see ICS).
17	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
18		SS		The SS is set in network operation mode II.
19	UE			The UE is set in UE operation mode A(see ICS) and the test is repeated from step 3 to step 17.

Specific message contents

None.

12.4.1.6.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate the routing area update procedure.

When change of cell into a new routing area is performed before the routing area updating procedure is finished, UE shall:

- abort the routing area updating procedure.
- re-initiate new routing area updating procedure in the new routing area.

12.4.1.7 Routing area updating / abnormal cases / change of cell during routing area updating procedure

12.4.1.7.1 Definition

12.4.1.7.2 Conformance requirement

When a change of cell within a new routing area is performed before the routing area updating procedure is finished, the UE shall perform the cell update before the routing area updating procedure is finished.

Reference

3GPP TS 24.008 clause 4.7.5.1

12.4.1.7.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.1.7.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) and cell C in MCC1/MNC1/LAC1/RAC2 (RAI-4).
All three cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update within the routing area. The UE then waits for the ROUTING AREA UPDATE ACCEPT message.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach result = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-2 signature Routing area identity = RAI-1
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7		SS		Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9		SS		No response to the ROUTING AREA UPDATING REQUEST message is given by the SS
				The following messages are sent and shall be received on cell C.
10		SS		The SS deactivates cell B and activates cell C.
11		SS		Cell C is preferred by the UE.
12a	->		CELL UPDATE	Cell update cause = 'cell reselection'
12b	<-		CELL UPDATE CONFIRM	
13	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4
14	->		ROUTING AREA UPDATING COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.1.7.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate routing area update procedure.

When a change of cell within a new routing area is performed, UE shall:

- perform the cell update before the routing area updating procedure is finished.

12.4.1.8 Routing area updating / abnormal cases / P-TMSI reallocation procedure collision

12.4.1.8.1 Definition

12.4.1.8.2 Conformance requirement

When a P-TMSI REALLOCATION REQUEST message is received by the UE while waiting for a ROUTING AREA UPDATE ACCEPT message, the UE shall ignore the P-TMSI reallocation procedure and continue with the routing area updating procedure.

Reference

3GPP TS 24.008 clause 4.7.5.1

12.4.1.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.1.8.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No (only if mode C not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a P-TMSI reallocation procedure. The UE shall ignore the P-TMSI reallocation procedure and continue with the routing area updating procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach result = 'PS attach' Mobile identity = IMSI
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8		SS		Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-1
10	<-		P-TMSI REALLOCATION REQUEST	Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
11	UE			The UE ignores the P-TMSI reallocation request.
12	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
13	->		ROUTING AREA UPDATING COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.1.8.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate the routing area updating procedure.

When a P-TMSI REALLOCATION REQUEST message is received from SS while waiting for a ROUTING AREA UPDATE ACCEPT message, UE shall:

- ignore the P-TMSI reallocation procedure
- continue with the routing area updating procedure.

12.4.2 Combined routing area updating

The combined routing area updating procedure is a GMM procedure used by PS UEs of UE operation mode A that are IMSI attached for PS and non-PS services. In order to use the combined routing area updating procedure, the network must operate in network operation mode I.

12.4.2.1 Combined routing area updating / combined RA/LA accepted

12.4.2.1.1 Definition

12.4.2.1.2 Conformance requirement

1) If the network accepts the combined routing area updating procedure and reallocates a P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.

2) If the network accepts the combined routing area updating procedure from the UE without reallocation of the old P-TMSI, the UE shall continue communication with the old P-TMSI.

Reference

3GPP TS 24.008 clause 4.7.5.2

12.4.2.1.3 Test purpose

To test the behaviour of the UE if the network accepts the combined routing area updating procedure.

The following cases are identified:

1) P-TMSI / P-TMSI signature is reallocated

2) Old P-TMSI / P-TMSI signature is not changed

3) Mobile terminating CS call is allowed with IMSI

4) Mobile terminating CS call is allowed with TMSI

12.4.2.1.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

1) A combined PS attach procedure is performed. The UE sends a ROUTING AREA UPDATE REQUEST message. The SS reallocates the P-TMSI, unassigns the TMSI and returns ROUTING AREA UPDATE ACCEPT message with a new P-TMSI and IMSI. The UE acknowledge the new P-TMSI by sending ROUTING AREA UPDATING COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. For CS calls, the IMSI is used

2) The UE is CS paged in order to verify that the IMSI is used for CS calls.

3) A combined PS attach procedure is performed. The UE sends an ROUTING AREA UPDATING REQUEST message. The SS accepts the P-TMSI signature and returns ROUTING AREA UPDATING ACCEPT message without any P-TMSI and with a new TMSI. The UE acknowledge the new TMSI by sending ROUTING AREA UPDATING COMPLETE message. Further communication UE-SS is performed by the old P-TMSI. For CS calls, the new TMSI is used.

4) The UE is CS paged in order to verify that the TMSI is used for CS calls.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6	SS			Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
7	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
9	->		ROUTING AREA UPDATING COMPLETE	
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10a	->		RRC CONNECTION REQUEST	
10b	<-		RRC CONNECTION SETUP	
10c	->		RRC CONNECTION SETUP COMPLETE	
11	->		SERVICE REQUEST	service type = "paging response"
11a	<-		RRC CONNECTION RELEASE	
11b	->		RRC CONNECTION RELEASE COMPLETE	
12	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
13	->		RRC CONNECTION REQUEST	
14	<-		RRC CONNECTION SETUP	
15	->		RRC CONNECTION SETUP COMPLETE	
16	->		PAGING RESPONSE	Mobile identity = IMSI
17	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
18	->		RRC CONNECTION RELEASE COMPLETE	
				The following messages are sent and shall be received on cell A.
19	SS			The RF level of cell A is increased and the RF level of cell B is lowered until cell A is preferred by the UE.
20	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-1 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available
21	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1

22	->	ROUTING AREA UPDATING COMPLETE	
23	<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
23a	->	RRC CONNECTION REQUEST	
23b	<-	RRC CONNECTION SETUP	
23c	->	RRC CONNECTION SETUP COMPLETE	
24	->	SERVICE REQUEST	service type = “paging response”
24a	<-	RRC CONNECTION RELEASE	
24b	->	RRC CONNECTION RELEASE COMPLETE	
25	<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
26	->	RRC CONNECTION REQUEST	
27	<-	RRC CONNECTION SETUP	
28	->	RRC CONNECTION SETUP COMPLETE	
29	->	PAGING RESPONSE	Mobile identity = TMSI-1
30	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
31	->	RRC CONNECTION RELEASE COMPLETE	
32	UE		The UE is switched off or power is removed (see ICS).
33	->	DETACH REQUEST	Message not sent if power is removed. Detach type = ‘power switched off, combined PS / IMSI detach’

Specific message contents

None.

12.4.2.1.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a combined routing area update procedure(Update type = ‘Combined RA/LA updating’) with the information elements specified above Expected Sequence when RF level of the attached cell is lower than the RF level of the new cell.
- acknowledge the new P-TMSI
- continue communication with the new P-TMSI If SS reallocates a P-TMSI.
- continue communication with the old P-TMSI If SS does not reallocate the old P-TMSI.

12.4.2.2 Combined routing area updating / UE in CS operation at change of RA

12.4.2.2.1 Definition

12.4.2.2.2 Conformance requirement

PS UE in UE operation mode A that is in an ongoing CS transaction at change of routing area shall initiate the normal routing area updating procedure.

Reference

3GPP TS 24.008 clause 4.7.5.2

12.4.2.2.3 Test purpose

To test the behaviour of the UE if the routing area is changed during an ongoing circuit switched transmission.

12.4.2.2.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A combined PS attach procedure is performed. The UE in UE operation mode A initiates a CS call. The routing area change. The UE will perform the normal routing area updating procedure durng the ongoing circuit-switched transaction.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			A CS call is initiated.
				The following messages are sent and shall be received on cell B.
7	SS			Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
10	->		ROUTING AREA UPDATING COMPLETE	
11	<-		PAGING TYPE2	Mobile identity = P-TMSI-1 Paging order is for PS services.
12	->		SERVICE REQUEST	service type = "paging response"
24	UE			The UE is switched off or power is removed (see ICS).
25	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.4.2.2.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a CS call. at change of routing area.

- initiate a normal routing area updating procedureduring the CS connection. .

12.4.2.3 Combined routing area updating / RA only accepted

12.4.2.3.1 Definition

12.4.2.3.2 Conformance requirement

1) If the network accepts the combined PS attach procedure, but GMM cause code 'IMSI unknown in HLR' is sent to the UE the User Equipment shall delete the stored TMSI, LAI and CKSN. The User Equipment shall consider USIM invalid for non-PS services until power is switched off or USIM is removed.

2) If the network accepts the combined PS attach procedure, but GMM cause code 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is sent to the UE, an UE operation mode A UE may perform an MM IMSI attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.2

12.4.2.3.3 Test purpose

Test porpose1

To test the behaviour of the UE if the network accepts the routing area updating procedure with indication RA only, GMM cause 'IMSI unknown in HLR'.

Test porpose2

To test the behaviour of the UE if the network accepts the routing area updating procedure with indication RA only, GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.

12.4.2.3.4 Method of test

Test Procedure1

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells operating in network operation mode I.

User Equipment:

The UE has a valid ITMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

After attach, the UE sends an ROUTING AREA UPDATE REQUEST message. The SS allocates a P-TMSI and returns ROUTING AREA UPDATE ACCEPT message with a P-TMSI. GMM cause 'IMSI unknown in HLR' is indicated from SS. Further communication UE - SS is performed by the P-TMSI. CS services are not possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'IMSI unknown in HLR'
9	->		ROUTING AREA UPDATING COMPLETE	
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10a	->		RRC CONNECTION REQUEST	
10b	<-		RRC CONNECTION SETUP	
10c	->		RRC CONNECTION SETUP COMPLETE	
11	->		SERVICE REQUEST	service type = "paging response"
11a	<-		RRC CONNECTION RELEASE	
11b	->		RRC CONNECTION RELEASE COMPLETE	
12	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
13	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Test Procedure2

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Automatic MM IMSI attach procedure for UE operation mode A UE Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

After attach, the UE sends an ROUTING AREA UPDATE REQUEST message . The SS allocates a new P-TMSI signature and returns ROUTING AREA UPDATE ACCEPT message. GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is indicated from SS. The cause code is arbitrarily chosen. An UE operation mode A UE may perform an MM IMSI attach procedure (according to the ICS statement). Further communication UE - SS is performed by the P-TMSI. The existence of a signalling channel is verified by a request for mobile identity. CS services are not possible unless an IMSI attach procedure is performed.

Expected Sequence

Dependent whether the option 'Automatic MM IMSI attach procedure for UE operation mode A UE' is not supported or not, the steps 1-13 or 14-35 apply depending on manufacturer (see ICS).

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A
1	UE			The UE is set in UE operation mode A and no automatic MM IMSI attach procedure is indicated (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
9	->		ROUTING AREA UPDATING COMPLETE	
10	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
11	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach' Stop the sequence.
				The following messages are sent and shall be received on cell B
14	UE			Automatic MM IMSI attach procedure is indicated (see ICS).
15	UE			The UE is powered up or switched on and initiates an attach (see ICS).
16	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
17	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
18	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell A.
19		SS		The SS deactivates cell B and activates cell A.
20	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available

21	<-	ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
22	->	ROUTING AREA UPDATING COMPLETE	
23	->	RRC CONNECTION REQUEST	
24	<-	RRC CONNECTION SETUP	
25	->	RRC CONNECTION SETUP COMPLETE	
26	->	LOCATION UPDATING REQ	Location updating type = IMSI attach.
27	<-	LOCATION UPDATING ACC	The SS allocates a new TMSI.
28	->	TMSI REALLOCATION COMP	Location updating type = IMSI attach.
29	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
30	->	RRC CONNECTION RELEASE COMPLETE	
31	<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
32	->	RRC CONNECTION REQUEST	
33	<-	RRC CONNECTION SETUP	
34	->	RRC CONNECTION SETUP COMPLETE	
35	->	PAGING RESPONSE	Mobile identity = TMSI-1
36	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
37	->	RRC CONNECTION RELEASE COMPLETE	
38	UE		The UE is switched off or power is removed (see ICS).
39	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.2.3.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a combined routing area updating procedure.
- perform the following actions depending on the GMM cause.

  Case 1) GMM cause = 'IMSI unknown in HLR'.

  UE shall:

  - delete the stored TMSI, LAI and CKSN.
  - consider USIM invalid for non-PS services until power is switched off or USIM is removed.

  Case 2) GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.

  UE shall:

- perform an MM IMSI attach procedure. (only applied UE operation mode A)

12.4.2.4 Combined routing area updating / rejected / PLMN not allowed

12.4.2.4.1 Definition

12.4.2.4.2 Conformance requirement

1) If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'PLMN not allowed' the User Equipment shall:

   1.1 not perform combined GPRA attach when switched on in the same location area or PLMN.

   1.2 delete the stored RAI, PS-CKSN, P-TMSI, P-TMSI signature, TMSI CKSN andLAI.

   1.3 store the PLMN in the 'forbidden PLMN list'.

Reference

3GPP TS 24.008 clause 4.7.5.2

12.4.2.4.3 Test purpose

To test the behaviour of the UE if the network rejects the combined routing area updating procedure of the UE with the cause 'PLMN not allowed'.

12.4.2.4.4 Method of test

Initial condition

System Simulator:

Four cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC2/RAC1 (RAI-3) and cell D in MCC2/MNC1/LAC1/RAC1 (RAI-2).
All four cells are operating in network operation mode I

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined routing area updating with the cause value 'PLMN not allowed'. The SS checks that the UE does not perform PS attach if activated in the same PLMN. The SS checks that the UE does not perform IMSI attach if activated in the same PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = TMSI-1
5		->	ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9		->	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
10		<-	ROUTING AREA UPDATING REJECT	GMM cause = 'PLMN not allowed'
11	UE			The UE initiates an attach by MMI or AT command.
12	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
14	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell C.
15		SS		The SS deactivates cell B and activates cell C.
16	UE			Cell C is preferred by the UE.
17	UE			The UE initiates an attach by MMI or by AT command.
18	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
19		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
20	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
				The following messages are sent and shall be received on cell A.
21		SS		The SS deactivates cell C and activates cell A.
22	UE			Cell A is preferred by the UE.
23	UE			The UE initiates an attach by MMI or by AT command.
24	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
25		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
26	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell D.
27		SS		The SS deactivates cell A and activates cell D.
28	UE			Cell D is preferred by the UE.
29	UE			The UE initiates an attach automatically, by MMI or by AT command.

30	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
31	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2 Mobile identity = IMSI
32	->	ATTACH COMPLETE	
33	UE		The UE is switched off or power is removed (see ICS).
34	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.4.2.4.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence
- delete the stored P-TMSI, P-TMSI signature, TMSI, RAI, LAI, ciphering key sequence number PS ciphering key sequence number.
- reset the location update attempt counter when UE receive the ROUTING AREA UPDATING REJECT message(GMM cause = 'PLMN not allowed') from SS.
- store the PLMN identity in the 'forbidden PLMN list'.
- not perform combined PS attach procedure when the UE is switched on in the same PLMN.

12.4.2.5 Combined routing area updating / rejected / roaming not allowed in this location area

12.4.2.5.1 Definition

12.4.2.5.2 Conformance requirement

1) If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'roaming not allowed in this location area' the User Equipment shall:

   1.1 not perform combined PS attach when in the same location area.

   1.2 delete the stored RAI, PS-CKSN, P-TMSI P-TMSI signature, TMSI, CKSN and LAI.

   1.3 store the LA in the 'forbidden location areas for roaming'.

   1.4 perform combined PS attach when a new location area is entered.

2) The User Equipment shall reset the list of 'Forbidden location areas for roaming' when switched off or when the USIM is removed.

Reference

3GPP TS 24.008 clause 4.7.5.2

12.4.2.5.3 Test purpose

Test purpose1

To test that on receipt of a rejection using the 'Roaming not allowed in this area' cause code, the UE ceases trying a routing area updating procedure on that location area. Successful combined routing area updating procedure is possible in other location areas.

Test purpose2

To test that if the UE is switched off or the USIM is removed the list of 'forbidden location areas for roaming' is cleared.

12.4.2.5.4 Method of test

12.4.2.5.4.1 Test procesure1

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined routing area updating with the cause value 'Roaming not allowed in this area'. A new attempt for a combined PS attach is not possible. Successful combined PS attach procedure is performed in another location area. The UE is mobed back to the 1st location area. A combined routing area updating shall not be performed, as the LA is on the forbidden list.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
10	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'Roaming not allowed in this area'
11	UE			The UE initiates an attach by MMI or by AT command.
12	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
14	UE			No response from the UE to the request. This is checked for 10 seconds.
15	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
16	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
				The following messages are sent and shall be received on cell A.
17		SS		The SS deactivates cell B and activates cell A.
18	UE			Cell A is preferred by the UE.
19	UE			The UE initiates an attach automatically, by MMI or by AT command.
20	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
21	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 Mobile identity = TMSI-1
22	->		ATTACH COMPLETE	
23	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
24	->		RRC CONNECTION REQUEST	
25	<-		RRC CONNECTION SETUP	
26	->		RRC CONNECTION SETUP COMPLETE	
27	->		PAGING RESPONSE	Mobile identity = TMSI-1
28	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
29	->		RRC CONNECTION RELEASE COMPLETE	
30	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.

30a	->	RRC CONNECTION REQUEST	
30b	<-	RRC CONNECTION SETUP	
30c	->	RRC CONNECTION SETUP COMPLETE	
31	->	SERVICE REQUEST	service type = “paging response”
31a	<-	RRC CONNECTION RELEASE	
31b	->	RRC CONNECTION RELEASE COMPLETE	
			The following messages are sent and shall be received on cell B.
32	SS		The SS deactivates cell A and activates cell B.
33	UE		No ROUTING AREA UPDATING REQUEST sent to SS (SS waits 30 seconds).
34	<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
35	UE		No response from the UE to the request. This is checked for 10 seconds.
36	<-	PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
37	UE		The UE shall not initiate an RRC connection. This is checked during 3 seconds.

12.4.2.5.4.2 Test procesure2

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC/LAC2/RAC1 (RAI-3).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined routing area updating with the cause value ‘Roaming not allowed in this area’. The UE is switched off for 10 seconds and switched on again. The SS checks that a combined PS attach is possible on the cell on which the previous combined routing area updating had been rejected.

If USIM removal is possible without switching off:
The SS rejects a routing area updating with the cause value ‘Roaming not allowed in this area’. The USIM is removed and inserted in the UE. The SS checks that a PS attach procedure and routing area updating procedure is possible on the cell on which the routing area updating had previously been rejected.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
10	<-		ROUTING AREA UPDATING REJECT	GMM cause = 'Roaming not allowed in this area'
11	UE			The UE initiates an attach by MMI or by AT command.
12	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
14	UE			No response from the UE to the request. This is checked for 10 seconds.
15	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
16	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
17	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
18	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
19	UE			The UE initiates an attach by MMI or AT command.
20	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
21	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 Mobile identity = TMSI-1
22	->		ATTACH COMPLETE	
23	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
24	->		RRC CONNECTION REQUEST	
25	<-		RRC CONNECTION SETUP	
26	->		RRC CONNECTION SETUP COMPLETE	
27	->		PAGING RESPONSE	Mobile identity = TMSI-1
28	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.

29	->	RRC CONNECTION RELEASE COMPLETE	
30	<-	PAGING TYPE1	Mobile identity = P-TMSI-1
30a	->	RRC CONNECTION REQUEST	
30b	<-	RRC CONNECTION SETUP	
30c	->	RRC CONNECTION SETUP COMPLETE	
31	->	SERVICE REQUEST	service type = “paging response”
31a	<-	RRC CONNECTION RELEASE	
31b	->	RRC CONNECTION RELEASE COMPLETE	
32	UE		The UE is switched off or power is removed (see ICS).
33	->	DETACH REQUEST	Message not sent if power is removed. Detach type = ‘power switched off, combined PS/IMSI detach’

Specific message contents

None.

12.4.2.5.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a combined routing area update procedure(Update type = ‘Combined RA/LA updating’) with the information elements specified above Expected Sequence
- delete the stored P-TMSI, P-TMSI signature, TMSI, RAI, LAI, ciphering key sequence number PS ciphering key sequence number.
- reset the location update attempt counter when UE receive the ROUTING AREA UPDATING REJECT message(GMM cause = ‘Roaming not allowed in this area’) from SS.
- store the LAI in the ‘forbidden location areas for roaming’.
- not perform combined PS attach procedure when the UE is switched on in the same location area.
- perform combined PS attach procedure when a new location area is entered.

12.4.2.6 Combined routing area updating / abnormal cases / access barred due to access class control

12.4.2.6.1 Definition

12.4.2.6.2 Conformance requirement

1) The UE shall not perform combined routing area updating procedure, but stays in the current serving cell and applies normal cell reselection process.
2) The User Equipment shall perform the combined routing area updating procedure when:
   2.1 Access is granted.
   2.2 Cell is changed.

Reference

3GPP TS 24.008 clause 4.7.5.2

12.4.2.6.3 Test purpose

Test porpose1

To test the behaviour of the UE in case of access class control (access is granted).

Test porpose2

To test the behaviour of the UE in case of access class control (cell is changed).

12.4.2.6.4 Method of test

12.4.2.6.4.1 Test procedure1

Initial condition

A random access class x (0-15) is selected. The USIM is programmed with this access class x. Communication with User Equipments using access class x is initially indicated to be barred.

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode I.
Access class x barred.

User Equipment:

The UE has a valid P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach procedure is performed. The routing area is changed. The SS indicates access class x barred. A routing area updating procedure is not performed.

The SS indicates that access class x is not barred. A routing area updating procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	UE			No ROUTING AREA UPDATE REQUEST sent to SS, as access class X is barred (SS waits 30 seconds).
10		SS		The access class x is not barred anymore.
11	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
12	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-4
13	->		ROUTING AREA UPDATING COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.6.4.2 Test procedure2

Initial condition

A random access class x (0-15) is selected. The USIM is programmed with this access class x. Communication with User Equipments using access class x is indicated to be barred on cell A.

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) has access class x not barred, cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) has access class x barred, cell C in MCC1/MNC1/LAC1/RAC2 (RAI-4) has access class x not barred.
All three cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach procedure is performed. The routing area is changed. The SS indicates access class x barred. A routing area updating procedure is not performed.

A cell change is performed into a cell where access class x is not barred. A routing area updating procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	Mobile identity = IMSI
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE.
9	UE			No ROUTING AREA UPDATING REQUEST sent to SS, as access class X is barred (SS waits 30 seconds).
				The following messages are sent and shall be received on cell C.
10		SS		The SS deactivates cell B and activates cell C.
11	UE			Cell C is preferred by the UE.
12	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
13	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
14	->		ROUTING AREA UPDATING COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.6.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- not perform the combined routing area updating procedure.
- stay in the current serving cell.
- apply the normal cell reselection process.(as access class X is barred)
- perform the combined routing area updating procedure when the barred state is removed or because of a cell change.

12.4.2.7 Combined routing area updating / abnormal cases / attempt counter check / procedure timeout

12.4.2.7.1 Definition

12.4.2.7.2 Conformance requirement

1) When a T3330 timeout has occurred during a routing area updating procedure, the UE shall repeat the routing area updating procedure after T3330 timeout until the procedure is repeated five times.
2) When a routing area updating procedure is repeated five times, the routing area updating attempt counter is incremented and five more routing area updating procedures are performed. This procedure is repeated until the routing area updating attempt counter is five, the UEshall then start timer T3302.
3) When the T3302 expire, a new routing area updating procedure shall be initiated.

Reference

3GPP TS 24.008 clause 4.7.5.2

12.4.2.7.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

12.4.2.7.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure (routing area updating attempt counter zero). The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter one) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter two) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter three) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter four) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and as the routing area updating attempt counter is five. T3302 is started.

The UE initiates a routing area updating procedure with routing area updating attempt counter zero after T3302 expires with the stored P-TMSI, P-TMSI signature, PS CKSN and RAI.

T3302; set to 12 minutes

T3311; 15 seconds

T3330; 15 seconds

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
7		SS		The SS deactivates cell A and activates cell B.
8	UE			Cell B is preferred by the UE. K = 1.
9	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k (k is not visible. It is only used for clarifying the sequence.) Retransmission counter = 0
10		SS		No response is given from the SS.
11		SS		The SS verifies that the time between the RA update requests is T3330seconds
12	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 1
13		SS		No response is given from the SS.
14		SS		The SS verifies that the time between the RA update requests is T3330seconds
15	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 2
16		SS		No response is given from the SS.
17		SS		The SS verifies that the time between the RA update requests is T3330seconds
18	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 3
19		SS		No response is given from the SS.
20		SS		The SS verifies that the time between the RA update requests is T3330seconds
21	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 4
22		SS		No response is given from the SS.

23	SS		The SS verifies that the time between the RA update requests is T3311 + T3330 seconds.
24	SS		Step 9 – 23 is repeated four times with k = 2, k = 3, k = 4 and k = 5
23	SS		The SS verifies that the time between the RA update requests is T3302 + T3330 seconds
24	->	ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
25	<-	ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
26	->	ROUTING AREA UPDATING COMPLETE	
27	UE		The UE is switched off or power is removed (see ICS).
28	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.7.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate a combined routing area updating procedure with information elements specified in the above Expected Sequence when UE is powered up or switched on.
- perform the following actions depending on the conditions described below.

  Case 1) A timer T3330 timeout has occurred during a combined routing area updating procedure with the Routing area attempt counter less than five and the Retransmission counter less than five

  UE shall:

  - repeat the combined routing area updating procedure after the timer T3330 timeout

  Case2) A timer T3330 timeout has occurred during a combined routing area updating procedure with the Routing area attempt counter less than five and the Retansmission counter five

  UE shall:

  - start the timer T3311

  Case 3) A timer T3311 timeout has occoured

  UE shall:

  - reset the Retransmission counter and increase the Routing area attempt counter
  - repeat the combined routing area updating procedure

Case 4) A timer T3330 timeout has occurred during a combined routing area updating procedure with the Routing area attempt counter five and the Retansmission counter five.

UE shall:

- start the timer T3302

Case5) The timer T3302 expires

UE shall:

- initiate a new routing area updating procedure

12.4.2.8 Combined routing area updating / abnormal cases / change of cell into new routing area

12.4.2.8.1 Definition

12.4.2.8.2 Conformance requirement

When a change of cell into a new routing area is performed before the routing area updating procedure is finished, the UE shall abort the routing area updating procedure and re-initiate it in the new routing area.

Reference

3GPP TS 24.008 clause 4.7.5.2

12.4.2.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.2.8.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC1/RAC3 (RAI-5).
All three cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update into a new routing area. The UE shall re-initiate a routing area updating procedure in the new routing area. The UE shall not increment the attempt counter.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9		SS		No response id given from the SS.
				The following messages are sent and shall be received on cell C.
10		SS		Activate cell C with a lower signal strength than cell B.
11	UE			The RF level of cell B is lowered, and the RF level of cell C is increased, until cell C is preferred by the UE.
12	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
13	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-5
14	->		ROUTING AREA UPDATING COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.8.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate the routing area update procedure.

When change of cell into new routing area is performed before the routing area updating procedure is finished, UE shall:

- abort the routing area updating procedure.
- re-initiate new routing area updating procedure in the new routing area.

12.4.2.9 Combined routing area updating / abnormal cases / change of cell during routing area updating procedure

12.4.2.9.1 Definition

12.4.2.9.2 Conformance requirement

When a change of cell within new routing area is performed before the routing area updating procedure is finished, the UE shall perform the cell update before the routing area updating procedure is finished.

Reference

3GPP TS 24.008 clause 4.7.5.2

12.4.2.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.2.9.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC1/RAC2 (RAI-4).
All three cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI. UE is Idle Updated on cell A.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update within the routing area. The UE then waits for the ROUTING AREA UPDATE ACCEPT message.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9		SS		No response id given from the SS.
				The following messages are sent and shall be received on cell C.
10		SS		Activate cell C with a lower signal strength than cell B.
11	UE			The RF level of cell B is lowered until cell C is preferred by the UE.
12a	->		CELL UPDATE	Cell update cause = 'cell reselection'
12b	<-		CELL UPDATE CONFIRM	
13	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
14	->		ROUTING AREA UPDATING COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.9.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate routing area update procedure.

When a change of cell within a new routing area is performed before the routing area updating procedure is finished, UE shall:

- perform the cell update.

12.4.2.10 Combined routing area updating / abnormal cases / PS detach procedure collision

12.4.2.10.1 Definition

12.4.2.10.2 Conformance requirement

1) When a detach request is received with cause 'PS detach' or 'combined PS/IMSI detach' by the UE while waiting for a ROUTING AREA UPDATE ACCEPT message, the UE shall terminate the routing area updating procedure and continue with the PS detach procedure.

2) When a detach request is received with cause 'IMSI detach' by the UE while waiting for a ROUTING AREA UPDATE ACCEPT message, the UE shall ignore the detach request and continue with the routing area updating procedure.

Reference

3GPP TS 24.008 clause 4.7.5.2

12.4.2.10.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.4.2.10.4 Method of test

12.4.2.10.4.1 Test procedure1

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a PS detach procedure with cause 'PS detach' or 'combined PS/IMSI detach'. The UE shall terminate the routing area updating procedure and continue with the PS detach procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9		SS		The SS ignores the ROUTING AREA UPDATING REQUEST message and initiates a detach procedure.
10	<-		DETACH REQUEST	Detach type = 're-attach not required'
11	->		DETACH ACCEPT	

Specific message contents

None.

12.4.2.10.4.2 Test procedure2

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid P-TMSI, P-TMSI signature and RAI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a PS detach procedure with cause 'IMSI detach'. The UE shall ignore the detach procedure and continue with the routing area updating procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
6		SS		The SS deactivates cell A and activates cell B.
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9		SS		The SS ignores the ROUTING AREA UPDATING REQUEST message and initiates a detach procedure.
10	<-		DETACH REQUEST	Detach type = 'IMSI detach'
11	UE			The UE ignores the DETACH REQUEST message and continue the routing area updating procedure.
12	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
13	->		ROUTING AREA UPDATING COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.2.10.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, UE shall:

- initiate routing area update procedure.
- perform the follow actions depending on the conditions described below.

Case 1) UE receives a DETACH REQUEST message with cause 'PS detach' or 'combined PS/IMSI detach' from SS while waiting for a ROUTING AREA UPDATE ACCEPT message, UE shall:

- terminate the routing area updating procedure
- continue with the PS detach procedure.

Case 2) UE receives a DETACH REQUEST message with cause 'IMSI detach' from SS while waiting for a ROUTING AREA UPDATING ACCEPT message, UE shall:

- ignore the detach request.
- continue with the routing area updating procedure.

12.4.3 Periodic routing area updating

12.4.3.1 Periodic routing area updating / accepted

12.4.3.1.1 Definition

12.4.3.1.2 Conformance requirement

The User Equipment shall perform a periodic routing area update procedure after a T3312 timeout.

Reference

3GPP TS 24.008 clause 4.7.2.2 and 4.7.5.1

12.4.3.1.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

12.4.3.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C Yes/No
UE operation mode A Yes/No
USIM removal possible without powering down Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure with identity P-TMSI. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. A routing area updating procedure is performed at T3312 timeout.

T3312; set to 6 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 11.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
5	->		ATTACH COMPLETE	
6	->		ROUTING AREA UPDATING REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1
7		SS		The SS verifies that the time between the attach and the periodic RA updating is T3312
8	<-		ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1
9	UE			The UE is switched off or power is removed (see ICS).
10	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
11				The SS is set in network operation mode II.
12	UE			The UE is set in UE operation mode A(see ICS) and the test is repeated from step 3 to step 10.

Specific message contents

None.

12.4.3.1.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- set and start the timer T3312 when the ATTACH ACCEPT message and ROUTING AREA UPDATING ACCEPT message from SS. The value of the timer T3312 is sent by SS to UE in ATTACH ACCEPT message and ROUTING AREA UPDATING ACCEPT message.
- initiate a routing area updating procedure with Update type = 'Periodic updating' when the timer T3312 is expired.

12.4.3.2 Periodic routing area updating / accepted / T3312 default value

12.4.3.2.1 Definition

12.4.3.2.2 Conformance requirement

The User Equipment shall perform a periodic routing area update procedure after a T3312 timeout.

Reference

3GPP TS 24.008 clause 4.7.2.2 and 4.7.5.2

12.4.3.2.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

12.4.3.2.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a combined PS attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312 is omitted. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. After 54 minutes, a periodic routing area updating procedure is initiated by the UE.

T3312; default value 54 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
3	<-		ATTACH ACCEPT	Attach result = 'Combined PS /IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1 T3312 = 54 min
4	->		ATTACH COMPLETE	
5	->		ROUTING AREA UPDATING REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
6	SS			The SS verifies that the time between the attach request and the periodic RA updating is T3312
7	<-		ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned. P-TMSI and TMSI not included. Update result = 'RAupdated' P-TMSI-3 signature Routing area identity = RAI-1
8	UE			The UE is switched off or power is removed (see ICS).
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

Specific message contents

None.

12.4.3.2.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.
- set and start the timer T3312 when the ATTACH ACCEPT message and ROUTING AREA UPDATING ACCEPT message from SS.
- initiate a routing area updating procedure with Update type = 'Periodic updating' when the timer T3312 is expired.

12.4.3.3 Periodic routing area updating / no cell available / network mode I

12.4.3.3.1 Definition

12.4.3.3.2 Conformance requirement

If the UE is both IMSI attached for PS and non-PS services, and if the UE lost coverage of the registered PLMN and timer T3312 expires; if the UE returns to coverage in a cell that supports PS and the network is in network operation mode I, then the UE shall perform a combined routing area update procedure.

Reference

3GPP TS 24.008 clause 4.7.2.2 and 4.7.5.1.

12.4.3.3.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

12.4.3.3.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Cell A is in are operating in network operation mode II and cell B is in network operation mode I.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Idle updated on Cell A

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. PS radio contact is distorted before T3312 timeout. PS radio contact is established again (after T3312 timeout), and a routing area updating procedure is performed immediately.

T3312; set to 6 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2		SS		The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
6	->		ATTACH COMPLETE	
7		SS		After 5 minutes, the signal strength is lowered until the UE have lost contact with the SS.
8		SS		Wait 2 minutes.
				The following messages are sent and shall be received on cell B.
9		SS		The SS deactivates cell A and activates cell B.
10	UE			Cell B is preferred by the UE.
11	UE			The UE immediately start a combined RA updating procedure
12	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available
13	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-3 P-TMSI-3 signature Mobile identity = TMSI-2 Routing area identity = RAI-4
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Specific message contents

None.

12.4.3.3.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

When the UE is both IMSI attached for PS and non-PS service , and if the UE lost coverage of the reiterated PLMN and the timer T3312 expires, if the UE returns to coverage in a cell that supports PS and the network is in network oration mode I, UE shall:

- perform the combined routing area update procedure indicating "combined RA/LA updating with IMSI attach".

12.4.3.4 Combined periodic routing area updating / no cell available

12.4.3.4.1 Definition

12.4.3.4.2 Conformance requirement

If the UE is both IMSI attached for PS and non-PS services, and if the UE lost coverage of the registered PLMN and timer T3312 expires; if the UE returns to coverage in a cell that supports PS and the network is in network operation mode II, then the UE shall perform a periodic routing area update procedure and a periodic location update procedure.

Reference

3GPP TS 24.008 clause 4.7.2.2 and 4.7.5.2

12.4.3.4.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

12.4.3.4.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Idle updated on Cell A

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. PS radio contact is distorted before T3312 timeout. PS radio contact is established again (after T3312 timeout), and a periodic routing area updating procedure and a periodic location update procedure is performed immediately.

T3312; set to 6 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
3	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
4	->		ATTACH COMPLETE	
5-12			(void)	
13	SS			After 5 minutes, the signal strength is lowered until the UE have lost contact with the SS.
14	SS			After 2 minutes, the signal strength is increased until the UE have got contact with the SS.
15	UE			The UE immediately start the periodic RA updating procedure
16	->		ROUTING AREA UPDATING REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1
17	<-		ROUTING AREA UPDATING ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RAupdated' P-TMSI-3 signature Routing area identity = RAI-1
18	->		RRC CONNECTION REQUEST	
19	<-		RRC CONNECTION SETUP	
20	->		RRC CONNECTION SETUP COMPLETE	
21	->		LOCATION UPDATING REQ	Location updating type = Periodic LA updating.
22	<-		LOCATION UPDATING ACC	
23	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
24	->		RRC CONNECTION RELEASE COMPLETE	
25	UE			The UE is switched off or power is removed (see ICS).
26	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.4.3.4.5 Test requirements

UE shall:

- initiate a combined PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

When the UE is both IMSI attached for PS and non-PS service , and if the UE lost coverage of the reiterated PLMN and the timer T3312 expires, if the UE returns to coverage in a cell in the same RA that supports PS and that indicates that the network is in network operation mode II, UE shall:

- perform the periodic routing area updating procedure indicating "Periodic updating".
- perform the periodic location updating procedure.

12.5 P-TMSI reallocation

12.5.1 Definition

12.5.2 Conformance requirement

1) A User Equipment shall acknowledge a new P-TMSI when explicitly allocated.

2) The P-TMSI shall be updated on the USIM when the User Equipment is correctly deactivated in accordance with the manufacturer's instructions.

3) A User Equipment shall use the given P-TMSI in further communication with the network.

Reference

3GPP TS 24.008 clause 4.7.6

12.5.3 Test purpose

To verify that the UE is able to receive and acknowledge a new P-TMSI by means of an explicit P-TMSI reallocation procedure.

To verify that the UE has stored the P-TMSI in a non-volatile memory.

The implicit reallocation procedure is tested in the attach procedure.

12.5.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No (only if mode A not supported)
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

An explicit P-TMSI reallocation procedure is performed (P-TMSI reallocation command sent from the SS and acknowledged from the UE by P-TMSI reallocation complete). The UE is PS detached and switched off. Its power supply is interrupted for 10 seconds. The power supply is resumed and then the UE is switched on. A PS attach procedure is performed with the given P-TMSI as identity.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS). If UE operation mode A not supported set the UE in operation mode C.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		P-TMSI REALLOCATION COMMAND	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
7	->		P-TMSI REALLOCATION COMPLETE	
8	UE			The UE is switched off or power is removed (see ICS).
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
10	UE			The UE is powered up or switched on and initiates an attach (see ICS).
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
12	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-3 signature Routing area identity = RAI-1
13	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
13a	->		RRC CONNECTION REQUEST	
13b	<-		RRC CONNECTION SETUP	
13c	->		RRC CONNECTION SETUP COMPLETE	
14	->		SERVICE REQUEST	service type = "paging response"
14a	<-		RRC CONNECTION RELEASE	
14b	->		RRC CONNECTION RELEASE COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.5.5 Test requirements

UE shall:

- initiate a PS attach procedure with the information elements specified in the above Expected Sequence when UE is powered up or switched on.

After completing the PS attach procedure, and when UE receive of the P-TMSI REALLOCATION COMMAND message, UE shall:

- store the allocated Routing Area Identifier(RAI) and the allocated P-TMSI.
- acknowledge a new P-TMSI.
- send the P-TMSI and a P-TMSI REALLOCATION COMPLETE message to SS.
- update P-TMSI on the USIM when UE is correctly deactivated in accordance with the manufacturer's instructions.
- use the given P-TMSI in further communication with SS.

12.6 PS authentication and ciphering

12.6.1 Test of authentication

The purpose of this procedure is to verify the user identity. A correct response is essential to guarantee the establishment of the connection. If not, the connection will drop.

12.6.1.1 Authentication accepted

12.6.1.1.1 Definition

12.6.1.1.2 Conformance requirement

A User Equipment shall correctly respond in an authentication and ciphering procedure by sending a response with the RES information field set to the same value as the one produced by the authentication and ciphering algorithm in the network.

Reference

3GPP TS 24.008 clause 4.7.7

12.6.1.1.3 Test purpose

To test the behaviour of the UE if the network accepts the authentication and ciphering procedure.

12.6.1.1.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach is performed, and the SS initiates an authentication and ciphering procedure.

The SS checks the value RES sent by the UE in the AUTHENTICATION AND CIPHERING RESPONSE message.

The UE initiates a routing area updating procedure and the SS checks the value of the PS Ciphering Key Sequence Number sent by the UE in the ROUTING AREA REQUEST message.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 17.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Set PS-CKSN-1
6	->		AUTHENTICATION AND CIPHERING RESPONSE	RES
7		SS		The SS checks the RES value.
8	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
9	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
10		SS		Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
11	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 PS-CKSN-1
12		SS		The value of PS-CKSN is checked
13	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
14	->		ROUTING AREA UPDATING COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
17		SS		Reset the RF level of cell A to default state. Deactivate cell B.
18	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 3 to step 16.

Specific message contents

None.

12.6.1.1.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered on or switched on.

When the UE receives the AUTHENTICATION AND CIPHERING REQUEST message form SS, UE shall:

- send the AUTHENTICATION AND CIPHERING RESPONSE message with the RES information field set to the same value as the one produced by the authentication and ciphering algorithm in the network.

12.6.1.2 Authentication rejected by the network

12.6.1.2.1 Definition

12.6.1.2.2 Conformance requirement

1) After reception of an Authentication Reject message the UE shall:

   1.1 not perform normal routing area updating

   1.2 not perform periodic routing area updating

   1.3 not perform PS detach if switched off

2) The UE shall delete the stored RAI, PS-CKSN P-TMSI and P-TMSI signature. USIM shall be considered invalid until power is switched off or USIM is removed.

Reference

3GPP TS 24.008 clauses 4.7.7

12.6.1.2.3 Test purpose

To test the behaviour of the UE if the network rejects the authentication and ciphering procedure.

12.6.1.2.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach is performed, and the SS rejects the authentication and ciphering procedure.

The SS checks that the UE does not perform normal routing area updating, does not perform periodic routing area updating and does not perform PS detach if switched off.

T3312; set to 10 minutes.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 14.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Set PS-CKSN-1
6	->		AUTHENTICATION AND CIPHERING RESPONSE	RES
7	<-		AUTHENTICATION AND CIPHERING REJECT	
8	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for PS services.
9	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell B.
10		SS		Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
11	UE			No ROUTING AREA UPDATING REQUEST sent to the SS (SS waits 30 seconds).
12	UE			No periodic ROUTING AREA UPDATING REQUEST sent to the SS (SS waits T3310 .
13	UE			The UE is switched off (see ICS).
14		SS		No DETACH REQUEST sent to the SS (SS waits 30 seconds).
15	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 1 to step 13.

Specific message contents

None.

12.6.1.2.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered on or switched on.

After UE receives the AUTHENTICATION AND CIPHERING REJECT message, UE shall:

- not perform normal routing area updating when the RF level of the attached cell is lower than the RF level of the new cell.
- not perform a periodic routing area updating when the timer T3312 expires.
- not perform PS detach when UE is switched off.
- delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.
- consider the USIM as invalid until power is switched off or USIM is removed.

12.6.1.3 Authentication rejected by the UE

12.6.1.3.1 GMM cause ‘MAC failure’

12.6.1.3.1.1 Definition

12.6.1.3.1.2 Conformance requirement

If the UE considers the MAC code (supplied by the core network in the AUTN parameter) to be invalid, the UE shall send AUTHENTICATION AND CIPHERING FAILURE message with the reject cause 'MAC failure' to the System Simulator.

Reference

3GPP TS 24.008 clause 4.7.7

12.6.1.3.1.3 Test purpose

To test the behaviors of the UE, when the UE considers the MAC code (supplied by the core network in the AUTN parameter) to be invalid.

12.6.1.3.1.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II.

The MAC (Message Authentication Code) code, which is included in AUTHENTICATION AND CIPHERING REQUEST, is invalid value.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach is performed, and the SS initiates an authentication and ciphering procedure.

The UE sends AUTHENTICATION AND CIPHERING FAILURE message with reject cause ‘MAC failure’ to the SS and starts timer T3214.

The SS initiates an identification procedure, upon receipt of a failure message with reject cause ‘MAC failure’.

After the identification procedure is complete, the SS re-initiates an authentication and ciphering procedure.

T3360; set to 6 seconds.

T3318; set to 5 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C is not supported, goto step 25.
3	UE			
4				The following messages are sent and shall be received on cell A.
5	UE			The UE is powered up or switched on and initiates an attach (see ICS).
6	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
7	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Invalid Message Authentication Code (MAC).
9	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause='MAC failure'
10	<-		IDENTITY REQUEST	Identity type = IMSI
11	->		IDENTITY RESPONSE	Mobile identity = IMSI
		SS		
13	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Including PS-CSKN-1
14	->		AUTHENTICATION AND CIPHERING RESPONSE	RES
15		SS		The SS checks the RES value.
16	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
17	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
18		SS		Cell B is activated and cell A is deactivated.
19	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 PS-CKSN-1
20		SS		The value of PS-CKSN is checked
21	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
22	->		ROUTING AREA UPDATING COMPLETE	
23	UE			The UE is switched off or power is removed (see ICS).
24	->		DETACH REQUEST	Message is not sent if power is removed. Detach type = 'power switched off, PS detach'
25	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 1 to step 24.

Specific message contents

None.

12.6.1.3.1.5 Test requirements

UE shall:

- initiate a PS attach procedure with information element specified in the above Expected Sequence when UE is powered on or switched on.
- send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause ‘MAC failure’ to the SS
- start timer T3318.

After UE receives the IDENTITY REQUEST message from SS, UE shall:

- send the IDENTITY RESPONSE message to SS

After UE receives the second AUTHENTICATION AND CIPHERING REQUEST message (containing a valid MAC) from SS, UE shall:

- stop timer T3318, if running
- send the AUTHENTICATION AND CIPHERING RESPONSE message to SS

12.6.1.3.2 GMM cause ‘Synch failure’

12.6.1.3.2.1 Definition

12.6.1.3.2.2 Conformance requirement

If the UE considers the SQN (supplied by the core network in the AUTN parameter) to be out of range, the UE shall send AUTHENTICATION AND CIPHERING FAILURE message with the reject cause 'Synch failure' to the System Simulator.

Reference

3GPP TS 24.008 clause 4.7.7

12.6.1.3.2.3 Test purpose

To test the behaviors of the UE, when the UE considers the SQN (supplied by the core network in the AUTN parameter) to be out of range.

12.6.1.3.2.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
UE operation mode C	Yes/No

Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach is performed, and the SS initiates an authentication and ciphering procedure.

UE sends AUTHENTICATION AND CIPHERING FAILURE message with reject cause ‘synch failure’ to the SS and starts timer T3214.

SS re-initiates an authentication and ciphering procedure.

T3360; set to 6 seconds.

T3320; set to 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C is not supported, goto step 21.
				The following messages are sent and shall be received on cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
5	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. SQN is out of range.
6		SS		The SS starts the timer T3360
7	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause = 'Synch failure' AUTS parameter
8		SS		set new authentication vectors. (re-synchronisation)
9	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Including PS-CKSN-1
10	->		AUTHENTICATION AND CIPHERING RESPONSE	RES
11		SS		The SS checks the RES value.
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
13	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell B.
14		SS		Cell B is activated, cell A is deactivated.
15	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 PS-CKSN-1
16		SS		The value of PS-CKSN is checked
17	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
18	->		ROUTING AREA UPDATING COMPLETE	
19	UE			The UE is switched off or power is removed (see ICS).
20	->		DETACH REQUEST	Message is not sent if power is removed. Detach type = 'power switched off, PS detach'
21	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 1 to step 20.

Specific message contents

None.

12.6.1.3.2.5 Test requirements

UE shall:

- initiate a PS attach procedure with information element specified in the above Expected Sequence when UE is powered on or switched on.
- send AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'synch failure' to the SS
- start timer T3320.

After UE receives the second AUTHENTICATION AND CIPHERING REQUEST message from SS, UE shall:

- stop timer T3320, if running.
- send AUTHENTICATION AND CIPHERING RESPONSE message to SS.

12.6.1.3.3 Authentication rejected by the UE / fraudulent network

12.6.1.3.3.1 Definition

12.6.1.3.3.2 Conformance requirement

It can be assumed that the source of the authentication challenge is not genuine (authentication not accepted by the UE) if any of the following occur:

- After sending the AUTHENTICATION & CIPHERING FAILURE message with GMM cause 'MAC failure' the timer T3318 expires;
- Upon receipt of the second AUTHENTICATION & CIPHERING REQUEST message from the network while the T3318 is running and the MAC value cannot be resolved.

If the UE deems that the network has failed in the authentication check, then the UE shall treat the cell where the AUTHENTICATION & CIPERHERING REQUEST message was received as barred, until System Information is refreshed.

Reference

3GPP TS 24.008 clause 4.7.7.6.1

12.6.1.3.3.3 Test purpose

To test UE treating a cell as barred:

1. when the network sends the second AUTHENTICATION & CIPHERING REQUEST message with invalid MAC code during the timer T3318 is running.

2. when the timer T3318 has expired.

12.6.1.3.3.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1(RAI-1), cell B in MCC1/MNC1/LAC1/RAC2(RAI-2).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

Two cells are configured. Cell A transmits with higher power so that the UE attempts an attach procedure to cell A.

During the attach procedure, the SS initiates an authentication and ciphering procedure but it sends an incorrect Message Authentication Code (MAC) value in its AUTHENTICATION AND CIPHERING REQUEST message.

The UE sends AUTHENTICATION AND CIPHERING FAILURE message to the SS indicating authentication failure.

The SS repeats a second time the authentication procedure, which fails again. Next, the UE shall attempt to attach to cell B, which again fails. In this case T3318 expires after the second attempt.

The UE shall treat now both cells as barred and shall not attempt to access the network, even if the user triggers the UE to perform an attach procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The SS is configures two cells A and B. Cell A transmits with higher power levels, so that the UE selects cell A for attaching.
				The following messages are sent and shall be received on cell A.
2	UE			The UE is powered up or switched on and initiates an attach procedure.
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
4	<-		AUTHENTICATION AND CIPHERING REQUEST	Request for authentication. Invalid Message Authentication Code (MAC).
5	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause='MAC failure'
6	<-		AUTHENTICATION AND CIPHERING REQUEST	Request for authentication. Invalid Message Authentication Code (MAC).
7	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause='MAC failure'
8		SS		SS verifies that the UE does not attempt to access the network for 30s.
9		SS		The SS deactivates cell A and activates cell B.
				UE shall attempt an attach on cell B.
				The following messages are sent and shall be received on cell B.
10	UE			The UE initiates an attach by MMI or AT command.
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
12	<-		AUTHENTICATION AND CIPHERING REQUEST	Request for authentication. Invalid Message Authentication Code (MAC).
13	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause='MAC failure'
14		SS		SS waits T3318 (20s)
15		SS		SS verifies that the UE does not attempt to access the network for 30s.
16	UE			The UE initiates an attach by MMI or AT command.
17		SS		SS verifies that the UE does not attempt to access the network for 30s.

Specific message contents

None.

12.6.1.3.3.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered on or switched on.

After UE receives the AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC), UE shall:

- send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause ‘MAC failure’ to the SS.

After UE receives the second AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC) from the network during a timer T3318 is running, UE shall:

- send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause ‘MAC failure’ to the SS.

After the activated cell is changed from cell A to cell B, UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence.

After UE receives the AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC), UE shall:

- send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause ‘MAC failure’ to the SS.

After a timer T3318 is expired, UE shall:

- not attempt to access the network.

12.6.2 Void

12.7 Identification procedure

The purpose of this procedure is to check that the UE gives its identity as requested by the network. If this procedure does not work, it will not be possible for the network to rely on the identity claimed by the UE.

12.7.1 General Identification

12.7.1.1 Definition

12.7.1.2 Conformance requirement

1) When requested by the network the User Equipment shall send its IMSI.

2) When requested by the network the User Equipment shall send its IMEI as stored in the Mobile Equipment.

3) When requested by the network the User Equipment shall send its IMEISV as stored in the Mobile Equipment.

Reference

3GPP TS 24.008 clauses 4.7.8

12.7.1.3 Test purpose

To verify that the UE sends identity information as requested by the system. The following identities can be requested: IMSI, IMEI and IMEISV.

12.7.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
UE operation mode C Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS requests identity information from the UE:

- IMSI
- IMEI
- IMEISV

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 14.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		IDENTITY REQUEST	Identity type = IMSI
7	->		IDENTITY RESPONSE	Mobile identity = IMSI
8	<-		IDENTITY REQUEST	Identity type = IMEI
9	->		IDENTITY RESPONSE	Mobile identity = IMEI
10	<-		IDENTITY REQUEST	Identity type = IMEISV
11	->		IDENTITY RESPONSE	Mobile identity = IMEISV
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
14	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 13.

Specific message contents

None.

12.7.1.5 Test requirements

UE shall:

- initiate a PS attach procedure with information elements specified in the above Expected Sequence when UE is powered on or switched on.

When SS requests an IMSI with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMSI.

When SS requests an IMEI with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMEI.

When SS requests an IMEISV with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMEISV.

12.8 GMM READY timer handling

The READY timer is not applicable for UMTS.

12.8.1 Definition

12.8.2 Conformance requirement

If a READY timer value is received by an UE capable of both UMTS and GSM in the ATTACH ACCEPT or the ROUTING AREA UPDATE ACCEPT messages, then the received value shall be stored by the UE in order to be used at an intersystem change from UMTS to GSM.

Reference

3GPP TS 24.008 clause 4.7.2.1

12.8.3 Test purpose

To verify the functionality of the READY timer.

12.8.4 Method of test

12.8.4.1 Test procedure1

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC1 (RAI-1).
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No
Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

An attach is performed.

T3314; set to 60 seconds

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		The SS activates cell A.
2	UE			The UE is set in UE operation mode A (see ICS). If UE operation mode A not supported set the UE in operation mode C. The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3314 = 60 seconds
5	->		ATTACH COMPLETE	
6	UE			The UE is switched off or power is removed (see ICS).
7	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.8.5 Test requirements

When UE receives the ATTACH ACCEPT or the ROUTING AREA UPDATE ACCEPT messages, UE shall:

- store the received READY timer value.

12.9 Service Request procedure (UMTS Only)

12.9.1 Service Request Initiated by UE Procedure

12.9.1.1 Definition

12.9.1.2 Conformance requirement

UE shall send the Service Request message to the network in order to establish the PS signalling connection for the upper layer signalling or for the resource reservation for active PDP context(s).

Reference

TS 24.008 clauses 4.7.13

TS 23.060 clauses 6.12.1

12.9.1.3 Test purpose

To test the behaviour of the UE if the UE initiates the CM layer service (e.g. SM or SMS) procedure.

12.9.1.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE in PMM-IDLE state sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receives the SERVICE REQUEST message, the SS performs authentication procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C(see ICS). If UE operation mode C not supported, goto step 12.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
7	->		SERVICE REQUEST	Service type = "signalling",
8	<-		AUTHENTICATION AND CIPHERING REQUEST	
9	->		AUTHENTICATION AND CIPHERING RESPONSE	
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
12	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 11.

Specific message contents

None.

12.9.1.5 Test requirements

When the UE has any signalling message (e.g. for SM or SMS) that requires security protection, the UE shall:

- send the SERVICE REQUEST message with service type indicated “signalling”

12.9.2 Service Request Initiated by Network Procedure

12.9.2.1 Definition

12.9.2.2 Conformance requirement

When the UE receives a paging request for PS domain from the network in PMM-IDLE mode, the UE shall send the SERVICE REQUEST message to the network.

Reference

TS 24.008 clauses 4.7.13

TS 23.060 clauses 6.12.2

12.9.2.3 Test purpose

To test the behavior of the UE if the UE receives the paging request for PS domain service from the network.

12.9.2.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE is in PMM-IDLE state. The SS pages the UE by sending a Paging message to the UE.

b) The UE sends a SERVICE REQUEST message to the SS. Service Type specifies Paging Response. The Service Request is carried over the radio in an RRC Direct Transfer message.

c) After the SS receives the SERVICE REQUEST message from the UE, SS initiates an authentication procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C(see ICS). If UE operation mode C not supported, goto step 12.
2	UE			The UE is powered up or switched in and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		PAGING TYPE1	
7	->		SERVICE REQUEST	Service type = "Paging response"
8	<-		AUTHENTICATION AND CIPHERING REQUEST	
9	->		AUTHENTICATION AND CIPHERING RESPONSE	
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
12	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 11.

Specific message contents

None.

12.9.2.5 Test requirements

When the UE receives a paging request for PS domain from the network in PMM-IDLE mode, the UE shall:

- send the SERVICE REQUEST message with service type indicated "paging response".

12.9.3 Service Request / rejected / Illegal MS

12.9.31 Definition

12.9.3.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "Illegal MS", the UE shall:

1) set the GPRS update status to GU3 ROAMING NOT ALLOWED and enter state GMM DEREGISTRATED.
2) delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
3) consider the USIM as invalid for PS service until switched off or the USIM is removed.

Reference

TS 24.008 clauses 4.7.13.4

12.9.3.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "Illegal MS".

12.9.3.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature, RAI-1 and IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #3(Illegal MS).

c) After the UE receives the SERVICE REJECT message with the cause value #3(Illegal MS), the UE deletes any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.

d) The SS checks that the UE does not initiate an upper-layer signalling until the power of the UE is switched off.

e) The SS checks that the UE does not initiate an upper-layer signalling until the USIM is removed from the UE.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "Illegal MS"
10	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
11	SS			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds)
12	UE			The UE is switched off.
13	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
14	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
15	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
16	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
17	->		ATTACH COMPLETE	
18	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
19	->		SERVICE REQUEST	Service type = "signalling"
20	<-		SERVICE REJECT	Reject cause = "Illegal MS"
21	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
22	SS			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds)
23	UE			USIM is removed.
24	->		DETACH REQUEST	
	UE			USIM is inserted.
25	UE			The UE initiates a PS attach, by MMI or by AT command.
26	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
27	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3

28	->	ATTACH COMPLETE	
29	UE		The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
30	->	SERVICE REQUEST	Service type = “signalling”

Specific message contents

None.

12.9.3.5 Test requirements

When the UE receives the SERVICE REJECT message with cause “Illegal MS” UE shall:

- delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
- consider the USIM as invalid for PS services until the UE is switched off.
- consider the USIM as invalid for PS service until USIM is removed.

12.9.4 Service Request / rejected / PS services not allowed

12.9.41 Definition

12.9.4.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause “PS services not allowed”, the UE shall:

1) set the GPRS update state to GU3 ROAMING NOT ALLOWED.
2) delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
3) consider the USIM as invalid for PS service until the UE is switched off or until the USIM is removed.

Reference

TS 24.008 clauses 4.7.13.4

12.9.4.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause “PS service not allowed”.

12.9.4.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #7(PS services not allowed).

c) After the UE receives the SERVICE REJECT message with the cause value #7(PS services not allowed), the UE deletes any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.

d) The SS checks that the UE does not initiate an upper-layer signalling until the UE is switched off.

e) The SS checks that the UE does not initiate an upper-layer signalling until the USIM is removed from the UE.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "PS services not allowed"
10	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
11		SS		The SS verifies that the UE does not attempt to access the network. (SS wait 30seconds)
12	UE			The UE is switched off.
13	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
14	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
15	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
16	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
17	->		ATTACH COMPLETE	
18	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
19	->		SERVICE REQUEST	Service type = "signalling"
20	<-		SERVICE REJECT	Reject cause = "PS services not allowed"
21	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
22		SS		The SS verifies that the UE does not attempt to access the network. (SS wait 30seconds)
23	UE			USIM is removed.
24	-> UE		DETACH REQUEST	USIM is inserted.
25	UE			The UE initiates a PS attach, by MMI or by AT command.
26	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
27	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
28	->		ATTACH COMPLETE	

29	UE		The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
30	->	SERVICE REQUEST	Service type = “signalling”

Specific message contents

12.9.4.5 Test requirements

When the UE receives the SERVICE REJECT message with cause “PS services not allowed” UE shall:

- delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number
- consider the USIM as invalid for PS services until the UE is switched off.
- consider the USIM as invalid for PS services until USIM is removed.

12.9.5 Service Request / rejected / MS identity cannot be derived by the network

12.9.5.1 Definition

12.9.5.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause “MS identity cannot be derived by the network”, the UE shall:

1) set the GPRS update states to GU2 NOT UPDATED.
2) delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
3) initiate the PS attach procedure automatically.

Reference

TS 24.008 clauses 4.7.13.4

12.9.5.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause “MS identity cannot be derived by the network”.

12.9.5.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #9 (MS identity cannot be derived by the network).

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "MS identity cannot be derived by the network"
10	UE			The UE automatically initiates the PS attach procedure.
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature
13	->		ATTACH COMPLETE	
14	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
15	->		SERVICE REQUEST	Service type = "signalling"
16	UE			The UE is switched off or power is removed (see ICS).
17	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.5.5 Test requirements

When the UE receives the SERVICE REJECT message with cause “MS identity cannot be derived by the network” UE shall:

- delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.

After the UE deletes any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number, UE shall:

- initiate PS attach procedure automatically.

12.9.6 Service Request / rejected / PLMN not allowed

12.9.6.1 Definition

12.9.6.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause “PLMN not allowed”, the UE shall:

1) delete any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number.
2) set the GPRS update status to GU3 ROAMING NOT ALLOWED.
3) store the LAI or the PLMN identity in the appropriate forbidden list.

Reference

TS 24.008 clauses 4.7.13.4

12.9.6.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause “PLMN not allowed”.

12.9.6.4 Method of test

Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 cell B in MCC2/MNC1/LAC1/RAC1.
All two cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #11 (PLMN not allowed).

c) The SS checks that the UE does not initiate an upper-layer signalling until the UE is switched off.

d) The SS checks that the UE does not answer a Page from the SS until the power of the UE is switched off.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "PLMN not allowed"
10	UE			The UE stores the LAI or the PLMN identity in the "forbidden PLMN list".
11	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
12	SS			The SS verifies that the UE does not attempt to access the network. (SS wait 30second)
13	<-		PAGING TYPE1	Paging order is for PS service
14	UE			No response from the UE to the request. This is checked for 10 seconds.
				The following messages shall be sent and shall be received on cell B.
15	SS			The SS deactivates cell A and activates cell B.
16	UE			Cell D is preferred by the UE.
17	UE			The UE initiates an attach automatically, by MMI or by AT command.
18	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
19	<-		ATTACH ACCEPT	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2 Attach result = 'PS only attached'
20	->		ATTACH COMPLETE	
21	UE			The UE is switched off or power is removed (see ICS).
22	->		DETACH REQUEST	

Specific message contents

None.

12.9.6.5 Test requirements

When the UE receives the SERVICE REJECT message with cause “PLMN not allowed”, UE shall:

- delete any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number.
- store the LAI or the PLMN identity in the appropriate forbidden list, i.e. in the "forbidden PLMN list".

After the UE stores the LAI or the PLMN identity in the appropriate forbidden list, UE shall:

- not perform a PS attach procedure in the same PLMN.

12.9.7 Service Request / rejected / No PDP context activated

12.9.7.1 Definition

12.9.7.2 Conformance requirement

If the network rejects a service request procedure with the cause “No PDP context activated”, the UE shall:

- deactivate all active PDP contexts.

After the UE deactivates all active PDP contexts, UE shall:

- perform PDP context(s) activation.

Reference

TS 24.008 clauses 4.7.13.4

12.9.7.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause “No PDP context activated”.

12.9.7.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #40 (No PDP context activated).

c) After the UE receives the SERVICE REJECT message, the UE shall send the ACTIVATE PDP CONTEXT REQUEST message.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1				The UE is set in UE operation mode C (see ICS).
2				The SS is set in network operation mode II and activates cell A.
3				The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	
5	<-		ATTACH ACCEPT	
6	->		ATTACH COMPLETE	
7	UE			The UE initiates a PS call, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = “signalling”
9	<-		SERVICE REJECT	Reject cause = “No PDP context activated”
10	UE			The UE shall deactivate locally all active PDP contexts.
11	UE			The UE initiates a PS call, by MMI or by AT command.
12	->		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
13	<-		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation
14	UE			The UE initiates Deactivate PDP Context request, via MMI or by AT command.
15	->		DEACTIVE PDP CONTEXT REQUEST	Deactivate PDP context deactivation
16	<-		DEACTIVE PDP CONTEXT ACCEPT	Accept PDP context deactivation
17	UE			The UE is switched off or power is removed (see ICS).
18	UE			The UE initiates Detach request, via MMI or by AT command.
19	->		DETACH REQUEST	Message not sent if power is removed. Detach type = ‘power switched off, PS detach’

Specific message contents

None.

12.9.7.5 Test requirements

When the UE receives a SERVICE REJECT message with the cause “No PDP context activated”, UE shall:

- deactivate all active PDP context.
- perform PDP context(s) activation.

12.9.8 Service Request / Abnormal cases / Access barred due to access class control

12.9.8.1 Definition

12.9.8.2 Conformance requirement

If the UE access class X is barred, the UE shall:

1) not start Service Request procedure.
2) stay in the current serving cell.
3) applie normal cell reselection process.

If the UE access class X is granted or serving cell is changed, the UE shall:

1) start Service Request procedure.

Reference

TS 24.008 clauses 4.7.13.5

12.9.8.3 Test purpose

To test the behavior of the UE in case of access class control (access is granted).

12.9.8.4 Method of test

Initial condition

A random access class X (0-15) is selected. The USIM is programmed with this access class X.

Initially, an access class X is barred.

System Simulator:

One cell operating in network operation mode II.

Access class x barred.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS initiates access class X barred. A service request procedure is not performed.

The SS initiates that access class X is not barred. A service request procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The USIM is set up Access class x. The access class x is barred in cell A. The UE is powered up or switched on and attempt to initiate an ATTACH.
2	UE			No SERVICE REQUEST sent to SS, as access class X is barred. (SS waits 30 seconds)
3	SS			The access class x is not barred anymore.
4	UE			The UE automatically initiates an attach.
5	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
7	->		ATTACH COMPLETE	
8	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
9	->		SERVICE REQUEST	Service Type = "signalling".
10	<-		AUTHENTICATION AND CIPHERING REQUEST	
11	->		AUTHENTICATION AND CIPHERING RESPONSE	
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.8.5 Test requirements

UE shall perform the following actions depending on the UE access class X.

Case 1) The UE access class X is barred,

UE shall:

- not start Service Request procedure.
- stay in the current serving cell.
- apply normal cell reselection process.

Case 2) The UE access class X is granted or serving cell is changed,

UE shall:

- start Service Request procedure.

12.9.9 Service Request / Abnormal cases / Routing area update procedure is triggered

12.9.9.1 Definition

12.9.9.2 Conformance requirement

If a cell change into a new routing area occurs and the necessity of routing area update procedure is determined before the security mode control procedure is completed, the UE shall:

- abort Service request procedure.
- start routing area update procedure immediately.

Reference

TS 24.008 clauses 4.7.13.5

12.9.9.3 Test purpose

To test the behavior of the UE in case of collision between Routing area update procedure and Service request procedure.

12.9.9.4 Method of test

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) The UE initiates the routing area update procedure.

c) The UE aborts Service request procedure and performs Routing area updating procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2		SS		The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
7	->		SERVICE REQUEST	Service type = "signalling"
8		SS		Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
9	UE			The UE aborts Service request procedure.
				The following message are sent and shall be received on cell B.
10	->		ROUTING AREA UPDATING REQUEST	Update type = 'RA updating' P-TMSI-2 signature
11	<-		ROUTING AREA UPDATING ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
12	->		ROUTING AREA UPDATING COMPLETE	
13	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
14	->		SERVICE REQUEST	Service type = "signalling"
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.9.5 Test requirements

When the routing area update procedure is initiated before the security mode control procedure is completed, UE shall;

- abort a Service request procedure

After the UE aborts the Service request procedure, UE shall;

- perform the routing area updating procedure.

After the UE completes the routing area updating procedure, UE shall;

- restart the Service Request procedure.

12.9.10 Service Request / Abnormal cases / Power off

12.9.10.1 Definition

12.9.10.2 Conformance requirement

When the UE in GMM-SERVICE-REQUEST-INITIATED state is switched off, UE shall:

- perform PS detach procedure.

Reference

TS 24.008 clauses 4.7.13.5

12.9.10.3 Test purpose

To test the behavior of the UE in case of collision between Service request procedure and “powered off”.

12.9.10.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

The UE is switched off after initiating a Service request procedure. A PS detach is automatically performed by the UE before power is switched off.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
7	->		SERVICE REQUEST	Service type = "signalling"
8	UE			The UE is powered off and initiates a PS detach (with power off) by MMI or by AT command.
9	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.10.5 Test requirements

When the UE is switched off during the Service Request procedure, UE shall;

- abort the Service request procedure.

After the UE aborts the Service request procedure, UE shall;

- perform the PS detach procedure.

12.9.11 Service Request / Abnormal cases / Service request procedure collision

12.9.11.1 Definition

12.9.11.2 Conformance requirement

When the UE in GMM-SERVICE-REQUEST-INITIATED state receives a DETACH REQUEST message from the network, UE shall:

- perform the PS detach procedure.
- abort Service request procedure.

Reference

TS 24.008 clauses 4.7.13.5

12.9.11.3 Test purpose

To test the behaviour of the UE in case of collision between Service request procedure and PS detach procedure.

12.9.11.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1, P-TMSI-1 signature and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No
UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

b) The SS sends a DETACH REQUEST message to the UE, before the security procedure is not started.

c) After the UE receives the DETACH REQUEST message, the UE aborts the Service request procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following message are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II and activates cell A.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	->		ATTACH COMPLETE	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	SS			The SS does not respond to SERVICE REQUEST message.
10	<-		DETACH REQUEST	GMM cause = "reattach request"
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
12	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
13	->		ATTACH COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.11.5 Test requirements

When the UE receives a DETACH REQUEST message from the network before the Service request procedure completes, UE shall;

- abort the Service request procedure.

After the UE aborts the Service request procedure, UE shall;

- perform the PS detach procedure.

13 General Tests

13.1 Emergency call / general

In this sub-clause, the emergency call service is tested for user equipment that support narrow band speech (AMR) in the following cases:

- emergency call initiated in the idle mode state with authentication and security, for narrow band speech (AMR)
- emergency call initiated in the idle, no IMSI state (hence without authentication and without security), the network accepting the call, for narrow band speech (AMR)
- emergency call initiated in the idle, no IMSI state (hence without authentication and without security), the network rejecting the call, for narrow band speech (AMR)

These tests on emergency calls are only applicable to an UE supporting narrow band speech (AMR).

13.2 Emergency call

Emergency call establishment can be initiated by an UE whether location updating has been successful or not and whether a USIM is inserted into the UE or not; but only if the UE is equipped for speech.

If the procedures tested in this sub-clause are not correctly implemented in the UE, establishment, maintenance and clearing of connections might fail in the essential case of emergency calls.

The tests of this sub-clause are only applicable to an UE supporting narrow band speech (AMR).

13.2.1 Emergency call / with USIM

13.2.1.1 Emergency call / with USIM / accept case

13.2.1.1.1 Definition

13.2.1.1.2 Conformance requirement

1) The UE in the "idle mode" state, as after a successful location update, after the number 112 has been entered by user, shall send a RRC CONNECTION REQUEST message with correct establishment cause ("emergency call").

2) After assignment of a dedicated channel the first layer message sent by the UE on the assigned dedicated channel shall be a CM SERVICE REQUEST message specifying the correct CKSN and TMSI , with CM Service Type "emergency call establishment".

3) Authentication and security mode setting shall be performed successfully.

4) After security mode setting acceptance by the network, the UE shall send an EMERGENCY SETUP message.

5), 6) The emergency call shall be correctly established. The assignment procedure shall be correctly performed.

7) After receipt of a CONNECT ACKNOWLEDGE message during correct establishment of the emergency call the DTCH shall be through connected in both directions if an appropriate DTCH is available.

8) The call shall be cleared correctly.

Reference(s):

- For conformance requirement 1 and 2: 3GPP TS 25.331 sub-clause 8.1.3, 3GPP TS 24.008 sub-clause 5.2.1, 3GPP TS 24.008 sub-clause 4.5.1.5, 3GPP TS 22.030 clause 4.
- For conformance requirement 3: 3GPP TS 25.331, sub-clause 8.1.12, 3GPP TS 24.008 sub-clause 4.3.2.
- For conformance requirement 4: 3GPP TS 24.008, sub-clause 5.2.1.1.
- For conformance requirement 5 and 6: 3GPP TS 25.331, sub-clause 8.2.1.
- For conformance requirement 7: 3GPP TS 24.008, sub-clauses 5.2.1.6.
- For conformance requirement 8: 3GPP TS 24.008, sub-clause 5.4.

13.2.1.1.3 Test purpose

1) To verify that an UE supporting speech in the MM state "idle mode", when made to call the number 112, sends a RRC CONNECTION REQUEST message with establishment cause "emergency call".
2) To verify that after assignment of a dedicated channel the first layer message sent by the UE on the assigned dedicated channel is a CM SERVICE REQUEST message specifying the correct CKSN and TMSI, with CM Service Type "emergency call establishment".
3) To verify that authentication and security mode setting are performed successfully.
4) To verify that after security mode setting acceptance by the SS, the UE sends an EMERGENCY SETUP message.
5) To verify that subsequently, the SS having sent a CALL PROCEEDING message and then an ALERT message and having initiated the assignment procedure of an appropriate speech traffic channel, the UE performs correctly that assignment procedure.
6) To verify subsequent correct performance of a connect procedure.
7) To verify that subsequently the UE has through connected the DTCH in both directions.
8) To verify that the call is cleared correctly.

13.2.1.1.4 Method of test

Related ICS Statements

- Narrow band speech (AMR).
- Classmark.

Initial Conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE is in MM-state "idle mode" with valid TMSI and CKSN.

Test procedure

The UE is made to initiate an emergency call. The call is established with late assignment. Having reached the active state, the call is cleared by the SS.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The "called number" 112 is entered.
2	-->		RRC CONNECTION REQUEST	Establishment cause is emergency call establishment.
3	<--		RRC CONNECTION SETUP	SS accepts the establishment of a RRC connection
4	-->		RRC CONNECTION SETUP COMPLETE	
5	-->		CM SERVICE REQUEST	The CM service type IE indicates "emergency call establishment".
6	<--		AUTHENTICATION REQUEST	IE Authentication Parameter AUTN shall be present in the message.
7	-->		AUTHENTICATION RESPONSE	SRES specifies correct value.
8	<--		SECURITY MODE COMMAND	SS starts deciphering after sending the message.
9	-->		SECURITY MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
10	SS			SS starts ciphering.
11	-->		EMERGENCY SETUP	
12	<--		CALL PROCEEDING	
13	<--		ALERTING	
14	<--		RADIO BEARER SETUP	The rate of the channel is that one indicated by the EMERGENCY SETUP message, if that message did not offer a choice, and the rate is the preferred one else.
15	-->		RADIO BEARER SETUP COMPLETE	
16	<--		CONNECT	
17	-->		CONNECT ACKNOWLEDGE	
18	UE			The DTCH is through connected in both directions.
19	<--		DISCONNECT	
20	-->		RELEASE	
21	<--		RELEASE COMPLETE	
22	<--		RRC CONNECTION RELEASE	
23	-->		RRC CONNECTION RELEASE COMPLETE	The main signalling link is released.

Specific Message Contents

None.

13.2.2 Emergency call / without USIM

13.2.2.1 Emergency call / without USIM / accept case

13.2.2.1.1 Definition

13.2.2.1.2 Conformance requirement

1) The UE in the "idle mode" state, as after a successful location update, after the number 112 has been entered by user, shall send a RRC CONNECTION REQUEST message with correct establishment cause ("emergency call").

2) After assignment of a dedicated channel the first layer message sent by the UE on the assigned dedicated channel shall be a CM SERVICE REQUEST message specifying the correct IMEI and a non-available CKSN, with CM Service Type "emergency call establishment".

3) After security mode setting acceptance by the network, the UE shall send an EMERGENCY SETUP message.

4), 5) The emergency call shall be correctly established. The assignment procedure shall be correctly performed.

6) After receipt of a CONNECT ACKNOWLEDGE message during correct establishment of the emergency call the DTCH shall be through connected in both directions if an appropriate DTCH is available.

7) The call shall be cleared correctly.

Reference(s):

For conformance requirement 1 and 2: 3GPP TS 25.331 sub-clause 8.1.3, 3GPP TS 24.008 sub-clause 5.2.1, 3GPP TS 24.008 sub-clause 4.5.1.5, 3GPP TS 22.030 clause 4.

For conformance requirement 3: 3GPP TS 24.008, sub-clause 5.2.1.1.

For conformance requirements 4 and 5: 3GPP TS 25.331, sub-clause 8.2.1.

For conformance requirement 6: 3GPP TS 24.008, sub-clauses 5.2.1.6.

For conformance requirement 7: 3GPP TS 24.008, sub-clause 5.4.

13.2.2.1.3 Test purpose

1) To verify that the UE in the "idle, no IMSI" state (no USIM inserted) when made to call the number 112, sends a RRC CONNECTION REQUEST message with establishment cause "emergency call".

2) To verify that after assignment of a dedicated channel the first layer message sent by the UE on the assigned dedicated channel is a CM SERVICE REQUEST message in which the security key sequence number IE indicates "no key is available", the CM service type IE indicates "emergency number establishment", and the mobile identity IE specifies the IMEI of the UE.

3) To verify that after receipt of a CM SERVICE ACCEPT message from the SS, the UE sends an EMERGENCY SETUP message.

4) To verify that subsequently, the SS having sent a CALL PROCEEDING message and then an ALERT message and having initiated the assignment procedure of an appropriate speech traffic channel, the UE performs correctly that assignment procedure.

5) To verify subsequent correct performance of a connect procedure.

6) To verify that subsequently the UE has through connected the DTCH in both directions.

7) To verify that the call is cleared correctly.

13.2.2.1.4 Method of test

Related ICS Statements

- Narrow band speech (AMR).
- Classmark.

Initial Conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE is in MM-state "idle, no IMSI", no USIM inserted.

Test procedure

The UE is made to initiate an emergency call. The call is established without authentication, without security, with late assignment. Having reached the active state, the call is cleared by the SS.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The "called number" 112 is entered.
2	-->		RRC CONNECTION REQUEST	Establishment cause is "emergency call".
3	<--		RRC CONNECTION SETUP	SS accepts the establishment of a RRC connection
4	-->		RRC CONNECTION SETUP COMPLETE	
5	-->		CM SERVICE REQUEST	The CM service type IE indicates "emergency call establishment". The mobile identity IE specifies the IMEI of the UE. The cipher key sequence number IE indicates "no key is available". The mobile station classmark IE is as specified by the manufacturer in a ICS statement.
6	<--		CM SERVICE ACCEPT	
7	-->		EMERGENCY SETUP	
8	<--		CALL PROCEEDING	
9	<--		ALERTING	
10	<--		RADIO BEARER SETUP	The rate of the channel is one indicated by the EMERGENCY SETUP message.
11	-->		RADIO BEARER SETUP COMPLETE	
12	<--		CONNECT	
13	-->		CONNECT ACKNOWLEDGE	
14	UE			The DTCH is through connected in both directions.
15	<--		DISCONNECT	
16	-->		RELEASE	
17	<--		RELEASE COMPLETE	
18	<--		RRC CONNECTION RELEASE	
19	-->		RRC CONNECTION RELEASE COMPLETE	The main signalling link is released

Specific Message Contents

None.

13.2.2.2 Emergency call / without USIM / reject case

13.2.2.2.1 Definition

13.2.2.2.2 Conformance requirement

1) The UE in the "idle, no IMSI" state (no USIM inserted), after the number 112 has been entered, shall send a RRC CONNECTION REQUEST message with correct establishment cause ("emergency call").

2) After assignment of a dedicated channel the first layer message sent by the UE on the assigned dedicated channel shall be a CM SERVICE REQUEST message specifying the correct IMEI and a non-available CKSN, with CM Service Type "emergency call establishment".

3) In the situation at the end of test purpose 2, when the UE receives a CM SERVICE REJECT message, it shall abandon the emergency call.

Reference(s):

For conformance requirement 1 and 2: 3GPP TS 25.331 sub-clause 8.1.3, 3GPP TS 24.008 sub-clause 5.2.1, 3GPP TS 24.008 sub-clause 4.5.1.5, 3GPP TS 22.030 clause 4.

For conformance requirement 3: 3GPP TS 25.331 sub-clause 8.1.12, 3GPP TS 24.008 sub-clause 4.5.1.1.

13.2.2.2.3 Test purpose

1) To verify that the UE in the "idle, no IMSI" state (no USIM inserted) when made to call the number 112, sends a RRC CONNECTION REQUEST message with establishment cause "emergency call".

2) To verify that after assignment of a dedicated channel the first layer message sent by the UE on the assigned dedicated channel is a CM SERVICE REQUEST message in which the security key sequence number IE indicates "no key is available", the CM service type IE indicates "emergency call establishment", and the mobile identity IE specifies the IMEI of the UE.

3) To verify that after receipt of a CM SERVICE REJECT message from the SS, the UE abandons the emergency call establishment.

13.2.2.2.4 Method of test

Related ICS statements

- Narrow band speech (AMR).
- Classmark.

Initial Conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE is in MM-state "idle, no IMSI", no USIM inserted.

Test procedure

The UE is made to initiate an emergency call. The call is established without authentication, without security, with early assignment. The SS responds to the CM SERVICE REQUEST from the UE with a CM SERVICE REJECT message specifying in the reject cause IE the reject cause value "IMEI not accepted". The SS then verifies for during 5 seconds that the UE does not send a layer 3 message. Then the call is cleared by the SS. The SS verifies during 20 seconds after disconnection of the main signalling link that the UE does not initiate a RRC connection establishment.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The "called number" 112 is entered.
2	-->		RRC CONNECTION REQUEST	Establishment cause is "emergency call".
3	<--		RRC CONNECTION SETUP	SS accepts the establishment of a RRC connection
4			RRC CONNECTION SETUP COMPLETE	
	-->		CM SERVICE REQUEST	The CM service type IE indicates "emergency call establishment". The mobile identity IE specifies the IMEI of the UE. The cipher key sequence number IE indicates "no key is available". The mobile station classmark IE is as specified by the manufacturer in a ICS statement.
6	<--		CM SERVICE REJECT	the reject cause IE specifies reject cause value #5, "IMEI not accepted".
7	SS			During 5 seconds, the SS verifies that the UE does not send L3 messages.
8	<--		RRC CONNECTION RELEASE	
9	-->		RRC CONNECTION RELEASE COMPLETE	The main signalling link is released.
10	SS			During 20 seconds, the SS verifies that the UE does not initiate a RRC connection establishment

Specific Message Contents:

None.

14 Interoperability Radio Bearer Tests

14.1 General information for interoperability radio bearer tests

The purpose of the interoperability radio bearer test cases are to ensure interoperability of UE's in different regions and networks. For this purpose representative radio bearer configurations that will be used in real network implementations have been defined in [9] TS 34.108, clause 6.10.

The applicability of radio bearer tests is dependent on the UE uplink and downlink radio access capabilities and UE support tele- and bearer-services. See TS 34.123-2, Annex B for applicability of the specific test cases.

14.1.1 Generic radio bearer test procedure

Initial conditions

UE in idle mode

Test procedure

a) The SS setup the reference radio bearer configuration as specified in TS 34.108, clause 6.10 for the actual radio bearer test.

b) The SS limits the UE allowed uplink transport format combinations according to the "Restricted UL TFCIs", as specified for the sub-test of the actual radio bearer test, using the RRC transport format combination control procedure.

c) The SS closes the test loop using UE test loop mode 1 and setting the UL RLC SDU size parameter, for all radio bearers under test, according to the "UL RLC SDU size" value as specified for the sub-test of the actual radio bearer test.

d) The SS transmits, for all radio bearers under test, an RLC SDU having the size equal to the "Test data size" as specified for the sub-test of the actual radio bearer test. See note 1.

e) The SS checks that, for all radio bearers under test, the content of the received RLC SDU has the correct content and is received having the correct transport format. See [10] TS 34.109 clause 5.3.2.6.2 for details regarding the UE loopback of RLC SDUs.

f) The SS opens the UE test loop.

g) Steps b) to f) are repeated for all sub-tests

h) The SS may optionally release the radio bearer.

i) The SS may optionally deactivate the radio bearer test mode.

Note 1. For the case when the reference radio bearer configuration under test uses RLC transperant mode in downlink then the radio bearer test case shall use a DL RLC SDU size (defined by the "Test data size" parameter) equal to the DL RLC PDU size. This is due to that the UE test loop function has no ability to perform reassembly of segmented DL RLC SDUs while the RLC is operated in transperent mode. See [7] TS 25.322 for details regarding UE operation in RLC transperent mode.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION (BCCH)	Broadcast
2	<--		PAGING (PCCH)	Paging
3	-->		RRC CONNECTION REQUEST (CCCH)	RRC
4	<--		RRC CONNECTION SETUP (CCCH)	RRC
5	-->		RRC CONNECTION SETUP COMPLETE (DCCH)	RRC
6	-->		PAGING RESPONSE (DCCH)	RR
7	<--		ACTIVATE RB TEST MODE (DCCH)	TC
8	-->		ACTIVATE RB TEST MODE COMPLETE (DCCH)	TC
9	<--		RADIO BEARER SETUP (DCCH)	RRC
10	-->		RADIO BEARER SETUP COMPLETE (DCCH)	RRC
11	<--		TRANSPORT FORMAT COMBINATION CONTROL	RRC Transport format combinations is limited to “Restricted UL TFCIs”, as specified for the sub-test
12	<--		CLOSE UE TEST LOOP	TC UE test mode 1 RLC SDU size is for every active radio bearer set to “UL RLC SDU size”, as specified for the sub-test.
13	-->		CLOSE UE TEST LOOP COMPLETE (DCCH)	TC
14	<--		DOWNLINK RLC SDU	Send test data using the downlink transport format combination under test
15	-->		UPLINK RLC SDU	
16	<--		OPEN UE TEST LOOP	TC
17	-->		OPEN UE TEST LOOP COMPLETE	TC
18			Repeat steps 11 to 17 for every sub-test.	
19			RB RELEASE	RRC Optional step
20	<--		DEACTIVATE RB TEST MODE	TC Optional step
21	-->		DEACTIVATE RB TEST MODE COMPLETE	TC Optional step

14.2 Combinations on DPCH

14.2.1 Stand-alone UL:1.7 DL:1.7 kbps SRBs for DCCH

Implicitly tested

14.2.2 Stand-alone UL:3.4 DL:3.4 kbps SRBs for DCCH

Implicitly tested

14.2.3 Stand-alone UL:13.6 DL:13.6 kbps SRBs for DCCH

Implicitly tested

14.2.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.4.1 Conformance requirement

The UE shall be able to establish the UTRAN requested radio bearers within the UE’s signaled radio access capabilities.

The UE shall correctly transfer user data from peer to peer RLC entitities according to the requested radio bearer configuration.

Reference(s)

3GPP TS 25.331, clause 8.2.1

3GPP TS 25.2xx series (Physical Layer)

3GPP TS 25.321 (MAC)

3GPP TS 25.322 (RLC)

14.2.4.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.4.

14.2.4.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x148
	TF1, bits	1x39	1x103	1x60	1x148
	TF2, bits	1x81	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x148
	TF1, bits	1x39	1x103	1x60	1x148
	TF2, bits	1x81	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size Note 1	Test data size Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, DL_TFC4, UL_TFC0, UL_TFC3, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 103 bits RB7: 60 bits	RB5: 39 bits RB6: No data RB7: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, DL_TFC5, UL_TFC0, UL_TFC3, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 81 bits RB6: 103 bits RB7: 60 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.4.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 or RB7.
   - for sub-test 2: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by SS

14.2.5 Conversational / speech / UL:10.2 DL:10.2 kbps / CS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.5.1 Conformance requirement

See 14.2.4.1.

14.2.5.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.5.

14.2.5.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	0x65(alt. 1x0)	0x99	0x40	0x148
	TF1, bits	1x39	1x99	1x40	1x148
	TF2, bits	1x65	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7,DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	1x0	0x99	0x40	0x148
	TF1, bits	1x39	1x99	1x40	1x148
	TF2, bits	1x65	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size Note 1	Test data size Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, DL_TFC4, UL_TFC0, UL_TFC3, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 99 bits RB7: 40 bits	RB5: 39 bits RB6: No data RB7: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, DL_TFC5, UL_TFC0, UL_TFC3, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 65 bits RB6: 99 bits RB7: 40 bits	RB5: 65 bits RB6: 99 bits RB7: 40 bits

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.5.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x65); RB6/TF1 (1x99); and RB7/TF1 (1x40).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 or RB7.

- for sub-test 2: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by SS.

14.2.6 Conversational / speech / UL:7.95 DL:7.95 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.6.1 Conformance requirement

See 14.2.4.1.

14.2.6.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.6.

14.2.6.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x75 (alt. 1x0)	0x84	0x148
	TF1, bits	1x39	1x84	1x148
	TF2, bits	1x75	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x84	0x148
	TF1, bits	1x39	1x84	1x148
	TF2, bits	1x75	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size Note 1	Test data size Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, DL_TFC4, UL_TFC0, UL_TFC3, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 84 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, DL_TFC5, UL_TFC0, UL_TFC3, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 75 bits RB6: 84 bits	RB5: 75 bits RB6: 84 bits

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.6.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x75) and RB6/TF1 (1x84).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
   - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

14.2.7 Conversational / speech / UL:7.4 DL:7.4 kbps / CS RAB+ UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.7.1 Conformance requirement

See 14.2.4.1.

14.2.7.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.7.

14.2.7.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x61 (alt. 1x0)	0x87	0x148
	TF1, bits	1x39	1x87	1x148
	TF2, bits	1x61	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x87	0x148
	TF1, bits	1x39	1x87	1x148
	TF2, bits	1x61	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size Note 1	Test data size Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, DL_TFC4, UL_TFC0, UL_TFC3, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 87 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, DL_TFC5, UL_TFC0, UL_TFC3, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 61 bits RB6: 87 bits	RB5: 61 bits RB6: 87 bits

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.7.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x61) and RB6/TF1 (1x87).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.

- for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

14.2.8 Conversational / speech / UL:6.7 DL:6.7 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.8.1 Conformance requirement

See 14.2.4.1.

14.2.8.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.8.

14.2.8.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x58 (alt. 1x0)	0x76	0x148
	TF1, bits	1x39	1x76	1x148
	TF2, bits	1x58	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x76	0x148
	TF1, bits	1x39	1x76	1x148
	TF2, bits	1x58	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size Note 1	Test data size Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, DL_TFC4, UL_TFC0, UL_TFC3, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 76 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, DL_TFC5, UL_TFC0, UL_TFC3, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 58 bits RB6: 76 bits	RB5: 58 bits RB6: 76 bits

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.8.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x58) and RB6/TF1 (1x76).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
   - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

14.2.9 Conversational / speech / UL:5.9 DL:5.9 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.9.1 Conformance requirement

See 14.2.4.1.

14.2.9.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.9.

14.2.9.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x55 (alt. 1x0)	0x63	0x148
	TF1, bits	1x39	1x63	1x148
	TF2, bits	1x55	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x63	0x148
	TF1, bits	1x39	1x63	1x148
	TF2, bits	1x55	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size Note 1	Test data size Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, DL_TFC4, UL_TFC0, UL_TFC3, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 63 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, DL_TFC5, UL_TFC0, UL_TFC3, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 55 bits RB6: 63 bits	RB5: 55 bits RB6: 63 bits

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.9.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x55) and RB6/TF1 (1x63).
3. At step 15 the UE shall return

- for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
- for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

14.2.10 Conversational / speech / UL:5.15 DL:5.15 kbps / CS RAB + UL:1.7 DL:1.7 kbps SRBs for DCCH

14.2.10.1 Conformance requirement

See 14.2.4.1.

14.2.10.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.10.

14.2.10.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x49 (alt. 1x0)	0x54	0x148
	TF1, bits	1x39	1x54	1x148
	TF2, bits	1x49	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x54	0x148
	TF1, bits	1x39	1x54	1x148
	TF2, bits	1x49	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size Note 1	Test data size Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, DL_TFC4, UL_TFC0, UL_TFC3, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 54 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, DL_TFC5, UL_TFC0, UL_TFC3, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 49 bits RB6: 54 bits	RB5: 49 bits RB6: 54 bits

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.10.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x49) and RB6/TF1 (1x54).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
   - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

14.2.11 Conversational / speech / UL:4.75 DL:4.75 kbps / CS RAB + UL:1.7 DL:1.7 kbps SRBs for DCCH

14.2.11.1 Conformance requirement

See 14.2.4.1.

14.2.11.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.11.

14.2.11.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x49 (alt. 1x0)	0x53	0x148
	TF1, bits	1x39	1x53	1x148
	TF2, bits	1x42	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x53	0x148
	TF1, bits	1x39	1x53	1x148
	TF2, bits	1x42	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size Note 1	Test data size Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, DL_TFC4, UL_TFC0, UL_TFC3, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 53 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, DL_TFC5, UL_TFC0, UL_TFC3, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 42 bits RB6: 53 bits	RB5: 42 bits RB6: 53 bits

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.11.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x42) and RB6/TF1 (1x53).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.

- for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

14.2.12 Conversational / unknown / UL:28.8 DL:28.8 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.12.1 Conformance requirement

See 14.2.4.1.

14.2.12.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.12.

14.2.12.3 Method of test

Uplink TFS:

	TFI	RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF0, TF1)
UL_TFC4	(TF1, TF1)
UL_TFC5	(TF2, TF1)

Downlink TFS:

		RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF0, TF1)
DL_TFC4	(TF1, TF1)
DL_TFC5	(TF2, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, DL_TFC4, UL_TFC0, UL_TFC3, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 576	RB5: 576
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, DL_TFC5, UL_TFC0, UL_TFC3, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 1152	RB5: 1152

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.12.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x576).
   - for sub-test 2: RB5/TF2 (2x576).
3. At step 15 the UE shall return
   - for sub-test 1 and 2: an RLC SDU on RB5 having the same content as sent by SS.

14.2.13 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.13.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI

14.2.13.1.1 Conformance requirement

See 14.2.4.1.

14.2.13.1.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.13 for the 20 ms TTI case.

14.2.13.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	2x640	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	2x640	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 1280	RB5: 1280

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.13.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (2x640).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS.

14.2.13.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI

14.2.13.2.1 Conformance requirement

See 14.2.4.1.

14.2.13.2.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.13 for the 40 ms TTI case.

14.2.13.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	4x640	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	4x640	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 2560	RB5: 2560

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.13.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (4x640).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS.

14.2.14 Conversational / unknown / UL:32 DL:32 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.14.1 Conversational / unknown / UL:32 DL:32 kbps / CS RAB / 20 ms TTI

14.2.14.1.1 Conformance requirement

See 14.2.4.1.

14.2.14.1.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.14 for the 20 ms TTI case.

14.2.14.1.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	1x640	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	1x640	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 640	RB5: 640

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.14.1.4 Test requirements

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x640).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS.

14.2.14.2 Conversational / unknown / UL:32 DL:32 kbps / CS RAB / 40 ms TTI

14.2.14.2.1 Conformance requirement

See 14.2.4.1.

14.2.14.2.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.14 for the 40 ms TTI case.

14.2.14.2.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	2x640	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	2x640	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 1280	RB5: 1280

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.14.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (2x640).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS.

14.2.15 Streaming / unknown / UL:14.4/DL:14.4 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.15.1 Conformance requirement

See 14.2.4.1.

14.2.15.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.15.

14.2.15.3 Method of test

Uplink TFS:

	TFI	RB5 (14.4 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (14.4 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576	RB5: 576

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.15.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x576).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS.

14.2.16 Streaming / unknown / UL:28.8/DL:28.8 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.16.1 Conformance requirement

See 14.2.4.1.

14.2.16.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.16.

14.2.16.3 Method of test

Uplink TFS:

	TFI	RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF0, TF1)
UL_TFC4	(TF1, TF1)
UL_TFC5	(TF2, TF1)

Downlink TFS:

		RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF0, TF1)
DL_TFC4	(TF1, TF1)
DL_TFC5	(TF2, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, DL_TFC4, UL_TFC0, UL_TFC3, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 576	RB5: 576
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, DL_TFC5, UL_TFC0, UL_TFC3, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 1152	RB5: 1152

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.16.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be

- for sub-test 1: RB5/TF1 (1x576).
- for sub-test 2: RB5/TF2 (2x576).

3. At step 15 the UE shall return
   - for sub-test 1 and 2: an RLC SDU on RB5 having the same content as sent by SS.

14.2.17 Streaming / unknown / UL:57.6/DL:57.6 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.17.1 Conformance requirement

See 14.2.4.1.

14.2.17.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.17.

14.2.17.3 Method of test

Uplink TFS:

	TFI	RB5 (57.6 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A
	TF3, bits	3x576	N/A
	TF4, bits	4x576	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (57.6 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A
	TF3, bits	3x576	N/A
	TF4, bits	4x576	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC6, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 576	RB5: 576
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, DL_TFC7, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1152	RB5: 1152
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, DL_TFC8, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1728	RB5: 1728
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, DL_TFC9, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2304	RB5: 2304

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.17.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x576).
   - for sub-test 2: RB5/TF2 (2x576).
   - for sub-test 3: RB5/TF3 (3x576).
   - for sub-test 4: RB5/TF4 (4x576).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as sent by SS.

14.2.18 Streaming / unknown / UL:0 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.18.1 Conformance requirement

See 14.2.4.1.

14.2.18.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.18.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 64 kbps,, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

14.2.18.3 Method of test

Uplink TFS:

	TFI	RB5 (14.4 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x320	0x148
	TF1, bits	1x320	1x148
	TF2, bits	2x320	N/A
	TF3, bits	4x320	N/A
	TF4, bits	8x320	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC6, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576	RB5: 320 Note 2
2	DL_TFC2	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC7, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 1152	RB5: 640 Note 3
3	DL_TFC3	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC8, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 1728	RB5: 1280 Note 4
4	DL_TFC4	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC9, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 2880	RB5: 2560 Note 5

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return one RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.

Note 3 SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return two RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2.

Note 4 SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return three RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3.

Note 5 SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return five RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5.

See 14.1.1 for test procedure.

14.2.18.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as sent by SS.

14.2.19 Streaming / unknown / UL:64 DL:0 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.19.1 Conformance requirement

See 14.2.4.1.

14.2.19.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.19.

To be able to test the uplink radio bearer using the UE loopback function for the reference radio bearer UL:64 DL: 0 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.2 (Streaming/unknown/DL:14.4 kbps) is used in downlink.

14.2.19.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x320	0x148
	TF1, bits	1x320	1x148
	TF2, bits	2x320	N/A
	TF3, bits	4x320	N/A
	TF4, bits	8x320	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (14.4 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 320	RB5: 576 Note 2
2	DL_TFC1	UL_TFC2	DL_TFC0, DL_TFC2, DL_TFC4, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 640	RB5: 576 Note 3
3	DL_TFC1	UL_TFC3	DL_TFC0, DL_TFC2, DL_TFC4, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1280	RB5: 576 Note 4
4	DL_TFC1	UL_TFC4	DL_TFC0, DL_TFC2, DL_TFC4, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2560	RB5: 576 Note 5

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 SS is using a DL RLC SDU with 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return the first 320 bits of the test data.

Note 3 SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU two times (truncating the last one to fit the UL RLC SDU size of 640 bits).

Note 4 SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU three times (truncating the last one to fit the UL RLC SDU size of 1280 bits).

Note 5 SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU five times (truncating the last one to fit the UL RLC SDU size of 2560 bits).

See 14.1.1 for test procedure.

14.2.19.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x320).
   - for sub-test 2: RB5/TF2 (2x320).
   - for sub-test 3: RB5/TF3 (4x320).
   - for sub-test 4: RB5/TF4 (8x320).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as the first 320 bits of the DL RLC SDU sent by the SS.
   - for sub-test 2: an RLC SDU on RB5 for which the first 576 bits are equal to the sent DL RLC SDU bit pattern and the remaining 64 bits are equal to the first 64 bits of the sent DL RLC SDU.

- for sub-test 3: an RLC SDU on RB5 for which the first 1152 bits are equal to the sent DL RLC SDU bit pattern repeated twice and the remaining 128 bits are equal to the first 128 bits of the sent DL RLC SDU.
- for sub-test 4: an RLC SDU on RB5 for which the first 2304 bits are equal to the sent DL RLC SDU bit pattern repeated four times and the remaining 256 bits are equal to the first 256 of the sent DL RLC SDU.

14.2.20 Streaming / unknown / UL:0 DL:128 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.20.1 Conformance requirement

See 14.2.4.1.

14.2.20.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.20.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 128 kbps,, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink. For all sub-tests UL_TFC1 is used.

14.2.20.3 Method of test

Uplink TFS:

	TFI	RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x320	0x148
	TF1, bits	1x320	1x148
	TF2, bits	2x320	N/A
	TF3, bits	4x320	N/A
	TF4, bits	8x320	N/A
	TF5, bits	16x320	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, DL_TFC7, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576	RB5: 320 Note 2
2	DL_TFC2	UL_TFC1	DL_TFC0, DL_TFC6, DL_TFC8, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 1152	RB5: 640 Note 3
3	DL_TFC3	UL_TFC1	DL_TFC0, DL_TFC6, DL_TFC9, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 1728	RB5: 1280 Note 4
4	DL_TFC4	UL_TFC1	DL_TFC0, DL_TFC6, DL_TFC10, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 2880	RB5: 2560 Note 5
5	DL_TFC5	UL_TFC1	DL_TFC0, DL_TFC6, DL_TFC11, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 5184	RB5: 5120 Note 6

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return one RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.

Note 3 SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return two RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2.

Note 4 SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return three RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3.

Note 5 SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return five RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5.

Note 6 SS is using a DL RLC SDU size of 5120 bits as test data (=DL RLC PDU size for DL/TF5). UE will return nine RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, .., RLC PDU#8 and the first 512 bits of RLC PDU#9.

See 14.1.1 for test procedure.

14.2.20.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE shall return
   - for sub-test 1 to 5: an RLC SDU on RB5 having the same content as sent by SS.

14.2.21 Streaming / unknown / UL:128 DL:0 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.21.1 Conformance requirement

See 14.2.4.1.

14.2.21.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.21.

To be able to test the uplink radio bearer using the UE loopback function for the reference radio bearer UL:64 DL: 0 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.2 (Streaming/unknown/DL:14.4 kbps) is used in downlink.

14.2.21.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x320	0x148
	TF1, bits	1x320	1x148
	TF2, bits	2x320	N/A
	TF3, bits	4x320	N/A
	TF4, bits	8x320	N/A
	TF5, bits	16x320	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF4, TF0)
UL_TFC6	(TF0, TF1)
UL_TFC7	(TF1, TF1)
UL_TFC8	(TF2, TF1)
UL_TFC9	(TF3, TF1)
UL_TFC10	(TF4, TF1)
UL_TFC11	(TF5, TF1)

Downlink TFS:

	TFI	RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC6, UL_TFC7	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 320	RB5: 576 Note 2
2	DL_TFC1	UL_TFC2	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC6, UL_TFC8	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 640	RB5: 576 Note 3
3	DL_TFC1	UL_TFC3	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 1280	RB5: 576 Note 4
4	DL_TFC1	UL_TFC4	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 2560	RB5: 576 Note 5
5	DL_TFC1	UL_TFC5	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 5120	RB5: 576 Note 6

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 SS is using a DL RLC SDU with 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return the first 320 bits of the test data.

Note 3 SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU two times (truncating the last one to fit the UL RLC SDU size of 640 bits).

Note 4 SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU three times (truncating the last one to fit the UL RLC SDU size of 1280 bits).

Note 5 SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU five times (truncating the last one to fit the UL RLC SDU size of 2560 bits).

Note 6 SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU nine times (truncating the last one to fit the UL RLC SDU size of 5120 bits).

See 14.1.1 for test procedure.

14.2.21.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x320).
   - for sub-test 2: RB5/TF2 (2x320).
   - for sub-test 3: RB5/TF3 (4x320).
   - for sub-test 4: RB5/TF4 (8x320).
   - for sub-test 5: RB5/TF5 (16x320).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as the first 320 bits of the DL RLC SDU sent by the SS.
   - for sub-test 2: an RLC SDU on RB5 for which the first 576 bits are equal to the sent DL RLC SDU bit pattern and the remaining 64 bits are equal to the first 64 bits of the DL RLC SDU sent by the SS.
   - for sub-test 3: an RLC SDU on RB5 for which the first 1152 bits are equal to the sent DL RLC SDU bit pattern repeated twice and the remaining 128 bits are equal to the first 128 of the sent DL RLC SDU.
   - for sub-test 4: an RLC SDU on RB5 for which the first 2304 bits are equal to the sent DL RLC SDU bit pattern repeated four times and the remaining 256 bits are equal to the first 256 of the sent DL RLC SDU.
   - for sub-test 5: an RLC SDU on RB5 for which the first 4608 bits are equal to the sent DL RLC SDU bit pattern repeated eight times and the remaining 512 bits are equal to the first 512 of the sent DL RLC SDU.

14.2.22 Streaming / unknown / UL:0 DL:384 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.22.1 Conformance requirement

See 14.2.4.1.

14.2.22.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.22.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 384 kbps,, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

14.2.22.3 Method of test

Uplink TFS:

	TFI	RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps)	DCCH
TFS	TF0, bits	0x320	0x148
	TF1, bits	1x320	1x148
	TF2, bits	2x320	N/A
	TF3, bits	4x320	N/A
	TF4, bits	8x320	N/A
	TF5, bits	16x320	N/A
	TF6, bits	32x320	N/A
	TF7, bits	48x320	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF0, TF1)
DL_TFC9	(TF1, TF1)
DL_TFC10	(TF2, TF1)
DL_TFC11	(TF3, TF1)
DL_TFC12	(TF4, TF1)
DL_TFC13	(TF5, TF1)
DL_TFC14	(TF6, TF1)
DL_TFC15	(TF7, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC8, DL_TFC9, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576	RB5: 320 Note 2
2	DL_TFC2	UL_TFC1	DL_TFC0, DL_TFC8, DL_TFC10, UL_TFC0, UL_TFC2 UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 1152	RB5: 640 Note 3
3	DL_TFC3	UL_TFC1	DL_TFC0, DL_TFC8, DL_TFC11, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 1728	RB5: 1280 Note 4
4	DL_TFC4	UL_TFC1	DL_TFC0, DL_TFC8, DL_TFC12, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 2880	RB5: 2560 Note 5
5	DL_TFC5	UL_TFC1	DL_TFC0, DL_TFC8, DL_TFC13, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 5184	RB5: 5120 Note 6
6	DL_TFC6	UL_TFC1	DL_TFC0, DL_TFC8, DL_TFC14, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 10368	RB5: 10240 Note 7
7	DL_TFC7	UL_TFC1	DL_TFC0, DL_TFC8, DL_TFC15, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 15552	RB5: 15360 Note 8

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return one RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.

Note 3 SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return two RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2.

Note 4 SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return 3 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3.

Note 5 SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return 5 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5.

Note 6 SS is using a DL RLC SDU size of 5120 bits as test data (=DL RLC PDU size for DL/TF5). UE will return 9 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, .., RLC PDU#8 and the first 512 bits of RLC PDU#9.

Note 7 SS is using a DL RLC SDU size of 10240 bits as test data (=DL RLC PDU size for DL/TF6). UE will return 18 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, .., RLC PDU#17 and the first 448 bits of RLC PDU#18.

Note 8 SS is using a DL RLC SDU size of 15360 bits as test data (=DL RLC PDU size for DL/TF7). UE will return 27 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, .., RLC PDU#26 and the first 384 bits of RLC PDU#27.

See 14.1.1 for test procedure.

14.2.22.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE shall return
   - for sub-test 1 to 7: an RLC SDU on RB5 having the same content as sent by SS.

14.2.23 Interactive or background / UL:32 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.23.1 Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC,10 ms TTI)

14.2.23.1.1 Conformance requirement

See 14.2.4.1.

14.2.23.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23 for the turbo channel coding and uplink 10 ms TTI case.

14.2.23.1.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (8 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 336	RB5: 336

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.23.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.23.2 Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC, 20 ms TTI)

14.2.23.2.1 Conformance requirement

See 14.2.4.1.

14.2.23.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23 for the turbo channel coding and uplink 20 ms TTI case.

14.2.23.2.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF0, TF1)
UL_TFC4	(TF1, TF1)
UL_TFC5	(TF2, TF1)

Downlink TFS:

	TFI	RB5 (8 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC3, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 336	RB5: 336
2	DL_TFC1	UL_TFC2	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC3, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 672	RB5: 672

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.23.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
3. At step 15 the UE shall return
   - for sub-test 1 and 2: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.23.3 Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 10 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23 for the convolutional channel coding and uplink 10 ms TTI case.

See test case 14.2.23.1 for test procedure and test requirement.

14.2.23.4 Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 20 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23 for the convolutional channel coding and uplink 20 ms TTI case.

See test case 14.2.23.2 for test procedure and test requirement.

14.2.24 Interactive or background / UL:64 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.24.1 Conformance requirement

See 14.2.4.1.

14.2.24.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.24.

14.2.24.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (8 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 336	RB5: 336
2	DL_TFC1	UL_TFC2	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 672	RB5: 672
3	DL_TFC1	UL_TFC3	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1008	RB5: 1008
4	DL_TFC1	UL_TFC4	DL_TFC0, DL_TFC2, DL_TFC3, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1344	RB5: 1344

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.24.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.25 Interactive or background / UL:32 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.25.1 Interactive or background / UL:32 DL: 64 kbps / PS RAB / (TC, 10 ms TTI)

14.2.25.1.1 Conformance requirement

See 14.2.4.1.

14.2.25.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.25 for the uplink turbo channel coding and 10 ms TTI case.

14.2.25.1.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC6, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC7, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC8, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 1008	RB5: 1008
4	DL_TFC4	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC9, UL_TFC0, UL_TFC2, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 1344	RB5: 1344

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.25.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1 to 4: RB5/TF1 (1x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.25.2 Interactive or background / UL:32 DL: 64 kbps / PS RAB / (TC, 20 ms TTI)

14.2.25.2.1 Conformance requirement

See 14.2.4.1.

14.2.25.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.25 for the uplink turbo channel coding and 20 ms TTI case.

14.2.25.2.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF0, TF1)
UL_TFC4	(TF1, TF1)
UL_TFC5	(TF2, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC6, UL_TFC0, UL_TFC3, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, DL_TFC7, UL_TFC0, UL_TFC3, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC8, UL_TFC0, UL_TFC3, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 1008	RB5: 1008
4	DL_TFC4	UL_TFC2	DL_TFC0, DL_TFC5, DL_TFC9, UL_TFC0, UL_TFC3, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 1344	RB5: 1344

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.25.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF1 (1x336).
   - for sub-test 4: RB5/TF2 (2x336).
3. At step 15 the UE shall return

- for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.25.3 Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 10 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.25 for the uplink convolutional channel coding and 10 ms TTI case.

See test case 14.2.25.1 for test procedure and test requirement.

14.2.25.4 Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 20 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.25 for the uplink convolutional channel coding and 20 ms TTI case.

See test case 14.2.25.2 for test procedure and test requirement.

14.2.26 Interactive or background / UL:64 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.26.1 Conformance requirement

See 14.2.4.1.

14.2.26.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.26.

14.2.26.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC6, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, DL_TFC7, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, DL_TFC8, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1008	RB5: 1008
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, DL_TFC9, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1344	RB5: 1344

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.26.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.27 Interactive or background / UL:64 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.27.1 Conformance requirement

See 14.2.4.1.

14.2.27.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.27.

14.2.27.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC6, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, DL_TFC7, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, DL_TFC8, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1344	RB5: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, DL_TFC9, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2688	RB5: 2688

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.27.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.28 Interactive or background / UL:128 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.28.1 Conformance requirement

See 14.2.4.1.

14.2.28.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.28.

14.2.28.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC6, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, DL_TFC7, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, DL_TFC8, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1344	RB5: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, DL_TFC9, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2688	RB5: 2688

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.28.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4: RB5/TF4 (8x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.29 Interactive or background / UL:64 DL:144 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.29.1 Conformance requirement

See 14.2.4.1.

14.2.29.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.29.

14.2.29.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (144 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	9x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF1)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, DL_TFC7, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, DL_TFC8, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, DL_TFC9, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1344	RB5: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, DL_TFC10, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2688	RB5: 2688
5	DL_TFC5	UL_TFC3	DL_TFC0, DL_TFC6, DL_TFC11, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 3024	RB5: 3024

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.29.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4: RB5/TF4 (8x336).

- for sub-test 5: RB5/TF3 (4x336).

3. At step 15 the UE shall return

   - for sub-test 1 to 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.30 Interactive or background / UL:144 DL:144 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.30.1 Conformance requirement

See 14.2.4.1.

14.2.30.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.30.

14.2.30.3 Method of test

Uplink TFS:

	TFI	RB5 (144 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	9x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF1)
UL_TFC6	(TF0, TF1)
UL_TFC7	(TF1, TF1)
UL_TFC8	(TF2, TF1)
UL_TFC9	(TF3, TF1)
UL_TFC10	(TF4, TF1)
UL_TFC11	(TF5, TF1)

Downlink TFS:

	TFI	RB5 (144 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	9x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF1)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, DL_TFC7, UL_TFC0, UL_TFC6, UL_TFC7	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, DL_TFC8, UL_TFC0, UL_TFC6, UL_TFC8	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, DL_TFC9, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 1344	RB5: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, DL_TFC10, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 2688	RB5: 2688
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC6, DL_TFC11, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 3024	RB5: 3024

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.30.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).

- for sub-test 4: RB5/TF4 (8x336).
- for sub-test 5: RB5/TF5 (9x336).

3. At step 15 the UE shall return
   - for sub-test 1 to 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.31 Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.31.1 Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH/ 10 ms TTI

14.2.31.1.1 Conformance requirement

See 14.2.4.1.

14.2.31.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.31 for the downlink 10 ms TTI case.

14.2.31.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (256 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, DL_TFC6, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, DL_TFC7, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, DL_TFC8, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1344	RB5: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, DL_TFC9, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2688	RB5: 2688

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.31.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).

- for sub-test 2: RB5/TF2 (2x336).
- for sub-test 3: RB5/TF3 (3x336).
- for sub-test 4: RB5/TF4 (4x336).

3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.31.2 Interactive or background / UL:64 DL:256 kbps / PS RAB / 20 ms TTI

14.2.31.2.1 Conformance requirement

See 14.2.4.1.

14.2.31.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.31 for the downlink 20 ms TTI case.

14.2.31.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (256 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF0, TF1)
DL_TFC8	(TF1, TF1)
DL_TFC9	(TF2, TF1)
DL_TFC10	(TF3, TF1)
DL_TFC11	(TF4, TF1)
DL_TFC12	(TF5, TF1)
DL_TFC13	(TF6, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC7, DL_TFC8, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC7, DL_TFC9, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC7, DL_TFC10, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1344	RB5: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC7, DL_TFC11, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2688	RB5: 2688
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC7, DL_TFC12, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 4032	RB5: 4032
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC7, DL_TFC13, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5376	RB5: 5376

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.31.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be

- for sub-test 1: RB5/TF1 (1x336).
- for sub-test 2: RB5/TF2 (2x336).
- for sub-test 3: RB5/TF3 (3x336).
- for sub-test 4 to 6: RB5/TF4 (4x336).

3. At step 15 the UE shall return
   - for sub-test 1 to 6: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.32 Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.32.1 Interactive or background / UL:64 DL:384 kbps / PS RAB / 10 ms TTI

14.2.32.1.1 Conformance requirement

See 14.2.4.1.

14.2.32.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.32 for the 10 ms TTI case.

14.2.32.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, DL_TFC7, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, DL_TFC8, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, DL_TFC9, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1344	RB5: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, DL_TFC10, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2688	RB5: 2688
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC6, DL_TFC11, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 4032	RB5: 4032

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.32.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4 and 5: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.32.2 Interactive or background / UL:64 DL:384 kbps / PS RAB / 20 ms TTI

14.2.32.2.1 Conformance requirement

See 14.2.4.1.

14.2.32.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.32 for the 20 ms TTI case.

14.2.32.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF0, TF1)
DL_TFC10	(TF1, TF1)
DL_TFC11	(TF2, TF1)
DL_TFC12	(TF3, TF1)
DL_TFC13	(TF4, TF1)
DL_TFC14	(TF5, TF1)
DL_TFC15	(TF6, TF1)
DL_TFC16	(TF7, TF1)
DL_TFC17	(TF8, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC9, DL_TFC10, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC9, DL_TFC11, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC9, DL_TFC12 UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1344	RB5: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC9, DL_TFC13, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2688	RB5: 2688
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC9, DL_TFC14, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 4032	RB5: 4032
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC9, DL_TFC15, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5376	RB5: 5376
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC9, DL_TFC16, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 6720	RB5: 6720
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC9, DL_TFC17, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 8064	RB5: 8064

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.32.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4 to 8: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 8: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.33 Interactive or background / UL:128 DL:384 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.33.1 Interactive or background / UL:128 DL:384 kbps / PS RAB / 10 ms TTI

14.2.33.1.1 Conformance requirement

See 14.2.4.1.

14.2.33.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.33 for the 10 ms TTI case.

14.2.33.1.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, DL_TFC7, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, DL_TFC8, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, DL_TFC9, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1344	RB5: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, DL_TFC10, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2688	RB5: 2688
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC6, DL_TFC11, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 4032	RB5: 4032

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.33.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4 and 5: RB5/TF4 (8x336).

3. At step 15 the UE shall return

   - for sub-test 1 to 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.33.2 Interactive or background / UL:128 DL:384 kbps / PS RAB / 20 ms TTI

14.2.33.2.1 Conformance requirement

See 14.2.4.1.

14.2.33.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.33 for the 20 ms TTI case.

14.2.33.2.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF0, TF1)
DL_TFC10	(TF1, TF1)
DL_TFC11	(TF2, TF1)
DL_TFC12	(TF3, TF1)
DL_TFC13	(TF4, TF1)
DL_TFC14	(TF5, TF1)
DL_TFC15	(TF6, TF1)
DL_TFC16	(TF7, TF1)
DL_TFC17	(TF8, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC9, DL_TFC10, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC9, DL_TFC11, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC9, DL_TFC12 UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1344	RB5: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC9, DL_TFC13, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2688	RB5: 2688
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC9, DL_TFC14, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 4032	RB5: 4032
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC9, DL_TFC15, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5376	RB5: 5376
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC9, DL_TFC16, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 6720	RB5: 6720
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC9, DL_TFC17, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4 UL_TFC5, UL_TFC9	RB5: 8064	RB5: 8064

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.33.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4 to 8: RB5/TF4 (8x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 8: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.34 Interactive or background / UL:384 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.34.1 Interactive or background / UL:384 DL:384 kbps / PS RAB / 10 ms TTI

14.2.34.1.1 Conformance requirement

See 14.2.4.1.

14.2.34.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.34 for the 10 ms TTI case.

14.2.34.1.3 Method of test

Uplink TFS:

	TFI	RB5 (384 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF0)
UL_TFC6	(TF0, TF1)
UL_TFC7	(TF1, TF1)
UL_TFC8	(TF2, TF1)
UL_TFC9	(TF3, TF1)
UL_TFC10	(TF4, TF1)
UL_TFC11	(TF5, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC7, DL_TFC8, UL_TFC0, UL_TFC7, UL_TFC8	UL_TFC0, UL_TFC1, UL_TFC7, UL_TFC8	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC7, DL_TFC9, UL_TFC0, UL_TFC7, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC7, UL_TFC9	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC7, DL_TFC10, UL_TFC0, UL_TFC7, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC7, UL_TFC10	RB5: 1344	RB5: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC7, DL_TFC11, UL_TFC0, UL_TFC7, UL_TFC11	UL_TFC0, UL_TFC4, UL_TFC7, UL_TFC11	RB5: 2688	RB5: 2688
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC7, DL_TFC12, UL_TFC0, UL_TFC7, UL_TFC12	UL_TFC0, UL_TFC5, UL_TFC7, UL_TFC12	RB5: 4032	RB5: 4032

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.34.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4: RB5/TF4 (8x336).
   - for sub-test 5: RB5/TF4 (12x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.34.2 Interactive or background / UL:384 DL:384 kbps / PS RAB / 20 ms TTI

14.2.34.2.1 Conformance requirement

See 14.2.4.1.

14.2.34.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.34. for the 20 ms TTI case

14.2.34.2.3 Method of test

Uplink TFS:

	TFI	RB5 (384 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF0)
UL_TFC6	(TF6, TF0)
UL_TFC7	(TF7, TF0)
UL_TFC8	(TF8, TF0)
UL_TFC9	(TF0, TF1)
UL_TFC10	(TF1, TF1)
UL_TFC11	(TF2, TF1)
UL_TFC12	(TF3, TF1)
UL_TFC13	(TF4, TF1)
UL_TFC14	(TF5, TF1)
UL_TFC15	(TF6, TF1)
UL_TFC16	(TF7, TF1)
UL_TFC17	(TF8, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF0, TF1)
DL_TFC10	(TF1, TF1)
DL_TFC11	(TF2, TF1)
DL_TFC12	(TF3, TF1)
DL_TFC13	(TF4, TF1)
DL_TFC14	(TF5, TF1)
DL_TFC15	(TF6, TF1)
DL_TFC16	(TF7, TF1)
DL_TFC17	(TF8, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC9, DL_TFC10, UL_TFC0, UL_TFC9, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10	RB5: 336	RB5: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC9, DL_TFC11, UL_TFC0, UL_TFC9, UL_TFC11	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11	RB5: 672	RB5: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC9, DL_TFC12 UL_TFC0, UL_TFC9, UL_TFC12	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 1344	RB5: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC9, DL_TFC13, UL_TFC0, UL_TFC9, UL_TFC13	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 2688	RB5: 2688
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC9, DL_TFC14, UL_TFC0, UL_TFC9, UL_TFC14	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 4032	RB5: 4032
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC9, DL_TFC15, UL_TFC0, UL_TFC9, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 5376	RB5: 5376
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC9, DL_TFC16, UL_TFC0, UL_TFC9, UL_TFC16	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC16	RB5: 6720	RB5: 6720
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC9, DL_TFC17, UL_TFC0, UL_TFC9, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 8064	RB5: 8064

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.34.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4: RB5/TF4 (8x336).
   - for sub-test 5: RB5/TF5 (12x336).
   - for sub-test 6: RB5/TF6 (16x336).
   - for sub-test 7: RB5/TF7 (20x336).
   - for sub-test 8: RB5/TF8 (24x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 8: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.35 Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.35.1 Interactive or background / UL:64 DL:2048 kbps / PS RAB / 10 ms TTI

14.2.35.1.1 Conformance requirement

See 14.2.4.1.

14.2.35.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.35 for the 10 ms TTI case.

14.2.35.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF0, TF1)
DL_TFC12	(TF1, TF1)
DL_TFC13	(TF2, TF1)
DL_TFC14	(TF3, TF1)
DL_TFC15	(TF4, TF1)
DL_TFC16	(TF5, TF1)
DL_TFC17	(TF6, TF1)
DL_TFC18	(TF7, TF1)
DL_TFC19	(TF8, TF1)
DL_TFC20	(TF9, TF1)
DL_TFC21	(TF10, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC11, DL_TFC12, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 656	RB5: 656
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC11, DL_TFC13, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1312	RB5: 1312
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC11, DL_TFC14 UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2624	RB5: 2624
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC15, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5248	RB5: 5248
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC16, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7872	RB5: 7872
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC17, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10496	RB5: 10496
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC18, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 13120	RB5: 13120
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC19, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 15744	RB5: 15744
9	DL_TFC9	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC19, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 18368	RB5: 18368
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC19, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 20992	RB5: 20992

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.35.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).

- for sub-test 3: RB5/TF3 (3x336).
- for sub-test 4 to 10: RB5/TF4 (4x336).

3. At step 15 the UE shall return
   - for sub-test 1 to 10: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.35.2 Interactive or background / UL:64 DL:2048 kbps / PS RAB / 20 ms TTI

14.2.35.2.1 Conformance requirement

See 14.2.4.1.

14.2.35.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.35 for the 20 ms TTI case.

14.2.35.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A
	TF11, bits	36x656	N/A
	TF12, bits	40x656	N/A
	TF13, bits	44x656	N/A
	TF14, bits	48x656	N/A
	TF15, bits	52x656	N/A
	TF16, bits	56x656	N/A
	TF17, bits	60x656	N/A
	TF18, bits	64x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF11, TF0)
DL_TFC12	(TF12, TF0)
DL_TFC13	(TF13, TF0)
DL_TFC14	(TF14, TF0)
DL_TFC15	(TF15, TF0)
DL_TFC16	(TF16, TF0)
DL_TFC17	(TF17, TF0)
DL_TFC18	(TF18, TF0)
DL_TFC19	(TF0, TF1)
DL_TFC20	(TF1, TF1)
DL_TFC21	(TF2, TF1)
DL_TFC22	(TF3, TF1)
DL_TFC23	(TF4, TF1)
DL_TFC24	(TF5, TF1)
DL_TFC25	(TF6, TF1)
DL_TFC26	(TF7, TF1)
DL_TFC27	(TF8, TF1)
DL_TFC28	(TF9, TF1)
DL_TFC29	(TF10, TF1)
DL_TFC30	(TF11, TF1)
DL_TFC31	(TF12, TF1)
DL_TFC32	(TF13, TF1)
DL_TFC33	(TF14, TF1)
DL_TFC34	(TF15, TF1)
DL_TFC35	(TF16, TF1)
DL_TFC36	(TF17, TF1)
DL_TFC37	(TF18, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC19, DL_TFC20, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 656	RB5: 656
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC19, DL_TFC21, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1312	RB5: 1312
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC19, DL_TFC22 UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2624	RB5: 2624
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC23, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5248	RB5: 5248
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC24, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7872	RB5: 7872
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC25, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10496	RB5: 10496
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC26, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 13120	RB5: 13120
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC27, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 15744	RB5: 15744
9	DL_TFC9	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC28, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 18368	RB5: 18368
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC29, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 20992	RB5: 20992
11	DL_TFC11	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC30, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 23616	RB5: 23616
12	DL_TFC12	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC31, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 26240	RB5: 26240
13	DL_TFC13	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC32, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4 UL_TFC5, UL_TFC9	RB5: 28864	RB5: 28864
14	DL_TFC14	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC33, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 31488	RB5: 31488
15	DL_TFC15	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC34, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 34112	RB5: 34112

16	DL_TFC16	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC35, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 36736	RB5: 36736
17	DL_TFC17	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC36, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4 UL_TFC5, UL_TFC9	RB5: 39360	RB5: 39360
18	DL_TFC18	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC37, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 41984	RB5: 41984

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.35.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4 to 18: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 18: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.36 Interactive or background / UL:128 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.36.1 Interactive or background / UL:128 DL:2048 kbps / PS RAB / 10 ms TTI

14.2.36.1.1 Conformance requirement

See 14.2.4.1.

14.2.36.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.36 for the 10 ms TTI case.

14.2.36.1.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF0, TF1)
DL_TFC12	(TF1, TF1)
DL_TFC13	(TF2, TF1)
DL_TFC14	(TF3, TF1)
DL_TFC15	(TF4, TF1)
DL_TFC16	(TF5, TF1)
DL_TFC17	(TF6, TF1)
DL_TFC18	(TF7, TF1)
DL_TFC19	(TF8, TF1)
DL_TFC20	(TF9, TF1)
DL_TFC21	(TF10, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC11, DL_TFC12, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 656	RB5: 656
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC11, DL_TFC13, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1312	RB5: 1312
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC11, DL_TFC14 UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2624	RB5: 2624
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC15, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5248	RB5: 5248
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC16, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7872	RB5: 7872
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC17, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10496	RB5: 10496
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC18, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 13120	RB5: 13120
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC19, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 15744	RB5: 15744
9	DL_TFC9	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC19, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 18368	RB5: 18368
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC19, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 20992	RB5: 20992

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.36.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).

- for sub-test 3: RB5/TF3 (4x336).
- for sub-test 4 to 10: RB5/TF4 (8x336).

3. At step 15 the UE shall return
   - for sub-test 1 to 10: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.36.2 Interactive or background / UL:128 DL:2048 kbps / PS RAB / 20 ms TTI

14.2.36.2.1 Conformance requirement

See 14.2.4.1.

14.2.36.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.36 for the 20 ms TTI case.

14.2.36.2.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A
	TF11, bits	36x656	N/A
	TF12, bits	40x656	N/A
	TF13, bits	44x656	N/A
	TF14, bits	48x656	N/A
	TF15, bits	52x656	N/A
	TF16, bits	56x656	N/A
	TF17, bits	60x656	N/A
	TF18, bits	64x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF11, TF0)
DL_TFC12	(TF12, TF0)
DL_TFC13	(TF13, TF0)
DL_TFC14	(TF14, TF0)
DL_TFC15	(TF15, TF0)
DL_TFC16	(TF16, TF0)
DL_TFC17	(TF17, TF0)
DL_TFC18	(TF18, TF0)
DL_TFC19	(TF0, TF1)
DL_TFC20	(TF1, TF1)
DL_TFC21	(TF2, TF1)
DL_TFC22	(TF3, TF1)
DL_TFC23	(TF4, TF1)
DL_TFC24	(TF5, TF1)
DL_TFC25	(TF6, TF1)
DL_TFC26	(TF7, TF1)
DL_TFC27	(TF8, TF1)
DL_TFC28	(TF9, TF1)
DL_TFC29	(TF10, TF1)
DL_TFC30	(TF11, TF1)
DL_TFC31	(TF12, TF1)
DL_TFC32	(TF13, TF1)
DL_TFC33	(TF14, TF1)
DL_TFC34	(TF15, TF1)
DL_TFC35	(TF16, TF1)
DL_TFC36	(TF17, TF1)
DL_TFC37	(TF18, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC19, DL_TFC20, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 656	RB5: 656
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC19, DL_TFC21, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1312	RB5: 1312
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC19, DL_TFC22 UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2624	RB5: 2624
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC23, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5248	RB5: 5248
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC24, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7872	RB5: 7872
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC25, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10496	RB5: 10496
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC26, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 13120	RB5: 13120
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC27, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 15744	RB5: 15744
9	DL_TFC9	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC28, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 18368	RB5: 18368
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC29, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 20992	RB5: 20992
11	DL_TFC11	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC30, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 23616	RB5: 23616
12	DL_TFC12	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC31, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 26240	RB5: 26240
13	DL_TFC13	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC32, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 28864	RB5: 28864
14	DL_TFC14	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC33, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 31488	RB5: 31488
15	DL_TFC15	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC34, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 34112	RB5: 34112

16	DL_TFC16	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC35, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 36736	RB5: 36736
17	DL_TFC17	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC36, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 39360	RB5: 39360
18	DL_TFC18	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC37, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 41984	RB5: 41984

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.36.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4 to 18: RB5/TF4 (8x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 18: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.37 Interactive or background / UL:384 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.37.1 Interactive or background / UL:384 DL:2048 kbps / PS RAB / 10 ms TTI

14.2.37.1.1 Conformance requirement

See 14.2.4.1.

14.2.37.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.37 for the 10 ms TTI case.

14.2.37.1.3 Method of test

Uplink TFS:

	TFI	RB5 (384 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF0)
UL_TFC6	(TF0, TF1)
UL_TFC7	(TF1, TF1)
UL_TFC8	(TF2, TF1)
UL_TFC9	(TF3, TF1)
UL_TFC10	(TF4, TF1)
UL_TFC11	(TF5, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF0, TF1)
DL_TFC12	(TF1, TF1)
DL_TFC13	(TF2, TF1)
DL_TFC14	(TF3, TF1)
DL_TFC15	(TF4, TF1)
DL_TFC16	(TF5, TF1)
DL_TFC17	(TF6, TF1)
DL_TFC18	(TF7, TF1)
DL_TFC19	(TF8, TF1)
DL_TFC20	(TF9, TF1)
DL_TFC21	(TF10, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC11, DL_TFC12, UL_TFC0, UL_TFC6, UL_TFC7	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 656	RB5: 656
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC11, DL_TFC13, UL_TFC0, UL_TFC6, UL_TFC8	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 1312	RB5: 1312
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC11, DL_TFC14 UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 2624	RB5: 2624
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC11, DL_TFC15, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 5248	RB5: 5248
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC11, DL_TFC16, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 7872	RB5: 7872
6	DL_TFC6	UL_TFC5	DL_TFC0, DL_TFC11, DL_TFC17, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 10496	RB5: 10496
7	DL_TFC7	UL_TFC5	DL_TFC0, DL_TFC11, DL_TFC18, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 13120	RB5: 13120
8	DL_TFC8	UL_TFC5	DL_TFC0, DL_TFC11, DL_TFC19, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 15744	RB5: 15744
9	DL_TFC9	UL_TFC5	DL_TFC0, DL_TFC11, DL_TFC19, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 18368	RB5: 18368
10	DL_TFC10	UL_TFC5	DL_TFC0, DL_TFC11, DL_TFC19, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 20992	RB5: 20992

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.37.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).

- for sub-test 3: RB5/TF3 (4x336).
- for sub-test 4: RB5/TF3 (8x336).
- for sub-test 5 to 10: RB5/TF4 (12x336).

3. At step 15 the UE shall return
   - for sub-test 1 to 10: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.37.2 Interactive or background / UL:384 DL:2048 kbps / PS RAB / 20 ms TTI

14.2.37.2.1 Conformance requirement

See 14.2.4.1.

14.2.37.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.37 for the 20 ms TTI case.

14.2.37.2.3 Method of test

Uplink TFS:

	TFI	RB5 (384 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF0)
UL_TFC6	(TF6, TF0)
UL_TFC7	(TF7, TF0)
UL_TFC8	(TF8, TF0)
UL_TFC9	(TF0, TF1)
UL_TFC10	(TF1, TF1)
UL_TFC11	(TF2, TF1)
UL_TFC12	(TF3, TF1)
UL_TFC13	(TF4, TF1)
UL_TFC14	(TF5, TF1)
UL_TFC15	(TF6, TF1)
UL_TFC16	(TF7, TF1)
UL_TFC17	(TF8, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A
	TF11, bits	36x656	N/A
	TF12, bits	40x656	N/A
	TF13, bits	44x656	N/A
	TF14, bits	48x656	N/A
	TF15, bits	52x656	N/A
	TF16, bits	56x656	N/A
	TF17, bits	60x656	N/A
	TF18, bits	64x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF11, TF0)
DL_TFC12	(TF12, TF0)
DL_TFC13	(TF13, TF0)
DL_TFC14	(TF14, TF0)
DL_TFC15	(TF15, TF0)
DL_TFC16	(TF16, TF0)
DL_TFC17	(TF17, TF0)
DL_TFC18	(TF18, TF0)
DL_TFC19	(TF0, TF1)
DL_TFC20	(TF1, TF1)
DL_TFC21	(TF2, TF1)
DL_TFC22	(TF3, TF1)
DL_TFC23	(TF4, TF1)
DL_TFC24	(TF5, TF1)
DL_TFC25	(TF6, TF1)
DL_TFC26	(TF7, TF1)
DL_TFC27	(TF8, TF1)
DL_TFC28	(TF9, TF1)
DL_TFC29	(TF10, TF1)
DL_TFC30	(TF11, TF1)
DL_TFC31	(TF12, TF1)
DL_TFC32	(TF13, TF1)
DL_TFC33	(TF14, TF1)
DL_TFC34	(TF15, TF1)
DL_TFC35	(TF16, TF1)
DL_TFC36	(TF17, TF1)
DL_TFC37	(TF18, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC19, DL_TFC20, UL_TFC0, UL_TFC9, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10	RB5: 656	RB5: 656
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC19, DL_TFC21, UL_TFC0, UL_TFC9, UL_TFC11	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11	RB5: 1312	RB5: 1312
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC19, DL_TFC22 UL_TFC0, UL_TFC9, UL_TFC12	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 2624	RB5: 2624
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC19, DL_TFC23, UL_TFC0, UL_TFC9, UL_TFC13	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 5248	RB5: 5248
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC19, DL_TFC24, UL_TFC0, UL_TFC9, UL_TFC14	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 7872	RB5: 7872
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC19, DL_TFC25, UL_TFC0, UL_TFC9, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 10496	RB5: 10496
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC19, DL_TFC26, UL_TFC0, UL_TFC9, UL_TFC16	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC16	RB5: 13120	RB5: 13120
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC19, DL_TFC27, UL_TFC0, UL_TFC9, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 15744	RB5: 15744
9	DL_TFC9	UL_TFC8	DL_TFC0, DL_TFC19, DL_TFC28, UL_TFC0, UL_TFC9, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 18368	RB5: 18368
10	DL_TFC10	UL_TFC8	DL_TFC0, DL_TFC19, DL_TFC29, UL_TFC0, UL_TFC9 UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 20992	RB5: 20992
11	DL_TFC11	UL_TFC8	DL_TFC0, DL_TFC19, DL_TFC30, UL_TFC0, UL_TFC9, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 23616	RB5: 23616
12	DL_TFC12	UL_TFC8	DL_TFC0, DL_TFC19, DL_TFC31, UL_TFC0, UL_TFC5, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 26240	RB5: 26240
13	DL_TFC13	UL_TFC8	DL_TFC0, DL_TFC19, DL_TFC32, UL_TFC0, UL_TFC9, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 28864	RB5: 28864
14	DL_TFC14	UL_TFC8	DL_TFC0, DL_TFC19, DL_TFC33, UL_TFC0, UL_TFC9, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 31488	RB5: 31488
15	DL_TFC15	UL_TFC8	DL_TFC0, DL_TFC19, DL_TFC34, UL_TFC0, UL_TFC9, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 34112	RB5: 34112

16	DL_TFC16	UL_TFC8	DL_TFC0, DL_TFC19, DL_TFC35, UL_TFC0, UL_TFC9, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 36736	RB5: 36736
17	DL_TFC17	UL_TFC8	DL_TFC0, DL_TFC19, DL_TFC36, UL_TFC0, UL_TFC9, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 39360	RB5: 39360
18	DL_TFC18	UL_TFC8	DL_TFC0, DL_TFC19, DL_TFC37, UL_TFC0, UL_TFC9, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 41984	RB5: 41984

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.37.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (4x336).
   - for sub-test 4: RB5/TF4 (8336).
   - for sub-test 5: RB5/TF5 (12x336).
   - for sub-test 6: RB5/TF6 (16x336).
   - for sub-test 7: RB5/TF7 (20x336).
   - for sub-test 8 to 18: RB5/TF4 (24x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 18: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.2.38 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.38.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC, 20 ms TTI)

14.2.38.1.1 Conformance requirement

See 14.2.4.1.

14.2.38.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38 for the turbo channel coding and 20 ms TTI case.

14.2.38.1.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (32 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF0, TF1)
UL_TFC10	(TF1, TF0, TF0, TF0, TF1)
UL_TFC11	(TF2, TF1, TF1, TF0, TF1)
UL_TFC12	(TF0, TF0, TF0, TF1, TF1)
UL_TFC13	(TF1, TF0, TF0, TF1, TF1)
UL_TFC14	(TF2, TF1, TF1, TF1, TF1)
UL_TFC15	(TF0, TF0, TF0, TF2, TF1)
UL_TFC16	(TF1, TF0, TF0, TF2, TF1)
UL_TFC17	(TF2, TF1, TF1, TF2, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (8 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF0, TF0, TF1)
DL_TFC8	(TF2, TF1, TF1, TF0, TF1)
DL_TFC9	(TF0, TF0, TF0, TF1, TF1)
DL_TFC10	(TF1, TF0, TF0, TF1, TF1)
DL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, DL_TFC7, UL_TFC0, UL_TFC9, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, DL_TFC8, UL_TFC0, UL_TFC9, UL_TFC11	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, DL_TFC9, UL_TFC0, UL_TFC9, UL_TFC12	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: No data RB6: No data RB7: No data RB8: 336
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, DL_TFC10, UL_TFC0, UL_TFC9, UL_TFC13	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: 336
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC6, DL_TFC11, UL_TFC0, UL_TFC9, UL_TFC14	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: 336
6	DL_TFC5	UL_TFC6	DL_TFC0, DL_TFC6, DL_TFC11, UL_TFC0, UL_TFC9, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: No data RB6: No data RB7: No data RB8: 672
7	DL_TFC5	UL_TFC7	DL_TFC0, DL_TFC6, DL_TFC11, UL_TFC0, UL_TFC9, UL_TFC16	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: 39 RB6: No data RB7: No data RB8: 672
8	DL_TFC5	UL_TFC8	DL_TFC0, DL_TFC6, DL_TFC11, UL_TFC0, UL_TFC9, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 672	RB5: 81 RB6: 103 RB7: 60 RB8: 672

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.38.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).

- for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).

3. At step 15 the UE shall return

   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.

   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.

   - for sub-test 3 and 6: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.

   - for sub-test 4 and 7: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.

   - for sub-test 5 and 8: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.38.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC, 10 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38 for the turbo channel coding and 10 ms TTI case.

See 14.2.38.1 for test procedure and test requirements. Only sub-tests 1 to 5 are applicable for the 10 ms TTI case.

14.2.38.3 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 20 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38 for the convolutional channel coding and 20 ms TTI case.

See test case 14.2.38.1 for test procedure and test requirement.

14.2.38.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 10 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38 for the convolutional channel coding and 10 ms TTI case.

See test case 14.2.38.2 for test procedure and test requirement.

14.2.39 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB+ UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.39.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (TC, 10 ms TTI)

14.2.39.1.1 Conformance requirement

See 14.2.4.1.

14.2.39.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.39 for the uplink turbo channel coding and 10 ms TTI case.

14.2.39.1.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (32 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC15, DL_TFC16, UL_TFC0, UL_TFC9, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC15, DL_TFC17, UL_TFC0, UL_TFC9, UL_TFC11	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC15, DL_TFC18, UL_TFC0, UL_TFC9, UL_TFC12	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: No data RB6: No data RB7: No data RB8: 336
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC15, DL_TFC19, UL_TFC0, UL_TFC9, UL_TFC13	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: 336
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC15, DL_TFC20, UL_TFC0, UL_TFC9, UL_TFC14	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: 336
6	DL_TFC6	UL_TFC3	DL_TFC0, DL_TFC15, DL_TFC21, UL_TFC0, UL_TFC9, UL_TFC12	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: No data RB6: No data RB7: No data RB8: 672
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC15, DL_TFC22, UL_TFC0, UL_TFC9, UL_TFC13	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: 39 RB6: No data RB7: No data RB8: 672
8	DL_TFC8	UL_TFC5	DL_TFC0, DL_TFC15, DL_TFC23, UL_TFC0, UL_TFC9, UL_TFC14	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 81 RB6: 103 RB7: 60 RB8: 672	RB5: 81 RB6: 103 RB7: 60 RB8: 672
9	DL_TFC9	UL_TFC3	DL_TFC0, DL_TFC15, DL_TFC24, UL_TFC0, UL_TFC9, UL_TFC12	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 39 RB6: 103 RB7: 60 RB8: 1008	RB5: No data RB6: No data RB7: No data RB8: 1008
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC15, DL_TFC25, UL_TFC0, UL_TFC9, UL_TFC13	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 1008	RB5: 39 RB6: No data RB7: No data RB8: 1008
11	DL_TFC11	UL_TFC5	DL_TFC0, DL_TFC15, DL_TFC26, UL_TFC0, UL_TFC9, UL_TFC14	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 81 RB6: 103 RB7: 60 RB8: 1008	RB5: 81 RB6: 103 RB7: 60 RB8: 1008
12	DL_TFC12	UL_TFC3	DL_TFC0, DL_TFC15, DL_TFC27, UL_TFC0, UL_TFC9, UL_TFC12	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: No data RB6: No data RB7: No data RB8: 1344
13	DL_TFC13	UL_TFC4	DL_TFC0, DL_TFC15, DL_TFC28, UL_TFC0, UL_TFC9, UL_TFC13	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: 39 RB6: No data RB7: No data RB8: 1344
14	DL_TFC14	UL_TFC5	DL_TFC0, DL_TFC15, DL_TFC29, UL_TFC0, UL_TFC9, UL_TFC14	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 81 RB6: 103 RB7: 60 RB8: 1344	RB5: 81 RB6: 103 RB7: 60 RB8: 1344

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.39.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3, 6, 9 and 12: RB8/TF1 (1x336)
   - for sub-test 4, 7, 10 and 13: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5, 8, 11 and 14: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.39.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (TC, 20 ms TTI)

14.2.39.2.1 Conformance requirement

See 14.2.4.1.

14.2.39.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.39 for the uplink turbo channel coding and 20 ms TTI case.

14.2.39.2.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (32 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF0, TF1)
UL_TFC10	(TF1, TF0, TF0, TF0, TF1)
UL_TFC11	(TF2, TF1, TF1, TF0, TF1)
UL_TFC12	(TF0, TF0, TF0, TF1, TF1)
UL_TFC13	(TF1, TF0, TF0, TF1, TF1)
UL_TFC14	(TF2, TF1, TF1, TF1, TF1)
UL_TFC15	(TF0, TF0, TF0, TF2, TF1)
UL_TFC16	(TF1, TF0, TF0, TF2, TF1)
UL_TFC17	(TF2, TF1, TF1, TF2, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC15, DL_TFC16, UL_TFC0, UL_TFC9, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC15, DL_TFC17, UL_TFC0, UL_TFC9, UL_TFC11	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC15, DL_TFC18, UL_TFC0, UL_TFC9, UL_TFC12	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: No data RB6: No data RB7: No data RB8: 336
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC15, DL_TFC19, UL_TFC0, UL_TFC9, UL_TFC13	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: 336
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC15, DL_TFC20, UL_TFC0, UL_TFC9, UL_TFC14	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: 336
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC15, DL_TFC21, UL_TFC0, UL_TFC9, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: No data RB6: No data RB7: No data RB8: 672
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC15, DL_TFC22, UL_TFC0, UL_TFC9, UL_TFC16	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: 39 RB6: No data RB7: No data RB8: 672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC15, DL_TFC23, UL_TFC0, UL_TFC9, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 672	RB5: 81 RB6: 103 RB7: 60 RB8: 672
9	DL_TFC9	UL_TFC6	DL_TFC0, DL_TFC15, DL_TFC24, UL_TFC0, UL_TFC9, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 39 RB6: 103 RB7: 60 RB8: 1008	RB5: No data RB6: No data RB7: No data RB8: 1008
10	DL_TFC10	UL_TFC7	DL_TFC0, DL_TFC15, DL_TFC25, UL_TFC0, UL_TFC9, UL_TFC16	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC15	RB5: 39 RB6: 103 RB7: 60 RB8: 1008	RB5: 39 RB6: No data RB7: No data RB8: 1008
11	DL_TFC11	UL_TFC8	DL_TFC0, DL_TFC15, DL_TFC26, UL_TFC0, UL_TFC9, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 1008	RB5: 81 RB6: 103 RB7: 60 RB8: 1008
12	DL_TFC12	UL_TFC6	DL_TFC0, DL_TFC15, DL_TFC27, UL_TFC0, UL_TFC9, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: No data RB6: No data RB7: No data RB8: 1344
13	DL_TFC13	UL_TFC7	DL_TFC0, DL_TFC15, DL_TFC28, UL_TFC0, UL_TFC9, UL_TFC16	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: 39 RB6: No data RB7: No data RB8: 1344
14	DL_TFC14	UL_TFC8	DL_TFC0, DL_TFC15, DL_TFC29, UL_TFC0, UL_TFC9, UL_TFC17	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 1344	RB5: 81 RB6: 103 RB7: 60 RB8: 1344

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.39.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6, 9 and 12: RB8/TF2 (2x336)
   - for sub-test 7, 10 and 13: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8, 11 and 14: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.39.3 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 10 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.39 for the uplink convolutional channel coding and 10 ms TTI case.

See test case 14.2.39.1 for test procedure and test requirement.

14.2.39.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 20 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.39 for the uplink convolutional channel coding and 20 ms TTI case.

See test case 14.2.39.2 for test procedure and test requirement.

14.2.40 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB+ UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.40.1 Conformance requirement

See 14.2.4.1.

14.2.40.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.40.

14.2.40.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC15, DL_TFC16, UL_TFC0, UL_TFC15, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC15, DL_TFC17, UL_TFC0, UL_TFC15, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC15, DL_TFC18, UL_TFC0, UL_TFC15, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: No data RB6: No data RB7: No data RB8: 336
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC15, DL_TFC19, UL_TFC0, UL_TFC15, UL_TFC19	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: 336
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC15, DL_TFC20, UL_TFC0, UL_TFC15, UL_TFC20	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: 336
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC15, DL_TFC21, UL_TFC0, UL_TFC15, UL_TFC21	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: No data RB6: No data RB7: No data RB8: 672
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC15, DL_TFC22, UL_TFC0, UL_TFC15, UL_TFC22	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: 39 RB6: No data RB7: No data RB8: 672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC15, DL_TFC23, UL_TFC0, UL_TFC15, UL_TFC23	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 672	RB5: 81 RB6: 103 RB7: 60 RB8: 672
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC15, DL_TFC24, UL_TFC0, UL_TFC15, UL_TFC24	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 1008	RB5: No data RB6: No data RB7: No data RB8: 1008
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC15, DL_TFC25, UL_TFC0, UL_TFC15, UL_TFC25	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 1008	RB5: 39 RB6: No data RB7: No data RB8: 1008
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC15, DL_TFC26, UL_TFC0, UL_TFC15, UL_TFC26	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 1008	RB5: 81 RB6: 103 RB7: 60 RB8: 1008
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC15, DL_TFC27, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: No data RB6: No data RB7: No data RB8: 1344
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC15, DL_TFC28, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: 39 RB6: No data RB7: No data RB8: 1344
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC15, DL_TFC29, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1344	RB5: 81 RB6: 103 RB7: 60 RB8: 1344

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.40.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
   - for sub-test 9: RB8/TF3 (3x336)
   - for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (3x336).
   - for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (3x336).
   - for sub-test 12: RB8/TF4 (4x336)
   - for sub-test 13: RB5/TF1 (1x39) and RB8/TF4 (4x336).
   - for sub-test 14: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.41 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.41.1 Conformance requirement

See 14.2.4.1.

14.2.41.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.41.

14.2.41.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (128 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC15, DL_TFC16, UL_TFC0, UL_TFC15, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC15, DL_TFC17, UL_TFC0, UL_TFC15, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC15, DL_TFC18, UL_TFC0, UL_TFC15, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: No data RB6: No data RB7: No data RB8: 336
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC15, DL_TFC19, UL_TFC0, UL_TFC15, UL_TFC19	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: 336
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC15, DL_TFC20, UL_TFC0, UL_TFC15, UL_TFC20	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: 336
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC15, DL_TFC21, UL_TFC0, UL_TFC15, UL_TFC21	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: No data RB6: No data RB7: No data RB8: 672
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC15, DL_TFC22, UL_TFC0, UL_TFC15, UL_TFC22	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: 39 RB6: No data RB7: No data RB8: 672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC15, DL_TFC23, UL_TFC0, UL_TFC15, UL_TFC23	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 672	RB5: 81 RB6: 103 RB7: 60 RB8: 672
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC15, DL_TFC24, UL_TFC0, UL_TFC15, UL_TFC24	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: No data RB6: No data RB7: No data RB8: 1344
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC15, DL_TFC25, UL_TFC0, UL_TFC15, UL_TFC25	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: 39 RB6: No data RB7: No data RB8: 1344
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC15, DL_TFC26, UL_TFC0, UL_TFC15, UL_TFC26	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 1344	RB5: 81 RB6: 103 RB7: 60 RB8: 1344
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC15, DL_TFC27, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 2688	RB5: No data RB6: No data RB7: No data RB8: 2688
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC15, DL_TFC28, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2688	RB5: 39 RB6: No data RB7: No data RB8: 2688
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC15, DL_TFC29, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2688	RB5: 81 RB6: 103 RB7: 60 RB8: 2688

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.41.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
   - for sub-test 9: RB8/TF3 (3x336)
   - for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (3x336).
   - for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (3x336).
   - for sub-test 12: RB8/TF4 (4x336)
   - for sub-test 13: RB5/TF1 (1x39) and RB8/TF4 (4x336).
   - for sub-test 14: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.42 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.42.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB / 10 ms TTI

14.2.42.1.1 Conformance requirement

See 14.2.4.1.

14.2.42.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.42 for the downlink 10 ms TTI case.

14.2.42.1.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (256 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC15, DL_TFC16, UL_TFC0, UL_TFC15, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC15, DL_TFC17, UL_TFC0, UL_TFC15, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC15, DL_TFC18, UL_TFC0, UL_TFC15, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: No data RB6: No data RB7: No data RB8: 336
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC15, DL_TFC19, UL_TFC0, UL_TFC15, UL_TFC19	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: 336
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC15, DL_TFC20, UL_TFC0, UL_TFC15, UL_TFC20	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: 336
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC15, DL_TFC21, UL_TFC0, UL_TFC15, UL_TFC21	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: No data RB6: No data RB7: No data RB8: 672
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC15, DL_TFC22, UL_TFC0, UL_TFC15, UL_TFC22	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: 39 RB6: No data RB7: No data RB8: 672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC15, DL_TFC23, UL_TFC0, UL_TFC15, UL_TFC23	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 672	RB5: 81 RB6: 103 RB7: 60 RB8: 672
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC15, DL_TFC24, UL_TFC0, UL_TFC15, UL_TFC24	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: No data RB6: No data RB7: No data RB8: 1344
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC15, DL_TFC25, UL_TFC0, UL_TFC15, UL_TFC25	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: 39 RB6: No data RB7: No data RB8: 1344
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC15, DL_TFC26, UL_TFC0, UL_TFC15, UL_TFC26	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 1344	RB5: 81 RB6: 103 RB7: 60 RB8: 1344
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC15, DL_TFC27, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 2688	RB5: No data RB6: No data RB7: No data RB8: 2688
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC15, DL_TFC28, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2688	RB5: 39 RB6: No data RB7: No data RB8: 2688
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC15, DL_TFC29, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2688	RB5: 81 RB6: 103 RB7: 60 RB8: 2688

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.42.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
   - for sub-test 9: RB8/TF3 (3x336)
   - for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (3x336).
   - for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (3x336).
   - for sub-test 12: RB8/TF4 (4x336)
   - for sub-test 13: RB5/TF1 (1x39) and RB8/TF4 (4x336).
   - for sub-test 14: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.42.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB / 20 ms TTI

14.2.42.2.1 Conformance requirement

See 14.2.4.1.

14.2.42.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.42 for the downlink 20 ms TTI case.

14.2.42.2.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (256 kbps, 20 ms)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A
	TF5, bits	N/A	N/A	N/A	12x336	N/A
	TF6, bits	N/A	N/A	N/A	16x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF6, TF0)
DL_TFC19	(TF1, TF0, TF0, TF6, TF0)
DL_TFC20	(TF2, TF1, TF1, TF6, TF0)
DL_TFC21	(TF0, TF0, TF0, TF0, TF1)
DL_TFC22	(TF1, TF0, TF0, TF0, TF1)
DL_TFC23	(TF2, TF1, TF1, TF0, TF1)
DL_TFC24	(TF0, TF0, TF0, TF1, TF1)
DL_TFC25	(TF1, TF0, TF0, TF1, TF1)
DL_TFC26	(TF2, TF1, TF1, TF1, TF1)
DL_TFC27	(TF0, TF0, TF0, TF2, TF1)
DL_TFC28	(TF1, TF0, TF0, TF2, TF1)
DL_TFC29	(TF2, TF1, TF1, TF2, TF1)
DL_TFC30	(TF0, TF0, TF0, TF3, TF1)
DL_TFC31	(TF1, TF0, TF0, TF3, TF1)
DL_TFC32	(TF2, TF1, TF1, TF3, TF1)
DL_TFC33	(TF0, TF0, TF0, TF4, TF1)
DL_TFC34	(TF1, TF0, TF0, TF4, TF1)
DL_TFC35	(TF2, TF1, TF1, TF4, TF1)
DL_TFC36	(TF0, TF0, TF0, TF5, TF1)
DL_TFC37	(TF1, TF0, TF0, TF5, TF1)
DL_TFC38	(TF2, TF1, TF1, TF5, TF1)
DL_TFC39	(TF0, TF0, TF0, TF6, TF1)
DL_TFC40	(TF1, TF0, TF0, TF6, TF1)
DL_TFC41	(TF2, TF1, TF1, TF6, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC21, DL_TFC22, UL_TFC0, UL_TFC15, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC21, DL_TFC23, UL_TFC0, UL_TFC15, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC21, DL_TFC24, UL_TFC0, UL_TFC15, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: No data RB6: No data RB7: No data RB8: 336
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC21, DL_TFC25, UL_TFC0, UL_TFC15, UL_TFC19	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: 336
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC21, DL_TFC26, UL_TFC0, UL_TFC15, UL_TFC20	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: 336
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC21, DL_TFC27, UL_TFC0, UL_TFC15, UL_TFC21	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: No data RB6: No data RB7: No data RB8: 672
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC21, DL_TFC28, UL_TFC0, UL_TFC15, UL_TFC22	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: 39 RB6: No data RB7: No data RB8: 672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC21, DL_TFC29, UL_TFC0, UL_TFC15, UL_TFC23	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 672	RB5: 81 RB6: 103 RB7: 60 RB8: 672
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC21, DL_TFC30, UL_TFC0, UL_TFC15, UL_TFC24	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: No data RB6: No data RB7: No data RB8: 1344
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC21, DL_TFC31, UL_TFC0, UL_TFC15, UL_TFC25	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: 39 RB6: No data RB7: No data RB8: 1344
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC21, DL_TFC32, UL_TFC0, UL_TFC15, UL_TFC26	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 1344	RB5: 81 RB6: 103 RB7: 60 RB8: 1344
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC21, DL_TFC33, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 2688	RB5: No data RB6: No data RB7: No data RB8: 2688
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC21, DL_TFC34, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2688	RB5: 39 RB6: No data RB7: No data RB8: 2688
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC21, DL_TFC35, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2688	RB5: 81 RB6: 103 RB7: 60 RB8: 2688
15	DL_TFC15	UL_TFC12	DL_TFC0, DL_TFC21, DL_TFC36, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 4032	RB5: No data RB6: No data RB7: No data RB8: 4032
16	DL_TFC16	UL_TFC13	DL_TFC0, DL_TFC21, DL_TFC37, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 4032	RB5: 39 RB6: No data RB7: No data RB8: 4032

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
17	DL_TFC17	UL_TFC14	DL_TFC0, DL_TFC21, DL_TFC38, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 4032	RB5: 81 RB6: 103 RB7: 60 RB8: 4032
18	DL_TFC18	UL_TFC12	DL_TFC0, DL_TFC21, DL_TFC39, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 5376	RB5: No data RB6: No data RB7: No data RB8: 5376
19	DL_TFC19	UL_TFC13	DL_TFC0, DL_TFC21, DL_TFC40, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 5376	RB5: 39 RB6: No data RB7: No data RB8: 5376
20	DL_TFC20	UL_TFC14	DL_TFC0, DL_TFC21, DL_TFC41, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 5376	RB5: 81 RB6: 103 RB7: 60 RB8: 5376

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.42.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
   - for sub-test 9: RB8/TF3 (3x336)
   - for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (3x336).
   - for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (3x336).
   - for sub-test 12, 15 and 18: RB8/TF4 (4x336)
   - for sub-test 13, 16 and 19: RB5/TF1 (1x39) and RB8/TF4 (4x336).
   - for sub-test 14, 17 and 20: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (4x336).
3. At step 15 the UE shall return

- for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
- for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
- for sub-test 3, 6, 9, 12, 15 and 18: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 4, 7, 10, 13, 16 and 19: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 5, 8, 11, 14, 17 and 20: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.43 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.43.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB / 10 ms TTI

14.2.43.1.1 Conformance requirement

See 14.2.4.1.

14.2.43.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.43 for the downlink 10 ms TTI case.

14.2.43.1.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (384 kbps, 10 ms)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A
	TF5, bits	N/A	N/A	N/A	12x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF0, TF1)
DL_TFC19	(TF1, TF0, TF0, TF0, TF1)
DL_TFC20	(TF2, TF1, TF1, TF0, TF1)
DL_TFC21	(TF0, TF0, TF0, TF1, TF1)
DL_TFC22	(TF1, TF0, TF0, TF1, TF1)
DL_TFC23	(TF2, TF1, TF1, TF1, TF1)
DL_TFC24	(TF0, TF0, TF0, TF2, TF1)
DL_TFC25	(TF1, TF0, TF0, TF2, TF1)
DL_TFC26	(TF2, TF1, TF1, TF2, TF1)
DL_TFC27	(TF0, TF0, TF0, TF3, TF1)
DL_TFC28	(TF1, TF0, TF0, TF3, TF1)
DL_TFC29	(TF2, TF1, TF1, TF3, TF1)
DL_TFC30	(TF0, TF0, TF0, TF4, TF1)
DL_TFC31	(TF1, TF0, TF0, TF4, TF1)
DL_TFC32	(TF2, TF1, TF1, TF4, TF1)
DL_TFC33	(TF0, TF0, TF0, TF5, TF1)
DL_TFC34	(TF1, TF0, TF0, TF5, TF1)
DL_TFC35	(TF2, TF1, TF1, TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC18, DL_TFC19, UL_TFC0, UL_TFC15, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC18, DL_TFC20, UL_TFC0, UL_TFC15, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC18, DL_TFC21, UL_TFC0, UL_TFC15, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: No data RB6: No data RB7: No data RB8: 336
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC18, DL_TFC22, UL_TFC0, UL_TFC15, UL_TFC19	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: 336
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC18, DL_TFC23, UL_TFC0, UL_TFC15, UL_TFC20	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: 336
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC18, DL_TFC24, UL_TFC0, UL_TFC15, UL_TFC21	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: No data RB6: No data RB7: No data RB8: 672
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC18, DL_TFC25, UL_TFC0, UL_TFC15, UL_TFC22	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: 39 RB6: No data RB7: No data RB8: 672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC18, DL_TFC26, UL_TFC0, UL_TFC15, UL_TFC23	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 672	RB5: 81 RB6: 103 RB7: 60 RB8: 672
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC18, DL_TFC27, UL_TFC0, UL_TFC15, UL_TFC24	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: No data RB6: No data RB7: No data RB8: 1344
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC18, DL_TFC28, UL_TFC0, UL_TFC15, UL_TFC25	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: 39 RB6: No data RB7: No data RB8: 1344
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC18, DL_TFC29, UL_TFC0, UL_TFC15, UL_TFC26	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 1344	RB5: 81 RB6: 103 RB7: 60 RB8: 1344
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC18, DL_TFC30, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 2688	RB5: No data RB6: No data RB7: No data RB8: 2688
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC18, DL_TFC31, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2688	RB5: 39 RB6: No data RB7: No data RB8: 2688
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC18, DL_TFC32, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2688	RB5: 81 RB6: 103 RB7: 60 RB8: 2688
15	DL_TFC15	UL_TFC12	DL_TFC0, DL_TFC18, DL_TFC33, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 4032	RB5: No data RB6: No data RB7: No data RB8: 4032
16	DL_TFC16	UL_TFC13	DL_TFC0, DL_TFC18, DL_TFC34, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 4032	RB5: 39 RB6: No data RB7: No data RB8: 4032

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
17	DL_TFC17	UL_TFC14	DL_TFC0, DL_TFC18, DL_TFC35, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 4032	RB5: 81 RB6: 103 RB7: 60 RB8: 4032

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.43.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
   - for sub-test 9: RB8/TF3 (3x336)
   - for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (3x336).
   - for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (3x336).
   - for sub-test 12 and 15: RB8/TF4 (4x336)
   - for sub-test 13 and 16: RB5/TF1 (1x39) and RB8/TF4 (4x336).
   - for sub-test 14 and 17: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9, 12 and 15: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10, 13 and 16: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.

- for sub-test 5, 8, 11, 14, and 17: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.43.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB / 20 ms TTI

14.2.43.2.1 Conformance requirement

See 14.2.4.1.

14.2.43.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.43 for the downlink 20 ms TTI case.

14.2.43.2.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (384 kbps, 10 ms)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A
	TF5, bits	N/A	N/A	N/A	12x336	N/A
	TF6, bits	N/A	N/A	N/A	16x336	N/A
	TF7, bits	N/A	N/A	N/A	20x336	N/A
	TF8, bits	N/A	N/A	N/A	24x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF6, TF0)
DL_TFC19	(TF1, TF0, TF0, TF6, TF0)
DL_TFC20	(TF2, TF1, TF1, TF6, TF0)
DL_TFC21	(TF0, TF0, TF0, TF7, TF0)
DL_TFC22	(TF1, TF0, TF0, TF7, TF0)
DL_TFC23	(TF2, TF1, TF1, TF7, TF0)
DL_TFC24	(TF0, TF0, TF0, TF8, TF0)
DL_TFC25	(TF1, TF0, TF0, TF8, TF0)
DL_TFC26	(TF2, TF1, TF1, TF8, TF0)
DL_TFC27	(TF0, TF0, TF0, TF0, TF1)
DL_TFC28	(TF1, TF0, TF0, TF0, TF1)
DL_TFC29	(TF2, TF1, TF1, TF0, TF1)
DL_TFC30	(TF0, TF0, TF0, TF1, TF1)
DL_TFC31	(TF1, TF0, TF0, TF1, TF1)
DL_TFC32	(TF2, TF1, TF1, TF1, TF1)
DL_TFC33	(TF0, TF0, TF0, TF2, TF1)
DL_TFC34	(TF1, TF0, TF0, TF2, TF1)
DL_TFC35	(TF2, TF1, TF1, TF2, TF1)
DL_TFC36	(TF0, TF0, TF0, TF3, TF1)
DL_TFC37	(TF1, TF0, TF0, TF3, TF1)
DL_TFC38	(TF2, TF1, TF1, TF3, TF1)
DL_TFC39	(TF0, TF0, TF0, TF4, TF1)
DL_TFC40	(TF1, TF0, TF0, TF4, TF1)
DL_TFC41	(TF2, TF1, TF1, TF4, TF1)
DL_TFC42	(TF0, TF0, TF0, TF5, TF1)
DL_TFC43	(TF1, TF0, TF0, TF5, TF1)
DL_TFC44	(TF2, TF1, TF1, TF5, TF1)
DL_TFC45	(TF0, TF0, TF0, TF6, TF1)
DL_TFC46	(TF1, TF0, TF0, TF6, TF1)
DL_TFC47	(TF2, TF1, TF1, TF6, TF1)
DL_TFC48	(TF0, TF0, TF0, TF7, TF1)
DL_TFC49	(TF1, TF0, TF0, TF7, TF1)
DL_TFC50	(TF2, TF1, TF1, TF7, TF1)
DL_TFC51	(TF0, TF0, TF0, TF8, TF1)
DL_TFC52	(TF1, TF0, TF0, TF8, TF1)
DL_TFC53	(TF2, TF1, TF1, TF8, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC27, DL_TFC28, UL_TFC0, UL_TFC15, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC27, DL_TFC29, UL_TFC0, UL_TFC15, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC27, DL_TFC30, UL_TFC0, UL_TFC15, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: No data RB6: No data RB7: No data RB8: 336
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC27, DL_TFC31, UL_TFC0, UL_TFC15, UL_TFC19	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 336	RB5: 39 RB6: No data RB7: No data RB8: 336
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC27, DL_TFC32, UL_TFC0, UL_TFC15, UL_TFC20	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 336	RB5: 81 RB6: 103 RB7: 60 RB8: 336
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC27, DL_TFC33, UL_TFC0, UL_TFC15, UL_TFC21	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: No data RB6: No data RB7: No data RB8: 672
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC27, DL_TFC34, UL_TFC0, UL_TFC15, UL_TFC22	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 672	RB5: 39 RB6: No data RB7: No data RB8: 672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC27, DL_TFC35, UL_TFC0, UL_TFC15, UL_TFC23	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 672	RB5: 81 RB6: 103 RB7: 60 RB8: 672
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC27, DL_TFC36, UL_TFC0, UL_TFC15, UL_TFC24	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: No data RB6: No data RB7: No data RB8: 1344
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC27, DL_TFC37, UL_TFC0, UL_TFC15, UL_TFC25	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 1344	RB5: 39 RB6: No data RB7: No data RB8: 1344
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC27, DL_TFC38, UL_TFC0, UL_TFC15, UL_TFC26	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 1344	RB5: 81 RB6: 103 RB7: 60 RB8: 1344
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC27, DL_TFC39, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 2688	RB5: No data RB6: No data RB7: No data RB8: 2688
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC27, DL_TFC40, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2688	RB5: 39 RB6: No data RB7: No data RB8: 2688
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC27, DL_TFC41, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2688	RB5: 81 RB6: 103 RB7: 60 RB8: 2688
15	DL_TFC15	UL_TFC12	DL_TFC0, DL_TFC27, DL_TFC42, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 4032	RB5: No data RB6: No data RB7: No data RB8: 4032
16	DL_TFC16	UL_TFC13	DL_TFC0, DL_TFC27, DL_TFC43, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 4032	RB5: 39 RB6: No data RB7: No data RB8: 4032

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
17	DL_TFC17	UL_TFC14	DL_TFC0, DL_TFC27, DL_TFC44, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 4032	RB5: 81 RB6: 103 RB7: 60 RB8: 4032
18	DL_TFC18	UL_TFC12	DL_TFC0, DL_TFC27, DL_TFC45, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 5376	RB5: No data RB6: No data RB7: No data RB8: 5376
19	DL_TFC19	UL_TFC13	DL_TFC0, DL_TFC27, DL_TFC46, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 5376	RB5: 39 RB6: No data RB7: No data RB8: 5376
20	DL_TFC20	UL_TFC14	DL_TFC0, DL_TFC27, DL_TFC47, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 5376	RB5: 81 RB6: 103 RB7: 60 RB8: 5376
21	DL_TFC21	UL_TFC12	DL_TFC0, DL_TFC27, DL_TFC48, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 6720	RB5: No data RB6: No data RB7: No data RB8: 6720
22	DL_TFC22	UL_TFC13	DL_TFC0, DL_TFC27, DL_TFC49, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 6720	RB5: 39 RB6: No data RB7: No data RB8: 6720
23	DL_TFC23	UL_TFC14	DL_TFC0, DL_TFC27, DL_TFC50, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 6720	RB5: 81 RB6: 103 RB7: 60 RB8: 6720
24	DL_TFC24	UL_TFC12	DL_TFC0, DL_TFC27, DL_TFC51, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 8064	RB5: No data RB6: No data RB7: No data RB8: 8064
25	DL_TFC25	UL_TFC13	DL_TFC0, DL_TFC27, DL_TFC52, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 8064	RB5: 39 RB6: No data RB7: No data RB8: 8064
26	DL_TFC26	UL_TFC14	DL_TFC0, DL_TFC27, DL_TFC53, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 8064	RB5: 81 RB6: 103 RB7: 60 RB8: 8064

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.43.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).

- for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
- for sub-test 6: RB8/TF2 (2x336)
- for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
- for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
- for sub-test 9: RB8/TF3 (3x336)
- for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (3x336).
- for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (3x336).
- for sub-test 12, 15, 18, 21 and 24: RB8/TF4 (4x336)
- for sub-test 13, 16, 19, 22 and 25: RB5/TF1 (1x39) and RB8/TF4 (4x336).
- for sub-test 14, 17, 20, 23 and 26: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (4x336).

3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9, 12, 15, 18, 21 and 24: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10, 13, 16, 19, 22 and 25: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11, 14, 17, 20, 23 and 26: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.44 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:128 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.44.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:128 DL:2048 kbps / PS RAB / 10 ms TTI

14.2.44.1.1 Conformance requirement

See 14.2.4.1.

14.2.44.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.44 for the downlink 10 ms TTI case.

14.2.44.1.3 Method of test

14.2.44.2.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (128 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (2048 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x656	0x148
	TF1, bits	1x39	1x103	1x60	1x656	1x148
	TF2, bits	1x81	N/A	N/A	2x656	N/A
	TF3, bits	N/A	N/A	N/A	4x656	N/A
	TF4, bits	N/A	N/A	N/A	8x656	N/A
	TF5, bits	N/A	N/A	N/A	12x656	N/A
	TF6, bits	N/A	N/A	N/A	16x656	N/A
	TF7, bits	N/A	N/A	N/A	20x656	N/A
	TF8, bits	N/A	N/A	N/A	24x656	N/A
	TF9, bits	N/A	N/A	N/A	28x656	N/A
	TF10, bits	N/A	N/A	N/A	32x656	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF6, TF0)
DL_TFC19	(TF1, TF0, TF0, TF6, TF0)
DL_TFC20	(TF2, TF1, TF1, TF6, TF0)
DL_TFC21	(TF0, TF0, TF0, TF7, TF0)
DL_TFC22	(TF1, TF0, TF0, TF7, TF0)
DL_TFC23	(TF2, TF1, TF1, TF7, TF0)
DL_TFC24	(TF0, TF0, TF0, TF8, TF0)
DL_TFC25	(TF1, TF0, TF0, TF8, TF0)
DL_TFC26	(TF2, TF1, TF1, TF8, TF0)
DL_TFC27	(TF0, TF0, TF0, TF9, TF0)
DL_TFC28	(TF1, TF0, TF0, TF9, TF0)
DL_TFC29	(TF2, TF1, TF1, TF9, TF0)
DL_TFC30	(TF0, TF0, TF0, TF10, TF0)
DL_TFC31	(TF1, TF0, TF0, TF10, TF0)
DL_TFC32	(TF2, TF1, TF1, TF10, TF0)
DL_TFC33	(TF0, TF0, TF0, TF0, TF1)
DL_TFC34	(TF1, TF0, TF0, TF0, TF1)
DL_TFC35	(TF2, TF1, TF1, TF0, TF1)
DL_TFC36	(TF0, TF0, TF0, TF1, TF1)
DL_TFC37	(TF1, TF0, TF0, TF1, TF1)
DL_TFC38	(TF2, TF1, TF1, TF1, TF1)
DL_TFC39	(TF0, TF0, TF0, TF2, TF1)
DL_TFC40	(TF1, TF0, TF0, TF2, TF1)
DL_TFC41	(TF2, TF1, TF1, TF2, TF1)
DL_TFC42	(TF0, TF0, TF0, TF3, TF1)
DL_TFC43	(TF1, TF0, TF0, TF3, TF1)
DL_TFC44	(TF2, TF1, TF1, TF3, TF1)
DL_TFC45	(TF0, TF0, TF0, TF4, TF1)
DL_TFC46	(TF1, TF0, TF0, TF4, TF1)
DL_TFC47	(TF2, TF1, TF1, TF4, TF1)
DL_TFC48	(TF0, TF0, TF0, TF5, TF1)
DL_TFC49	(TF1, TF0, TF0, TF5, TF1)
DL_TFC50	(TF2, TF1, TF1, TF5, TF1)
DL_TFC51	(TF0, TF0, TF0, TF6, TF1)
DL_TFC52	(TF1, TF0, TF0, TF6, TF1)
DL_TFC53	(TF2, TF1, TF1, TF6, TF1)
DL_TFC54	(TF0, TF0, TF0, TF7, TF1)
DL_TFC55	(TF1, TF0, TF0, TF7, TF1)
DL_TFC56	(TF2, TF1, TF1, TF7, TF1)
DL_TFC57	(TF0, TF0, TF0, TF8, TF1)
DL_TFC58	(TF1, TF0, TF0, TF8, TF1)
DL_TFC59	(TF2, TF1, TF1, TF8, TF1)
DL_TFC60	(TF0, TF0, TF0, TF9, TF1)
DL_TFC61	(TF1, TF0, TF0, TF9, TF1)
DL_TFC62	(TF2, TF1, TF1, TF9, TF1)

DL_TFC63	(TF0, TF0, TF0, TF10, TF1)
DL_TFC64	(TF1, TF0, TF0, TF10, TF1)
DL_TFC65	(TF2, TF1, TF1, TF10, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC33, DL_TFC34, UL_TFC0, UL_TFC15, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 656	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC33, DL_TFC35, UL_TFC0, UL_TFC15, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 656	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC33, DL_TFC36, UL_TFC0, UL_TFC15, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 656	RB5: No data RB6: No data RB7: No data RB8: 656
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC33, DL_TFC37, UL_TFC0, UL_TFC15, UL_TFC19	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 656	RB5: 39 RB6: No data RB7: No data RB8: 656
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC33, DL_TFC38, UL_TFC0, UL_TFC15, UL_TFC20	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 656	RB5: 81 RB6: 103 RB7: 60 RB8: 656
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC33, DL_TFC39, UL_TFC0, UL_TFC15, UL_TFC21	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 1312	RB5: No data RB6: No data RB7: No data RB8: 1312
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC33, DL_TFC40, UL_TFC0, UL_TFC15, UL_TFC22	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 1312	RB5: 39 RB6: No data RB7: No data RB8: 1312
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC33, DL_TFC41, UL_TFC0, UL_TFC15, UL_TFC23	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 1312	RB5: 81 RB6: 103 RB7: 60 RB8: 1312
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC33, DL_TFC42, UL_TFC0, UL_TFC15, UL_TFC24	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 2624	RB5: No data RB6: No data RB7: No data RB8: 2624
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC33, DL_TFC43, UL_TFC0, UL_TFC15, UL_TFC25	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 2624	RB5: 39 RB6: No data RB7: No data RB8: 2624
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC33, DL_TFC44, UL_TFC0, UL_TFC15, UL_TFC26	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 2624	RB5: 81 RB6: 103 RB7: 60 RB8: 2624
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC33, DL_TFC45, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 5248	RB5: No data RB6: No data RB7: No data RB8: 5248
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC33, DL_TFC46, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 5248	RB5: 39 RB6: No data RB7: No data RB8: 5248
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC33, DL_TFC47, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 5248	RB5: 81 RB6: 103 RB7: 60 RB8: 5248
15	DL_TFC15	UL_TFC12	DL_TFC0, DL_TFC33, DL_TFC48, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 7872	RB5: No data RB6: No data RB7: No data RB8: 7872
16	DL_TFC16	UL_TFC13	DL_TFC0, DL_TFC33, DL_TFC49, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 7872	RB5: 39 RB6: No data RB7: No data RB8: 7872

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
17	DL_TFC17	UL_TFC14	DL_TFC0, DL_TFC33, DL_TFC50, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 7872	RB5: 81 RB6: 103 RB7: 60 RB8: 7872
18	DL_TFC18	UL_TFC12	DL_TFC0, DL_TFC33, DL_TFC51, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 10496	RB5: No data RB6: No data RB7: No data RB8: 10496
19	DL_TFC19	UL_TFC13	DL_TFC0, DL_TFC33, DL_TFC52, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 10496	RB5: 39 RB6: No data RB7: No data RB8: 10496
20	DL_TFC20	UL_TFC14	DL_TFC0, DL_TFC33, DL_TFC53, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 10496	RB5: 81 RB6: 103 RB7: 60 RB8: 10496
21	DL_TFC21	UL_TFC12	DL_TFC0, DL_TFC33, DL_TFC54, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 13120	RB5: No data RB6: No data RB7: No data RB8: 13120
22	DL_TFC22	UL_TFC13	DL_TFC0, DL_TFC33, DL_TFC55, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 13120	RB5: 39 RB6: No data RB7: No data RB8: 13120
23	DL_TFC23	UL_TFC14	DL_TFC0, DL_TFC33, DL_TFC56, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 13120	RB5: 81 RB6: 103 RB7: 60 RB8: 13120
24	DL_TFC24	UL_TFC12	DL_TFC0, DL_TFC33, DL_TFC57, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 15744	RB5: No data RB6: No data RB7: No data RB8: 15744
25	DL_TFC25	UL_TFC13	DL_TFC0, DL_TFC33, DL_TFC58, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 15744	RB5: 39 RB6: No data RB7: No data RB8: 15744
26	DL_TFC26	UL_TFC14	DL_TFC0, DL_TFC33, DL_TFC59, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 15744	RB5: 81 RB6: 103 RB7: 60 RB8: 15744
27	DL_TFC27	UL_TFC12	DL_TFC0, DL_TFC33, DL_TFC60, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 18368	RB5: No data RB6: No data RB7: No data RB8: 18368
28	DL_TFC28	UL_TFC13	DL_TFC0, DL_TFC33, DL_TFC61, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 18368	RB5: 39 RB6: No data RB7: No data RB8: 18368
29	DL_TFC29	UL_TFC14	DL_TFC0, DL_TFC33, DL_TFC62, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 18368	RB5: 81 RB6: 103 RB7: 60 RB8: 18368
30	DL_TFC30	UL_TFC12	DL_TFC0, DL_TFC33, DL_TFC63, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 20992	RB5: No data RB6: No data RB7: No data RB8: 20992
31	DL_TFC31	UL_TFC13	DL_TFC0, DL_TFC33, DL_TFC64, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 20992	RB5: 39 RB6: No data RB7: No data RB8: 20992
32	DL_TFC32	UL_TFC14	DL_TFC0, DL_TFC33, DL_TFC65, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 20992	RB5: 81 RB6: 103 RB7: 60 RB8: 20992

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.44.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).
   - for sub-test 9: RB8/TF3 (4x336)
   - for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (4x336).
   - for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (4x336).
   - for sub-test 12,15,18,21,24,27,30: RB8/TF4 (8x336)
   - for sub-test 13,16,19,22,25,28,31: RB5/TF1 (1x39) and RB8/TF4 (8x336).
   - for sub-test 14,17,20,23,26,29,32: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (8x336).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9, 12, 15, 18, 21, 24, 27, 30: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10, 13, 16, 19, 22, 25, 28, 31: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11, 14, 17, 20, 23, 26, 29, 32: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.44.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:128 DL:2048 kbps / PS RAB / 20 ms TTI

14.2.44.2.1 Conformance requirement

See 14.2.4.1.

14.2.44.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.44 for the downlink 20 ms TTI case.

14.2.44.2.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (128 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (2048 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x656	0x148
	TF1, bits	1x39	1x103	1x60	1x656	1x148
	TF2, bits	1x81	N/A	N/A	2x656	N/A
	TF3, bits	N/A	N/A	N/A	4x656	N/A
	TF4, bits	N/A	N/A	N/A	8x656	N/A
	TF5, bits	N/A	N/A	N/A	12x656	N/A
	TF6, bits	N/A	N/A	N/A	16x656	N/A
	TF7, bits	N/A	N/A	N/A	20x656	N/A
	TF8, bits	N/A	N/A	N/A	24x656	N/A
	TF9, bits	N/A	N/A	N/A	28x656	N/A
	TF10, bits	N/A	N/A	N/A	32x656	N/A
	TF11, bits	N/A	N/A	N/A	36x656	N/A
	TF12, bits	N/A	N/A	N/A	40x656	N/A
	TF13, bits	N/A	N/A	N/A	44x656	N/A
	TF14, bits	N/A	N/A	N/A	48x656	N/A
	TF15, bits	N/A	N/A	N/A	52x656	N/A
	TF16, bits	N/A	N/A	N/A	56x656	N/A
	TF17, bits	N/A	N/A	N/A	60x656	N/A
	TF18, bits	N/A	N/A	N/A	64x656	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF6, TF0)
DL_TFC19	(TF1, TF0, TF0, TF6, TF0)
DL_TFC20	(TF2, TF1, TF1, TF6, TF0)
DL_TFC21	(TF0, TF0, TF0, TF7, TF0)
DL_TFC22	(TF1, TF0, TF0, TF7, TF0)
DL_TFC23	(TF2, TF1, TF1, TF7, TF0)
DL_TFC24	(TF0, TF0, TF0, TF8, TF0)
DL_TFC25	(TF1, TF0, TF0, TF8, TF0)
DL_TFC26	(TF2, TF1, TF1, TF8, TF0)
DL_TFC27	(TF0, TF0, TF0, TF9, TF0)
DL_TFC28	(TF1, TF0, TF0, TF9, TF0)
DL_TFC29	(TF2, TF1, TF1, TF9, TF0)
DL_TFC30	(TF0, TF0, TF0, TF10, TF0)
DL_TFC31	(TF1, TF0, TF0, TF10, TF0)
DL_TFC32	(TF2, TF1, TF1, TF10, TF0)
DL_TFC33	(TF0, TF0, TF0, TF11, TF0)
DL_TFC34	(TF1, TF0, TF0, TF11, TF0)
DL_TFC35	(TF2, TF1, TF1, TF11, TF0)
DL_TFC36	(TF0, TF0, TF0, TF12, TF0)
DL_TFC37	(TF1, TF0, TF0, TF12, TF0)
DL_TFC38	(TF2, TF1, TF1, TF12, TF0)
DL_TFC39	(TF0, TF0, TF0, TF13, TF0)
DL_TFC40	(TF1, TF0, TF0, TF13, TF0)
DL_TFC41	(TF2, TF1, TF1, TF13, TF0)
DL_TFC42	(TF0, TF0, TF0, TF14, TF0)
DL_TFC43	(TF1, TF0, TF0, TF14, TF0)
DL_TFC44	(TF2, TF1, TF1, TF14, TF0)
DL_TFC45	(TF0, TF0, TF0, TF15, TF0)
DL_TFC46	(TF1, TF0, TF0, TF15, TF0)
DL_TFC47	(TF2, TF1, TF1, TF15, TF0)
DL_TFC48	(TF0, TF0, TF0, TF16, TF0)
DL_TFC49	(TF1, TF0, TF0, TF16, TF0)
DL_TFC50	(TF2, TF1, TF1, TF16, TF0)
DL_TFC51	(TF0, TF0, TF0, TF17, TF0)
DL_TFC52	(TF1, TF0, TF0, TF17, TF0)
DL_TFC53	(TF2, TF1, TF1, TF17, TF0)
DL_TFC54	(TF0, TF0, TF0, TF18, TF0)
DL_TFC55	(TF1, TF0, TF0, TF18, TF0)
DL_TFC56	(TF2, TF1, TF1, TF18, TF0)
DL_TFC57	(TF0, TF0, TF0, TF0, TF1)
DL_TFC58	(TF1, TF0, TF0, TF0, TF1)
DL_TFC59	(TF2, TF1, TF1, TF0, TF1)
DL_TFC60	(TF0, TF0, TF0, TF1, TF1)
DL_TFC61	(TF1, TF0, TF0, TF1, TF1)
DL_TFC61	(TF2, TF1, TF1, TF1, TF1)

DL_TFC63	(TF0, TF0, TF0, TF2, TF1)
DL_TFC64	(TF1, TF0, TF0, TF2, TF1)
DL_TFC65	(TF2, TF1, TF1, TF2, TF1)
DL_TFC66	(TF0, TF0, TF0, TF3, TF1)
DL_TFC67	(TF1, TF0, TF0, TF3, TF1)
DL_TFC68	(TF2, TF1, TF1, TF3, TF1)
DL_TFC69	(TF0, TF0, TF0, TF4, TF1)
DL_TFC70	(TF1, TF0, TF0, TF4, TF1)
DL_TFC71	(TF2, TF1, TF1, TF4, TF1)
DL_TFC72	(TF0, TF0, TF0, TF5, TF1)
DL_TFC73	(TF1, TF0, TF0, TF5, TF1)
DL_TFC74	(TF2, TF1, TF1, TF5, TF1)
DL_TFC75	(TF0, TF0, TF0, TF6, TF1)
DL_TFC76	(TF1, TF0, TF0, TF6, TF1)
DL_TFC77	(TF2, TF1, TF1, TF6, TF1)
DL_TFC78	(TF0, TF0, TF0, TF7, TF1)
DL_TFC79	(TF1, TF0, TF0, TF7, TF1)
DL_TFC80	(TF2, TF1, TF1, TF7, TF1)
DL_TFC81	(TF0, TF0, TF0, TF8, TF1)
DL_TFC82	(TF1, TF0, TF0, TF8, TF1)
DL_TFC83	(TF2, TF1, TF1, TF8, TF1)
DL_TFC84	(TF0, TF0, TF0, TF9, TF1)
DL_TFC85	(TF1, TF0, TF0, TF9, TF1)
DL_TFC86	(TF2, TF1, TF1, TF9, TF1)
DL_TFC87	(TF0, TF0, TF0, TF10, TF1)
DL_TFC88	(TF1, TF0, TF0, TF10, TF1)
DL_TFC89	(TF2, TF1, TF1, TF10, TF1)
DL_TFC90	(TF0, TF0, TF0, TF11, TF1)
DL_TFC91	(TF1, TF0, TF0, TF11, TF1)
DL_TFC92	(TF2, TF1, TF1, TF11, TF1)
DL_TFC93	(TF0, TF0, TF0, TF12, TF1)
DL_TFC94	(TF1, TF0, TF0, TF12, TF1)
DL_TFC95	(TF2, TF1, TF1, TF12, TF1)
DL_TFC96	(TF0, TF0, TF0, TF13, TF1)
DL_TFC97	(TF1, TF0, TF0, TF13, TF1)
DL_TFC98	(TF2, TF1, TF1, TF13, TF1)
DL_TFC99	(TF0, TF0, TF0, TF14, TF1)
DL_TFC100	(TF1, TF0, TF0, TF14, TF1)
DL_TFC101	(TF2, TF1, TF1, TF14, TF1)
DL_TFC102	(TF0, TF0, TF0, TF15, TF1)
DL_TFC103	(TF1, TF0, TF0, TF15, TF1)
DL_TFC104	(TF2, TF1, TF1, TF15, TF1)
DL_TFC105	(TF0, TF0, TF0, TF16, TF1)
DL_TFC106	(TF1, TF0, TF0, TF16, TF1)
DL_TFC107	(TF2, TF1, TF1, TF16, TF1)
DL_TFC108	(TF0, TF0, TF0, TF17, TF1)
DL_TFC109	(TF1, TF0, TF0, TF17, TF1)
DL_TFC110	(TF2, TF1, TF1, TF17, TF1)
DL_TFC111	(TF0, TF0, TF0, TF18, TF1)
DL_TFC112	(TF1, TF0, TF0, TF18, TF1)
DL_TFC113	(TF2, TF1, TF1, TF18, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC57, DL_TFC58, UL_TFC0, UL_TFC15, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 656	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC57, DL_TFC59, UL_TFC0, UL_TFC15, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 656	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC57, DL_TFC60, UL_TFC0, UL_TFC15, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 656	RB5: No data RB6: No data RB7: No data RB8: 656
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC57, DL_TFC61, UL_TFC0, UL_TFC15, UL_TFC19	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 656	RB5: 39 RB6: No data RB7: No data RB8: 656
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC57, DL_TFC62, UL_TFC0, UL_TFC15, UL_TFC20	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 656	RB5: 81 RB6: 103 RB7: 60 RB8: 656
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC57, DL_TFC63, UL_TFC0, UL_TFC15, UL_TFC21	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 1312	RB5: No data RB6: No data RB7: No data RB8: 1312
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC57, DL_TFC64, UL_TFC0, UL_TFC15, UL_TFC22	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 1312	RB5: 39 RB6: No data RB7: No data RB8: 1312
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC57, DL_TFC65, UL_TFC0, UL_TFC15, UL_TFC23	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 1312	RB5: 81 RB6: 103 RB7: 60 RB8: 1312
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC57, DL_TFC66, UL_TFC0, UL_TFC15, UL_TFC24	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 2624	RB5: No data RB6: No data RB7: No data RB8: 2624
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC57, DL_TFC67, UL_TFC0, UL_TFC15, UL_TFC25	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 2624	RB5: 39 RB6: No data RB7: No data RB8: 2624
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC57, DL_TFC68, UL_TFC0, UL_TFC15, UL_TFC26	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 2624	RB5: 81 RB6: 103 RB7: 60 RB8: 2624
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC69, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 5248	RB5: No data RB6: No data RB7: No data RB8: 5248
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC70, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 5248	RB5: 39 RB6: No data RB7: No data RB8: 5248
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC71, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 5248	RB5: 81 RB6: 103 RB7: 60 RB8: 5248
15	DL_TFC15	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC72, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 7872	RB5: No data RB6: No data RB7: No data RB8: 7872
16	DL_TFC16	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC73, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 7872	RB5: 39 RB6: No data RB7: No data RB8: 7872

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
17	DL_TFC17	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC74, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 7872	RB5: 81 RB6: 103 RB7: 60 RB8: 7872
18	DL_TFC18	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC75, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 10496	RB5: No data RB6: No data RB7: No data RB8: 10496
19	DL_TFC19	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC76, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 10496	RB5: 39 RB6: No data RB7: No data RB8: 10496
20	DL_TFC20	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC77, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 10496	RB5: 81 RB6: 103 RB7: 60 RB8: 10496
21	DL_TFC21	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC78, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 13120	RB5: No data RB6: No data RB7: No data RB8: 13120
22	DL_TFC22	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC79, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 13120	RB5: 39 RB6: No data RB7: No data RB8: 13120
23	DL_TFC23	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC80, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 13120	RB5: 81 RB6: 103 RB7: 60 RB8: 13120
24	DL_TFC24	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC81, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 15744	RB5: No data RB6: No data RB7: No data RB8: 15744
25	DL_TFC25	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC82, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 15744	RB5: 39 RB6: No data RB7: No data RB8: 15744
26	DL_TFC26	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC83, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 15744	RB5: 81 RB6: 103 RB7: 60 RB8: 15744
27	DL_TFC27	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC84, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 18368	RB5: No data RB6: No data RB7: No data RB8: 18368
28	DL_TFC28	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC85, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 18368	RB5: 39 RB6: No data RB7: No data RB8: 18368
29	DL_TFC29	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC86, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 18368	RB5: 81 RB6: 103 RB7: 60 RB8: 18368
30	DL_TFC30	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC87, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 20992	RB5: No data RB6: No data RB7: No data RB8: 20992
31	DL_TFC31	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC88, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 20992	RB5: 39 RB6: No data RB7: No data RB8: 20992
32	DL_TFC32	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC89, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 20992	RB5: 81 RB6: 103 RB7: 60 RB8: 20992

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
33	DL_TFC33	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC90, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 23616	RB5: No data RB6: No data RB7: No data RB8: 23616
34	DL_TFC34	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC91, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 23616	RB5: 39 RB6: No data RB7: No data RB8: 23616
35	DL_TFC35	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC92, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 23616	RB5: 81 RB6: 103 RB7: 60 RB8: 23616
36	DL_TFC36	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC93, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 26240	RB5: No data RB6: No data RB7: No data RB8: 26240
37	DL_TFC37	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC94, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 26240	RB5: 39 RB6: No data RB7: No data RB8: 26240
38	DL_TFC38	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC95, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 26240	RB5: 81 RB6: 103 RB7: 60 RB8: 26240
39	DL_TFC39	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC96, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 28864	RB5: No data RB6: No data RB7: No data RB8: 28864
40	DL_TFC40	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC97, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 28864	RB5: 39 RB6: No data RB7: No data RB8: 28864
41	DL_TFC41	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC98, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 28864	RB5: 81 RB6: 103 RB7: 60 RB8: 28864
42	DL_TFC42	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC99, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 31488	RB5: No data RB6: No data RB7: No data RB8: 31488
43	DL_TFC43	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC100, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 31488	RB5: 39 RB6: No data RB7: No data RB8: 31488
44	DL_TFC44	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC101, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 31488	RB5: 81 RB6: 103 RB7: 60 RB8: 31488
45	DL_TFC45	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC102, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 34112	RB5: No data RB6: No data RB7: No data RB8: 34112
46	DL_TFC46	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC103, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 34112	RB5: 39 RB6: No data RB7: No data RB8: 34112
47	DL_TFC47	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC104, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 34112	RB5: 81 RB6: 103 RB7: 60 RB8: 34112
48	DL_TFC48	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC105, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 36736	RB5: No data RB6: No data RB7: No data RB8: 36736

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
49	DL_TFC49	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC106, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 36736	RB5: 39 RB6: No data RB7: No data RB8: 36736
50	DL_TFC50	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC107, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 36736	RB5: 81 RB6: 103 RB7: 60 RB8: 36736
51	DL_TFC51	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC108, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 39360	RB5: No data RB6: No data RB7: No data RB8: 39360
52	DL_TFC52	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC109, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 39360	RB5: 39 RB6: No data RB7: No data RB8: 39360
53	DL_TFC53	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC110, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 39360	RB5: 81 RB6: 103 RB7: 60 RB8: 39360
54	DL_TFC54	UL_TFC12	DL_TFC0, DL_TFC57, DL_TFC111, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 41984	RB5: No data RB6: No data RB7: No data RB8: 41984
55	DL_TFC55	UL_TFC13	DL_TFC0, DL_TFC57, DL_TFC112, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 41984	RB5: 39 RB6: No data RB7: No data RB8: 41984
56	DL_TFC56	UL_TFC14	DL_TFC0, DL_TFC57, DL_TFC113, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 41984	RB5: 81 RB6: 103 RB7: 60 RB8: 41984

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.44.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x336)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x336).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x336).
   - for sub-test 6: RB8/TF2 (2x336)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x336).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x336).

- for sub-test 9: RB8/TF3 (4x336)
- for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (4x336).
- for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (4x336).
- for sub-test 12,15,18,21,24,27,30,33,36,39,42: RB8/TF4 (8x336)
- for sub-test 13,16,19,22,25,28,31,34,37,40,43: RB5/TF1 (1x39) and RB8/TF4 (8x336).
- for sub-test 14,17,20,23,26,29,32,35,38,41,44: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (8x336).

3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40, 43: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.45 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Streaming / unknown / UL:57.6 DL:57.6 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.45.1 Conformance requirement

See 14.2.4.1.

14.2.45.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.45.

14.2.45.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (57.6 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x576	0x148
	TF1, bits	1x39	1x103	1x60	1x576	1x148
	TF2, bits	1x81	N/A	N/A	2x576	N/A
	TF3, bits	N/A	N/A	N/A	3x576	N/A
	TF4, bits	N/A	N/A	N/A	4x576	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (57.6 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x576	0x148
	TF1, bits	1x39	1x103	1x60	1x576	1x148
	TF2, bits	1x81	N/A	N/A	2x576	N/A
	TF3, bits	N/A	N/A	N/A	3x576	N/A
	TF4, bits	N/A	N/A	N/A	4x576	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC15, DL_TFC16, UL_TFC0, UL_TFC15, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC15, DL_TFC17, UL_TFC0, UL_TFC15, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC15, DL_TFC18, UL_TFC0, UL_TFC15, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: No data RB6: No data RB7: No data RB8: 336
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC15, DL_TFC19, UL_TFC0, UL_TFC15, UL_TFC19	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: 576
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC15, DL_TFC20, UL_TFC0, UL_TFC15, UL_TFC20	UL_TFC0, UL_TFC5, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: 576
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC15, DL_TFC21, UL_TFC0, UL_TFC15, UL_TFC21	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 1152	RB5: No data RB6: No data RB7: No data RB8: 1152
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC15, DL_TFC22, UL_TFC0, UL_TFC15, UL_TFC22	UL_TFC0, UL_TFC7, UL_TFC15, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 1152	RB5: 39 RB6: No data RB7: No data RB8: 1152
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC15, DL_TFC23, UL_TFC0, UL_TFC15, UL_TFC23	UL_TFC0, UL_TFC8, UL_TFC15, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 1152	RB5: 81 RB6: 103 RB7: 60 RB8: 1152
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC15, DL_TFC24, UL_TFC0, UL_TFC15, UL_TFC24	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 1728	RB5: No data RB6: No data RB7: No data RB8: 1728
10	DL_TFC10	UL_TFC10	DL_TFC0, DL_TFC15, DL_TFC25, UL_TFC0, UL_TFC15, UL_TFC25	UL_TFC0, UL_TFC10, UL_TFC15, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 1728	RB5: 39 RB6: No data RB7: No data RB8: 1728
11	DL_TFC11	UL_TFC11	DL_TFC0, DL_TFC15, DL_TFC26, UL_TFC0, UL_TFC15, UL_TFC26	UL_TFC0, UL_TFC11, UL_TFC15, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 1728	RB5: 81 RB6: 103 RB7: 60 RB8: 1728
12	DL_TFC12	UL_TFC12	DL_TFC0, DL_TFC15, DL_TFC27, UL_TFC0, UL_TFC15, UL_TFC27	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 2304	RB5: No data RB6: No data RB7: No data RB8: 2304
13	DL_TFC13	UL_TFC13	DL_TFC0, DL_TFC15, DL_TFC28, UL_TFC0, UL_TFC15, UL_TFC28	UL_TFC0, UL_TFC13, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2304	RB5: 39 RB6: No data RB7: No data RB8: 2304
14	DL_TFC14	UL_TFC14	DL_TFC0, DL_TFC15, DL_TFC29, UL_TFC0, UL_TFC15, UL_TFC29	UL_TFC0, UL_TFC14, UL_TFC15, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2304	RB5: 81 RB6: 103 RB7: 60 RB8: 2304

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.45.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (1x576)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (1x576).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (1x576).
   - for sub-test 6: RB8/TF2 (2x576)
   - for sub-test 7: RB5/TF1 (1x39) and RB8/TF2 (2x576).
   - for sub-test 8: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF2 (2x576).
   - for sub-test 9: RB8/TF2 (3x576)
   - for sub-test 10: RB5/TF1 (1x39) and RB8/TF3 (3x576).
   - for sub-test 11: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF3 (3x576).
   - for sub-test 12: RB8/TF2 (4x576)
   - for sub-test 13: RB5/TF1 (1x39) and RB8/TF4 (4x576).
   - for sub-test 14: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF4 (4x576).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.46 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Streaming / unknown / UL:0 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.46.1 Conformance requirement

See 14.2.4.1.

14.2.46.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.46.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 64 kbps,, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

14.2.46.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (14.4 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x576	0x148
	TF1, bits	1x39	1x103	1x60	1x576	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x320	0x148
	TF1, bits	1x39	1x103	1x60	1x320	1x148
	TF2, bits	1x81	N/A	N/A	2x320	N/A
	TF3, bits	N/A	N/A	N/A	4x320	N/A
	TF4, bits	N/A	N/A	N/A	8x320	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC15, DL_TFC16, UL_TFC0, UL_TFC6, UL_TFC7	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC15, DL_TFC17, UL_TFC0, UL_TFC6, UL_TFC8	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC15, DL_TFC18, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: No data RB6: No data RB7: No data RB8: 320 Note 2
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC15, DL_TFC19, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: 320 Note 2
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC15, DL_TFC20, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: 320 Note 2
6	DL_TFC6	UL_TFC3	DL_TFC0, DL_TFC15, DL_TFC21, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 1152	RB5: No data RB6: No data RB7: No data RB8: 640 Note 3
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC15, DL_TFC22, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 1152	RB5: 39 RB6: No data RB7: No data RB8: 640 Note 3
8	DL_TFC8	UL_TFC5	DL_TFC0, DL_TFC15, DL_TFC23, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 1152	RB5: 81 RB6: 103 RB7: 60 RB8: 640 Note 3
9	DL_TFC9	UL_TFC3	DL_TFC0, DL_TFC15, DL_TFC24, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 1728	RB5: No data RB6: No data RB7: No data RB8: 1280 Note 4
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC15, DL_TFC25, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 1728	RB5: 39 RB6: No data RB7: No data RB8: 1280 Note 4
11	DL_TFC11	UL_TFC5	DL_TFC0, DL_TFC15, DL_TFC26, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 1728	RB5: 81 RB6: 103 RB7: 60 RB8: 1280 Note 4
12	DL_TFC12	UL_TFC3	DL_TFC0, DL_TFC15, DL_TFC27, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 2880	RB5: No data RB6: No data RB7: No data RB8: 2560 Note 5
13	DL_TFC13	UL_TFC4	DL_TFC0, DL_TFC15, DL_TFC28, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 2880	RB5: 39 RB6: No data RB7: No data RB8: 2560 Note 5

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
14	DL_TFC14	UL_TFC5	DL_TFC0, DL_TFC15, DL_TFC29, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 2880	RB5: 81 RB6: 103 RB7: 60 RB8: 2560 Note 5

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 RB8: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return one RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.

Note 3 RB8: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return two RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2.

Note 4 RB8: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return three RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3.

Note 5 RB8: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return five RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5.

See 14.1.1 for test procedure.

14.2.46.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1, 4, 7, 10 and 13: RB5/TF1 (1x39).
   - for sub-test 2, 5, 8, 11 and 14: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
3. At step 15 the UE shall return
   - for sub-test 3, 6, 9 and 12: no data on RB5, RB6 and RB7.
   - for sub-test 1, 4, 7, 10 and 13: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 or RB7.
   - for sub-test 2, 5, 8, 11 and 14: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by SS.
   - for sub-test 1 to 2: no data on RB8.
   - for sub-test 3 to 14: an RLC SDU on RB8 having the same content as sent by SS.

14.2.47 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Streaming / unknown / UL:0 DL:128 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.47.1 Conformance requirement

See 14.2.4.1.

14.2.47.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.47.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 128 kbps,, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

14.2.47.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (14.4 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x576	0x148
	TF1, bits	1x39	1x103	1x60	1x576	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (128 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x320	0x148
	TF1, bits	1x39	1x103	1x60	1x320	1x148
	TF2, bits	1x81	N/A	N/A	2x320	N/A
	TF3, bits	N/A	N/A	N/A	4x320	N/A
	TF4, bits	N/A	N/A	N/A	8x320	N/A
	TF5, bits	N/A	N/A	N/A	16x320	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF0, TF1)
DL_TFC19	(TF1, TF0, TF0, TF0, TF1)
DL_TFC20	(TF2, TF1, TF1, TF0, TF1)
DL_TFC21	(TF0, TF0, TF0, TF1, TF1)
DL_TFC22	(TF1, TF0, TF0, TF1, TF1)
DL_TFC23	(TF2, TF1, TF1, TF1, TF1)
DL_TFC24	(TF0, TF0, TF0, TF2, TF1)
DL_TFC25	(TF1, TF0, TF0, TF2, TF1)
DL_TFC26	(TF2, TF1, TF1, TF2, TF1)
DL_TFC27	(TF0, TF0, TF0, TF3, TF1)
DL_TFC28	(TF1, TF0, TF0, TF3, TF1)
DL_TFC29	(TF2, TF1, TF1, TF3, TF1)
DL_TFC30	(TF0, TF0, TF0, TF4, TF1)
DL_TFC31	(TF1, TF0, TF0, TF4, TF1)
DL_TFC32	(TF2, TF1, TF1, TF4, TF1)
DL_TFC33	(TF0, TF0, TF0, TF5, TF1)
DL_TFC34	(TF1, TF0, TF0, TF5, TF1)
DL_TFC35	(TF2, TF1, TF1, TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC18, DL_TFC19, UL_TFC0, UL_TFC6, UL_TFC7	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC18, DL_TFC20, UL_TFC0, UL_TFC6, UL_TFC8	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC18, DL_TFC21, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: No data RB6: No data RB7: No data RB8: 320 Note 2
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC18, DL_TFC22, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: 320 Note 2
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC18, DL_TFC23, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: 320 Note 2
6	DL_TFC6	UL_TFC3	DL_TFC0, DL_TFC18, DL_TFC24, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 1152	RB5: No data RB6: No data RB7: No data RB8: 640 Note 3
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC18, DL_TFC25, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 1152	RB5: 39 RB6: No data RB7: No data RB8: 640 Note 3
8	DL_TFC8	UL_TFC5	DL_TFC0, DL_TFC18, DL_TFC26, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 1152	RB5: 81 RB6: 103 RB7: 60 RB8: 640 Note 3
9	DL_TFC9	UL_TFC3	DL_TFC0, DL_TFC18, DL_TFC27, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 1728	RB5: No data RB6: No data RB7: No data RB8: 1280 Note 4
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC18, DL_TFC28, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 1728	RB5: 39 RB6: No data RB7: No data RB8: 1280 Note 4
11	DL_TFC11	UL_TFC5	DL_TFC0, DL_TFC18, DL_TFC29, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 1728	RB5: 81 RB6: 103 RB7: 60 RB8: 1280 Note 4
12	DL_TFC12	UL_TFC3	DL_TFC0, DL_TFC18, DL_TFC30, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 2880	RB5: No data RB6: No data RB7: No data RB8: 2560 Note 5
13	DL_TFC13	UL_TFC4	DL_TFC0, DL_TFC18, DL_TFC31, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 2880	RB5: 39 RB6: No data RB7: No data RB8: 2560 Note 5

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
14	DL_TFC14	UL_TFC5	DL_TFC0, DL_TFC18, DL_TFC32, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 2880	RB5: 81 RB6: 103 RB7: 60 RB8: 2560 Note 5
15	DL_TFC15	UL_TFC3	DL_TFC0, DL_TFC18, DL_TFC33, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 5184	RB5: No data RB6: No data RB7: No data RB8: 5120 Note 6
16	DL_TFC16	UL_TFC4	DL_TFC0, DL_TFC18, DL_TFC34, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 5184	RB5: 39 RB6: No data RB7: No data RB8: 5120 Note 6
17	DL_TFC17	UL_TFC5	DL_TFC0, DL_TFC18, DL_TFC35, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 5184	RB5: 81 RB6: 103 RB7: 60 RB8: 5120 Note 6

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 RB8: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return 1 RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.

Note 3 RB8: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return 2 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2.

Note 4 RB8: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return 3 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3.

Note 5 RB8: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return 5 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5.

Note 6 RB8: SS is using a DL RLC SDU size of 5120 bits as test data (=DL RLC PDU size for DL/TF5). UE will return 9 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, … ,RLC PDU#8 and the first 512 bits of RLC PDU#9.

See 14.1.1 for test procedure.

14.2.47.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1, 4, 7, 10, 13 and 16: RB5/TF1 (1x39).
   - for sub-test 2, 5, 8, 11, 14 and 17: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
3. At step 15 the UE shall return
   - for sub-test 3, 6, 9, 12 and 15: no data on RB5, RB6 and RB7.

- for sub-test 1, 4, 7, 10, 13 and 16: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 or RB7.
- for sub-test 2, 5, 8, 11, 14 and 17: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by SS.
- for sub-test 1 to 2: no data on RB8.
- for sub-test 3 to 17: an RLC SDU on RB8 having the same content as sent by SS.

14.2.48 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Streaming / unknown / UL:0 DL:384 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.48.1 Conformance requirement

See 14.2.4.1.

14.2.48.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.48.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 384 kbps,, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

14.2.48.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (14.4 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x576	0x148
	TF1, bits	1x39	1x103	1x60	1x576	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (128 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x320	0x148
	TF1, bits	1x39	1x103	1x60	1x320	1x148
	TF2, bits	1x81	N/A	N/A	2x320	N/A
	TF3, bits	N/A	N/A	N/A	4x320	N/A
	TF4, bits	N/A	N/A	N/A	8x320	N/A
	TF5, bits	N/A	N/A	N/A	16x320	N/A
	TF6, bits	N/A	N/A	N/A	32x320	N/A
	TF7, bits	N/A	N/A	N/A	48x320	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF6, TF0)
DL_TFC19	(TF1, TF0, TF0, TF6, TF0)
DL_TFC20	(TF2, TF1, TF1, TF6, TF0)
DL_TFC21	(TF0, TF0, TF0, TF7, TF0)
DL_TFC22	(TF1, TF0, TF0, TF7, TF0)
DL_TFC23	(TF2, TF1, TF1, TF7, TF0)
DL_TFC24	(TF0, TF0, TF0, TF0, TF1)
DL_TFC25	(TF1, TF0, TF0, TF0, TF1)
DL_TFC26	(TF2, TF1, TF1, TF0, TF1)
DL_TFC27	(TF0, TF0, TF0, TF1, TF1)
DL_TFC28	(TF1, TF0, TF0, TF1, TF1)
DL_TFC29	(TF2, TF1, TF1, TF1, TF1)
DL_TFC30	(TF0, TF0, TF0, TF2, TF1)
DL_TFC31	(TF1, TF0, TF0, TF2, TF1)
DL_TFC32	(TF2, TF1, TF1, TF2, TF1)
DL_TFC33	(TF0, TF0, TF0, TF3, TF1)
DL_TFC34	(TF1, TF0, TF0, TF3, TF1)
DL_TFC35	(TF2, TF1, TF1, TF3, TF1)
DL_TFC36	(TF0, TF0, TF0, TF4, TF1)
DL_TFC37	(TF1, TF0, TF0, TF4, TF1)
DL_TFC38	(TF2, TF1, TF1, TF4, TF1)
DL_TFC39	(TF0, TF0, TF0, TF5, TF1)
DL_TFC40	(TF1, TF0, TF0, TF5, TF1)
DL_TFC41	(TF2, TF1, TF1, TF5, TF1)
DL_TFC42	(TF0, TF0, TF0, TF6, TF1)
DL_TFC43	(TF1, TF0, TF0, TF6, TF1)
DL_TFC44	(TF2, TF1, TF1, TF6, TF1)
DL_TFC45	(TF0, TF0, TF0, TF7, TF1)
DL_TFC46	(TF1, TF0, TF0, TF7, TF1)
DL_TFC47	(TF2, TF1, TF1, TF7, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC24, DL_TFC25, UL_TFC0, UL_TFC6, UL_TFC7	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC24, DL_TFC26, UL_TFC0, UL_TFC6, UL_TFC8	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC24, DL_TFC27, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: No data RB6: No data RB7: No data RB8: 320 Note 2
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC24, DL_TFC28, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: 320 Note 2
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC24, DL_TFC29, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: 320 Note 2
6	DL_TFC6	UL_TFC3	DL_TFC0, DL_TFC24, DL_TFC30, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 1152	RB5: No data RB6: No data RB7: No data RB8: 640 Note 3
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC24, DL_TFC31, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 1152	RB5: 39 RB6: No data RB7: No data RB8: 640 Note 3
8	DL_TFC8	UL_TFC5	DL_TFC0, DL_TFC24, DL_TFC32, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 1152	RB5: 81 RB6: 103 RB7: 60 RB8: 640 Note 3
9	DL_TFC9	UL_TFC3	DL_TFC0, DL_TFC24, DL_TFC33, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 1728	RB5: No data RB6: No data RB7: No data RB8: 1280 Note 4
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC24, DL_TFC34, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 1728	RB5: 39 RB6: No data RB7: No data RB8: 1280 Note 4
11	DL_TFC11	UL_TFC5	DL_TFC0, DL_TFC24, DL_TFC35, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 1728	RB5: 81 RB6: 103 RB7: 60 RB8: 1280 Note 4
12	DL_TFC12	UL_TFC3	DL_TFC0, DL_TFC24, DL_TFC36, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 2880	RB5: No data RB6: No data RB7: No data RB8: 2560 Note 5
13	DL_TFC13	UL_TFC4	DL_TFC0, DL_TFC24, DL_TFC37, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 2880	RB5: 39 RB6: No data RB7: No data RB8: 2560 Note 5

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
14	DL_TFC14	UL_TFC5	DL_TFC0, DL_TFC24, DL_TFC38, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 2880	RB5: 81 RB6: 103 RB7: 60 RB8: 2560 Note 5
15	DL_TFC15	UL_TFC3	DL_TFC0, DL_TFC24, DL_TFC39, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 5184	RB5: No data RB6: No data RB7: No data RB8: 5120 Note 6
16	DL_TFC16	UL_TFC4	DL_TFC0, DL_TFC24, DL_TFC40, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 5184	RB5: 39 RB6: No data RB7: No data RB8: 5120 Note 6
17	DL_TFC17	UL_TFC5	DL_TFC0, DL_TFC24, DL_TFC41, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 5184	RB5: 81 RB6: 103 RB7: 60 RB8: 5120 Note 6
18	DL_TFC18	UL_TFC3	DL_TFC0, DL_TFC24, DL_TFC39, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 10368	RB5: No data RB6: No data RB7: No data RB8: 10240 Note 7
19	DL_TFC19	UL_TFC4	DL_TFC0, DL_TFC24, DL_TFC40, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 10368	RB5: 39 RB6: No data RB7: No data RB8: 10240 Note 7
20	DL_TFC20	UL_TFC5	DL_TFC0, DL_TFC24, DL_TFC41, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 10368	RB5: 81 RB6: 103 RB7: 60 RB8: 10240 Note 7
21	DL_TFC21	UL_TFC3	DL_TFC0, DL_TFC24, DL_TFC39, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 15552	RB5: No data RB6: No data RB7: No data RB8: 15360 Note 8
22	DL_TFC22	UL_TFC4	DL_TFC0, DL_TFC24, DL_TFC40, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 15552	RB5: 39 RB6: No data RB7: No data RB8: 15360 Note 8
23	DL_TFC23	UL_TFC5	DL_TFC0, DL_TFC24, DL_TFC41, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 15552	RB5: 81 RB6: 103 RB7: 60 RB8: 15360 Note 8

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 RB8: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return 1 RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.

Note 3 RB8: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return 2 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2.

Note 4 RB8: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return 3 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3.

Note 5 RB8: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return 5 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5.

Note 6 RB8: SS is using a DL RLC SDU size of 5120 bits as test data (=DL RLC PDU size for DL/TF5). UE will return 9 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, … ,RLC PDU#8 and the first 512 bits of RLC PDU#9.

Note 7 RB8: SS is using a DL RLC SDU size of 10240 bits as test data (=DL RLC PDU size for DL/TF6). UE will return 18 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, .., RLC PDU#17 and the first 448 bits of RLC PDU#18.

Note 8 RB8: SS is using a DL RLC SDU size of 15360 bits as test data (=DL RLC PDU size for DL/TF7). UE will return 27 RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, .., RLC PDU#26 and the first 384 bits of RLC PDU#27.

See 14.1.1 for test procedure.

14.2.48.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1, 4, 7, 10, 13, 16, 19 and 22: RB5/TF1 (1x39).
   - for sub-test 2, 5, 8, 11, 14, 17, 20 and 23: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
3. At step 15 the UE shall return
   - for sub-test 3, 6, 9, 12, 15, 18 and 21: no data on RB5, RB6 and RB7.
   - for sub-test 1, 4, 7, 10, 13, 16, 19 and 22: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 or RB7.
   - for sub-test 2, 5, 8, 11, 14, 17, 20 and 23: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by SS.
   - for sub-test 1 to 2: no data on RB8.
   - for sub-test 3 to 23: an RLC SDU on RB8 having the same content as sent by SS.

14.2.49 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.49.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI

14.2.49.1.1 Conformance requirement

See 14.2.4.1.

14.2.49.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.49 for the 20 ms TTI case.

14.2.49.1.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x640	0x148
	TF1, bits	1x39	1x103	1x60	2x640	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x640	0x148
	TF1, bits	1x39	1x103	1x60	2x640	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF0, TF0, TF1)
DL_TFC8	(TF2, TF1, TF1, TF0, TF1)
DL_TFC9	(TF0, TF0, TF0, TF1, TF1)
DL_TFC10	(TF1, TF0, TF0, TF1, TF1)
DL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, DL_TFC7, UL_TFC0, UL_TFC6, UL_TFC7	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 1280	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, DL_TFC8, UL_TFC0, UL_TFC6, UL_TFC8	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 1280	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, DL_TFC9, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 1280	RB5: No data RB6: No data RB7: No data RB8: 1280
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, DL_TFC10, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 1280	RB5: 39 RB6: No data RB7: No data RB8: 1280
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC6, DL_TFC11, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 1280	RB5: 81 RB6: 103 RB7: 60 RB8: 1280

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.49.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (2x640)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (2x640).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (2x640).
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
   - for sub-test 3: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
   - for sub-test 4: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
   - for sub-test 5: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.49.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI

14.2.49.2.1 Conformance requirement

See 14.2.4.1.

14.2.49.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.49 for the 40 ms TTI case.

14.2.49.2.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x640	0x148
	TF1, bits	1x39	1x103	1x60	4x640	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x640	0x148
	TF1, bits	1x39	1x103	1x60	4x640	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF0, TF0, TF1)
DL_TFC8	(TF2, TF1, TF1, TF0, TF1)
DL_TFC9	(TF0, TF0, TF0, TF1, TF1)
DL_TFC10	(TF1, TF0, TF0, TF1, TF1)
DL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, DL_TFC7, UL_TFC0, UL_TFC6, UL_TFC7	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 2560	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, DL_TFC8, UL_TFC0, UL_TFC6, UL_TFC8	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 2560	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, DL_TFC9, UL_TFC0, UL_TFC6, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 2560	RB5: No data RB6: No data RB7: No data RB8: 2560
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, DL_TFC10, UL_TFC0, UL_TFC6, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 2560	RB5: 39 RB6: No data RB7: No data RB8: 2560
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC6, DL_TFC11, UL_TFC0, UL_TFC6, UL_TFC11	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 2560	RB5: 81 RB6: 103 RB7: 60 RB8: 2560

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.49.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x39).
   - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
   - for sub-test 3: RB8/TF1 (4x640)
   - for sub-test 4: RB5/TF1 (1x39) and RB8/TF1 (2x640).
   - for sub-test 5: RB5/TF2 (1x81); RB6/TF1 (1x103); RB7/TF1 (1x60); and RB8/TF1 (4x640).

3. At step 15 the UE shall return

   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.

   - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.

   - for sub-test 3: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.

   - for sub-test 4: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.

   - for sub-test 5: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

14.2.50 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.50.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 20 ms TTI

14.2.50.1.1 Conformance requirement

See 14.2.4.1.

14.2.50.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.50 for the 20 ms TTI case.

14.2.50.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	RB6 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x640	0x148
	TF1, bits	2x640	2x640	1x148
	TF2, bits	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF0, TF1, TF0)
UL_TFC3	(TF1, TF1, TF0)
UL_TFC4	(TF0, TF0, TF1)
UL_TFC5	(TF1, TF0, TF1)
UL_TFC6	(TF0, TF1, TF1)
UL_TFC7	(TF1, TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	RB6 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x640	0x148
	TF1, bits	2x640	2x640	1x148
	TF2, bits	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF0, TF1, TF0)
DL_TFC3	(TF1, TF1, TF0)
DL_TFC4	(TF0, TF0, TF1)
DL_TFC5	(TF1, TF0, TF1)
DL_TFC6	(TF0, TF1, TF1)
DL_TFC7	(TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC4, DL_TFC5, UL_TFC0, UL_TFC4, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC4, UL_TFC5	RB5: 1280 RB6: 1280	RB5: 1280 RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC4, DL_TFC6, UL_TFC0, UL_TFC4, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC4, UL_TFC6	RB5: 1280 RB6: 1280	RB5: No data RB6: 1280
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC4, DL_TFC7, UL_TFC0, UL_TFC4, UL_TFC7	UL_TFC0, UL_TFC3, UL_TFC4, UL_TFC7	RB5: 1280 RB6: 1280	RB5: 1280 RB6: 1280

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.50.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (2x640).
   - for sub-test 2: RB6/TF1 (2x640).
   - for sub-test 3: RB5/TF1 (2x640); RB6/TF1 (2x640)
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.

- for sub-test 2: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
- for sub-test 3: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.50.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 40 ms TTI

14.2.50.2.1 Conformance requirement

See 14.2.4.1.

14.2.50.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.50 for the 40 ms TTI case.

14.2.50.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	RB6 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x640	0x148
	TF1, bits	4x640	4x640	1x148
	TF2, bits	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF0, TF1, TF0)
UL_TFC3	(TF1, TF1, TF0)
UL_TFC4	(TF0, TF0, TF1)
UL_TFC5	(TF1, TF0, TF1)
UL_TFC6	(TF0, TF1, TF1)
UL_TFC7	(TF1, TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	RB6 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x640	0x148
	TF1, bits	4x640	4x640	1x148
	TF2, bits	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF0, TF1, TF0)
DL_TFC3	(TF1, TF1, TF0)
DL_TFC4	(TF0, TF0, TF1)
DL_TFC5	(TF1, TF0, TF1)
DL_TFC6	(TF0, TF1, TF1)
DL_TFC7	(TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC4, DL_TFC5, UL_TFC0, UL_TFC4, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC4, UL_TFC5	RB5: 2560 RB6: 2560	RB5: 2560 RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC4, DL_TFC6, UL_TFC0, UL_TFC4, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC4, UL_TFC6	RB5: 2560 RB6: 2560	RB5: No data RB6: 2560
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC4, DL_TFC7, UL_TFC0, UL_TFC4, UL_TFC7	UL_TFC0, UL_TFC3, UL_TFC4, UL_TFC7	RB5: 2560 RB6: 2560	RB5: 2560 RB6: 2560

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.50.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (4x640).
   - for sub-test 2: RB6/TF1 (4x640).
   - for sub-test 3: RB5/TF1 (4x640); RB6/TF1 (4x640)
3. At step 15 the UE shall return
   - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
   - for sub-test 2: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
   - for sub-test 3: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.51 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.51.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:64 DL:64 kbps / PS RAB

14.2.51.1.1 Conformance requirement

See 14.2.4.1.

14.2.51.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.51 for the 20 ms TTI case.

14.2.51.1.3 Method of test

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC10, DL_TFC11, UL_TFC0, UL_TFC10, UL_TFC11	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 1280 RB6: 336	RB5: No data RB6: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC10, DL_TFC12, UL_TFC0, UL_TFC10, UL_TFC12	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 1280 RB6: 672	RB5: No data RB6: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC10, DL_TFC13, UL_TFC0, UL_TFC10, UL_TFC13	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 1280 RB6: 1008	RB5: No data RB6: 1008
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC10, DL_TFC14, UL_TFC0, UL_TFC10, UL_TFC14	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC14	RB5: 1280 RB6: 1344	RB5: No data RB6: 1344
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC10, DL_TFC15, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 1280 RB6: 336	RB5: 1280 RB6: No data
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC10, DL_TFC16, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 1280 RB6: 336	RB5: 1280 RB6: 336
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC10, DL_TFC17, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 1280 RB6: 672	RB5: 1280 RB6: 672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC10, DL_TFC18, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 1280 RB6: 1008	RB5: 1280 RB6: 1008
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC10, DL_TFC19, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 1280 RB6: 1344	RB5: 1280 RB6: 1344

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.51.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1 and 6: RB6/TF1 (1x336).
   - for sub-test 2 and 7: RB6/TF1 (2x336).
   - for sub-test 3 and 8: RB6/TF1 (3x336).
   - for sub-test 4 and 9: RB6/TF1 (4x336).
   - for sub-test 5, 6, 7, 8 and 9: RB5/TF1 (2x640)
3. At step 15 the UE shall return

- for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
- for sub-test 5: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
- for sub-test 6, 7, 8 and 9: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.51.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI + Interactive or background / UL:64 DL:64 kbps / PS RAB

14.2.51.2.1 Conformance requirement

See 14.2.4.1.

14.2.51.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.51 for the 40 ms TTI case.

14.2.51.2.3 Method of test

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC10, DL_TFC11, UL_TFC0, UL_TFC10, UL_TFC11	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 2560 RB6: 336	RB5: No data RB6: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC10, DL_TFC12, UL_TFC0, UL_TFC10, UL_TFC12	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 2560 RB6: 672	RB5: No data RB6: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC10, DL_TFC13, UL_TFC0, UL_TFC10, UL_TFC13	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 2560 RB6: 1008	RB5: No data RB6: 1008
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC10, DL_TFC14, UL_TFC0, UL_TFC10, UL_TFC14	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC14	RB5: 2560 RB6: 1344	RB5: No data RB6: 1344
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC10, DL_TFC15, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 2560 RB6: 336	RB5: 2560 RB6: No data
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC10, DL_TFC16, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 2560 RB6: 336	RB5: 2560 RB6: 336
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC10, DL_TFC17, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 2560 RB6: 672	RB5: 2560 RB6: 672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC10, DL_TFC18, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 2560 RB6: 1008	RB5: 2560 RB6: 1008
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC10, DL_TFC19, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 2560 RB6: 1344	RB5: 2560 RB6: 1344

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.51.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1 and 6: RB6/TF1 (1x336).
   - for sub-test 2 and 7: RB6/TF1 (2x336).
   - for sub-test 3 and 8: RB6/TF1 (3x336).
   - for sub-test 4 and 9: RB6/TF1 (4x336).
   - for sub-test 5, 6, 7, 8 and 9: RB5/TF1 (4x640)
3. At step 15 the UE shall return

- for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
- for sub-test 5: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
- for sub-test 6, 7, 8 and 9: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.52 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or background / UL:64 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.52.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:64 DL:128 kbps / PS RAB

14.2.52.1.1 Conformance requirement

See 14.2.4.1.

14.2.52.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.52 for the 20 ms TTI case.

14.2.52.1.3 Method of test

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC10, DL_TFC11, UL_TFC0, UL_TFC10, UL_TFC11	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 1280 RB6: 336	RB5: No data RB6: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC10, DL_TFC12, UL_TFC0, UL_TFC10, UL_TFC12	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 1280 RB6: 672	RB5: No data RB6: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC10, DL_TFC13, UL_TFC0, UL_TFC10, UL_TFC13	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 1280 RB6: 1344	RB5: No data RB6: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC10, DL_TFC14, UL_TFC0, UL_TFC10, UL_TFC14	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC14	RB5: 1280 RB6: 2688	RB5: No data RB6: 2688
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC10, DL_TFC15, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 1280 RB6: 336	RB5: 1280 RB6: No data
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC10, DL_TFC16, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 1280 RB6: 336	RB5: 1280 RB6: 336
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC10, DL_TFC17, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 1280 RB6: 672	RB5: 1280 RB6: 672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC10, DL_TFC18, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 1280 RB6: 1344	RB5: 1280 RB6: 1344
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC10, DL_TFC19, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 1280 RB6: 2688	RB5: 1280 RB6: 2688

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.52.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1 and 6: RB6/TF1 (1x336).
   - for sub-test 2 and 7: RB6/TF1 (2x336).
   - for sub-test 3 and 8: RB6/TF1 (3x336).
   - for sub-test 4 and 9: RB6/TF1 (4x336).
   - for sub-test 5, 6, 7, 8 and 9: RB5/TF1 (2x640)
3. At step 15 the UE shall return

- for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
- for sub-test 5: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
- for sub-test 6, 7, 8 and 9: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.52.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI + Interactive or background / UL:64 DL:128 kbps / PS RAB

14.2.52.2.1 Conformance requirement

See 14.2.4.1.

14.2.52.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.51 for the 40 ms TTI case.

14.2.52.2.3 Method of test

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC10, DL_TFC11, UL_TFC0, UL_TFC10, UL_TFC11	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 2560 RB6: 336	RB5: No data RB6: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC10, DL_TFC12, UL_TFC0, UL_TFC10, UL_TFC12	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 2560 RB6: 672	RB5: No data RB6: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC10, DL_TFC13, UL_TFC0, UL_TFC10, UL_TFC13	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 2560 RB6: 1344	RB5: No data RB6: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC10, DL_TFC14, UL_TFC0, UL_TFC10, UL_TFC14	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC14	RB5: 2560 RB6: 2688	RB5: No data RB6: 2688
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC10, DL_TFC15, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 2560 RB6: 336	RB5: 2560 RB6: No data
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC10, DL_TFC16, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 2560 RB6: 336	RB5: 2560 RB6: 336
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC10, DL_TFC17, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 2560 RB6: 672	RB5: 2560 RB6: 672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC10, DL_TFC18, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 2560 RB6: 1344	RB5: 2560 RB6: 1344
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC10, DL_TFC19, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 2560 RB6: 2688	RB5: 2560 RB6: 2688

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.52.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1 and 6: RB6/TF1 (1x336).
   - for sub-test 2 and 7: RB6/TF1 (2x336).
   - for sub-test 3 and 8: RB6/TF1 (3x336).
   - for sub-test 4 and 9: RB6/TF1 (4x336).
   - for sub-test 5, 6, 7, 8 and 9: RB5/TF1 (4x640)
3. At step 15 the UE shall return

- for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
- for sub-test 5: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
- for sub-test 6, 7, 8 and 9: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.53 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or background / UL:128 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.53.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:128 DL:128 kbps / PS RAB

14.2.53.1.1 Conformance requirement

See 14.2.4.1.

14.2.53.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.53 for the 20 ms TTI case.

14.2.53.1.3 Method of test

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC10, DL_TFC11, UL_TFC0, UL_TFC10, UL_TFC11	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 1280 RB6: 336	RB5: No data RB6: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC10, DL_TFC12, UL_TFC0, UL_TFC10, UL_TFC12	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 1280 RB6: 672	RB5: No data RB6: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC10, DL_TFC13, UL_TFC0, UL_TFC10, UL_TFC13	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 1280 RB6: 1344	RB5: No data RB6: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC10, DL_TFC14, UL_TFC0, UL_TFC10, UL_TFC14	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC14	RB5: 1280 RB6: 2688	RB5: No data RB6: 2688
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC10, DL_TFC15, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 1280 RB6: 336	RB5: 1280 RB6: No data
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC10, DL_TFC16, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 1280 RB6: 336	RB5: 1280 RB6: 336
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC10, DL_TFC17, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 1280 RB6: 672	RB5: 1280 RB6: 672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC10, DL_TFC18, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 1280 RB6: 1344	RB5: 1280 RB6: 1344
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC10, DL_TFC19, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 1280 RB6: 2688	RB5: 1280 RB6: 2688

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.53.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1 and 6: RB6/TF1 (1x336).
   - for sub-test 2 and 7: RB6/TF1 (2x336).
   - for sub-test 3 and 8: RB6/TF1 (4x336).
   - for sub-test 4 and 9: RB6/TF1 (8x336).
   - for sub-test 5, 6, 7, 8 and 9: RB5/TF1 (2x640)
3. At step 15 the UE shall return

- for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
- for sub-test 5: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
- for sub-test 6, 7, 8 and 9: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.53.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI + Interactive or background / UL:128 DL:128 kbps / PS RAB

14.2.53.2.1 Conformance requirement

See 14.2.4.1.

14.2.53.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.53 for the 40 ms TTI case.

14.2.53.2.3 Method of test

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC10, DL_TFC11, UL_TFC0, UL_TFC10, UL_TFC11	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 2560 RB6: 336	RB5: No data RB6: 336
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC10, DL_TFC12, UL_TFC0, UL_TFC10, UL_TFC12	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 2560 RB6: 672	RB5: No data RB6: 672
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC10, DL_TFC13, UL_TFC0, UL_TFC10, UL_TFC13	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 2560 RB6: 1344	RB5: No data RB6: 1344
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC10, DL_TFC14, UL_TFC0, UL_TFC10, UL_TFC14	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC14	RB5: 2560 RB6: 2688	RB5: No data RB6: 2688
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC10, DL_TFC15, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 2560 RB6: 336	RB5: 2560 RB6: No data
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC10, DL_TFC16, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 2560 RB6: 336	RB5: 2560 RB6: 336
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC10, DL_TFC17, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 2560 RB6: 672	RB5: 2560 RB6: 672
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC10, DL_TFC18, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 2560 RB6: 1344	RB5: 2560 RB6: 1344
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC10, DL_TFC19, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 2560 RB6: 2688	RB5: 2560 RB6: 2688

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

14.2.53.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1 and 6: RB6/TF1 (1x336).
   - for sub-test 2 and 7: RB6/TF1 (2x336).
   - for sub-test 3 and 8: RB6/TF1 (4x336).
   - for sub-test 4 and 9: RB6/TF1 (8x336).
   - for sub-test 5, 6, 7, 8 and 9: RB5/TF1 (4x640)
3. At step 15 the UE shall return

- for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
- for sub-test 5: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
- for sub-test 6, 7, 8 and 9: an RLC SDU on RB5 and RB6 having the same content as sent by SS.

14.2.54 Interactive or background / UL:64 DL:128 kbps / PS RAB + Streaming / unknown / UL:0 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.54.1 Conformance requirement

See 14.2.4.1.

14.2.54.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.54.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 64 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

14.2.54.3 Method of test

Uplink TFS:

	TFI	RB5 (I/B 64 kbps)	RB6 (Str. 14.4 kbps)	DCCH
TFS	TF0, bits	0x336	0x576	0x148
	TF1, bits	1x336	1x576	1x148
	TF2, bits	2x336	N/A	N/A
	TF3, bits	3x336	N/A	N/A
	TF4, bits	4x336	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF0, TF0)
UL_TFC3	(TF3, TF0, TF0)
UL_TFC4	(TF4, TF0, TF0)
UL_TFC5	(TF0, TF1, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF2, TF1, TF0)
UL_TFC8	(TF3, TF1, TF0)
UL_TFC9	(TF4, TF1, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF1, TF0, TF1)
UL_TFC12	(TF2, TF0, TF1)
UL_TFC13	(TF3, TF0, TF1)
UL_TFC14	(TF4, TF0, TF1)
UL_TFC15	(TF0, TF1, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF2, TF1, TF1)
UL_TFC18	(TF3, TF1, TF1)
UL_TFC19	(TF4, TF1, TF1)

Downlink TFS:

	TFI	RB5 (I/B 128 kbps)	RB6 (Str. 64 kbps)	DCCH
TFS	TF0, bits	0x336	0x320	0x148
	TF1, bits	1x336	1x320	1x148
	TF2, bits	2x336	2x320	N/A
	TF3, bits	4x336	4x320	N/A
	TF4, bits	8x336	8x320	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF0, TF0)
DL_TFC3	(TF3, TF0, TF0)
DL_TFC4	(TF4, TF0, TF0)
DL_TFC5	(TF0, TF1, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF2, TF1, TF0)
DL_TFC8	(TF3, TF1, TF0)
DL_TFC9	(TF4, TF1, TF0)
DL_TFC10	(TF0, TF2, TF0)
DL_TFC11	(TF1, TF2, TF0)
DL_TFC12	(TF2, TF2, TF0)
DL_TFC13	(TF3, TF2, TF0)
DL_TFC14	(TF4, TF2, TF0)
DL_TFC15	(TF0, TF3, TF0)
DL_TFC16	(TF1, TF3, TF0)
DL_TFC17	(TF2, TF3, TF0)
DL_TFC18	(TF3, TF3, TF0)
DL_TFC19	(TF4, TF3, TF0)
DL_TFC20	(TF0, TF4, TF0)
DL_TFC21	(TF1, TF4, TF0)
DL_TFC22	(TF2, TF4, TF0)
DL_TFC23	(TF3, TF4, TF0)
DL_TFC24	(TF4, TF4, TF0)
DL_TFC25	(TF0, TF0, TF1)
DL_TFC26	(TF1, TF0, TF1)
DL_TFC27	(TF2, TF0, TF1)
DL_TFC28	(TF3, TF0, TF1)
DL_TFC29	(TF4, TF0, TF1)
DL_TFC30	(TF0, TF1, TF1)
DL_TFC31	(TF1, TF1, TF1)
DL_TFC32	(TF2, TF1, TF1)
DL_TFC33	(TF3, TF1, TF1)
DL_TFC34	(TF4, TF1, TF1)
DL_TFC35	(TF0, TF2, TF1)
DL_TFC36	(TF1, TF2, TF1)
DL_TFC37	(TF2, TF2, TF1)
DL_TFC38	(TF3, TF2, TF1)
DL_TFC39	(TF4, TF2, TF1)
DL_TFC40	(TF0, TF3, TF1)
DL_TFC41	(TF1, TF3, TF1)
DL_TFC42	(TF2, TF3, TF1)
DL_TFC43	(TF3, TF3, TF1)
DL_TFC44	(TF4, TF3, TF1)
DL_TFC45	(TF0, TF4, TF1)
DL_TFC46	(TF1, TF4, TF1)
DL_TFC47	(TF2, TF4, TF1)
DL_TFC48	(TF3, TF4, TF1)
DL_TFC49	(TF4, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC25, DL_TFC26, UL_TFC0, UL_TFC10, UL_TFC11	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 336 RB6: 576	RB5: 336 RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC25, DL_TFC27, UL_TFC0, UL_TFC10, UL_TFC12	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 672 RB6: 576	RB5: 672 RB6: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC25, DL_TFC28, UL_TFC0, UL_TFC10, UL_TFC13	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 1344 RB6: 576	RB5: 1344 RB6: No data
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC25, DL_TFC29, UL_TFC0, UL_TFC10, UL_TFC14	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC14	RB5: 2688 RB6: 576	RB5: 2688 RB6: No data
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC25, DL_TFC30, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 336 RB6: 576	RB5: No data RB6: 320 Note 2
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC25, DL_TFC31, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 336 RB6: 576	RB5: 336 RB6: 320 Note 2
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC25, DL_TFC32, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 672 RB6: 576	RB5: 672 RB6: 320 Note 2
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC25, DL_TFC33, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 1344 RB6: 576	RB5: 1344 RB6: 320 Note 2
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC25, DL_TFC34, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 2688 RB6: 576	RB5: 2688 RB6: 320 Note 2
10	DL_TFC10	UL_TFC5	DL_TFC0, DL_TFC25, DL_TFC35, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 336 RB6: 1152	RB5: No data RB6: 640 Note 3
11	DL_TFC11	UL_TFC6	DL_TFC0, DL_TFC25, DL_TFC36, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 336 RB6: 1152	RB5: 336 RB6: 640 Note 3
12	DL_TFC12	UL_TFC7	DL_TFC0, DL_TFC25, DL_TFC37, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 672 RB6: 1152	RB5: 672 RB6: 640 Note 3
13	DL_TFC13	UL_TFC8	DL_TFC0, DL_TFC25, DL_TFC38, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 1344 RB6: 1152	RB5: 1344 RB6: 640 Note 3
14	DL_TFC14	UL_TFC9	DL_TFC0, DL_TFC25, DL_TFC39, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 2688 RB6: 1152	RB5: 2688 RB6: 640 Note 3
15	DL_TFC15	UL_TFC5	DL_TFC0, DL_TFC25, DL_TFC40, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 336 RB6: 1728	RB5: No data RB6: 1280 Note 4
16	DL_TFC16	UL_TFC6	DL_TFC0, DL_TFC25, DL_TFC41, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 336 RB6: 1728	RB5: 336 RB6: 1280 Note 4

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
17	DL_TFC17	UL_TFC7	DL_TFC0, DL_TFC25, DL_TFC42, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 672 RB6: 1728	RB5: 672 RB6: 1280 Note 4
18	DL_TFC18	UL_TFC8	DL_TFC0, DL_TFC25, DL_TFC43, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 1344 RB6: 1728	RB5: 1344 RB6: 1280 Note 4
19	DL_TFC19	UL_TFC9	DL_TFC0, DL_TFC25, DL_TFC44, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 2688 RB6: 1728	RB5: 2688 RB6: 1280 Note 4
20	DL_TFC20	UL_TFC5	DL_TFC0, DL_TFC25, DL_TFC45, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 336 RB6: 2880	RB5: No data RB6: 2560 Note 5
21	DL_TFC21	UL_TFC6	DL_TFC0, DL_TFC25, DL_TFC46, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 336 RB6: 2880	RB5: 336 RB6: 2560 Note 5
22	DL_TFC22	UL_TFC7	DL_TFC0, DL_TFC25, DL_TFC47, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 672 RB6: 2880	RB5: 672 RB6: 2560 Note 5
23	DL_TFC23	UL_TFC8	DL_TFC0, DL_TFC25, DL_TFC48, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 1344 RB6: 2880	RB5: 1344 RB6: 2560 Note 5
24	DL_TFC24	UL_TFC9	DL_TFC0, DL_TFC25, DL_TFC49, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 2688 RB6: 2880	RB5: 2688 RB6: 2560 Note 5

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 RB6: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return one RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.

Note 3 RB6: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return two RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2.

Note 4 RB6: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return three RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3.

Note 5 RB6: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return five RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5.

See 14.1.1 for test procedure.

14.2.54.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be

- for sub-test 1, 6, 11, 16 and 21: RB5/TF1 (1x336).
- for sub-test 2, 7, 12, 17 and 22: RB5/TF1 (2x336).
- for sub-test 3, 8, 13, 18 and 23: RB5/TF1 (3x336).
- for sub-test 4, 9, 14, 19 and 24: RB5/TF1 (4x336).

3. At step 15 the UE shall return
   - for sub-test 1, 2, 3, 4, 6, 7, 8, 9, 11, 12, 13, 14, 16, 17, 18, 19, 21, 22, 23 and 24: an RLC SDU on RB5 having the same content as sent by SS.
   - for sub-test 5, 10, 15 and 20: no data shall be received on RB5.
   - for sub-test 1, 2, 3 and 4: no data shall be received on RB6.
   - for sub-test 5 to 24: an RLC SDU on RB6 having the same content as sent by SS.

14.2.55 Interactive or background / UL:64 DL:128 kbps / PS RAB + Streaming / unknown / UL:0 DL:128 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.55.1 Conformance requirement

See 14.2.4.1.

14.2.55.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.55.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 64 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

14.2.55.3 Method of test

Uplink TFS:

	TFI	RB5 (I/B 64 kbps)	RB6 (Str. 14.4 kbps)	DCCH
TFS	TF0, bits	0x336	0x576	0x148
	TF1, bits	1x336	1x576	1x148
	TF2, bits	2x336	N/A	N/A
	TF3, bits	3x336	N/A	N/A
	TF4, bits	4x336	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF0, TF0)
UL_TFC3	(TF3, TF0, TF0)
UL_TFC4	(TF4, TF0, TF0)
UL_TFC5	(TF0, TF1, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF2, TF1, TF0)
UL_TFC8	(TF3, TF1, TF0)
UL_TFC9	(TF4, TF1, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF1, TF0, TF1)
UL_TFC12	(TF2, TF0, TF1)
UL_TFC13	(TF3, TF0, TF1)
UL_TFC14	(TF4, TF0, TF1)
UL_TFC15	(TF0, TF1, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF2, TF1, TF1)
UL_TFC18	(TF3, TF1, TF1)
UL_TFC19	(TF4, TF1, TF1)

Downlink TFS:

	TFI	RB5 (I/B 128 kbps)	RB6 (Str. 128 kbps)	DCCH
TFS	TF0, bits	0x336	0x320	0x148
	TF1, bits	1x336	1x320	1x148
	TF2, bits	2x336	2x320	N/A
	TF3, bits	4x336	4x320	N/A
	TF4, bits	8x336	8x320	N/A
	TF5, bits	N/A	16x320	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF0, TF0)
DL_TFC3	(TF3, TF0, TF0)
DL_TFC4	(TF4, TF0, TF0)
DL_TFC5	(TF0, TF1, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF2, TF1, TF0)
DL_TFC8	(TF3, TF1, TF0)
DL_TFC9	(TF4, TF1, TF0)
DL_TFC10	(TF0, TF2, TF0)
DL_TFC11	(TF1, TF2, TF0)
DL_TFC12	(TF2, TF2, TF0)
DL_TFC13	(TF3, TF2, TF0)
DL_TFC14	(TF4, TF2, TF0)
DL_TFC15	(TF0, TF3, TF0)
DL_TFC16	(TF1, TF3, TF0)
DL_TFC17	(TF2, TF3, TF0)
DL_TFC18	(TF3, TF3, TF0)
DL_TFC19	(TF4, TF3, TF0)
DL_TFC20	(TF0, TF4, TF0)
DL_TFC21	(TF1, TF4, TF0)
DL_TFC22	(TF2, TF4, TF0)
DL_TFC23	(TF3, TF4, TF0)
DL_TFC24	(TF4, TF4, TF0)
DL_TFC25	(TF0, TF5, TF0)
DL_TFC26	(TF1, TF5, TF0)
DL_TFC27	(TF2, TF5, TF0)
DL_TFC28	(TF3, TF5, TF0)
DL_TFC29	(TF4, TF5, TF0)
DL_TFC30	(TF0, TF0, TF1)
DL_TFC31	(TF1, TF0, TF1)
DL_TFC32	(TF2, TF0, TF1)
DL_TFC33	(TF3, TF0, TF1)
DL_TFC34	(TF4, TF0, TF1)
DL_TFC35	(TF0, TF1, TF1)
DL_TFC36	(TF1, TF1, TF1)
DL_TFC37	(TF2, TF1, TF1)
DL_TFC38	(TF3, TF1, TF1)
DL_TFC39	(TF4, TF1, TF1)
DL_TFC40	(TF0, TF2, TF1)
DL_TFC41	(TF1, TF2, TF1)
DL_TFC42	(TF2, TF2, TF1)
DL_TFC43	(TF3, TF2, TF1)
DL_TFC44	(TF4, TF2, TF1)
DL_TFC45	(TF0, TF3, TF1)
DL_TFC46	(TF1, TF3, TF1)
DL_TFC47	(TF2, TF3, TF1)
DL_TFC48	(TF3, TF3, TF1)
DL_TFC49	(TF4, TF3, TF1)
DL_TFC50	(TF0, TF4, TF1)
DL_TFC51	(TF1, TF4, TF1)
DL_TFC52	(TF2, TF4, TF1)
DL_TFC53	(TF3, TF4, TF1)
DL_TFC54	(TF4, TF4, TF1)
DL_TFC55	(TF0, TF5, TF1)
DL_TFC56	(TF1, TF5, TF1)
DL_TFC57	(TF2, TF5, TF1)
DL_TFC58	(TF3, TF5, TF1)
DL_TFC59	(TF4, TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC30, DL_TFC31, UL_TFC0, UL_TFC10, UL_TFC11	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 336 RB6: 576	RB5: 336 RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC30, DL_TFC32, UL_TFC0, UL_TFC10, UL_TFC12	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 672 RB6: 576	RB5: 672 RB6: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC30, DL_TFC33, UL_TFC0, UL_TFC10, UL_TFC13	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 1344 RB6: 576	RB5: 1344 RB6: No data
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC30, DL_TFC34, UL_TFC0, UL_TFC10, UL_TFC14	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC14	RB5: 2688 RB6: 576	RB5: 2688 RB6: No data
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC30, DL_TFC35, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 336 RB6: 576	RB5: No data RB6: 320 Note 2
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC30, DL_TFC36, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 336 RB6: 576	RB5: 336 RB6: 320 Note 2
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC30, DL_TFC37, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 672 RB6: 576	RB5: 672 RB6: 320 Note 2
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC30, DL_TFC38, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 1344 RB6: 576	RB5: 1344 RB6: 320 Note 2
9	DL_TFC9	UL_TFC9	DL_TFC0, DL_TFC30, DL_TFC39, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 2688 RB6: 576	RB5: 2688 RB6: 320 Note 2
10	DL_TFC10	UL_TFC5	DL_TFC0, DL_TFC30, DL_TFC40, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 336 RB6: 1152	RB5: No data RB6: 640 Note 3
11	DL_TFC11	UL_TFC6	DL_TFC0, DL_TFC30, DL_TFC41, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 336 RB6: 1152	RB5: 336 RB6: 640 Note 3
12	DL_TFC12	UL_TFC7	DL_TFC0, DL_TFC30, DL_TFC42, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 672 RB6: 1152	RB5: 672 RB6: 640 Note 3
13	DL_TFC13	UL_TFC8	DL_TFC0, DL_TFC30, DL_TFC43, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 1344 RB6: 1152	RB5: 1344 RB6: 640 Note 3
14	DL_TFC14	UL_TFC9	DL_TFC0, DL_TFC30, DL_TFC44, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 2688 RB6: 1152	RB5: 2688 RB6: 640 Note 3
15	DL_TFC15	UL_TFC5	DL_TFC0, DL_TFC30, DL_TFC45, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 336 RB6: 1728	RB5: No data RB6: 1280 Note 4
16	DL_TFC16	UL_TFC6	DL_TFC0, DL_TFC30, DL_TFC46, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 336 RB6: 1728	RB5: 336 RB6: 1280 Note 4

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
17	DL_TFC17	UL_TFC7	DL_TFC0, DL_TFC30, DL_TFC47, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 672 RB6: 1728	RB5: 672 RB6: 1280 Note 4
18	DL_TFC18	UL_TFC8	DL_TFC0, DL_TFC30, DL_TFC48, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 1344 RB6: 1728	RB5: 1344 RB6: 1280 Note 4
19	DL_TFC19	UL_TFC9	DL_TFC0, DL_TFC30, DL_TFC49, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 2688 RB6: 1728	RB5: 2688 RB6: 1280 Note 4
20	DL_TFC20	UL_TFC5	DL_TFC0, DL_TFC30, DL_TFC50, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 336 RB6: 2880	RB5: No data RB6: 2560 Note 5
21	DL_TFC21	UL_TFC6	DL_TFC0, DL_TFC30, DL_TFC51, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 336 RB6: 2880	RB5: 336 RB6: 2560 Note 5
22	DL_TFC22	UL_TFC7	DL_TFC0, DL_TFC30, DL_TFC52, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 672 RB6: 2880	RB5: 672 RB6: 2560 Note 5
23	DL_TFC23	UL_TFC8	DL_TFC0, DL_TFC30, DL_TFC53, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 1344 RB6: 2880	RB5: 1344 RB6: 2560 Note 5
24	DL_TFC24	UL_TFC9	DL_TFC0, DL_TFC30, DL_TFC54, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 2688 RB6: 2880	RB5: 2688 RB6: 2560 Note 5
25	DL_TFC20	UL_TFC5	DL_TFC0, DL_TFC30, DL_TFC55, UL_TFC0, UL_TFC10, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC15	RB5: 336 RB6: 5184	RB5: No data RB6: 5120 Note 6
26	DL_TFC21	UL_TFC6	DL_TFC0, DL_TFC30, DL_TFC56, UL_TFC0, UL_TFC10, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC16	RB5: 336 RB6: 5184	RB5: 336 RB6: 5120 Note 6
27	DL_TFC22	UL_TFC7	DL_TFC0, DL_TFC30, DL_TFC57, UL_TFC0, UL_TFC10, UL_TFC17	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC17	RB5: 672 RB6: 5184	RB5: 672 RB6: 5120 Note 6
28	DL_TFC23	UL_TFC8	DL_TFC0, DL_TFC30, DL_TFC58, UL_TFC0, UL_TFC10, UL_TFC18	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC18	RB5: 1344 RB6: 5184	RB5: 1344 RB6: 5120 Note 6
29	DL_TFC24	UL_TFC9	DL_TFC0, DL_TFC30, DL_TFC59, UL_TFC0, UL_TFC10, UL_TFC19	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC19	RB5: 2688 RB6: 5184	RB5: 2688 RB6: 5120 Note 6

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 RB6: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return one RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.

Note 3 RB6: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return two RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 64 bits of RLC PDU#2.

Note 4 RB6: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return three RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 128 bits of RLC PDU#3.

Note 5 RB6: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return five RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 256 bits of RLC PDU#5.

Note 6 RB6: SS is using a DL RLC SDU size of 5120 bits as test data (=DL RLC PDU size for DL/TF5). UE will return nine RLC PDUs. SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, .., RLC PDU#8 and the first 512 bits of RLC PDU#9.

See 14.1.1 for test procedure.

14.2.55.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1, 6, 11, 16, 21 and 26: RB5/TF1 (1x336).
   - for sub-test 2, 7, 12, 17, 22 and 27: RB5/TF1 (2x336).
   - for sub-test 3, 8, 13, 18, 23 and 28: RB5/TF1 (3x336).
   - for sub-test 4, 9, 14, 19, 24 and 29: RB5/TF1 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1, 2, 3, 4, 6, 7, 8, 9, 11, 12, 13, 14, 16, 17, 18, 19, 21, 22, 23, 24, 26, 27, 28 and 29: an RLC SDU on RB5 having the same content as sent by SS.
   - for sub-test 5, 10, 15, 20 and 25: no data shall be received on RB5.
   - for sub-test 1, 2, 3 and 4: no data shall be received on RB6.
   - for sub-test 5 to 29: an RLC SDU on RB6 having the same content as sent by SS.

14.3 Combinations on PDSCH and DPCH

14.3.1 Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.3.1.1 Interactive or background / UL:64 DL:256 kbps / PS RAB / 10 ms TTI

14.3.1.1.1 Conformance requirement

See 14.2.4.1.

14.3.1.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.1 for the downlink 10 ms TTI case.

14.3.1.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	TFI	RB5 (256 kbps)
TFS	DSCH_TF0, bits	0x354
	DSCH_TF1, bits	1x354
	DSCH_TF2, bits	2x354
	DSCH_TF3, bits	4x354
	DSCH_TF4, bits	8x354

DSCH downlink TFCS:

TFCI	RB5
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4

DCH downlink TFS:

	TFI	DCCH
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

TFCI	DCCH
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 354	RB5: 354 Note 2
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 708	RB5: 708 Note 3
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1416	RB5: 1416 Note 4
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2832	RB5: 2832 Note 5

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 SS is using a DL RLC SDU with 354 bits as test data (=DL RLC PDU size for DL/DSCH_TF1). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 18 bits of RLC PDU#2.

Note 3 SS is using a DL RLC SDU size of 708 bits as test data (=DL RLC PDU size for DL/DSCH_TF2). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 36 bits of RLC PDU#2.

Note 4 SS is using a DL RLC SDU size of 1416 bits as test data (=DL RLC PDU size for DL/DSCH_TF3). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 408 bits of RLC PDU#2.

Note 5 SS is using a DL RLC SDU size of 2832 bits as test data (=DL RLC PDU size for DL/DSCH_TF4). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 144 bits of RLC PDU#3.

See 14.1.1 for test procedure.

14.3.1.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.3.1.2 Interactive or background / UL:64 DL:256 kbps / PS RAB / 20 ms TTI

14.3.1.2.1 Conformance requirement

See 14.2.4.1.

14.3.1.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.1 for the downlink 20 ms TTI case.

14.3.1.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	TFI	RB5 (256 kbps)
TFS	DSCH_TF0, bits	0x354
	DSCH_TF1, bits	1x354
	DSCH_TF2, bits	2x354
	DSCH_TF3, bits	4x354
	DSCH_TF4, bits	8x354
	DSCH_TF5, bits	12x354
	DSCH_TF6, bits	16x354

DSCH downlink TFCS:

TFCI	RB5
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5
DL_DSCH_TFC6	DSCH_TF6

DCH downlink TFS:

	TFI	DCCH
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

TFCI	DCCH
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 354	RB5: 354 Note 2
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 708	RB5: 708 Note 3
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1416	RB5: 1416 Note 4
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2832	RB5: 2832 Note 5
5	DL_DSCH_TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 4248	RB5: 4248 Note 6
6	DL_DSCH_TFC6	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5664	RB5: 5664 Note 7

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 SS is using a DL RLC SDU with 354 bits as test data (=DL RLC PDU size for DL/DSCH_TF1). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 18 bits of RLC PDU#2.

Note 3 SS is using a DL RLC SDU size of 708 bits as test data (=DL RLC PDU size for DL/DSCH_TF2). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 36 bits of RLC PDU#2.

Note 4 SS is using a DL RLC SDU size of 1416 bits as test data (=DL RLC PDU size for DL/DSCH_TF3). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 408 bits of RLC PDU#2.

Note 5 SS is using a DL RLC SDU size of 2832 bits as test data (=DL RLC PDU size for DL/DSCH_TF4). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 144 bits of RLC PDU#3.

Note 6 SS is using a DL RLC SDU size of 4248 bits as test data (=DL RLC PDU size for DL/DSCH_TF5). UE will return four RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3 and the first 216 bits of RLC PDU#4.

Note 7 SS is using a DL RLC SDU size of 5664 bits as test data (=DL RLC PDU size for DL/DSCH_TF6). UE will return five RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3, RLC PDU#4 and the first 288 bits of RLC PDU#5.

See 14.1.1 for test procedure.

14.3.1.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4, 5 and 6: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 6: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.3.2 Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.3.2.1 Interactive or background / UL:64 DL:384 kbps / PS RAB / 10 ms TTI

14.3.2.1.1 Conformance requirement

See 14.2.4.1.

14.3.2.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.2 for the downlink 10 ms TTI case.

14.3.2.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	TFI	RB5 (384 kbps)
TFS	DSCH_TF0, bits	0x354
	DSCH_TF1, bits	1x354
	DSCH_TF2, bits	2x354
	DSCH_TF3, bits	4x354
	DSCH_TF4, bits	8x354
	DSCH_TF5, bits	12x354

DSCH downlink TFCS:

TFCI	RB5
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5

DCH downlink TFS:

	TFI	DCCH
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

TFCI	DCCH
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 354	RB5: 354 Note 2
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 708	RB5: 708 Note 3
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1416	RB5: 1416 Note 4
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2832	RB5: 2832 Note 5
5	DL_DSCH_TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 4248	RB5: 4248 Note 6

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 SS is using a DL RLC SDU with 354 bits as test data (=DL RLC PDU size for DL/DSCH_TF1). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 18 bits of RLC PDU#2.

Note 3 SS is using a DL RLC SDU size of 708 bits as test data (=DL RLC PDU size for DL/DSCH_TF2). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 36 bits of RLC PDU#2.

Note 4 SS is using a DL RLC SDU size of 1416 bits as test data (=DL RLC PDU size for DL/DSCH_TF3). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 408 bits of RLC PDU#2.

Note 5 SS is using a DL RLC SDU size of 2832 bits as test data (=DL RLC PDU size for DL/DSCH_TF4). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 144 bits of RLC PDU#3.

Note 6 SS is using a DL RLC SDU size of 4248 bits as test data (=DL RLC PDU size for DL/DSCH_TF5). UE will return four RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3 and the first 216 bits of RLC PDU#4.

See 14.1.1 for test procedure.

14.3.2.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).

- for sub-test 4, 5 and 6: RB5/TF4 (4x336).

3. At step 15 the UE shall return

   - for sub-test 1 to 6: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.3.2.2 Interactive or background / UL:64 DL:384 kbps / PS RAB / 20 ms TTI

14.3.2.2.1 Conformance requirement

See 14.2.4.1.

14.3.2.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.2 for the downlink 20 ms TTI case.

14.3.2.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	TFI	RB5 (384 kbps)
TFS	DSCH_TF0, bits	0x354
	DSCH_TF1, bits	1x354
	DSCH_TF2, bits	2x354
	DSCH_TF3, bits	4x354
	DSCH_TF4, bits	8x354
	DSCH_TF5, bits	12x354
	DSCH_TF6, bits	16x354
	DSCH_TF7, bits	20x354
	DSCH_TF8, bits	24x354

DSCH downlink TFCS:

TFCI	RB5
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5
DL_DSCH_TFC6	DSCH_TF6
DL_DSCH_TFC7	DSCH_TF7
DL_DSCH_TFC8	DSCH_TF8

DCH downlink TFS:

	TFI	DCCH
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

TFCI	DCCH
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 354	RB5: 354 Note 2
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 708	RB5: 708 Note 3
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1416	RB5: 1416 Note 4
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2832	RB5: 2832 Note 5
5	DL_DSCH_TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 4248	RB5: 4248 Note 6
6	DL_DSCH_TFC6	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5664	RB5: 5664 Note 7
7	DL_DSCH_TFC7	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7080	RB5: 7080 Note 8
8	DL_DSCH_TFC8	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 8496	RB5: 8496 Note 9

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 SS is using a DL RLC SDU with 354 bits as test data (=DL RLC PDU size for DL/DSCH_TF1). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 18 bits of RLC PDU#2.

Note 3 SS is using a DL RLC SDU size of 708 bits as test data (=DL RLC PDU size for DL/DSCH_TF2). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 36 bits of RLC PDU#2.

Note 4 SS is using a DL RLC SDU size of 1416 bits as test data (=DL RLC PDU size for DL/DSCH_TF3). UE will return two RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 and the first 408 bits of RLC PDU#2.

Note 5 SS is using a DL RLC SDU size of 2832 bits as test data (=DL RLC PDU size for DL/DSCH_TF4). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2 and the first 144 bits of RLC PDU#3.

Note 6 SS is using a DL RLC SDU size of 4248 bits as test data (=DL RLC PDU size for DL/DSCH_TF5). UE will return four RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC PDU#2, RLC PDU#3 and the first 216 bits of RLC PDU#4.

Note 7 SS is using a DL RLC SDU size of 4248 bits as test data (=DL RLC PDU size for DL/DSCH_TF6). UE will return five RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#4 and the first 288 bits of RLC PDU#5.

Note 8 SS is using a DL RLC SDU size of 4248 bits as test data (=DL RLC PDU size for DL/DSCH_TF7). UE will return six RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#5 and the first 360 bits of RLC PDU#6.

Note 9 SS is using a DL RLC SDU size of 4248 bits as test data (=DL RLC PDU size for DL/DSCH_TF8). UE will return seven RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#6 and the first 432 bits of RLC PDU#7.

See 14.1.1 for test procedure.

14.3.2.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4, 5, 6, 7 and 8: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 8: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.3.3 Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.3.3.1 Interactive or background / UL:64 DL:2048 kbps / PS RAB / 10 ms TTI

14.3.3.1.1 Conformance requirement

See 14.2.4.1.

14.3.3.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.3 for the downlink 10 ms TTI case.

14.3.3.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	TFI	RB5 (384 kbps)
TFS	DSCH_TF0, bits	0x674
	DSCH_TF1, bits	1x674
	DSCH_TF2, bits	2x674
	DSCH_TF3, bits	4x674
	DSCH_TF4, bits	8x674
	DSCH_TF5, bits	12x674
	DSCH_TF6, bits	16x674
	DSCH_TF7, bits	20x674
	DSCH_TF8, bits	24x674
	DSCH_TF9, bits	28x674
	DSCH_TF10, bits	32x674

DSCH downlink TFCS:

TFCI	RB5
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5
DL_DSCH_TFC6	DSCH_TF6
DL_DSCH_TFC7	DSCH_TF7
DL_DSCH_TFC8	DSCH_TF8
DL_DSCH_TFC9	DSCH_TF9
DL_DSCH_TFC10	DSCH_TF10

DCH downlink TFS:

	TFI	DCCH
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

TFCI	DCCH
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 674	RB5: 674 Note 2
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1348	RB5: 1348 Note 3
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2696	RB5: 2696 Note 4
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5392	RB5: 5392 Note 5
5	DL_DSCH_TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 8088	RB5: 8088 Note 6
6	DL_DSCH_TFC6	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10784	RB5: 10784 Note 7
7	DL_DSCH_TFC7	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 13480	RB5: 13480 Note 8
8	DL_DSCH_TFC8	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 16176	RB5: 16176 Note 9
9	DL_DSCH_TFC9	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 18872	RB5: 18872 Note 10
10	DL_DSCH_TFC10	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 21568	RB5: 21568 Note 11

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 SS is using a DL RLC SDU with 674 bits as test data (=DL RLC PDU size for DL/DSCH_TF1). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC SDU#2 and the first 2 bits of RLC PDU#3.

Note 3 SS is using a DL RLC SDU size of 1348 bits as test data (=DL RLC PDU size for DL/DSCH_TF2). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC SDU#2 and the first 4 bits of RLC PDU#3.

Note 4 SS is using a DL RLC SDU size of 2696 bits as test data (=DL RLC PDU size for DL/DSCH_TF3). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC SDU#2 and the first 680 bits of RLC PDU#3.

Note 5 SS is using a DL RLC SDU size of 5392 bits as test data (=DL RLC PDU size for DL/DSCH_TF4). UE will return five RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#4 and the first 16 bits of RLC PDU#5.

Note 6 SS is using a DL RLC SDU size of 8088 bits as test data (=DL RLC PDU size for DL/DSCH_TF5). UE will return seven RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#6 and the first 24 bits of RLC PDU#7.

Note 7 SS is using a DL RLC SDU size of 10784 bits as test data (=DL RLC PDU size for DL/DSCH_TF6). UE will return nine RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#8 and the first 32 bits of RLC PDU#9.

Note 8 SS is using a DL RLC SDU size of 13480 bits as test data (=DL RLC PDU size for DL/DSCH_TF7). UE will return eleven RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#10 and the first 40 bits of RLC PDU#11.

Note 9 SS is using a DL RLC SDU size of 16176 bits as test data (=DL RLC PDU size for DL/DSCH_TF8). UE will return thirteen RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#12 and the first 48 bits of RLC PDU#13.

Note 10 SS is using a DL RLC SDU size of 18872 bits as test data (=DL RLC PDU size for DL/DSCH_TF9). UE will return fifteen RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#14 and the first 56 bits of RLC PDU#15.

Note 11 SS is using a DL RLC SDU size of 21568 bits as test data (=DL RLC PDU size for DL/DSCH_TF10). UE will return seventeen RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#16 and the first 64 bits of RLC PDU#17.

See 14.1.1 for test procedure.

14.3.3.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4, 5, 6, 7, 8, 9 and 10: RB5/TF4 (4x336).
3. At step 15 the UE shall return
   - for sub-test 1 to 10: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.3.3.2 Interactive or background / UL:64 DL:2048 kbps / PS RAB / 20 ms TTI

14.3.3.2.1 Conformance requirement

See 14.2.4.1.

14.3.3.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.3 for the downlink 20 ms TTI case.

14.3.3.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	TFI	RB5 (384 kbps)
TFS	DSCH_TF0, bits	0x674
	DSCH_TF1, bits	1x674
	DSCH_TF2, bits	2x674
	DSCH_TF3, bits	4x674
	DSCH_TF4, bits	8x674
	DSCH_TF5, bits	12x674
	DSCH_TF6, bits	16x674
	DSCH_TF7, bits	20x674
	DSCH_TF8, bits	24x674
	DSCH_TF9, bits	28x674
	DSCH_TF10, bits	32x674
	DSCH_TF11, bits	36x674
	DSCH_TF12, bits	40x674
	DSCH_TF13, bits	44x674
	DSCH_TF14, bits	48x674
	DSCH_TF15, bits	52x674
	DSCH_TF16, bits	56x674
	DSCH_TF17, bits	60x674
	DSCH_TF18, bits	64x674

DSCH downlink TFCS:

TFCI	RB5
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5
DL_DSCH_TFC6	DSCH_TF6
DL_DSCH_TFC7	DSCH_TF7
DL_DSCH_TFC8	DSCH_TF8
DL_DSCH_TFC9	DSCH_TF9
DL_DSCH_TFC10	DSCH_TF10
DL_DSCH_TFC11	DSCH_TF11
DL_DSCH_TFC12	DSCH_TF12
DL_DSCH_TFC13	DSCH_TF13
DL_DSCH_TFC14	DSCH_TF14
DL_DSCH_TFC15	DSCH_TF15
DL_DSCH_TFC16	DSCH_TF16
DL_DSCH_TFC17	DSCH_TF17
DL_DSCH_TFC18	DSCH_TF18

DCH downlink TFS:

	TFI	DCCH
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

TFCI	DCCH
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 674	RB5: 674 Note 2
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1348	RB5: 1348 Note 3
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC8	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2696	RB5: 2696 Note 4
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5392	RB5: 5392 Note 5
5	DL_DSCH_TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 8088	RB5: 8088 Note 6
6	DL_DSCH_TFC6	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10784	RB5: 10784 Note 7
7	DL_DSCH_TFC7	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 13480	RB5: 13480 Note 8
8	DL_DSCH_TFC8	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 16176	RB5: 16176 Note 9
9	DL_DSCH_TFC9	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 18872	RB5: 18872 Note 10
10	DL_DSCH_TFC10	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 21568	RB5: 21568 Note 11
11	DL_DSCH_TFC11	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 24264	RB5: 24264 Note 12
12	DL_DSCH_TFC12	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 26960	RB5: 26960 Note 13
13	DL_DSCH_TFC13	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 29656	RB5: 29656 Note 14
14	DL_DSCH_TFC14	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 32352	RB5: 32352 Note 15
15	DL_DSCH_TFC15	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 35048	RB5: 35048 Note 16
16	DL_DSCH_TFC16	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 37744	RB5: 37744 Note 17

17	DL_DSCH_ TFC17	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 40440	RB5: 40440 Note 18
18	DL_DSCH_ TFC18	UL_TFC4	DL_DSCH_TFC0, DL_DSC_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 43136	RB5: 43136 Note 19

Note 1 See [10] TS 34.109 clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

Note 2 SS is using a DL RLC SDU with 674 bits as test data (=DL RLC PDU size for DL/DSCH_TF1). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC SDU#2 and the first 2 bits of RLC PDU#3.

Note 3 SS is using a DL RLC SDU size of 1348 bits as test data (=DL RLC PDU size for DL/DSCH_TF2). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC SDU#2 and the first 4 bits of RLC PDU#3.

Note 4 SS is using a DL RLC SDU size of 2696 bits as test data (=DL RLC PDU size for DL/DSCH_TF3). UE will return three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1, RLC SDU#2 and the first 680 bits of RLC PDU#3.

Note 5 SS is using a DL RLC SDU size of 5392 bits as test data (=DL RLC PDU size for DL/DSCH_TF4). UE will return five RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#4 and the first 16 bits of RLC PDU#5.

Note 6 SS is using a DL RLC SDU size of 8088 bits as test data (=DL RLC PDU size for DL/DSCH_TF5). UE will return seven RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#6 and the first 24 bits of RLC PDU#7.

Note 7 SS is using a DL RLC SDU size of 10784 bits as test data (=DL RLC PDU size for DL/DSCH_TF6). UE will return nine RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#8 and the first 32 bits of RLC PDU#9.

Note 8 SS is using a DL RLC SDU size of 13480 bits as test data (=DL RLC PDU size for DL/DSCH_TF7). UE will return eleven RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#10 and the first 40 bits of RLC PDU#11.

Note 9 SS is using a DL RLC SDU size of 16176 bits as test data (=DL RLC PDU size for DL/DSCH_TF8). UE will return thirteen RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#12 and the first 48 bits of RLC PDU#13.

Note 10 SS is using a DL RLC SDU size of 18872 bits as test data (=DL RLC PDU size for DL/DSCH_TF9). UE will return fifteen RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#14 and the first 56 bits of RLC PDU#15.

Note 11 SS is using a DL RLC SDU size of 21568 bits as test data (=DL RLC PDU size for DL/DSCH_TF10). UE will return seventeen RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#16 and the first 64 bits of RLC PDU#17.

Note 12 SS is using a DL RLC SDU size of 24264 bits as test data (=DL RLC PDU size for DL/DSCH_TF11). UE will return nineteen RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#18 and the first 72 bits of RLC PDU#19.

Note 13 SS is using a DL RLC SDU size of 26960 bits as test data (=DL RLC PDU size for DL/DSCH_TF12). UE will return twenty-one RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#20 and the first 80 bits of RLC PDU#21.

Note 14 SS is using a DL RLC SDU size of 29656 bits as test data (=DL RLC PDU size for DL/DSCH_TF13). UE will return twenty-three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#22 and the first 88 bits of RLC PDU#23.

Note 15 SS is using a DL RLC SDU size of 32352 bits as test data (=DL RLC PDU size for DL/DSCH_TF14). UE will return twenty-five RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#24 and the first 96 bits of RLC PDU#25.

Note 16 SS is using a DL RLC SDU size of 35048 bits as test data (=DL RLC PDU size for DL/DSCH_TF15). UE will return twenty-seven RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#26 and the first 104 bits of RLC PDU#27.

Note 17 SS is using a DL RLC SDU size of 37744 bits as test data (=DL RLC PDU size for DL/DSCH_TF16). UE will return twenty-nine RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#28 and the first 112 bits of RLC PDU#29.

Note 18 SS is using a DL RLC SDU size of 40440 bits as test data (=DL RLC PDU size for DL/DSCH_TF17). UE will return thirty-one RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#30 and the first 120 bits of RLC PDU#31.

Note 19 SS is using a DL RLC SDU size of 43136 bits as test data (=DL RLC PDU size for DL/DSCH_TF18). UE will return thirty-three RLC PDUs. The SS creates an UL RLC SDU by concatenating RLC PDU#1 to RLC PDU#32 and the first 128 bits of RLC PDU#33.

See 14.1.1 for test procedure.

14.3.3.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
   - for sub-test 1: RB5/TF1 (1x336).
   - for sub-test 2: RB5/TF2 (2x336).
   - for sub-test 3: RB5/TF3 (3x336).
   - for sub-test 4 to 18: RB5/TF4 (4x336).
3. At step 15 the UE shall return

- for sub-test 1 to 18: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

14.3.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.4.

14.3.5 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.5.

14.3.6 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.6.

14.4 Combinations on SCCPCH

14.4.1 Stand-alone signalling RB for PCCH

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.3.1.

14.4.2 Interactive/Background 32 kbps PS RAB + SRBs for CCCH + SRB for DCCH + SRB for BCCH

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.3.2.

14.4.3 Interactive/Background 32 kbps RAB + SRBs for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.3.3.

14.5 Combinations on PRACH

14.5.1 Interactive/Background 32 kbps PS RAB + SRB for CCCH + SRB for DCCH

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.4.1.

15 Supplementary Services

This section is FFS.

16 Short message service (SMS)

Ref.: 3GPP TS 23.040, 3GPP TS 24.011 (point to point)
3GPP TS 23.041, (cell broadcast)

General

The purpose of these tests is to verify that the UE can handle Iu mode system functions when submitting or receiving Short Messages (SM) between UE and a short message service centre as described in 3GPP TS 23.040.

The procedures are based upon services provided by the Mobility Management (MM) sublayer and GPRS Mobility Managemant(GMM) sublayer which are not tested in this case.

The SMS comprises three basic services; SMS point to point services on CS mode, on PS mode and SMS cell broadcast service. The SMS point to point services on CS mode shall work in an active UE at any time independent of whether or not there is a speech or data call in progress. The SMS point to point services on PS mode shall work in an active UE at any time independent of whether or not there is a PDP context in progress. The SMS cell broadcast service only works when the UE is in idle mode.

Since the timer TC1M currently is not standardized, the value of TC1M shall be declared by the manufacturer (to be used in sub-clauses 16.1.1 and 16.1.2).

The manufacturer shall declare whether SMS messages are stored in the USIM and/or the ME. This shall be referred to as the SMS message store in the following tests.

Unless otherwise stated default message contents from 3GPP TS 34.108 applies for following tests.

16.1 Short message service point to point on CS mode

All of test cases in this sub-clause are applied to UE supporting CS mode.

16.1.1 SMS mobile terminated

16.1.1.1 Definition

16.1.1.2 Conformance requirements

An active UE shall be able to receive short message TPDU (SMS-DELIVER) at any time, independently of whether or not there is a speech or data call in progress. A report will always be returned to the SC, confirming that the UE has received the short message.

Reference

3GPP TS 23.040, sub-clause 3.1.

16.1.1.3 Test purpose

To verify the ability of a UE to receive and decode the SMS where provided for the point to point service.

16.1.1.4 Method of test

Initial Conditions

- System simulator:
  - 1 cell, default parameters.

- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the SMS message storage shall be empty.

Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Support for call control state U10.

Test procedure

a) Mobile terminates establishment of Radio Resource Connection. After the completion of RRC Connection SS authenticates UE.

After the SS receives SECURITY MODE COMPLETE, the SS sends a CP-DATA message. The information element of the CP-DATA message will be RP-DATA RPDU (SMS DELIVER TPDU).

b) The SS waits a maximum of 25 seconds for the CP-ACK message and then a maximum of 60 seconds for the CP-DATA message containing the RP-ACK RPDU.

c) The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates RRC Connection release.

d) Steps a), b) and c) are repeated but the first CP-DATA message from the UE is not acknowledged. The second CP-DATA message from the UE is acknowledged by a CP-ACK within a time TC1M.

e) Steps a) and b) are repeated. The SS is configured not to send CP-ACK. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 5 seconds after the last CP-DATA retransmission the SS then initiates the channel release. The 5 seconds is the appropriate time to wait to verify that the UE does not send more than the maximum allowed (3) CP-DATA retransmissions.

f) The SMS message store shall be cleared manually by the operator.

g) A data or speech call is established on a DTCH with the SS and the state U10 of call control is entered. The SS sends a PAGING TYPE 2.

The SS sends a CP-DATA message. The information element of the CP-DATA message will be RP-DATA RPDU (SMS DELIVER TPDU). The SS waits a maximum of 25 seconds for the CP-ACK message and then a maximum of 60 seconds for the CP-DATA message containing the RP-ACK RPDU.

h) The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates RRC Connection release. The SMS message store shall be cleared manually by the operator.

i) Steps g) and h) are repeated but the first CP-DATA message from the UE is not acknowledged. The second CP-DATA message from the UE is acknowledged by a CP-ACK within a time TC1M.

j) Step g) is repeated. The SS is configured not to send CP-ACK. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 15 seconds after the last CP-DATA retransmission the SS initiates the channel release. The 15 seconds is the appropriate time to wait to verify that the UE does not send more than the maximum allowed (3) CP-DATA retransmissions (during a call in progress).

k) A data or speech call is established on a DTCH with the SS and the state U10 of call control shall be entered. The speech call is cleared by the SS with a disconnect message. (The call clearing is continued on the DCCH in parallel to the following exchange of messages related to SMS).

The SS sends a CP-DATA RPDU (SMS DELIVER TPDU) message. The information element of the CP-DATA message is RP-DATA.

The SS waits a maximum of 25 seconds for the CP-ACK message and then a maximum of 60 seconds for the CP-DATA message containing the RP-ACK RPDU.

The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates channel release.

The SMS message store shall be cleared manually by the operator.

l) A data or speech call is established with the SS and the state U10 of call control is entered. After the SS sends a PAGING TYPE 2,the speech call shall be cleared from the UE. (The call clearing is continued in parallel to the following exchange of messages related to SMS).

The SS sends a CP-DATA message. The information element of the CP-DATA message is RP-DATA RPDU (SMS DELIVER TPDU).

The SS waits a maximum of 25 seconds for the CP-ACK message and then a maximum of 60 seconds for the CP-DATA message containing the RP-ACK RPDU.

The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates RRC Connection release.

The SMS message store shall be cleared manually by the operator.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
8	SS			Waits max 25 seconds for CP-ACK
9	-->		CP-ACK	
10	SS			Waits max 60 seconds for RP-ACK RPDU
11	-->		CP-DATA	Contains RP-ACK RPDU
12	<--		CP-ACK	
13	UE			There should be no further CP-DATA messages until the UE aborts the RRC connection .
14	UE			The UE shall indicate that an SM has arrived.
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
16	-->		PAGING RESPONSE	
17	<--		AUTHENTICATION REQUEST	
18	-->		AUTHENTICATION RESPONSE	
19	<--		SECURITY MODE COMMAND	
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
22	SS			Waits max 25 seconds for CP-ACK
23	-->		CP-ACK	
24	SS			Waits max 60 seconds for RP-ACK RPDU
25	-->		CP-DATA	First CP-DATA from UE, contains RP-ACK RPDU
26	SS			First CP-DATA message not acknowledged by SS
27	-->		CP-DATA	Retransmitted CP-DATA from UE within twice TC1M, after step 25, contains RP-ACK RPDU

Step	Direction		Message	Comments
	UE	SS		
28	<--		CP-ACK	Second CP_DATA message is acknowledged
29	UE			There should be no further CP-DATA messages until the UE aborts the RRC connection.
30	UE			The UE shall indicate that an SM has arrived.
31			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
32	-->		PAGING RESPONSE	
33	<--		AUTHENTICATION REQUEST	
34	-->		AUTHENTICATION RESPONSE	
35	<--		SECURITY MODE COMMAND	
36	-->		SECURITY MODE COMPLETE	
37	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
38	SS			Waits max 25 seconds for CP-ACK
39	-->		CP-ACK	
40	SS			Waits max 60 seconds for RP-ACK RPDU
41	-->		CP-DATA	Contains RP-ACK RPDU
42	SS			First CP-DATA message not acknowledged by SS
43			CP-DATA	Retransmitted CP-DATA from UE within twice TC1M after step 41, contains RP-ACK RPDU
44	SS			Retransmitted CP-DATA message not acknowledged by SS
45	UE			Depending upon the maximum number of CP-DATA retransmissions implemented, step 43 and 44 may be repeated.
46	<--		RRC CONNECTION RELEASE	RRC connection is released after a duration of TC1M + 5 seconds after the last CP-DATA retransmission.
47	-->		RRC CONNECTION RELEASE COMPLETE	
48	UE			The UE shall indicate that an SM has arrived.
49	SS			A data or speech call is established on a DTCH and the state U10 of call control is entered.
50			PAGING TYPE 2	
51	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
52	SS			Waits max 25 seconds for CP-ACK
53	-->		CP-ACK	
54	SS			Waits max 60 seconds for RP-ACK RPDU
55	-->		CP-DATA	Contains RP-ACK RPDU
56	<--		CP-ACK	
57	<--		DISCONNECT	Disconnect the active call
58	-->		RELEASE	
59	UE			The UE shall indicate that an SM has arrived.
60	UE			Clear the SMS message store
61	SS			A data or speech call is established on a DTCH and the state U10 of call control is entered.
62	<--		PAGING TYPE 2	
63	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
64	SS			Waits max 25 seconds for CP-ACK
65	-->		CP-ACK	
66	SS			Waits max 60 seconds for RP-ACK RPDU
67	-->		CP-DATA	First CP-DATA from UE, contains RP-ACK RPDU
68	SS			First CP-DATA message not acknowledged by SS
69	-->		CP-DATA	Retransmitted CP-DATA message within twice TC1M after step 67, contains RP-ACK RPDU
70	<--		CP-ACK	Second CP-DATA message is acknowledged
71	<--		DISCONNECT	Disconnect the active call
72	-->		RELEASE	
74	UE			There should be no further CP-DATA messages until the UE aborts the RRC connection
75	UE			The UE shall indicate that an SM has arrived.
76	UE			Clear the SMS message store
77	SS			A data or speech call is established on a DTCH and the state U10 of call control is entered.
78	<--		PAGING TYPE 2	
	-->			

Step	Direction		Message	Comments
	UE	SS		
79	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
80	SS			Waits max 25 seconds for CP-ACK
81	-->		CP-ACK	
82	SS			Waits max 60 seconds for RP-ACK RPDU
83	-->		CP-DATA	First CP-DATA from UE, contains RP-ACK RPDU
84	SS			First CP-DATA message not acknowledged by SS
85	-->		CP-DATA	Transmitted CP-DATA message within twice TC1M after step 83, contains RP-ACK RPDU
86	SS			Retransmitted CP-DATA message not acknowledged by SS
87	UE			Depending on the maximum number of CP-DATA retransmissions implemented, step 85-86 may be repeated. The maximum number of retransmissions may however not exceed three.
88	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released after a duration of TC1M + 15 seconds after the last CP-DATA retransmission.
89	-->		RRC CONNECTION RELEASE COMPLETE	
90	UE			The UE shall indicate that an SM has arrived.
91	UE			Clear the SMS message store
92	SS			A data or speech call is established on a DTCH and the state U10 of call control is entered.
93	<--		PAGING TYPE 2	Sent on DCCH associated with the DTCH
94	<--		DISCONNECT	The speech call is cleared by the SS. The call clearing is continued in parallel to the following exchange of messages related to SMS.
95	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
96	SS			Waits max 25 seconds for CP-ACK
97	-->		CP-ACK	
98	SS			Waits max 60 seconds for RP-ACK RPDU
99	-->		CP-DATA	Contains RP-ACK RPDU
100	<--		CP-ACK	
101	UE			There should be no further CP-DATA messages until the UE aborts the RR connection.
102	UE			The UE shall indicate that an SM has arrived.
103	UE			Clear the SMS message store
104	SS			A data or speech call is established on a DTCH and the state U10 of call control is entered.
105	<--		PAGING TYPE 2	
106	-->		DISCONNECT	The speech call is cleared from the UE. The call clearing is continued in parallel to the following exchange of messages related to SMS.
107	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
108	<--		RELEASE	This message is likely to be sent before all of the CP-DATA message has been sent on the DCCH.
109	-->		RELEASE COMPLETE	
110	-->		CP-ACK	shall be sent before 25 seconds after the start of step 107
111	SS			Waits max 60 seconds for RP-ACK RPDU
112	-->		CP-DATA	Contains RP-ACK RPDU
113	<--		CP-ACK	
114	UE			There should be no further CP-DATA messages until the UE aborts the RRC connection.
115	UE			The UE shall indicate that an SM has arrived.
116	UE			Clear the SMS message store

NOTE: Time values for SS wait time are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.

Specific Message Contents

SMS DELIVER TPDU

Information element	Comment Value
TP-UDL TP-UD (140 octets)	160 text of message (160 characters)

NOTE: The 160 characters in TP-UD shall include at least one occurrence of each character in the default alphabet (see 3GPP TS 23.038, sub-clause 6.2.1).

16.1.1.5 Test requirements

After step 7 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 seconds and CP-DATA containing RP-ACK within 60 seconds.

After step 25 UE shall retransmit CP-DATA containing RP-ACK within twice TC1M.

After step 30 UE shall indicate that an SM has arrived.

After step 43 UE shall repeat CP-DATA retransmissions as many times as the decided maximum number.

After step 48 UE shall indicate that an SM has arrived.

After step 51 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 seconds and CP-DATA containing RP-ACK within 60 seconds.

After step 67 UE shall retransmit CP-DATA containing RP-ACK within twice TC1M.

After step 74 UE shall indicate that an SM has arrived.

After step 79 UE shall repeat CP-DATA retransmissions as many times as the decided maximum number.

After step 90 UE shall indicate that an SM has arrived.

After step 95 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 seconds and CP-DATA containing RP-ACK within 60 seconds.

After step 107 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 seconds and CP-DATA containing RP-ACK within 60 seconds.

16.1.2 SMS mobile originated

16.1.2.1 Definition

16.1.2.2 Conformance requirements

An active UE shall be able to submit short message TPDU (SMS-SUBMIT) at any time, independently of whether or not there is a speech or data call in progress.

Reference

3GPP TS 23.040, sub-clause 3.1.

16.1.2.3 Test purpose

To verify that the UE is able to correctly send a short message where the SMS is provided for the point to point service.

16.1.2.4 Method of test

Initial Conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the SMS message storage shall be empty.

Related ICS/IXIT Statements

Support for Short message MO/PP.

Support for state U10 of call control.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Maximum length (characters) of a mobile originated short message.

Test procedure

a) The UE shall be set up to send a SM to the SS. The SS responds to RRC CONNECTION REQUEST by allocating a CCCH. The SS receives RRC CONNECTION SETUP COMPLETE on DCCH and then performs the authentication.

b) After receiving SECURITY MODE COMMAND UE shall send SECURITY COMMAND COMPLETE.

c) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message within TC1M followed by a CP-DATA message containing the correct RP-ACK RPDU. The SS waits a maximum of 25 seconds for the CP-ACK message.

d) The SS sends a channel release message to the UE.

e) Steps a) and b) are repeated. The SS is configured not to send the CP-ACK message. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 5 seconds after the last CP-DATA retransmission the SS initiates channel release. The 5 seconds is the appropriate time to wait to verify that the UE does not send more than the maximum CP-DATA retransmissions.

f) Steps a) and b) are repeated. On receipt of the CP-DATA from the UE the SS sends a CP-ERROR message within TC1M containing a "Network Failure" cause. Then the SS initiates channel release.

g) A data or speech call is established with the SS and the state U10 of call control is entered. The UE is set up to send an SM to the SS. After the reception of the CM SERVICE REQUEST, the SS sends a CM SERVICE ACCEPT message.

h) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message within TC1M followed by a CP-DATA message containing the correct RP-ACK RPDU. The SS waits a maximum of 25 seconds for the CP-ACK message. Then the SS sends a channel release message to the UE.

i) Step g) is repeated. The SS is configured not to send the CP-ACK message. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 15 seconds after the last CP-DATA retransmission the SS initiates channel release. The 15 seconds is the appropriate time to wait to verify that the UE does not send more than the maximum CP-DATA retransmissions (during a call in progress).

j) (void)

k) The UE is set up to send an SM to the SS. On receipt of the CM SERVICE REQUEST the SS sends a CM SERVICE REJECT message with the reject cause set to "Service Option not supported" or "Service Option temporarily out of order". After 5 seconds the SS initiates channel release.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<--	SYSTEM INFORMATION	BCCH
2		-->	RRC CONNECTION REQUEST	CCCH
3		<--	RRC CONNECTION SETUP	CCCH
4		-->	RRC CONNECTION SETUP COMPLETE	DCCH
5		-->	CM SERVICE REQUEST	
6		<--	AUTHENTICATION REQUEST	
7		-->	AUTHENTICATION RESPONSE	
8		<--	SECURITY MODE COMMAND	
9		-->	SECURITY MODE COMPLETE	
10		-->	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
11		<--	CP-ACK	Sent within TC1M after step 10
12		<--	CP-DATA	Contains RP-ACK RPDU
13		SS		Waits max 25 seconds for CP-ACK
14		-->	CP-ACK	
15		<--	RRC CONNECTION RELEASE	RRC connection is released.
16		-->	RRC CONNECTION RELEASE COMPLETE	
17		<--	SYSTEM INFORMATION	BCCH
18		-->	RRC CONNECTION REQUEST	CCCH
19		<--	RRC CONNECTION SETUP	CCCH
20		-->	RRC CONNECTION SETUP COMPLETE	DCCH
21				
22		-->	CM SERVICE REQUEST	
23		<--	AUTHENTICATION REQUEST	
24		-->	AUTHENTICATION RESPONSE	
25		<--	SECURITY MODE COMMAND	
26		-->	SECURITY MODE COMPLETE	
27		-->	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
28		SS		SS configured not to send CP-ACK
29		-->	CP-DATA	Retransmitted CP-DATA message within twice TC1M after step 27
30	UE			Depending on the maximum number of CP-DATA retransmissions implemented, step 29 may be repeated. The maximum number of retransmissions may however not exceed three.
31		<--	RRC CONNECTION RELEASE	RRC CONNECTION is released after a duration of TC1M + 5 seconds after the last CP-DATA retransmission.
32		-->	RRC CONNECTION RELEASE COMPLETE	
33		<--	SYSTEM INFORMATION	BCCH
34		-->	RRC CONNECTION REQUEST	CCCH
35		<--	RRC CONNECTION SETUP	CCCH
36		-->	RRC CONNECTION SETUP COMPLETE	DCCH
37		-->	CM SERVICE REQUEST	
38		<--	AUTHENTICATION REQUEST	
39		-->	AUTHENTICATION RESPONSE	
40		<--	SECURITY MODE COMMAND	
41		-->	SECURITY MODE COMPLETE	
42		-->	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
43		<--	CP-ERROR	Sent within TC1M containing "Network Failure" cause.
44		<--	RRC CONNECTION RELEASE	RRC CONNECTION is released.
45		-->	RRC CONNECTION RELEASE COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
46		SS		A data or speech call is established on a DTCH and the state U10 of call control is entered.
47		UE		The UE is set up to send an SM
48	-->		CM SERVICE REQUEST	CM service type set to "short message "
49	<--		CM SERVICE ACCEPT	
50	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
51	<--		CP-ACK	Sent within TC1M after step 50
52	<--		CP-DATA	Contains RP-ACK RPDU
53		SS		Waits max 25 seconds for CP-ACK
54	-->		CP-ACK	
55	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released.
56	-->		RRC CONNECTION RELEASE CONPLETE	
57		SS		A data or speech call is established on a DTCH and the state U10 of call control is entered.
58	-->		CM SERVICE REQUEST	CM service type set to "short message "
59	<--		CM SERVICE ACCEPT	
60	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
61		SS		SS configured not to send CP-ACK
62	-->		CP-DATA	Transmitted CP-DATA message within twice TC1M after step 60
63		UE		Depending on the maximum number of CP-DATA retransmissions implemented, step 62 may be repeated. The maximum number of retransmissions may however not exceed three.
64	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released after a duration of TC1m + 15 seconds after the last CP-DATA retransmission.
65	-->		RRC CONNECTION RELEASE COMPLETE	
66-78			(void)	
79	-->		RRC CONNECTION REQUEST	
80	<--		RRC CONNECTION SETUP	
81	-->		RRC CONNECTION SETUP COMPLETE	
82	-->		CM SERVICE REQUEST	. CM service type set to "short message transfer"
83	<--		CM SERVICE REJ	Reject cause set to "Service Option not supported" or "Service Option temporarily out of order"
84		UE		
85	<--		RRC CONNECTION RELEASE	Sent 5 seconds after CM SERVICE REJ
86	-->		RRC CONNECTION RELEASE COMPLETE	

NOTE: Time values for SS wait times are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.

Specific Message Contents

SMS SUBMIT TPDU

Information element	Comment Value
TP-UDL TP-UD (140 octets max)	as applicable maximum number of characters (text of message) as defined by the manufacturer (see ICS/IXIT)

16.1.2.5 Test requirements

After step 9 UE shall send a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 27 UE shall retransmit a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 44 UE shall send the RRC CONNECTION RELEASE COMPLETE.

After step 49 UE shall send a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 60 UE shall repeat CP-DATA retransmissions as many times as the decided maximum number.

After step 83 UE shall not send CP-DATA.

16.1.3 Test of memory full condition and memory available notification:

The Memory Available Notification provides a means for the UE to notify the network that it has memory available to receive one or more short messages. The SMS status field in the USIM contains status information on the "memory available" notification flag.

16.1.3.1 Definition

16.1.3.2 Conformance requirement

1. When a mobile terminated message is Class 2, the UE shall ensure that the message has been transferred to the SMS data field in the USIM before sending an acknowledgement to the SC. The UE shall return a protocol error message if the short message cannot be stored in the USIM and there is other short message storage available in the UE. If all the short message storage in the UE is already in use, the UE shall return "memory capability exceeded".

2. When the UE rejects a short message due to lack of available memory capability the need to transfer notification shall be stored in the USIM.

3. If the memory capability becomes available because memory is cleared, the value of the memory capability exceeded notification flag in the USIM is read. If the flag is set, the UE notifies the network that memory capability is now available. After a positive acknowledgement from the network, the ME unsets the memory capability exceeded notification flag in the USIM.

References

- 3GPP TS 23.040, sub-clause 9.2.3.10, 3GPP TS 23.038, clause 4.

- 3GPP TS 23.040, sub-clause 10.3 (operation 14).

- 3GPP TS 23.040, sub-clause 10.3 (operation 14).

16.1.3.3 Test purpose

1. To verify that the UE sends the correct acknowledgement when its memory in the USIM becomes full.

2. To verify that the UE sends the correct acknowledgement when its memory in the ME and the USIM becomes full, and sets the "memory exceeded" notification flag in the USIM.

3. To verify that the UE performs the "memory available" procedure when its message store becomes available for receiving short messages, and only at this moment.

16.1.3.4 Method of test

Initial conditions

- System Simulator:

  - 1 cell, default parameters.

- User Equipment:

  - the UE shall be in MM-state "Idle, updated";

  - the SMS message storage shall be empty;

  - the UE shall be connected to the USIM simulator. The following shall be present in the USIM simulator:

- EF_{SMS} with at least one record;
- $EF_{SMSstatus}$, with SMS "Memory Cap. Exceed" notification flag set to "memory available";
- Service no. 4 (SMS) in EF_{SST} set to allocated and activated.

- for storing of Class 1 Short Messages the UE shall be set up to store Short Messages in the ME memory (by way of MMI, as described in ICS/IXIT statement).

Related ICS/IXIT Statements

Support for Short message MT/PP.

Whether SMS messages are stored in the USIM and/or the ME.

The value of timer TC1M.

Test procedure

a) step a) of sub-clause 16.1.5.3 (test of Class 2 Short Messages) is repeated until the UE sends a negative acknowledgement (RP-ERROR). The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.

b) a Class 1 Short Message is sent to the UE.

c) step b) is repeated until the UE sends a negative acknowledgement (RP-ERROR). The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.

d) a Short Message is sent to the UE with the DCS field of the SMS-DELIVER TPDU set to 0.

e) the SS prompts the operator to read a short message and to remove it from the message store of the UE.

f) the SS waits for a RRC CONNECTION REQUEST from the UE, and sends a RRC CONNECTION SETUP.

g) after the SS receives a RRC CONNECTION SETUP COMPLETE, the SS authenticates the UE and activates ciphering.

h) the SS answers to the RP-SMMA from the UE with a CP-DATA containing a RP-ACK RPDU.

i) after the UE has acknowledged the CP-DATA with a CP-ACK, the SS releases the RRC connection. The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been unset on the USIM.

j) step e) is repeated.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message
8		SS		Waits max 25 seconds for CP-ACK
9	-->		CP-ACK	
10		SS		Waits max 60 seconds for RP-ACK RPDU
11	-->		CP-DATA	Contains RP-ACK RPDU
12	<--		CP-ACK	Within TC1M after step 11

Step	Direction		Message	Comments
	UE	SS		
13	<--		RRC CONNECTION RELEASE	RRC connection is released. Step 1-13 is repeated until UE sends a negative acknowledgement (RP-ERROR) in step 16. The RP-ERROR RPDU cause field shall be "Protocol error, unspecified" if there is message capability in the ME, or "Memory capability exceeded" if there is no message capability in the ME. If the total memory store of the UE is full, the ME shall set the "memory capability exceeded" notification flag on the USIM.
14	-->		RRC CONNECTION RELEASE COMPLETE	
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
16	-->		PAGING RESPONSE	
17	<--		AUTHENTICATION REQUEST	
18	-->		AUTHENTICATION RESPONSE	
19	<--		SECURITY MODE COMMAND	
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 1 Short Message
22		SS		Waits max 25 seconds for CP-ACK
23	-->		CP-ACK	
24		SS		Waits max 60 seconds for RP-ACK RPDU
25	-->		CP-DATA	Shall contain RP-ACK RPDU if there is memory capability in the ME. If not it shall contain RP-ERROR RPDU which cause field shall be "memory capability exceeded". If the total memory store of the UE now becomes full at this step, the ME shall set the "memory cap. exceed" notification flag on the USIM.
26	<--		CP-ACK	Within TC1M after step 25
27	<--		RRC CONNECTION RELEASE	RRC connection is released. Step 15-27 is repeated until the UE sends an RP-ERROR. The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.
28	-->		RRC CONNECTION RELEASE COMPLETE	
29			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
30	-->		PAGING RESPONSE	
31	<--		AUTHENTICATION REQUEST	
32	-->		AUTHENTICATION RESPONSE	
33	<--		SECURITY MODE COMMAND	
34	-->		SECURITY MODE COMPLETE	
35	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) with TP-DCS set to 0
36		SS		Waits max 25 seconds for CP-ACK
37	-->		CP-ACK	
38		SS		Waits max 60 seconds for RP-ACK RPDU
39	-->		CP-DATA	Shall contain RP-ERROR RPDU with error cause "memory capability exceeded".
40	<--		CP-ACK	Within TC1M after step 39
41	<--		RRC CONNECTION RELEASE	RRC connection is released.
42	-->		RRC CONNECTION RELEASE COMPLETE	
43		SS		Prompts the operator to remove one of the short messages from the message store of the UE.
44	<--		SYSTEM INFORMATION	BCCH
45	-->		RRC CONNECTION REQUEST	CCCH
46	<--		RRC CONNECTION SETUP	CCCH
47	-->		RRC CONNECTION SETUP COMPLETE	DCCH
48	-->		CM SERVICE REQUEST	CM service type information element is set to "Short message transfer".
49	<--		CM SERVICE ACCEPT	
50	-->		CP-DATA	Contains RP-SMMA RPDU
51	<--		CP-ACK	

Step	Direction		Message	Comments
	UE	SS		
52	<--		CP-DATA	Contains RP-ACK RPDU
53	-->		CP-ACK	Acknowledge of CP-DATA containing the RP-ACK RPDU. The ME shall unset the "memory capability exceeded" notification flag on the USIM.
54	<--		RRC CONNECTION RELEASE	RRC connection is released. The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been unset on the USIM.
55	-->		RRC CONNECTION RELEASE COMPLETE	
56		SS		Prompts the operator to remove one of the short messages from the message store of the UE.
57		UE		Shall not attempt to send a RP-SMMA RPDU. This is verified by checking that the UE does not send a CHANNEL REQUEST message with the establishment cause "Other services which can be completed with an SDCCH"

NOTE: Time values for SS wait time are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.

Specific Message Contents

SMS-DELIVER TPDU in step 7

Information element	Comment Value
TP-DCS	default alphabet, class 2 "11110010"B

SMS-DELIVER TPDU in step 21

TP-DCS	default alphabet, class 1 "11110001"B

SMS-DELIVER TPDU in step 35

TP-DCS	default alphabet "00000000"B

16.1.3.5 Test requirements

After UE sends a negative acknowledgement (RP-ERROR) in step 11, the USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.

After UE sends a negative acknowledgement (RP-ERROR) in step 23, the USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.

After step 53 the ME shall unset the "memory capability exceeded" notification flag on the USIM.

After step 56 UE shall not attempt to send a RP-SMMA RPDU.

16.1.4 Test of the status report capabilities and of SMS-COMMAND:

This test applies to UEs which support the status report capabilities.

16.1.4.1 Definition

16.1.4.2 Conformance requirement

The SMS offers the SC the capabilities of informing the UE of the status of a previously sent mobile originated short message. This is achieved by the SC returning a status report TPDU (SMS-STATUS-REPORT) to the originating UE.

SMS-COMMAND enables an UE to invoke an operation at the SC.

The UE shall increment TP-MR by 1 for each SMS-SUBMIT or SMS-COMMAND being submitted.

References

- 3GPP TS 23.040, sub-clause 3.2.9.
- 3GPP TS 23.040, sub-clause 9.2.3.6.

16.1.4.3 Test purpose

1) To verify that the UE is able to accept a SMS-STATUS-REPORT TPDU.
2) To verify that the UE is able to use the SMS-COMMAND functionality correctly and sends an SMS-COMMAND TPDU with the correct TP-Message-Reference.

16.1.4.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated".

Related ICS/IXIT Statements

Support of SMS MO/PP and MT/PP.

Test procedure

a) The UE is made to send a Mobile Originated short message setting TP-SRR as in steps a) to d) of test 16.1.2 (SMS Mobile originated).

b) The SS sends a CP-DATA message containing a RP-DATA RPDU itself containing an SMS-STATUS-REPORT TPDU.

c) The SS sends a RRC CONNECTION RELEASE message.

d) The UE is made to send an SMS-COMMAND message enquiring about the previously submitted short message.

e)

f) The SS acknowledges the CP-DATA message from the UE with a CP-ACK followed by a CP-DATA message containing an RP-ACK RPDU

g) After receiving the CP-ACK from the UE, the SS releases the RRC connection by using a RRC CONNECTION RELEASE message.

h) The UE is made to send an SMS-COMMAND message requiring to delete the previously submitted short message.

i) steps e) to g) are repeated.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION	BCCH
2	-->		RRC CONNECTION REQUEST	CCCH
3	<--		RRC CONNECTION SETUP	CCCH
4	-->		RRC CONNECTION SETUP COMPLETE	DCCH
5	-->		CM SERVICE REQUEST	
6	<--		AUTHENTICATION REQUEST	
7	-->		AUTHENTICATION RESPONSE	
8	<--		SECURITY MODE COMMAND	
9	-->		SECURITY MODE COMPLETE	
10	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
11	<--		CP-ACK	Sent within TC1M after step 10
12	<--		CP-DATA	Contains RP-ACK RPDU
13		SS		Waits max 25 seconds for CP-ACK
14	-->		CP-ACK	
15	<--		RRC CONNECTION RELEASE	RRC connection is released.
16	-->		RRC CONNECTION RELEASE COMPLETE	
17			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
18	-->		PAGING RESPONSE	
19	<--		AUTHENTICATION REQUEST	
20	-->		AUTHENTICATION RESPONSE	
21	<--		SECURITY MODE COMMAND	
22	-->		SECURITY MODE COMPLETE	
23	<--		CP-DATA	Contains RP-DATA RPDU (SMS-STATUS-REPORT TPDU)
24	-->		CP-ACK	
25	-->		CP-DATA	Contains RP-ACK RPDU
26	<--		CP-ACK	
27	<--		RRC CONNECTION RELEASE	RRC connection is released.
28	-->		RRC CONNECTION RELEASE COMPLETE	
29	UE			The UE is made to send an SMS-COMMAND message enquiring about the previously submitted SM
30	<--		SYSTEM INFORMATION	BCCH
31	-->		RRC CONNECTION REQUEST	CCCH
32	<--		RRC CONNECTION SETUP	CCCH
33	-->		RRC CONNECTION SETUP COMPLETE	DCCH
34	-->		CM SERVICE REQUEST	
35	<--		AUTHENTICATION REQUEST	
36	-->		AUTHENTICATION RESPONSE	
37	<--		SECURITY MODE COMMAND	
38	-->		SECURITY MODE COMPLETE	
39	-->		CP-DATA	Contains RP-DATA RPDU (SMS-COMMAND TPDU) which shall contain the correct TP-MR
40	<--		CP-ACK	
41	<--		CP-DATA	Contains RP-ACK RPDU
42	-->		CP-ACK	
43	<--		RRC CONNECTION RELEASE	RRC connection is released.
44	-->		RRC CONNECTION RELEASE COMPLETE	
45	UE		The UE is made to send an SMS-COMMAND	message requiring to delete the previously submitted SM.
46	-->		RRC CONNECTION REQUEST	CCCH
47	<--		RRC CONNECTION SETUP	CCCH
48	-->		RRC CONNECTION SETUP COMPLETE	DCCH

Step	Direction		Message	Comments
	UE	SS		
49	-->		CM SERVICE REQUEST	
50	<--		AUTHENTICATION REQUEST	
51	-->		AUTHENTICATION RESPONSE	
52	<--		SECURITY MODE COMMAND	
53	-->		SECURITY MODE COMPLETE	
	.			
54	-->		CP-DATA	Contains RP-DATA RPDU (SMS-COMMAND TPDU) which shall contain the correct TP-MR
55	<--		CP-ACK	
56	<--		CP-DATA	Contains RP-ACK RPDU
57	-->		CP-ACK	
58	<--		RRC CONNECTION RELEASE	RRC connection is released.
59	-->		RRC CONNECTION RELEASE COMPLETE	

Specific Message Contents

SMS SUBMIT TPDU

Information element	Comment Value
TP-SRR	status report is requested "1"B

SMS-STATUS-REPORT TPDU (SS to UE in step 23):

Information element	Comment Value
TP-MR	same as previous SMS-SUBMIT
TP-MMS	no more messages "1"B
TP-SRQ	result of SMS-SUBMIT "0"B
TP-RA	same as the Destination address of the SMS-SUBMIT
TP-ST	SM received "00000000"B

first SMS-COMMAND TPDU (UE to SS in step 39)

Information element	Comment Value
TP-MR	TP-MR in previous SMS-SUBMIT plus "1"
TP-SRR	status report requested "1"B
TP-CT	Enquiry relating to previously submitted short message "00000000"B
TP-MN	not checked (TP-MR in previous SMS-SUBMIT)

second SMS-COMMAND TPDU (UE to SS in step 54)

Information element	Comment Value
TP-MR	TP-MR in previous SMS-COMMAND plus "1"
TP-CT	Delete previously submitted short message "00000010"B
TP-MN	not checked (TP-MR in previous SMS-SUBMIT)

16.1.4.5 Test requirements

After step 23 UE accept a SMS-STATUS-REPORT TPDU.

After step 38 UE shall send a SMS-COMMAND TPDU with the correct TP-Message-Reference.

After step 53 UE shall send a SMS-COMMAND TPDU with the correct TP-Message-Reference.

16.1.5 Test of message class 0 to 3

16.1.5.1 Short message class 0

16.1.5.1.1 Definition

16.1.5.1.2 Conformance requirement

When a mobile terminated message is class 0 and the UE has the capability of indicating short messages, the UE shall indicate the message immediately and send an acknowledgement to the SC when the message has successfully reached the UE irrespective of whether there is memory available in the USIM or ME. The message shall not be automatically stored in the USIM or ME.

References

3GPP TS 23.038, clause 4.

16.1.5.1.3 Test purpose

To verify that the UE will accept and indicate but not store a class 0 message, and that it will accept and indicate a class 0 message if its message store is full.

NOTE: failure of this test in a UE could cause it to reject a class 0 message when its SMS memory becomes full. This could lead to unwanted repetitions between the UE and the service centre.

16.1.5.1.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the UE message store shall be empty.

Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Test procedure

a) The SS sends a class 0 message by using the method described in step a) of sub-clause 16.1.1 but with the TPDU described in this sub-clause.

b) The UE message store shall be filled (for example by using the method of sub-clause 16.1.3 test of the memory available notification) with the same SMS-DELIVER TPDU except that TP-DCS is set to class 1.

c) The SS sends a class 0 message as in step a).

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 0 Short Message
8	-->		CP-ACK	
9	-->		CP-DATA	Contains RP-ACK RPDU.
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13	UE			The content of the short message shall be indicated by the ME. The UE shall not store the message. This can be checked by verifying that it is impossible to retrieve any short messages from the UE message store.
14		SS		The UE message store shall be filled (for example by using the method of 16.1.3) with Class 1 SMS-DELIVER TPDU.
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
16	-->		PAGING RESPONSE	
17	<--		AUTHENTICATION REQUEST	
18	-->		AUTHENTICATION RESPONSE	
19	<--		SECURITY MODE COMMAND	
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 0 Short Message
22	-->		CP-ACK	
23	-->		CP-DATA	Contains RP-ACK RPDU.
24	<--		CP-ACK	
25	<--		RRC CONNECTION RELEASE	
26	-->		RRC CONNECTION RELEASE COMPLETE	
27	UE			The content of the short message shall be indicated by the ME.

Specific Message Contents

SMS-DELIVER TPDU (containing a class 0 message) (SS to UE)

Information element	Comment	Value
TP-DCS	default alphabet, class 0	"1111 0000"B

SMS-DELIVER TPDU (containing a class 1 message to fill the UE message store) (SS to UE)

Information element	Comment	Value
TP-DCS	default alphabet, class 1	"1111 0001"B

16.1.5.1.5 Test requirements

After step 7 UE shall accept and indicate but not store a class 0 message.

After step 21 UE shall accept and indicate a class 0 message.

16.1.5.2 Test of class 1 short messages

This test shall apply to UEs which support:

- storing of received Class 1 Short Messages; and
- indicating of stored Short Messages.

16.1.5.2.1 Definition

16.1.5.2.2 Conformance requirement

When a mobile terminated message is class 1, the UE shall send an acknowledgement to the SC when the message has successfully reached the UE and can be stored, either in the ME or in the USIM.

References

3GPP TS 23.038, clause 4.

16.1.5.2.3 Test purpose

This procedure verifies that the UE acts correctly on receiving a class 1 message, i.e. that it stores the message in the ME or USIM and sends an acknowledgement (at RP and CP-Layer).

16.1.5.2.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the UE message store shall be empty;
  - for storing of class 1 Short Messages, the UE shall be set up to store Short Messages in the ME memory (by way of MMI, as described in ICS/IXIT statement).

Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Test procedure

a) The SS delivers a Short Message of class 1 to the UE as specified in sub-clause 16.1.1, step a).

b) The Short Message is recalled (e.g. by means of the MMI).

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 1 Short Message
8	-->		CP-ACK	
9	-->		CP-DATA	Contains RP-ACK RPDU.
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13	UE			The short message shall be recalled and indicated at the UE.

Specific Message Contents

SMS-DELIVER TPDU (containing a class 1 message) (SS to UE)

Information element	Comment	Value
TP-DCS	default alphabet, class 1	"1111 0001"B

16.1.5.2.5 Test requirements

After step 7 UE shall store the message in the ME or USIM and send an acknowledgement.

16.1.5.3 Test of class 2 short messages

16.1.5.3.1 Definition

Class 2 Short Messages are defined as USIM specific, and the UE shall ensure that a message of this class is stored on the USIM.

16.1.5.3.2 Conformance requirement

When a mobile terminated message is Class 2, the UE shall ensure that the message has been correctly transferred to the SMS data field in the USIM before sending an acknowledgement to the SC. The UE shall return a "protocol error, unspecified" error message if the short message cannot be stored in the USIM and there is other short message storage available at the UE. If all the short message storage at the UE is already in use, the UE shall return "memory capacity exceeded".

Reference(s)

3GPP TS 23.040, sub-clause 9.2.3.10; 3GPP TS 23.038, clause 4, 3GPP TS 34.108, sub-clause 8.3.2.28.

16.1.5.3.3 Test purpose

This procedure verifies that the UE acts correctly on receiving a class 2 message, i.e. that it stores the message correctly in the USIM, and if this is not possible, returns a protocol error message, with the correct error cause, to the network.

There are 2 cases:

1) if the UE supports storing of short messages in the USIM and in the ME, and storage in the ME is not full, and the short message cannot be stored in the USIM, the error cause shall be "protocol error, unspecified";

2) if the UE supports storing of short messages in the USIM and not in the ME, and storage in the ME is not full, and the short message cannot be stored in the USIM, the error cause shall be "memory capacity exceeded".

NOTE: If the UE supports storing of short messages in the USIM and the ME, and storage in the ME is full, and the short message cannot be stored in the USIM, the error cause shall be "memory capacity exceeded". This case is not tested in this test.

16.1.5.3.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the ME message store shall be empty;
  - the ME shall be connected to the USIM simulator. The following shall be present in the USIM simulator:
    - EF_{SMS} with at least two free records and one full record;
    - $EF_{SMSstatus}$, with SMS "Memory Cap. Exceed" notification flag set to "memory available";
    - Service no. 4 (SMS) in EF_{SST} set to allocated and activated;
    - for storing of Class 1 Short Messages the UE shall be set up to store Short Messages in the ME memory (by way of MMI, as described in ICS/IXIT statement).

Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Test procedure

a) The SS delivers a Short Message of class 2 to the UE as specified in sub-clause 16.1.1, step b).

b) Following an attempt by the ME to store the short message in a free record of EF_{SMS} in the USIM, the USIM simulator returns the status response "OK" ("90 00").

c) Step a) is repeated.

d) Following an attempt by the ME to store the short message in a free record of EF_{SMS} in the USIM, the USIM simulator returns the status response "memory problem" ("92 40").

e) The USIM simulator indicates if an attempt was made in steps a) and c) to store the messages and if the messages are stored according to the requirement.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<		Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		PAGING RESPONSE	

Step	Direction		Message	Comments
	UE	SS		
3		<--	AUTHENTICATION REQUEST	
4		-->	AUTHENTICATION RESPONSE	
5		<--	SECURITY MODE COMMAND	
6		-->	SECURITY MODE COMPLETE	
7		<--	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message
8		-->	CP-ACK	
9	ME			The ME shall correctly store the short message in a free record of EFSMS in the USIM, i.e. -the ME shall use a free record - the first byte of the record shall indicate "message received by UE from network" - the TS-Service-Centre-Address shall be correctly stored - the TPDU shall be identical to that sent by the SS - bytes following the TPDU shall be set to "FF"
10	USIM			The USIM simulator returns the status response "OK" ("90 00"). The USIM simulator shall indicate if an attempt was made by the ME to store the short message in the USIM.
11		-->	CP-DATA	Contains RP-ACK RPDU.
12		<--	CP-ACK	
13		<--	RRC CONNECTION RELEASE	
14		-->	RRC CONNECTION RELEASE COMPLETE	
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
16		-->	PAGING RESPONSE	
17		<--	AUTHENTICATION REQUEST	
18		-->	AUTHENTICATION RESPONSE	
19		<--	SECURITY MODE COMMAND	
20		-->	SECURITY MODE COMPLETE	
21		<--	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message
22		-->	CP-ACK	
23	ME			The ME shall attempt to store the short message in a free record of EFSMS in the USIM.
24	USIM			The USIM simulator returns the status response "memory problem" ("92 40"). The USIM simulator shall indicate if an attempt was made by the ME to store the short message in the USIM.
25		-->	CP-DATA	Contains RP-ERROR RPDU with error cause "protocol error, unspecified" if the UE supports storing of short messages in the ME, or error cause "memory capacity exceeded" if not.
26		<--	CP-ACK	
27		<--	RRC CONNECTION RELEASE	
28		-->	RRC CONNECTION RELEASE COMPLETE	

Specific Message Contents

SMS-DELIVER TPDU (containing a class 2 message) (SS to UE)

Information element	Comment	Value
TP-DCS	default alphabet, class 2	"1111 0010"B

16.1.5.3.5 Test requirements

After step 10 UE shall confirm that the short message is stored in the USIM and send CP-DATA containing RP-ACK RPDU.

After step 24 UE shall confirm that the short message cannot be stored in the USIM and send CP-DATA containing RP-ERROR RPDU. If UE supports storing of short message in the ME, the error cause of RP-ERROR RPDU shall be “protocol error, unspecified”, and if not the error cause of RP-ERROR RPDU shall be “memory capacity exceeded”

16.1.5.4 Test of class 3 short messages

For further study.

16.1.6 Test of short message type 0

For further study.

16.1.7 Test of the replace mechanism for SM type 1-7

16.1.7.1 Definition

16.1.7.2 Conformance requirement

On receipt of a short message, the UE shall check to see if the associated Protocol Identifier contains a Replace Short Message Type code. If such a code is present, then the UE will check the associated SC address (RP-OA) and originating address (TP-OA) and replace any existing stored message having the same Protocol Identifier code, SC address and originating address with the new short message.

Reference(s)

3GPP TS 23.040; sub-clause 9.2.3.9.

16.1.7.3 Test purpose

This procedure verifies the correct implementation of the replace mechanism for Replace Short Messages.

16.1.7.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the UE message store shall be empty.

Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Test procedure

a) Two different numbers n and m are drawn randomly between 1 and 7. Two different addresses for TP-Originating-Address (TPOA1 and TPOA2) are drawn. Two different addresses for RP-Originating-Address (RPOA1 and RPOA2) are drawn.

b) The SS delivers a short message to the UE as specified in sub-clause 16.1.1 step a). In the SMS-DELIVER TPDU, the TP-Protocol-Identifier parameter is "Replace Short Message Type n", the TP-Originating-Address is TPOA1, and the RP-Originating-Address is RPOA1.

c) Step b) is repeated but with a different TP-Originating-Address (TPOA2), and different contents of TP-User-Data in the SMS-DELIVER TPDU. The other parameters are the same as in step b).

d) Step c) is repeated but with RPOA2 in the RP-Originated-Address, and contents of TP-User-Data different from the former two messages. The other parameters are the same as in step c).

e) Step d) is repeated but with the TP-Protocol-Identifier equal to "Replace Short Message Type m", and contents of TP-User-Data different from the former three messages. The other parameters are the same as in step d).

f) Step e) is repeated but the contents of TP-User-Data are different from that used in step e).

g) The SS prompts the operator to indicate the Short Messages stored in the UE.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA1 and RP-OA is RPOA1
8	-->		CP-ACK	
9	-->		CP-DATA	Contains RP-ACK RPDU.
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
14	-->		PAGING RESPONSE	
15	<--		AUTHENTICATION REQUEST	
16	-->		AUTHENTICATION RESPONSE	
17	<--		SECURITY MODE COMMAND	
18	-->		SECURITY MODE COMPLETE	
19	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA2 and RP-OA is RPOA1, TP-UD different from step 7
20	-->		CP-ACK	
21	-->		CP-DATA	Contains RP-ACK RPDU.
22	<--		CP-ACK	
23	<--		RRC CONNECTION RELEASE	
24	-->		RRC CONNECTION RELEASE COMPLETE	
25			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
26	-->		PAGING RESPONSE	
27	<--		AUTHENTICATION REQUEST	
28	-->		AUTHENTICATION RESPONSE	

Step	Direction		Message	Comments
	UE	SS		
29	<--		SECURITY MODE COMMAND	
30	-->		SECURITY MODE COMPLETE	
31	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA2 and RP-OA is RPOA2, TP-UD different from step 7 and 19
32	-->		CP-ACK	
33	-->		CP-DATA	Contains RP-ACK RPDU.
34	<--		CP-ACK	
35	<--		RRC CONNECTION RELEASE	
36	-->		RRC CONNECTION RELEASE COMPLETE	
37			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
38	-->		PAGING RESPONSE	
39	<--		AUTHENTICATION REQUEST	
40	-->		AUTHENTICATION RESPONSE	
41	<--		SECURITY MODE COMMAND	
42	-->		SECURITY MODE COMPLETE	
43	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type m", TP-OA is TPOA2 and RP-OA is RPOA2, TP-UD different from step 7, 19 and 31
44	-->		CP-ACK	
45	-->		CP-DATA	Contains RP-ACK RPDU.
46	<--		CP-ACK	
47	<--		RRC CONNECTION RELEASE	
48	-->		RRC CONNECTION RELEASE COMPLETE	
49			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
50	-->		PAGING RESPONSE	
51	<--		AUTHENTICATION REQUEST	
52	-->		AUTHENTICATION RESPONSE	
53	<--		SECURITY MODE COMMAND	
54	-->		SECURITY MODE COMPLETE	
55	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type m", TP-OA is TPOA2 and RP-OA is RPOA2, TP-UD different from step 43
56	-->		CP-ACK	
57	-->		CP-DATA	Contains RP-ACK RPDU.
58	<--		CP-ACK	
59	<--		RRC CONNECTION RELEASE	
60	-->		RRC CONNECTION RELEASE COMPLETE	
61	SS			Prompts the operator to indicate the Short Messages stored in the UE. Only the Short Messages delivered in step 7, 19, 31 and 55 shall be retrievable and indicated

Specific Message Contents

SMS-DELIVER TPDU

Information element	Comment Value
TP-MMS	no more messages are waiting in SC "1"B
TP-PID	binary 01000xxx, xxx represents n resp. m (see test method description)

16.1.7.5 Test requirements

After step 60 only the Short Messages delivered in step 7, 19, 31 and 55 shall be retrieved and indicated.

16.1.8 Test of the reply path scheme

16.1.8.1 Definition

16.1.8.2 Conformance requirement

When a replying UE receives an original mobile terminated short message it has:

- originating SME = TP-Originating Address in the SMS-DELIVER TPDU;
- original SC = RP-Originating Address in the RP-MT-DATA.

When submitting the reply mobile originated short message, the replying UE should use parameters as follows:

- TP-Destination Address in SMS-SUBMIT TPDU = originating SME;
- RP-Destination Address in RP-MO-DATA = original SC.

Reference(s)

3GPP TS 23.040 Annex D.5, D.6

16.1.8.3 Test purpose

This procedure verifies that the UE is able to send a Reply Short Message back to the correct originating SME even if in the meantime it receives another Short Message.

16.1.8.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the UE message store shall be empty.

Related ICS/IXIT Statements

Support for Short message MT/PP.

Support for Short message MO/PP.

The value of timer TC1M.

Test procedure

a) The SS delivers a Short Message as specified in sub-clause 16.1.1, step b) with TP-Reply-Path set to 1.

b) Step a) is repeated but with:
   - different TP-Originating-Address for the originating SME;
   - different RP-Originating-Address for the original SC; and
   - different message contents TP-User-Data.

c) UE sends the Reply Short Message corresponding to one of two received Short Messages (e.g. by means of the MMI).

d) step c) is repeated for the other Short Message.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-RP set to 1
8	-->		CP-ACK	Sent within TC1M after step 7
9	-->		CP-DATA	Contains RP-ACK RPDU.
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
14	-->		PAGING RESPONSE	
15	<--		AUTHENTICATION REQUEST	
16	-->		AUTHENTICATION RESPONSE	
17	<--		SECURITY MODE COMMAND	
18	-->		SECURITY MODE COMPLETE	
19	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-OA, RP-OA and TP-UD different from step 7
20	-->		CP-ACK	Sent within TC1M after step 7
21	-->		CP-DATA	Contains RP-ACK RPDU.
22	<--		CP-ACK	
23	<--		RRC CONNECTION RELEASE	
24	-->		RRC CONNECTION RELEASE COMPLETE	
25	UE			UE sends the Reply Short Message corresponding to one of two received Short Messages.
26	<--		SYSTEM INFORMATION	BCCH
27	-->		RRC CONNECTION REQUEST	CCCH
28	<--		RRC CONNECTION SETUP	CCCH
29	-->		RRC CONNECTION SETUP COMPLETE	DCCH
30	-->		CM SERVICE REQUEST	
31	<--		AUTHENTICATION REQUEST	
32	-->		AUTHENTICATION RESPONSE	
33	<--		SECURITY MODE COMMAND	
34	-->		SECURITY MODE COMPLETE	
35	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU) RP-DA = RP-OA corresponding to the message TP-DA = TP-OA corresponding to the message
36	<--		CP-ACK	Sent within TC1M after step 35
37	<--		CP-DATA	Contains RP-ACK RPDU
38	SS			Waits max 25 seconds for CP-ACK
39	-->		CP-ACK	
40	<--		RRC CONNECTION RELEASE	RRC connection is released.
	-->		RRC CONNECTION RELEASE COMPLETE	
41	UE			UE sends the Reply Short Message corresponding to other Short Message.
42	<--		SYSTEM INFORMATION	BCCH
43	-->		RRC CONNECTION REQUEST	CCCH

Step	Direction		Message	Comments
	UE	SS		
44	<--		RRC CONNECTION SETUP	CCCH
45	-->		RRC CONNECTION SETUP COMPLETE	DCCH
46	-->		CM SERVICE REQUEST	
47	<--		AUTHENTICATION REQUEST	
48	-->		AUTHENTICATION RESPONSE	
49	<--		SECURITY MODE COMMAND	
50	-->		SECURITY MODE COMPLETE	
51	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU) RP-DA = RP-OA corresponding to the Message TP-DA = TP-OA corresponding to the message
52	<--		CP-ACK	Sent within TC1M after step 51
53	<--		CP-DATA	Contains RP-ACK RPDU
54	SS			Waits max 25 seconds for CP-ACK
55	-->		CP-ACK	
56	<--		RRC CONNECTION RELEASE	RRC connection is released.
57	-->		RRC CONNECTION RELEASE COMPLETE	

Specific Message Contents

SMS-DELIVER TPDU

Information element	Comment	Value
TP-MMS	no more messages are waiting in SC	"1"B
TP-RP	Reply Path exists	"1"B

16.1.8.5 Test requirements

After step 34 UE shall send the Reply Short Message corresponding to one of two previously received short messages.

After step 50 UE shall send the Reply Short Message corresponding to the other of two previously received short messages.

16.1.9 Multiple SMS mobile originated

16.1.9.1 UE in idle mode

This test applies to UE supporting the ability of sending multiple short messages on the same RRC connection when there is no call in progress.

16.1.9.1.1 Definition

16.1.9.1.2 Conformance requirements

When the UE chooses to use the same RRC connection to send another short message or a memory available notification, then:

- the UE shall transmit a CM SERVICE REQUEST for the new CM connection before the final CP-ACK (e.g. the one that acknowledges the CP-DATA that carried the RP-ACK) for the old MM connection is transmitted;
- before transmission of the first CP-DATA on the new MM connection, the UE shall transmit the CP-ACK for the old MM connection;
- the Transaction Identifier used on the new MM connection shall be different to that used on the old MM connection; and
- the UE shall not initiate establishment of the new MM connection before the final CP-DATA (e.g. the one carrying the RP-ACK) has been received.

Reference

- 3GPP TS 23.040; sub-clause 3.1.
- 3GPP TS 24.011; sub-clause 5.4.

16.1.9.1.3 Test purpose

To verify that the UE is able to correctly send multiple short messages on the same RRC connection when using a DCCH.

16.1.9.1.4 Method of test

Initial conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the SMS message storage shall be empty.

Related ICS/IXIT statements

Support for multiple short message MO/PP on the same RRC connection.

Description of how to enter multiple SMS.

Whether SMS messages are stored in the USIM and/or the ME.

Foreseen final state of UE

Idle, updated.

Test procedure

a) The UE shall be set up to send 3 short messages as multiple SM to the SS. The SS answers correctly to RRC CONNECTION REQUEST on CCCH and then performs the authentication.

b) After receiving SECURITY MODE COMMAND UE shall send SECURITY COMMAND COMPLETE.

c) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message followed by a CP-DATA message containing the correct RP-ACK RPDU. The Transaction Identifier used on this MM connection is 'x'.

d) The UE shall transmit a CM SERVICE REQUEST for the new CM connection (for the second short message) before the final CP-ACK (the one that acknowledges the CP-DATA that carried the RP-ACK before) for the old MM connection is transmitted. The UE shall not initiate establishment of the new MM connection before the final CP-DATA (i.e. the one carrying the RP-ACK for the first short message) has been received. Before transmission of the first CP-DATA on the new MM connection, the UE shall transmit the CP-ACK for the old MM connection. The Transaction Identifier used on the new MM connection shall be y, where y <> x (see procedure c)).

e) The SS waits a maximum of 5 seconds after receiving the CM SERVICE REQUEST for the CP-ACK message from the UE.

f) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message followed by a CP-DATA message containing the correct RP-ACK RPDU.

g) The UE shall transmit a CM SERVICE REQUEST for the new CM connection (for the third short message) before the final CP-ACK (the one that acknowledges the CP-DATA that carried the RP-ACK before) for the old MM connection is transmitted. Before transmission of the first CP-DATA on the new MM connection, the UE shall transmit the CP-ACK for the old MM connection. The Transaction Identifier used on the new MM connection shall be z, where z <> y (see procedure d)). The UE shall not initiate establishment of the new MM connection before the final CP-DATA (i.e. the one carrying the RP-ACK for the second short message) has been received.

h) The SS waits a maximum of 5 seconds after receiving the CM SERVICE REQUEST for the CP-ACK message from the UE.

i) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message followed by a CP-DATA message containing the correct RP-ACK RPDU.

j) The SS waits a maximum of 5 seconds after sending CP-DATA for the CP-ACK message from the UE.

k) The SS sends a RRC CONNECTION RELEASE to the UE.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<--	SYSTEM INFORMATION	BCCH
2		-->	RRC CONNECTION REQUEST	CCCH
3		<--	RRC CONNECTION SETUP	CCCH
4		-->	RRC CONNECTION SETUP COMPLETE	DCCH
5		-->	CM SERVICE REQUEST	
6		<--	AUTHENTICATION REQUEST	
7		-->	AUTHENTICATION RESPONSE	
8		<--	SECURITY MODE COMMAND	
9		-->	SECURITY MODE COMPLETE	
10		-->	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 10, 11, 12 and 14 shall be x.
11		<--	CP-ACK	
12		<--	CP-DATA	Contains RP-ACK RPDU
13		-->	CM SERVICE REQUEST	CM service type set to "Short message transfer".
14		-->	CP-ACK	Shall be sent within 5 seconds of step 13
15		<--	CM SERVICE ACCEPT	
16		-->	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 16, 17, 18 and 20 shall be y where y <> x (see step 10).
17		<--	CP-ACK	
18		<--	CP-DATA	Contains RP-ACK RPDU
19		-->	CM SERVICE REQUEST	CM service type set to "Short message transfer".
20		-->	CP-ACK	Shall be sent within 5 seconds of step 19

Step	Direction		Message	Comments
	UE	SS		
21		<--	CM SERVICE ACCEPT	
22		-->	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 22, 23, 24 and 25 shall be z, where z <> y (see step 16).
23		<--	CP-ACK	
24		<--	CP-DATA	Contains RP-ACK RPDU
25		-->	CP-ACK	Shall be sent within 5 seconds of step 24
26		<--	RRC CONNECTION RELEASE	RRC connection is released.
27		-->	RRC CONNECTION RELEASE COMPLETE	

16.1.9.1.5 Test requirements

In step 13 the UE shall transmit a CM SERVICE REQUEST for the new CM connection (for the second short message) before the final CP-ACK for the old MM connection is transmitted.

In step 19 the UE shall transmit a CM SERVICE REQUEST for the new CM connection (for the third short message) before the final CP-ACK for the old MM connection is transmitted.

16.1.9.2 UE in active mode

This test applies to UE supporting the ability of sending concatenated multiple short messages when there is a call in progress.

16.1.9.2.1 Definition

16.1.9.2.2 Conformance requirements

When the UE chooses to use the same RRC connection to send another short message or a memory available notification, then:

- the UE shall transmit a CM SERVICE REQUEST for the new CM connection before the final CP-ACK (e.g. the one that acknowledges the CP-DATA that carried the RP-ACK) for the old MM connection is transmitted;
- before transmission of the first CP-DATA on the new MM connection, the UE shall transmit the CP-ACK for the old MM connection;
- the Transaction Identifier used on the new MM connection shall be different to that used on the old MM connection; and
- the UE shall not initiate establishment of the new MM connection before the final CP-DATA (e.g. the one carrying the RP-ACK) has been received.

Reference

- 3GPP TS 23.040; sub-clause 3.1.
- 3GPP TS 24.011; sub-clause 5.4.

16.1.9.2.3 Test purpose

To verify that the UE is able to correctly concatenate multiple short messages on the same RRC connection when sent parallel to a call.

16.1.9.2.4 Method of test

Initial conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the SMS message storage shall be empty.

Related ICS/IXIT statements

Support for multiple short message MO/PP on the same RRC connection.

Description of how to enter multiple SMS.

Support for state U10 of call control.

Whether SMS messages are stored in the USIM and/or the ME.

Foreseen final state of UE

Idle, updated.

Test procedure

a) A data or speech call is established on a DTCH with the SS and the state U10 of call control is entered. The UE is set up to send 3 short messages as multiple SM to the SS. After the reception of the CM SERVICE REQUEST, the SS sends a CM SERVICE ACCEPT message.

b) Steps c) to k) of the test procedure in sub-clause 16.1.9.1.4 are repeated.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		A data or speech call is established on a DTCH and the state U10 of call control is entered.
2		UE		The UE is set up to send 3 short messages as multiple SM
3	-->		CM SERVICE REQUEST	Sent in a layer 2 frame on the DCCH. CM service type set to "short message transfer"
4	<--		CM SERVICE ACCEPT	
7	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 7, 8, 9 and 11 shall be x.
8	<--		CP-ACK	
9	<--		CP-DATA	Contains RP-ACK RPDU
10	-->		CM SERVICE REQUEST	Sent in a layer 2 frame on the DCCH. CM service type set to "short message transfer"
11	-->		CP-ACK	Shall be sent within 5 seconds of step 10
12	<--		CM SERVICE ACCEPT	
13	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 13, 14, 15 and 17 shall be y where y <> x (see step 7).
14	<--		CP-ACK	
15	<--		CP-DATA	Contains RP-ACK RPDU
16	-->		CM SERVICE REQUEST	Sent in a layer 2 frame on the DCCH. CM service type set to "short message transfer"
17	-->		CP-ACK	Shall be sent within 5 seconds of step 16

Step	Direction		Message	Comments
	UE	SS		
18	<--		CM SERVICE ACCEPT	
19	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 19, 20, 21 and 22 shall be z, where z <> y (see step 13).
20	<--		CP-ACK	
21	<--		CP-DATA	Contains RP-ACK RPDU
22	-->		CP-ACK	Shall be sent within 5 seconds of step 21
23	<--		RRC CONNECTION RELEASE	RRC connection is released.
24	-->		RRC CONNECTION RELEASE COMPLETE	

16.1.9.2.5 Test requirements

In step 10 the UE shall transmit a CM SERVICE REQUEST for the new CM connection (for the second short message) before the final CP-ACK for the old MM connection is transmitted.

In step 16 the UE shall transmit a CM SERVICE REQUEST for the new CM connection (for the third short message) before the final CP-ACK for the old MM connection is transmitted.

16.1.10 Test of capabilities of simultaneously receiving a short message whilst sending a mobile originated short message

16.1.10.1 Definition

16.1.10.2 Conformance requirements

An active UE shall be able to receive short message TPDU (SMS-SUBMIT) at any time, independently of whether or not there is in SMS mobile originated.

Reference

3GPP TS 23.040, sub-clause 3.1.

16.1.10.3 Test purpose

The test verifies that the UE is capable of simultaneously receiving a network originated SM whilst sending a mobile originated SM.

16.1.10.4 Method of test

Initial Conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the SMS message storage shall be empty.

Related ICS/IXIT Statements

Support for Short message MO/PP and MT/PP.

Support for state U10 of call control.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Maximum length (characters) of a mobile originated short message.

Test procedure

a) The SS is configured to receive a mobile originated SM. In sub-clause 16.1.2 steps a) and b) are repeated and, using the end of the CP-DATA message from the UE as a trigger, the SS sends a SM to the UE. In this case a new transaction identifier shall be used in the CP messages of SMS mobile terminated.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION	BCCH
2	-->		RRC CONNECTION REQUEST	CCCH
3	<--		RRC CONNECTION SETUP	CCCH
4	-->		RRC CONNECTION SETUP COMPLETE	DCCH
5	-->		CM SERVICE REQUEST	
6	<--		AUTHENTICATION REQUEST	
7	-->		AUTHENTICATION RESPONSE	
8	<--		SECURITY MODE COMMAND	
9	-->		SECURITY MODE COMPLETE	
10	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
11		SS		The SS sends an SM to the UE triggered by the end of the CP-DATA message from the UE
12	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
13		UE		The UE shall correctly receive the SM and indicate that a message has arrived. In the MO case the UE shall send the CP-ACK message with transaction identifier assigned to this transfer. In the MT case the UE shall send a CP-ACK message and a CP-DATA message containing the RP-ACK RPDU. The transaction identifier shall be the same as chosen by the SS for the MT transfer.

NOTE: Time values for SS wait times are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.

Specific Message Contents

SMS SUBMIT TPDU

Information element	Comment Value
TP-UDL	as applicable
TP-UD (140 octets max)	maximum number of characters (text of message) as defined by the manufacturer (see ICS/IXIT)

16.1.10.5 Test requirements

After step 12 UE shall correctly receive the SM and indicate that a message has arrived.

16.2 Short message service point to point on PS mode

All of test cases in this sub-clause are applied to the UE supported PS mode.

16.2.1 SMS mobile terminated

16.2.1.1 Definition

16.2.1.2 Conformance requirements

An active UE shall be able to receive short message TPDU (SMS-DELIVER) at any time, independently of whether or not there is a PDP context in progress. A report will always be returned to the SC, confirming that the UE has received the short message.

Reference

3GPP TS 23.040, sub-clause 3.1.

16.2.1.3 Test purpose

To verify the ability of a UE to receive and decode the SMS where provided for the point to point service.

16.2.1.4 Method of test

Initial Conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the SMS message storage shall be empty.

Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Support for session management state”PDP-ACTIVE”.

Test procedure

a) Mobile terminates establishment of Radio Resource Connection. After the completion of RRC Connection the SS authenticates the UE and activates ciphering.

After the SS receives SECURITY MODE COMPLETE, the SS sends a CP-DATA message. The information element of the CP-DATA message will be RP-DATA RPDU (SMS DELIVER TPDU).

b) The SS waits a maximum of 25 seconds for the CP-ACK message and then a maximum of 60 seconds for the CP-DATA message containing the RP-ACK RPDU.

c) The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates channel release.

d) Steps a), b) and c) are repeated but the first CP-DATA message from the UE is not acknowledged. The second CP-DATA message from the UE is acknowledged by a CP-ACK within a time TC1M.

e) Steps a) and b) are repeated. The SS is configured not to send CP-ACK. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 5 seconds after the last CP-DATA retransmission the SS then initiates the channel release. The 5 seconds is the appropriate time to wait to verify that the UE does not send more than the maximum allowed (3) CP-DATA retransmissions.

f) The SMS message store shall be cleared manually by the operator.

g) A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered. The SS sends a PAGING TYPE 2.

The SS sends a CP-DATA message. The information element of the CP-DATA message will be RP-DATA RPDU (SMS DELIVER TPDU). The SS waits a maximum of 25 seconds for the CP-ACK message and then a maximum of 60 seconds for the CP-DATA message containing the RP-ACK RPDU.

h) The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates channel release. The SMS message store shall be cleared manually by the operator.

i) Steps g) and h) are repeated but the first CP-DATA message from the UE is not acknowledged. The second CP-DATA message from the UE is acknowledged by a CP-ACK within a time TC1M.

j) Step g) is repeated. The SS is configured not to send CP-ACK. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 15 seconds after the last CP-DATA retransmission the SS initiates the channel release. The 15 seconds is the appropriate time to wait to verify that the UE does not send more than the maximum allowed (3) CP-DATA retransmissions (during PDP context in progress).

k) A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered. The PDP context is cleared by the SS with a disconnect message. (The PDP context deactivating is continued in parallel to the following exchange of messages related to SMS).

The SS sends a CP-DATA RPDU (SMS DELIVER TPDU) message. The information element of the CP-DATA message is RP-DATA.

The SS waits a maximum of 25 seconds for the CP-ACK message and then a maximum of 60 seconds for the CP-DATA message containing the RP-ACK RPDU.

The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates channel release.

The SMS message store shall be cleared manually by the operator.

l) A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered. After the SS sends a PAGING TYPE 2,the PDP context shall be cleared from the UE. (The PDP context deactivating is continued in parallel to the following exchange of messages related to SMS).

The SS sends a CP-DATA message. The information element of the CP-DATA message is RP-DATA RPDU (SMS DELIVER TPDU).

The SS waits a maximum of 25 seconds for the CP-ACK message and then a maximum of 60 seconds for the CP-DATA message containing the RP-ACK RPDU.

The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates channel release.

The SMS message store shall be cleared manually by the operator.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
8		SS		Waits max 25 seconds for CP-ACK
9	-->		CP-ACK	

Step	Direction		Message	Comments
	UE	SS		
10		SS		Waits max 60 seconds for RP-ACK RPDU
11	-->		CP-DATA	Contains RP-ACK RPDU
12	<--		CP-ACK	
13	UE			There should be no further CP-DATA messages until the UE aborts the RR connection (disconnection of layer 2).
14	UE			The UE shall indicate that an SM has arrived.
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
16	-->		SERVICE REQUEST	
17	<--		AUTHENTICATION AND CIPHERING REQUEST	
18	-->		AUTHENTICATION AND CIPHERING RESPONSE	
19	<--		SECURITY MODE COMMAND	
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
22		SS		Waits max 25 seconds for CP-ACK
23	-->		CP-ACK	
24		SS		Waits max 60 seconds for RP-ACK RPDU
25	-->		CP-DATA	First CP-DATA from UE, contains RP-ACK RPDU
26		SS		First CP-DATA message not acknowledged by SS
27	-->		CP-DATA	Retransmitted CP-DATA from UE within twice TC1M, after step 25, contains RP-ACK RPDU
28	<--		CP-ACK	Second CP_DATA message is acknowledged
29	UE			There should be no further CP-DATA messages until the UE aborts the RRC connection
30	UE			The UE shall indicate that an SM has arrived.
31			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
32	-->		SERVICE REQUEST	
33	<--		AUTHENTICATION AND CIPHERING REQUEST	
34	-->		AUTHENTICATION AND CIPHERING RESPONSE	
35	<--		SECURITY MODE COMMAND	
36	-->		SECURITY MODE COMPLETE	
37	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
38		SS		Waits max 25 seconds for CP-ACK
39	-->		CP-ACK	
40		SS		Waits max 60 seconds for RP-ACK RPDU
41	-->		CP-DATA	Contains RP-ACK RPDU
42		SS		First CP-DATA message not acknowledged by SS
43			CP-DATA	Retransmitted CP-DATA from UE within twice TC1M after step 41, contains RP-ACK RPDU
44		SS		Retransmitted CP-DATA message not acknowledged by SS
45	UE			Depending upon the maximum number of CP-DATA retransmissions implemented, step 43 and 44 may be repeated.
46	<--		RRC CONNECTION RELEASE	RRC connection is released after a duration of TC1M + 5 seconds after the last CP-DATA retransmission.
47	-->		RRC CONNECTION RELEASE COMPLETE	
48	UE			The UE shall indicate that an SM has arrived.
49	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
50			PAGING TYPE 2	
51	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
52		SS		Waits max 25 seconds for CP-ACK
53	-->		CP-ACK	
54		SS		Waits max 60 seconds for RP-ACK RPDU
55	-->		CP-DATA	Contains RP-ACK RPDU
56	<--		CP-ACK	
57	<--		DEACTIVATE PDP CONTEXT REQUEST	Deactivates an existing PDP context.

Step	Direction		Message	Comments
	UE	SS		
58	-->		DEACTIVATE PDP CONTEXT ACCEPT	
59	UE			The UE shall indicate that an SM has arrived.
60	UE			Clear the SMS message store
61	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
62	<--		PAGING TYPE 2	
63	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
64	SS			Waits max 25 seconds for CP-ACK
65	-->		CP-ACK	
66	SS			Waits max 60 seconds for RP-ACK RPDU
67	-->		CP-DATA	First CP-DATA from UE, contains RP-ACK RPDU
68	SS			First CP-DATA message not acknowledged by SS
69	-->		CP-DATA	Retransmitted CP-DATA message within twice TC1M after step 67, contains RP-ACK RPDU
70	<--		CP-ACK	Second CP-DATA message is acknowledged
71	<--		DEACTIVATE PDP CONTEXT REQUEST	Deactivates an existing PDP context.
72	-->		DEACTIVATE PDP CONTEXT ACCEPT	
73	UE			There should be no further CP-DATA messages until the UE aborts the RRC connection
74	UE			The UE shall indicate that an SM has arrived.
75	UE			Clear the SMS message store
76	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
77	<--		PAGING TYPE 2	
78	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
79	SS			Waits max 25 seconds for CP-ACK
80	-->		CP-ACK	
81	SS			Waits max 60 seconds for RP-ACK RPDU
82	-->		CP-DATA	First CP-DATA from UE, contains RP-ACK RPDU
83	SS			First CP-DATA message not acknowledged by SS
84	-->		CP-DATA	Transmitted CP-DATA message within twice TC1M after step 82, contains RP-ACK RPDU
85	SS			Retransmitted CP-DATA message not acknowledged by SS
86	UE			Depending on the maximum number of CP-DATA retransmissions implemented, step 83-84 may be repeated. The maximum number of retransmissions may however not exceed three.
87	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released after a duration of TC1M + 15 seconds after the last CP-DATA retransmission.
88	-->		RRC CONNECTION RELEASE COMPLETE	
89	UE			The UE shall indicate that an SM has arrived.
90	UE			Clear the SMS message store
91	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
92	<--		PAGING TYPE 2	Sent on DCCH associated with the DTCH
93	<--		DEACTIVATE PDP CONTEXT REQUEST	The PDP context is deactivated by the SS. The PDP context deactivating is continued in parallel to the following exchange of messages related to SMS.
94	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
95	SS			Waits max 25 seconds for CP-ACK
96	-->		CP-ACK	
97	SS			Waits max 60 seconds for RP-ACK RPDU
98	-->		CP-DATA	Contains RP-ACK RPDU
99	<--		CP-ACK	
100	UE			There should be no further CP-DATA messages until the UE aborts the RR connection.
101	UE			The UE shall indicate that an SM has arrived.
102	UE			Clear the SMS message store
103	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
104	<--		PAGING TYPE 2	

Step	Direction		Message	Comments
	UE	SS		
105	-->		DEACTIVATE PDP CONTEXT REQUEST	The PDP context is deactivated by the UE. The PDP context deactivation is continued in parallel to the following
106	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
107	<--		DEACTIVATE PDP CONTEXT REQUEST COMPLETE	
108	-->		CP-ACK	shall be sent before 25 seconds after the start of step 106
109	SS			Waits max 60 seconds for RP-ACK RPDU
110	-->		CP-DATA	Contains RP-ACK RPDU
111	<--		CP-ACK	
112	UE			There should be no further CP-DATA messages until the UE aborts the RRC connection.
113	UE			The UE shall indicate that an SM has arrived.
114	UE			Clear the SMS message store

NOTE: Time values for SS wait time are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.

Specific Message Contents

SMS DELIVER TPDU

Information element	Comment Value
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters)

NOTE: The 160 characters in TP-UD shall include at least one occurrence of each character in the default alphabet (see 3GPP TS 23.038, sub-clause 6.2.1).

16.2.1.5 Test requirements

After step 7 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 seconds and CP-DATA containing RP-ACK within 60 seconds.

After step 25 UE shall retransmit CP-DATA containing RP-ACK within twice TC1M.

After step 30 UE shall indicate that an SM has arrived.

After step 43 UE shall repeat CP-DATA retransmissions as many times as the decided maximum number.

After step 48 UE shall indicate that an SM has arrived.

After step 51 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 seconds and CP-DATA containing RP-ACK within 60 seconds.

After step 67 UE shall retransmit CP-DATA containing RP-ACK within twice TC1M.

After step 73 UE shall indicate that an SM has arrived.

After step 78 UE shall repeat CP-DATA retransmissions as many times as the decided maximum number.

After step 89 UE shall indicate that an SM has arrived.

After step 94 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 seconds and CP-DATA containing RP-ACK within 60 seconds.

After step 106 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 seconds and CP-DATA containing RP-ACK within 60 seconds.

16.2.2 SMS mobile originated

16.2.2.1 Definition

16.2.2.2 Conformance requirements

An active UE shall be able to submit short message TPDU (SMS-SUBMIT) at any time, independently of whether or not there is a PDP context in progress.

Reference

3GPP TS 23.040, sub-clause 3.1.

16.2.2.3 Test purpose

To verify that the UE is able to correctly send a short message where the SMS is provided for the point to point service.

16.2.2.4 Method of test

Initial Conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the SMS message storage shall be empty.

Related ICS/IXIT Statements

Support for Short message MO/PP.

Support for state PDP-ACTIVE of session management.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Maximum length (characters) of a mobile originated short message.

Test procedure

a) The UE shall be set up to send a SM to the SS. The SS responds to RRC CONNECTION REQUEST by allocating a CCCH. The SS receives RRC CONNECTION SETUP COMPLETE on DCCH and then performs the authentication.

b) After receiving SECURITY MODE COMMAND UE shall send SECURITY COMMAND COMPLETE.

c) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message within TC1M followed by a CP-DATA message containing the correct RP-ACK RPDU. The SS waits a maximum of 25 seconds for the CP-ACK message.

d) The SS sends a channel release message to the UE.

e) Steps a) and b) are repeated. The SS is configured not to send the CP-ACK message. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 5 seconds after the last CP-DATA retransmission the SS initiates channel release. The 5 seconds is the appropriate time to wait to verify that the UE does not send more than the maximum CP-DATA retransmissions.

f) Steps a) and b) are repeated. On receipt of the CP-DATA from the UE the SS sends a CP-ERROR message within TC1M containing a "Network Failure" cause. Then the SS initiates channel release.

g) A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered. The UE is set up to send an SM to the SS. After the reception of the SERVICE REQUEST, the SS sends a SERVICE ACCEPT message.

h) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message within TC1M followed by a CP-DATA message containing the correct RP-ACK RPDU. The SS waits a maximum of 25 seconds for the CP-ACK message. Then the SS sends a channel release message to the UE.

i) Step g) is repeated. The SS is configured not to send the CP-ACK message. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 15 seconds after the last CP-DATA retransmission the SS initiates channel release. The 15 seconds is the appropriate time to wait to verify that the UE does not send more than the maximum CP-DATA retransmissions (during a PDP context in progress).

j) (void)

k) The UE is set up to send an SM to the SS. On receipt of the SERVICE REQUEST the SS sends a SERVICE REJECT message with the reject cause set to "GPRS services not allowed". After 5 seconds the SS initiates channel release.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION	BCCH
2	-->		RRC CONNECTION REQUEST	CCCH
3	<--		RRC CONNECTION SETUP	CCCH
4	-->		RRC CONNECTION SETUP COMPLETE	DCCH
5	-->		SERVICE REQUEST	
6	<--		AUTHENTICATION AND CIPHERING REQUEST	
7	-->		AUTHENTICATION AND CIPHERING RESPONSE	
8	<--		SECURITY MODE COMMAND	
9	-->		SECURITY MODE COMPLETE	
10	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
11	<--		CP-ACK	Sent within TC1M after step 10
12	<--		CP-DATA	Contains RP-ACK RPDU
13	SS			Waits max 25 seconds for CP-ACK
14	-->		CP-ACK	
15	<--		RRC CONNECTION RELEASE	RRC connection is released.
16	-->		RRC CONNECTION RELEASE COMPLETE	
17	<--		SYSTEM INFORMATION	BCCH
18	-->		RRC CONNECTION REQUEST	CCCH
19	<--		RRC CONNECTION SETUP	CCCH
20	-->		RRC CONNECTION SETUP COMPLETE	DCCH
21	-->		SERVICE REQUEST	
22	<--		AUTHENTICATION AND CIPHERING REQUEST	
23	-->		AUTHENTICATION AND CIPHERING RESPONSE	
24	<--		SECURITY MODE COMMAND	
25	-->		SECURITY MODE COMPLETE	
26	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
27	SS			SS configured not to send CP-ACK
28	-->		CP-DATA	Retransmitted CP-DATA message within twice TC1M after step 26
29	UE			Depending on the maximum number of CP-DATA retransmissions implemented, step 28 may be repeated. The maximum number of retransmissions may however not exceed three.

Step	Direction		Message	Comments
	UE	SS		
30	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released after a duration of TC1M + 5 seconds after the last CP-DATA retransmission.
31	-->		RRC CONNECTION RELEASE COMPLETE	
32	<--		SYSTEM INFORMATION	BCCH
33	-->		RRC CONNECTION REQUEST	CCCH
34	<--		RRC CONNECTION SETUP	CCCH
35	-->		RRC CONNECTION SETUP COMPLETE	DCCH
36	-->		SERVICE REQUEST	
37	<--		AUTHENTICATION AND CIPHERING REQUEST	
38	-->		AUTHENTICATION AND CIPHERING RESPONSE	
39	<--		SECURITY MODE COMMAND	
40	-->		SECURITY MODE COMPLETE	
41	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
42	<--		CP-ERROR	Sent within TC1M containing "Network Failure" cause.
43	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released.
44	-->		RRC CONNECTION RELEASE COMPLETE	
45	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
46	UE			The UE is set up to send an SM
47	-->		SERVICE REQUEST	
48	<--		SERVICE ACCEPT	
49	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
50	<--		CP-ACK	Sent within TC1M after step 49
51	<--		CP-DATA	Contains RP-ACK RPDU
52	SS			Waits max 25 seconds for CP-ACK
53	-->		CP-ACK	
54	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released.
55	-->		RRC CONNECTION RELEASE CONPLETE	
56	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
57	-->		SERVICE REQUEST	
58	<--		SERVICE ACCEPT	
59	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
60	SS			SS configured not to send CP-ACK
61	-->		CP-DATA	Transmitted CP-DATA message within twice TC1M after step 59
62	UE			Depending on the maximum number of CP-DATA retransmissions implemented, step 61 may be repeated. The maximum number of retransmissions may however not exceed three.
63	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released after a duration of TC1m + 15 seconds after the last CP-DATA retransmission.
64	-->		RRC CONNECTION RELEASE COMPLETE	
65-77			(void)	
78	-->		RRC CONNECTION REQUEST	initiate outgoing call
79	<--		RRC CONNECTION SETUP	
80	-->		RRC CONNECTION SETUP COMPLETE	
81	-->		SERVICE REQUEST	
82	<--		SERVICE REJECT	Reject cause set to "GPRS services not allowed"
83	<--		RRC CONNECTION RELEASE	Sent 5 seconds after SERVICE REJ
84	-->		RRC CONNECTION RELEASE COMPLETE	

NOTE: Time values for SS wait times are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.

Specific Message Contents

SMS SUBMIT TPDU

Information element	Comment Value
TP-UDL TP-UD (140 octets max)	as applicable maximum number of characters (text of message) as defined by the manufacturer (see ICS/IXIT)

16.2.2.5 Test requirements

After step 9 UE shall send a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 26 UE shall retransmit a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 45 UE shall send the RRC CONNECTION RELEASE COMPLETE.

After step 48 UE shall send a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 71 UE shall repeat CP-DATA retransmissions as many times as the decided maximum number.

After step 82 UE shall not send CP-DATA.

16.2.3 Test of memory full condition and memory available notification:

The Memory Available Notification provides a means for the UE to notify the network that it has memory available to receive one or more short messages. The SMS status field in the USIM contains status information on the "memory available" notification flag.

16.2.3.1 Definition

16.2.3.2 Conformance requirement

1. When a mobile terminated message is Class 2, the UE shall ensure that the message has been transferred to the SMS data field in the USIM before sending an acknowledgement to the SC. The UE shall return a protocol error message if the short message cannot be stored in the USIM and there is other short message storage available in the UE. If all the short message storage in the UE is already in use, the UE shall return "memory capability exceeded".

2. When the UE rejects a short message due to lack of available memory capability the need to transfer notification shall be stored in the USIM.

3. If the memory capability becomes available because memory is cleared, the value of the memory capability exceeded notification flag in the USIM is read. If the flag is set, the UE notifies the network that memory capability is now available. After a positive acknowledgement from the network, the ME unsets the memory capability exceeded notification flag in the USIM.

References

- 3GPP TS 23.040, sub-clause 9.2.3.10, 3GPP TS 23.038, clause 4.

- 3GPP TS 23.040, sub-clause 10.3 (operation 14).

- 3GPP TS 23.040, sub-clause 10.3 (operation 14).

16.2.3.3 Test purpose

1. To verify that the UE sends the correct acknowledgement when its memory in the USIM becomes full.

2. To verify that the UE sends the correct acknowledgement when its memory in the ME and the USIM becomes full, and sets the "memory exceeded" notification flag in the USIM.

3. To verify that the UE performs the "memory available" procedure when its message store becomes available for receiving short messages, and only at this moment.

16.2.3.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the SMS message storage shall be empty;
  - the UE shall be connected to the USIM simulator. The following shall be present in the USIM simulator:
    - EF_{SMS} with at least one record;
    - $EF_{SMSstatus}$, with SMS "Memory Cap. Exceed" notification flag set to "memory available";
    - Service no. 4 (SMS) in EF_{SST} set to allocated and activated.
  - for storing of Class 1 Short Messages the UE shall be set up to store Short Messages in the ME memory (by way of MMI, as described in ICS/IXIT statement).

Related ICS/IXIT Statements

Support for Short message MT/PP.

Whether SMS messages are stored in the USIM and/or the ME.

The value of timer TC1M.

Test procedure

a) step a) of sub-clause 16.2.5.3 (test of Class 2 Short Messages) is repeated until the UE sends a negative acknowledgement (RP-ERROR). The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.

b) a Class 1 Short Message is sent to the UE.

c) step b) is repeated until the UE sends a negative acknowledgement (RP-ERROR). The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.

d) a Short Message is sent to the UE with the DCS field of the SMS-DELIVER TPDU set to 0.

e) the SS prompts the operator to read a short message and to remove it from the message store of the UE.

f) the SS waits for a RRC CONNECTION REQUEST from the UE, and sends a RRC CONNECTION SETUP.

g) after the SS receives a RRC CONNECTION SETUP COMPLETE, the SS authenticates the UE and activates ciphering.

h) the SS answers to the RP-SMMA from the UE with a CP-DATA containing a RP-ACK RPDU.

i) after the UE has acknowledged the CP-DATA with a CP-ACK, the SS releases the RRC connection. The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been unset on the USIM.

j) step e) is repeated.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message
8		SS		Waits max 25 seconds for CP-ACK
9	-->		CP-ACK	
10		SS		Waits max 60 seconds for RP-ACK RPDU
11	-->		CP-DATA	Contains RP-ACK RPDU
12	<--		CP-ACK	Within TC1M after step 11
13	<--		RRC CONNECTION RELEASE	RRC connection is released. Step 1-18 is repeated until UE sends a negative acknowledgement (RP-ERROR) in step 11. The RP-ERROR RPDU cause field shall be "Protocol error, unspecified" if there is message capability in the ME, or "Memory capability exceeded" if there is no message capability in the ME. If the total memory store of the UE is full, the ME shall set the "memory capability exceeded" notification flag on the USIM.
14	-->		RRC CONNECTION RELEASE COMPLETE	
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
16	-->		SERVICE REQUEST	
17	<--		AUTHENTICATION AND CIPHERING REQUEST	
18	-->		AUTHENTICATION AND CIPHERING RESPONSE	
19	<--		SECURITY MODE COMMAND	
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 1 Short Message
22		SS		Waits max 25 seconds for CP-ACK
23	-->		CP-ACK	
24		SS		Waits max 60 seconds for RP-ACK RPDU
25	-->		CP-DATA	Shall contain RP-ACK RPDU if there is memory capability in the ME. If not it shall contain RP-ERROR RPDU which cause field shall be "memory capability exceeded". If the total memory store of the UE now becomes full at this step, the ME shall set the "memory cap. exceed" notification flag on the USIM.
26	<--		CP-ACK	Within TC1M after step 25
27	<--		RRC CONNECTION RELEASE	RRC connection is released. Step 19-36 is repeated until the UE sends an RP-ERROR. The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.
28	-->		RRC CONNECTION RELEASE COMPLETE	
29			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
30	-->		SERVICE REQUEST	
31	<--		AUTHENTICATION AND CIPHERING REQUEST	
32	-->		AUTHENTICATION AND CIPHERING RESPONSE	
33	<--		SECURITY MODE COMMAND	
34	-->		SECURITY MODE COMPLETE	
35	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) with TP-DCS set to 0
36		SS		Waits max 25 seconds for CP-ACK
37	-->		CP-ACK	

Step	Direction		Message	Comments
	UE	SS		
38		SS		Waits max 60 seconds for RP-ACK RPDU
39	-->		CP-DATA	Shall contain RP-ERROR RPDU with error cause "memory capability exceeded".
40	<--		CP-ACK	Within TC1M after step 39
41	<--		RRC CONNECTION RELEASE	RRC connection is released.
42	-->		RRC CONNECTION RELEASE COMPLETE	
43		SS		Prompts the operator to remove one of the short messages from the message store of the UE.
44	<--		SYSTEM INFORMATION	BCCH
45	-->		RRC CONNECTION REQUEST	CCCH
46	<--		RRC CONNECTION SETUP	CCCH
47	-->		RRC CONNECTION SETUP COMPLETE	DCCH
48	-->		SERVICE REQUEST	
49	<--		SERVICE ACCEPT	
50	-->		CP-DATA	Contains RP-SMMA RPDU
51	<--		CP-ACK	
52	<--		CP-DATA	Contains RP-ACK RPDU
53	-->		CP-ACK	Acknowledge of CP-DATA containing the RP-ACK RPDU. The ME shall unset the "memory capability exceeded" notification flag on the USIM.
54	<--		RRC CONNECTION RELEASE	RRC connection is released. The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been unset on the USIM.
55	-->		RRC CONNECTION RELEASE COMPLETE	
56		SS		Prompts the operator to remove one of the short messages from the message store of the UE.
57		UE		Shall not attempt to send a RP-SMMA RPDU. This is verified by checking that the UE does not send a CHANNEL REQUEST message with the establishment cause "Other services which can be completed with an SDCCH"

NOTE: Time values for SS wait time are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.

Specific Message Contents

SMS-DELIVER TPDU in step 7

Information element	Comment Value
TP-DCS	default alphabet, class 2 "11110010"B

SMS-DELIVER TPDU in step 21

TP-DCS	default alphabet, class 1 "11110001"B

SMS-DELIVER TPDU in step 35

TP-DCS	default alphabet "00000000"B

16.2.3.5 Test requirements

After UE sends a negative acknowledgement (RP-ERROR) in step 11, the USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.

After UE sends a negative acknowledgement (RP-ERROR) in step 23, the USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.

After step 53 the ME shall unset the "memory capability exceeded" notification flag on the USIM.

After step 56 UE shall not attempt to send a RP-SMMA RPDU.

16.2.4 Test of the status report capabilities and of SMS-COMMAND:

This test applies to UEs which support the status report capabilities.

16.2.4.1 Definition

16.2.4.2 Conformance requirement

The SMS offers the SC the capabilities of informing the UE of the status of a previously sent mobile originated short message. This is achieved by the SC returning a status report TPDU (SMS-STATUS-REPORT) to the originating UE.

SMS-COMMAND enables an UE to invoke an operation at the SC.

The UE shall increment TP-MR by 1 for each SMS-SUBMIT or SMS-COMMAND being submitted.

References

- 3GPP TS 23.040, sub-clause 3.2.9.
- 3GPP TS 23.040, sub-clause 9.2.3.6.

16.2.4.3 Test purpose

1) To verify that the UE is able to accept a SMS-STATUS-REPORT TPDU.
2) To verify that the UE is able to use the SMS-COMMAND functionality correctly and sends an SMS-COMMAND TPDU with the correct TP-Message-Reference.

16.2.4.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED".

Related ICS/IXIT Statements

Support of SMS MO/PP and MT/PP.

Test procedure

a) The UE is made to send a Mobile Originated short message setting TP-SRR as in steps a) to d) of test 16.2.2 (SMS Mobile originated).

b) The SS sends a CP-DATA message containing a RP-DATA RPDU itself containing an SMS-STATUS-REPORT TPDU.

c) The SS sends a RRC CONNECTION RELEASE message.

d) The UE is made to send an SMS-COMMAND message enquiring about the previously submitted short message.

e)

f) The SS acknowledges the CP-DATA message from the UE with a CP-ACK followed by a CP-DATA message containing an RP-ACK RPDU

g) After receiving the CP-ACK from the UE, the SS releases the RRC connection by using a RRC CONNECTION RELEASE message.

h) The UE is made to send an SMS-COMMAND message requiring to delete the previously submitted short message.

i) steps e) to g) are repeated.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION	BCCH
2	-->		RRC CONNECTION REQUEST	CCCH
3	<--		RRC CONNECTION SETUP	CCCH
4	-->		RRC CONNECTION SETUP COMPLETE	DCCH
5	-->		SERVICE REQUEST	
6	<--		AUTHENTICATION AND CIPHERING REQUEST	
7	-->		AUTHENTICATION AND CIPHERING RESPONSE	
8	<--		SECURITY MODE COMMAND	
9	-->		SECURITY MODE COMPLETE	
10	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
11	<--		CP-ACK	Sent within TC1M after step 10
12	<--		CP-DATA	Contains RP-ACK RPDU
13	SS			Waits max 25 seconds for CP-ACK
14	-->		CP-ACK	
15	<--		RRC CONNECTION RELEASE	RRC connection is released.
16	-->		RRC CONNECTION RELEASE COMPLETE	
17			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
18	-->		SERVICE REQUEST	
19	<--		AUTHENTICATION AND CIPHERING REQUEST	
20	-->		AUTHENTICATION AND CIPHERING RESPONSE	
21	<--		SECURITY MODE COMMAND	
22	-->		SECURITY MODE COMPLETE	
23	<--		CP-DATA	Contains RP-DATA RPDU (SMS-STATUS-REPORT TPDU)
24	-->		CP-ACK	
25	-->		CP-DATA	Contains RP-ACK RPDU
26	<--		CP-ACK	
27	<--		RRC CONNECTION RELEASE	
28	-->		RRC CONNECTION RELEASE COMPLETE	
29	UE			The UE is made to send an SMS-COMMAND message enquiring about the previously submitted SM
30	<--		SYSTEM INFORMATION	BCCH
31	-->		RRC CONNECTION REQUEST	CCCH
32	<--		RRC CONNECTION SETUP	CCCH

Step	Direction		Message	Comments
	UE	SS		
33	-->		RRC CONNECTION SETUP COMPLETE	DCCH
34	-->		SERVICE REQUEST	
35	<--		AUTHENTICATION AND CIPHERING REQUEST	
36	-->		AUTHENTICATION AND CIPHERING RESPONSE	
37	<--		SECURITY MODE COMMAND	
38	-->		SECURITY MODE COMPLETE	
39	-->		CP-DATA	Contains RP-DATA RPDU (SMS-COMMAND TPDU) which shall contain the correct TP-MR
40	<--		CP-ACK	
41	<--		CP-DATA	Contains RP-ACK RPDU
42	-->		CP-ACK	
43	<--		RRC CONNECTION RELEASE	
44	-->		RRC CONNECTION RELEASE COMPLETE	
45	UE		The UE is made to send an SMS-COMMAND	message requiring to delete the previously submitted SM.
46	-->		RRC CONNECTION REQUEST	CCCH
47	<--		RRC CONNECTION SETUP	CCCH
48	-->		RRC CONNECTION SETUP COMPLETE	DCCH
49	-->		SERVICE REQUEST	
50	<--		AUTHENTICATION AND CIPHERING REQUEST	
51	-->		AUTHENTICATION AND CIPHERING RESPONSE	
52	<--		SECURITY MODE COMMAND	
53	-->		SECURITY MODE COMPLETE	
54	-->		CP-DATA	Contains RP-DATA RPDU (SMS-COMMAND TPDU) which shall contain the correct TP-MR
55	<--		CP-ACK	
56	<--		CP-DATA	Contains RP-ACK RPDU
57	-->		CP-ACK	
58	<--		RRC CONNECTION RELEASE	
59	-->		RRC CONNECTION RELEASE COMPLETE	

Specific Message Contents

SMS SUBMIT TPDU

Information element	Comment Value
TP-SRR	status report is requested "1"B

SMS-STATUS-REPORT TPDU (SS to UE in step 23):

Information element	Comment Value
TP-MR	same as previous SMS-SUBMIT
TP-MMS	no more messages "1"B
TP-SRQ	result of SMS-SUBMIT "0"B
TP-RA	same as the Destination address of the SMS-SUBMIT
TP-ST	SM received "00000000"B

first SMS-COMMAND TPDU (UE to SS in step 39)

Information element	Comment Value
TP-MR	TP-MR in previous SMS-SUBMIT plus "1"
TP-SRR	status report requested "1"B
TP-CT	Enquiry relating to previously submitted short message "00000000"B
TP-MN	not checked (TP-MR in previous SMS-SUBMIT)

second SMS-COMMAND TPDU (UE to SS in step 54)

Information element	Comment Value
TP-MR	TP-MR in previous SMS-COMMAND plus "1"
TP-CT	Delete previously submitted short message "00000010"B
TP-MN	not checked (TP-MR in previous SMS-SUBMIT)

16.2.4.5 Test requirements

After step 23 UE accept a SMS-STATUS-REPORT TPDU.

After step 39 UE shall send a SMS-COMMAND TPDU with the correct TP-Message-Reference.

After step 54 UE shall send a SMS-COMMAND TPDU with the correct TP-Message-Reference.

16.2.5 Test of message class 0 to 3

16.2.5.1 Short message class 0

16.2.5.1.1 Definition

16.2.5.1.2 Conformance requirement

When a mobile terminated message is class 0 and the UE has the capability of indicating short messages, the UE shall indicate the message immediately and send an acknowledgement to the SC when the message has successfully reached the UE irrespective of whether there is memory available in the USIM or ME. The message shall not be automatically stored in the USIM or ME.

References

3GPP TS 23.038, clause 4.

16.2.5.1.3 Test purpose

To verify that the UE will accept and indicate but not store a class 0 message, and that it will accept and indicate a class 0 message if its message store is full.

NOTE: failure of this test in a UE could cause it to reject a class 0 message when its SMS memory becomes full. This could lead to unwanted repetitions between the UE and the service centre.

16.2.5.1.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.

- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the UE message store shall be empty.

Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Test procedure

a) The SS sends a class 0 message by using the method described in step a) of sub-clause 16.2.1 but with the TPDU described in this sub-clause.

b) The UE message store shall be filled (for example by using the method of sub-clause 16.2.3 test of the memory available notification) with the same SMS-DELIVER TPDU except that TP-DCS is set to class 1.

c) The SS sends a class 0 message as in step a).

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 0 Short Message
8	-->		CP-ACK	
9	-->		CP-DATA	Contains RP-ACK RPDU.
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13	UE			The content of the short message shall be indicated by the ME. The UE shall not store the message. This can be checked by verifying that it is impossible to retrieve any short messages from the UE message store.
14		SS		The UE message store shall be filled (for example by using the method of 16.2.3) with Class 1 SMS-DELIVER TPDU.
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
16	-->		SERVICE REQUEST	
17	<--		AUTHENTICATION AND CIPHERING REQUEST	
18	-->		AUTHENTICATION AND CIPHERING RESPONSE	
19	<--		SECURITY MODE COMMAND	
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 0 Short Message
22	-->		CP-ACK	
23	-->		CP-DATA	Contains RP-ACK RPDU.

Step	Direction		Message	Comments
	UE	SS		
24	<--		CP-ACK	
25	<--		RRC CONNECTION RELEASE	
26	-->		RRC CONNECTION RELEASE COMPLETE	
27	UE			The content of the short message shall be indicated by the ME.

Specific Message Contents

SMS-DELIVER TPDU (containing a class 0 message) (SS to UE)

Information element	Comment	Value
TP-DCS	default alphabet, class 0	"1111 0000"B

SMS-DELIVER TPDU (containing a class 1 message to fill the UE message store) (SS to UE)

Information element	Comment	Value
TP-DCS	default alphabet, class 1	"1111 0001"B

16.2.5.1.5 Test requirements

After step 7 UE shall accept and indicate but not store a class 0 message.

After step 21 UE shall accept and indicate a class 0 message.

16.2.5.2 Test of class 1 short messages

This test shall apply to UEs which support:

- storing of received Class 1 Short Messages; and
- indicating of stored Short Messages.

16.2.5.2.1 Definition

16.2.5.2.2 Conformance requirement

When a mobile terminated message is class 1, the UE shall send an acknowledgement to the SC when the message has successfully reached the UE and can be stored, either in the ME or in the USIM.

References

3GPP TS 23.038, clause 4.

16.2.5.2.3 Test purpose

This procedure verifies that the UE acts correctly on receiving a class 1 message, i.e. that it stores the message in the ME or USIM and sends an acknowledgement (at RP and CP-Layer).

16.2.5.2.4 Method of test

Initial conditions

- System Simulator:

- 1 cell, default parameters.

- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the UE message store shall be empty;
  - for storing of class 1 Short Messages, the UE shall be set up to store Short Messages in the ME memory (by way of MMI, as described in ICS/IXIT statement).

Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Test procedure

a) The SS delivers a Short Message of class 1 to the UE as specified in sub-clause 16.2.1, step a).

b) The Short Message is recalled (e.g. by means of the MMI).

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 1 Short Message
8	-->		CP-ACK	
9	-->		CP-DATA	Contains RP-ACK RPDU.
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13	UE			The short message shall be recalled and indicated at the UE.

Specific Message Contents

SMS-DELIVER TPDU (containing a class 1 message) (SS to UE)

Information element	Comment	Value
TP-DCS	default alphabet, class 1	"1111 0001"B

16.2.5.2.5 Test requirements

After step 7 UE shall store the message in the ME or USIM and send an acknowledgement.

16.2.5.3 Test of class 2 short messages

16.2.5.3.1 Definition

Class 2 Short Messages are defined as USIM specific, and the UE shall ensure that a message of this class is stored on the USIM.

16.2.5.3.2 Conformance requirement

When a mobile terminated message is Class 2, the UE shall ensure that the message has been correctly transferred to the SMS data field in the USIM before sending an acknowledgement to the SC. The UE shall return a "protocol error, unspecified" error message if the short message cannot be stored in the USIM and there is other short message storage available at the UE. If all the short message storage at the UE is already in use, the UE shall return "memory capacity exceeded".

Reference(s)

3GPP TS 23.040, sub-clause 9.2.3.10; 3GPP TS 23.038, clause 4. 3GPP TS 34.108, sub-clause 8.3.2.28.

16.2.5.3.3 Test purpose

This procedure verifies that the UE acts correctly on receiving a class 2 message, i.e. that it stores the message correctly in the USIM, and if this is not possible, returns a protocol error message, with the correct error cause, to the network.

There are 2 cases:

1) if the UE supports storing of short messages in the USIM and in the ME, and storage in the ME is not full, and the short message cannot be stored in the USIM, the error cause shall be "protocol error, unspecified";

2) if the UE supports storing of short messages in the USIM and not in the ME, and storage in the ME is not full, and the short message cannot be stored in the USIM, the error cause shall be "memory capacity exceeded".

NOTE: If the UE supports storing of short messages in the USIM and the ME, and storage in the ME is full, and the short message cannot be stored in the USIM, the error cause shall be "memory capacity exceeded". This case is not tested in this test.

16.2.5.3.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the ME message store shall be empty;
  - the ME shall be connected to the USIM simulator. The following shall be present in the USIM simulator:
    - EF_{SMS} with at least two free records and one full record;
    - $EF_{SMSstatus}$, with SMS "Memory Cap. Exceed" notification flag set to "memory available";
    - Service no. 4 (SMS) in EF_{SST} set to allocated and activated;
    - for storing of Class 1 Short Messages the UE shall be set up to store Short Messages in the ME memory (by way of MMI, as described in ICS/IXIT statement).

Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Test procedure

a) The SS delivers a Short Message of class 2 to the UE as specified in sub-clause 16.2.1, step b).

b) Following an attempt by the ME to store the short message in a free record of EF_{SMS} in the USIM, the USIM simulator returns the status response "OK" ("90 00").

c) Step a) is repeated.

d) Following an attempt by the ME to store the short message in a free record of EF_{SMS} in the USIM, the USIM simulator returns the status response "memory problem" ("92 40").

e) The USIM simulator indicates if an attempt was made in steps a) and c) to store the messages and if the messages are stored according to the requirement.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message
8	-->		CP-ACK	
9	ME			The ME shall correctly store the short message in a free record of EFSMS in the USIM, i.e. -the ME shall use a free record - the first byte of the record shall indicate "message received by UE from network" - the TS-Service-Centre-Address shall be correctly stored - the TPDU shall be identical to that sent by the SS - bytes following the TPDU shall be set to "FF"
10	USIM			The USIM simulator returns the status response "OK" ("90 00"). The USIM simulator shall indicate if an attempt was made by the ME to store the short message in the USIM.
11	-->		CP-DATA	Contains RP-ACK RPDU.
12	<--		CP-ACK	
13	<--		RRC CONNECTION RELEASE	
14	-->		RRC CONNECTION RELEASE COMPLETE	
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
16	-->		SERVICE REQUEST	
17	<--		AUTHENTICATION AND CIPHERING REQUEST	
18	-->		AUTHENTICATION AND CIPHERING RESPONSE	
19	<--		SECURITY MODE COMMAND	

Step	Direction		Message	Comments
	UE	SS		
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message
22	-->		CP-ACK	
23	ME			The ME shall attempt to store the short message in a free record of EFSMS in the USIM.
24	USIM			The USIM simulator returns the status response "memory problem" ("92 40"). The USIM simulator shall indicate if an attempt was made by the ME to store the short message in the USIM.
25	-->		CP-DATA	Contains RP-ERROR RPDU with error cause "protocol error, unspecified" if the UE supports storing of short messages in the ME, or error cause "memory capacity exceeded" if not.
26	<--		CP-ACK	
27	<--		RRC CONNECTION RELEASE	
28	-->		RRC CONNECTION RELEASE COMPLETE	

Specific Message Contents

SMS-DELIVER TPDU (containing a class 2 message) (SS to UE)

Information element	Comment	Value
TP-DCS	default alphabet, class 2	"1111 0010"B

16.2.5.3.5 Test requirements

After step 10 UE shall confirm that the short message is stored in the USIM and send CP-DATA containing RP-ACK RPDU.

After step 24 UE shall confirm that the short message cannot be stored in the USIM and send CP-DATA containing RP-ERROR RPDU. If UE supports storing of short message in the ME, the error cause of RP-ERROR RPDU shall be “protocol error, unspecified”, and if not the error cause of RP-ERROR RPDU shall be “memory capacity exceeded”

16.2.5.4 Test of class 3 short messages

For further study.

16.2.6 Test of short message type 0

For further study.

16.2.7 Test of the replace mechanism for SM type 1-7

16.2.7.1 Definition

16.2.7.2 Conformance requirement

On receipt of a short message, the UE shall check to see if the associated Protocol Identifier contains a Replace Short Message Type code. If such a code is present, then the UE will check the associated SC address (RP-OA) and originating address (TP-OA) and replace any existing stored message having the same Protocol Identifier code, SC address and originating address with the new short message.

Reference(s)

3GPP TS 23.040; sub-clause 9.2.3.9.

16.2.7.3 Test purpose

This procedure verifies the correct implementation of the replace mechanism for Replace Short Messages.

16.2.7.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the UE message store shall be empty.

Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Test procedure

a) Two different numbers n and m are drawn randomly between 1 and 7. Two different addresses for TP-Originating-Address (TPOA1 and TPOA2) are drawn. Two different addresses for RP-Originating-Address (RPOA1 and RPOA2) are drawn.

b) The SS delivers a short message to the UE as specified in sub-clause 16.2.1 step a). In the SMS-DELIVER TPDU, the TP-Protocol-Identifier parameter is "Replace Short Message Type n", the TP-Originating-Address is TPOA1, and the RP-Originating-Address is RPOA1.

c) Step b) is repeated but with a different TP-Originating-Address (TPOA2), and different contents of TP-User-Data in the SMS-DELIVER TPDU. The other parameters are the same as in step b).

d) Step c) is repeated but with RPOA2 in the RP-Originated-Address, and contents of TP-User-Data different from the former two messages. The other parameters are the same as in step c).

e) Step d) is repeated but with the TP-Protocol-Identifier equal to "Replace Short Message Type m", and contents of TP-User-Data different from the former three messages. The other parameters are the same as in step d).

f) Step e) is repeated but the contents of TP-User-Data are different from that used in step e).

g) The SS prompts the operator to indicate the Short Messages stored in the UE.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA1 and RP-OA is RPOA1
8	-->		CP-ACK	
9	-->		CP-DATA	Contains RP-ACK RPDU.

Step	Direction		Message	Comments
	UE	SS		
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
14	-->		SERVICE REQUEST	
15	<--		AUTHENTICATION AND CIPHERING REQUEST	
16	-->		AUTHENTICATION AND CIPHERING RESPONSE	
17	<--		SECURITY MODE COMMAND	
18	-->		SECURITY MODE COMPLETE	
19	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA2 and RP-OA is RPOA1, TP-UD different from step 7
20	-->		CP-ACK	
21	-->		CP-DATA	Contains RP-ACK RPDU.
22	<--		CP-ACK	
23	<--		RRC CONNECTION RELEASE	
24	-->		RRC CONNECTION RELEASE COMPLETE	
25			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
26	-->		SERVICE REQUEST	
27	<--		AUTHENTICATION AND CIPHERING REQUEST	
28	-->		AUTHENTICATION AND CIPHERING RESPONSE	
29	<--		SECURITY MODE COMMAND	
30	-->		SECURITY MODE COMPLETE	
31	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA2 and RP-OA is RPOA2, TP-UD different from step 7 and 19
32	-->		CP-ACK	
33	-->		CP-DATA	Contains RP-ACK RPDU.
34	<--		CP-ACK	
35	<--		RRC CONNECTION RELEASE	
36	-->		RRC CONNECTION RELEASE COMPLETE	
37			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
38	-->		SERVICE REQUEST	
39	<--		AUTHENTICATION AND CIPHERING REQUEST	
40	-->		AUTHENTICATION AND CIPHERING RESPONSE	
41	<--		SECURITY MODE COMMAND	
42	-->		SECURITY MODE COMPLETE	
43	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type m", TP-OA is TPOA2 and RP-OA is RPOA2, TP-UD different from step 7, 19 and 31
44	-->		CP-ACK	
45	-->		CP-DATA	Contains RP-ACK RPDU.
46	<--		CP-ACK	
47	<--		RRC CONNECTION RELEASE	
48	-->		RRC CONNECTION RELEASE COMPLETE	
49			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
50	-->		SERVICE REQUEST	
51	<--		AUTHENTICATION AND CIPHERING REQUEST	

Step	Direction		Message	Comments
	UE	SS		
52	-->		AUTHENTICATION AND CIPHERING RESPONSE	
53	<--		SECURITY MODE COMMAND	
54	-->		SECURITY MODE COMPLETE	
55	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type m", TP-OA is TPOA2 and RP-OA is RPOA2, TP-UD different from step 43
56	-->		CP-ACK	
57	-->		CP-DATA	Contains RP-ACK RPDU.
58	<--		CP-ACK	
59	<--		RRC CONNECTION RELEASE	
60	-->		RRC CONNECTION RELEASE COMPLETE	
61	SS			Prompts the operator to indicate the Short Messages stored in the UE. Only the Short Messages delivered in step 7, 19, 31 and 55 shall be retrievable and indicated

Specific Message Contents

SMS-DELIVER TPDU

Information element	Comment Value
TP-MMS	no more messages are waiting in SC "1"B
TP-PID	binary 01000xxx, xxx represents n resp. m (see test method description)

16.2.7.5 Test requirements

After step 60 only the Short Messages delivered in step 7, 19, 31 and 55 shall be retrieved and indicated.

16.2.8 Test of the reply path scheme

16.2.8.1 Definition

16.2.8.2 Conformance requirement

When a replying UE receives an original mobile terminated short message it has:

- originating SME = TP-Originating Address in the SMS-DELIVER TPDU;
- original SC = RP-Originating Address in the RP-MT-DATA.

When submitting the reply mobile originated short message, the replying UE should use parameters as follows:

- TP-Destination Address in SMS-SUBMIT TPDU = originating SME;
- RP-Destination Address in RP-MO-DATA = original SC.

Reference(s)

3GPP TS 23.040 Annex D.5,D.6

16.2.8.3 Test purpose

This procedure verifies that the UE is able to send a Reply Short Message back to the correct originating SME even if in the meantime it receives another Short Message.

16.2.8.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the UE message store shall be empty.

Related ICS/IXIT Statements

Support for Short message MT/PP.

Support for Short message MO/PP.

The value of timer TC1M.

Test procedure

a) The SS delivers a Short Message as specified in sub-clause 16.2.1, step b) with TP-Reply-Path set to 1.

b) Step a) is repeated but with:
   - different TP-Originating-Address for the originating SME;
   - different RP-Originating-Address for the original SC; and
   - different message contents TP-User-Data.

c) UE sends the Reply Short Message corresponding to one of two received Short Messages (e.g. by means of the MMI).

d) step c) is repeated for the other Short Message.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-RP set to 1
8	-->		CP-ACK	Sent within TC1M after step 7
9	-->		CP-DATA	Contains RP-ACK RPDU.
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
14	-->		SERVICE REQUEST	
15	<--		AUTHENTICATION AND CIPHERING REQUEST	

Step	Direction		Message	Comments
	UE	SS		
16	-->		AUTHENTICATION AND CIPHERING RESPONSE	
17	<--		SECURITY MODE COMMAND	
18	-->		SECURITY MODE COMPLETE	
19	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-OA, RP-OA and TP-UD different from step 7
20	-->		CP-ACK	Sent within TC1M after step 7
21	-->		CP-DATA	Contains RP-ACK RPDU.
22	<--		CP-ACK	
23	<--		RRC CONNECTION RELEASE	
24	-->		RRC CONNECTION RELEASE COMPLETE	
25	UE			UE sends the Reply Short Message corresponding to one of two received Short Messages.
26	<--		SYSTEM INFORMATION	BCCH
27	-->		RRC CONNECTION REQUEST	CCCH
28	<--		RRC CONNECTION SETUP	CCCH
29	-->		RRC CONNECTION SETUP COMPLETE	DCCH
30	-->		SERVICE REQUEST	
31	<--		AUTHENTICATION AND CIPHERING REQUEST	
32	-->		AUTHENTICATION AND CIPHERING RESPONSE	
33	<--		SECURITY MODE COMMAND	
34	-->		SECURITY MODE COMPLETE	
35	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU) RP-DA = RP-OA corresponding to the message TP-DA = TP-OA corresponding to the message
36	<--		CP-ACK	Sent within TC1M after step 35
37	<--		CP-DATA	Contains RP-ACK RPDU
38	SS			Waits max 25 seconds for CP-ACK
39	-->		CP-ACK	
40	<--		RRC CONNECTION RELEASE	RRC connection is released.
41	-->		RRC CONNECTION RELEASE COMPLETE	
42	UE			UE sends the Reply Short Message corresponding to other Short Message.
43	<--		SYSTEM INFORMATION	BCCH
44	-->		RRC CONNECTION REQUEST	CCCH
45	<--		RRC CONNECTION SETUP	CCCH
46	-->		RRC CONNECTION SETUP COMPLETE	DCCH
47	-->		SERVICE REQUEST	
48	<--		AUTHENTICATION AND CIPHERING REQUEST	
49	-->		AUTHENTICATION AND CIPHERING RESPONSE	
50	<--		SECURITY MODE COMMAND	
51	-->		SECURITY MODE COMPLETE	
52	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU) RP-DA = RP-OA corresponding to the Message TP-DA = TP-OA corresponding to the message
53	<--		CP-ACK	Sent within TC1M after step 52
54	<--		CP-DATA	Contains RP-ACK RPDU
55	SS			Waits max 25 seconds for CP-ACK
56	-->		CP-ACK	
57	<--		RRC CONNECTION RELEASE	RRC connection is released.
58	-->		RRC CONNECTION RELEASE COMPLETE	

Specific Message Contents

SMS-DELIVER TPDU

Information element	Comment Value
TP-MMS	no more messages are waiting in SC "1"B
TP-RP	Reply Path exists "1"B

16.2.8.5 Test requirements

After step 34 UE shall send the Reply Short Message corresponding to one of two previously received short messages.

After step 51 UE shall send the Reply Short Message corresponding to the other of two previously received short messages.

16.2.9 Multiple SMS mobile originated

16.2.9.1 UE in idle mode

This test is not applicable for R99.

16.2.9.2 UE in active mode

This test is not applicable for R99.

16.2.10 Test of capabilities of simultaneously receiving a short message whilst sending a mobile originated short message

16.2.10.1 Definition

16.2.10.2 Conformance requirements

An active UE shall be able to receive short message TPDU (SMS-SUBMIT) at any time, independently of whether or not there is in SMS mobile originated.

Reference

3GPP TS 23.040, sub-clause 3.1.

16.2.10.3 Test purpose

The test verifies that the UE is capable of simultaneously receiving a network originated SM whilst sending a mobile originated SM.

16.2.10.4 Method of test

Initial Conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the SMS message storage shall be empty.

Related ICS/IXIT Statements

Support for Short message MO/PP and MT/PP.

Support for state PDP-ACTIVE of session management.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Maximum length (characters) of a mobile originated short message.

Test procedure

a) The SS is configured to receive a mobile originated SM. In sub-clause 16.2.2 steps a) and b) are repeated and, using the end of the CP-DATA message from the UE as a trigger, the SS sends a SM to the UE. In this case a new transaction identifier shall be used in the CP messages of SMS mobile terminated.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION	BCCH
2	-->		RRC CONNECTION REQUEST	CCCH
3	<--		RRC CONNECTION SETUP	CCCH
4	-->		RRC CONNECTION SETUP COMPLETE	DCCH
5	-->		SERVICE REQUEST	
6	<--		AUTHENTICATION AND CIPHERING REQUEST	
7	-->		AUTHENTICATION AND CIPHERING RESPONSE	
8	<--		SECURITY MODE COMMAND	
9	-->		SECURITY MODE COMPLETE	
10	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
11	SS			The SS sends an SM to the UE triggered by the end of the CP-DATA message from the UE
12	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
13	UE			The UE shall correctly receive the SM and indicate that a message has arrived. In the MO case the UE shall send the CP-ACK message with transaction identifier assigned to this transfer. In the MT case the UE shall send a CP-ACK message and a CP-DATA message containing the RP-ACK RPDU. The transaction identifier shall be the same as chosen by the SS for the MT transfer.

NOTE: Time values for SS wait times are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.

Specific Message Contents

SMS SUBMIT TPDU

Information element	Comment Value
TP-UDL TP-UD (140 octets max)	as applicable maximum number of characters (text of message) as defined by the manufacturer (see ICS/IXIT)

16.2.10.5 Test requirements

After step 12 UE shall correctly receive the SM and indicate that a message has arrived.

16.3 Short message service cell broadcast

16.3.1 Definition

16.3.2 Conformance requirements

In idle mode, the UE listens to the BCCH and to the paging sub-channel for the paging group it belongs to. The UE is required to receive and analyse the paging messages and immediate assignment messages sent on the paging subchannel corresponding to its paging subgroup.

Reference

- 3GPP TS 23.041;clause 8.
- 3GPP TS 25.324; clause 11

16.3.3 Test purpose

This test verifies that an UE supporting SMS-CB is able to receive SMS-CB messages.

16.3.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters;
  - the SS provides a BCCH/CCCH to support the UE in idle mode;
  - periodic location updating is disabled.
- User Equipment:
  - the UE shall be in the idle updated state.

Related ICS/IXIT Statements

Support for short message transmission cell broadcast.

Test procedure

Three Cell Broadcast (CB) messages are sent by the SS on the CBCH with message codes 0,1,1 in serial number fields respectively.

The UE shall respond to the page.

Expected sequence

Since the SMS-CB messages are sent continuously, a table is not applicable in this test.

Specific Message Contents:

Cell broadcast test message content

Information element	Comment Value
Message Type	CBS Message "1"B (see 3GPP TS 25.324, sub-clause 11.1)
Message ID	
Serial Number	
- Geographical scope	"00"B
- Message code	see test procedure "0000000000"B or "0000000001"B
- Update number	as applicable
Data Coding Scheme	Default alphabet, English "00000001"B
CB Data	max 1246 octets

16.3.5 Test requirements

In consequence of test the UE shall ignore third message and store two messages.

16.4 Default message contents:

16.4.1 Default message contents for SM-CP protocol

CP-DATA

Protocol Discriminator	SMS messages ("1001"B)
Transaction Identifier	
TIO	any value from the set {0, ..., 6}
TI flag	0
Message type	00000001
CP-User data	
length indicator	
RPDU	max 248 octets

CP-ACK

Protocol Discriminator	SMS messages ("1001"B)
Transaction Identifier	
TIO	
TI flag	
Message type	00000100

CP-ERROR

Protocol Discriminator	SMS messages ("1001"B)
Transaction Identifier	
TIO	
TI flag	
Message type	00010000
CP-Cause	
Cause value	see 3GPP TS 24.011, sub-clause 8.1.4.2

16.4.2 Default message contents for SM-RP protocol

RP-DATA

Information element	Comment Value
RP-Message Type	"001"B (SS->UE) or "000"B(UE->SS)
RP-Message Reference	see 3GPP TS 24.011, sub-clause 8.2.3
RP-Originator Address	see 3GPP TS 24.011, sub-clause 8.2.5.1
RP-Destination Address	see 3GPP TS 24.011, sub-clause 8.2.5.2
RP-User Data	see 3GPP TS 24.011, sub-clause 8.2.5.3
Length indicator	
TP-DATA	max 233 octets

RP-ACK

Information element	Comment Value
RP-Message Type	"010"B (UE->SS) or "011"B(SS->UE)
RP-Message Reference	see 3GPP TS 24.011, sub-clause 8.2.3
RP-User Data	see 3GPP TS 24.011, subclause 8.2.5.3 : optional, may be present or not
RP-User Data IEI	"1000001"B
Length indicator	
TP-Data	max 232 octets

RP-ERROR

Information element	Comment Value
RP-Message Type	"100"B (UE->SS) or "101"B(SS->UE)
RP-Message Reference	see 3GPP TS 24.011, sub-clause 8.2.3
RP-Cause	see 3GPP TS 24.011, sub-clause 8.2.5.4
RP-User Data	see 3GPP TS 24.011, sub-clause 8.2.5.3: optional, may be present or not
RP-User Data IEI	"1000001"B
Length indicator	
TP-Data	max 232 octets

RP-SMMA UE->SS)

Information element	Comment Value
RP-Message Type	"110"B (UE->SS)
RP-Message Reference	see 3GPP TS 24.011, sub-clause 8.2.3

16.4.3 Default message contents for SM-TP protocol

SMS DELIVER TPDU

Information element	Comment Value
TP-MTI	SMS DELIVER "00"B
TP-MMS	more messages are waiting in SC "0"B
TP-RP	no reply path "0"B
TP-UDHI	TP-UD contains only the SM"0"B
TP-SRI	no status report returned"0"B
TP-OA	an international number coded E.164
TP-PID	default"00000000"B
TP-DCS	default alphabet "00000000"B
TP-SCTS	any legal value (cf. 3GPP TS 23.040)
TP-UDL	
TP-UD	max 140 octets

SMS SUBMIT TPDU

Information element	CommentValue
TP-MTI	SMS SUBMIT"01"B
TP-RD	SC shall accept same SMS-SUBMIT “0”B
TP-VPF	TP-VP field not present “00”B
TP-RP	no reply path "0"B
TP-UDHI	TP-UD contains only the SM “00”B
TP-SRR	no request of status report “00”B
TP-MR	
TP-DA	an international number coded E164
TP-PID	default"00000000"B
TP-DCS	default alphabet "00000000"B
TP-VP	
TP-UDL	
TP-UD	max 140 octets

SMS COMMAND TPDU

Information element	Comment Value
TP-MTI	SMS-COMMAND"10"B
TP-UDHI	TP-UD contains only the SM “00”B
TP-SRR	status report not requested "0"B
TP-MR	
TP-PID	default"00000000"B
TP-CT	
TP-MN	
TP-DA	an international number coded E164
TP-CDL	
TP-CD	

SMS STATUS REPORT TPDU

Information element	Comment Value
TP-MTI	SMS-STATUS-REPORT“10”B
TP-MMS	no more messages "1"B
TP-SRQ	result of SMS-SUBMIT "0"B
TP-MR	
TP-RA	the destination address of the previous SM MO
TP-SCTS	any legal value (cf. 3GPP TS 23.040, sub-clause 9.2.3.11)
TP-DT	any legal value (cf. 3GPP TS 23.040, sub-clause 9.2.3.13)
TP-ST	see 3GPP TS 23.040, sub-clause 9.2.3.15

17 User Equipment features (MMI, VHE, MexE, SAT)

17.1 Test of autocalling restrictions

17.1.1 General

It is essential that all autocalling apparatus is prevented from continuously dialling a given number, to avoid machines repeatedly disturbing PSTN subscribers in error, or numerous repeat attempts to unobtainable numbers which cause waste of valuable network resources. Therefore autocalling restrictions are defined by TS 22.001.

The tests shall be performed using all of the call methods specified by the supplier in the IXIT statement TS 34.123-2. The supplier shall state any autocalling procedures implemented and how many times they can be repeated to a single number and the minimum re-attempt interval(s), i.e. the complete re-try schedule or algorithm with parameter values. The supplier shall further describe any automatic methods for making repeated calls to a single number. The supplier shall also state in the IXIT statement the number of B-party numbers that can be stored on the list of blacklisted numbers as described in TS 22.001, Annex E.

For an external R-interface the supplier shall state in the IXIT statement the procedure for autocalling restrictions for that interface and the possible parameter settings for the number of times the LTE can make a re-attempt and the minimum accepted time between re-attempts accepted by the UE. The conditions for clearing the autocalling constraints shall be stated in the IXIT statement.

For external interfaces the LTE must be programmed so that it clearly attempts to violate the autocalling constraints.

For all the tests in this clause the call setup procedure uses the Generic Setup Procedure for Circuit Switched connection as specified in TS 34.108 clause 7. A Radio Access Bearer to set up shall be selected from one of the speech or CS data bearers within the capability of the UE as specified in the ICS statement. Unless otherwise indicated, this procedure shall only run to the transmission by the SS or UE of the SETUP message (CC).

17.1.2 Constraining the access to a single number (TS 22.001 category 3)

17.1.2.1 Definition

This test checks that when an auto-dialled call to a B-party number fails due to a category 3 cause, only one retry to that number is permitted.

During this test the SETUP messages shall contain the same B-party number.

No manual intervention shall be performed except to initiate and end the test.

17.1.2.2 Conformance requirement

A repeat call attempt may be made when a call attempt is unsuccessful for the reasons listed below (as defined in TS 24.008).

These reasons are classified in three major categories:

1. "Busy destination";
2. "Unobtainable destination - temporary";
3. "Unobtainable destination - permanent/long term".

NOTE: Cause values for each category are defined in TS 22.001, Annex E.

The table below describes a repeat call restriction pattern to any B number. This pattern defines a maximum number (n) of call repeat attempts; when this number n is reached, the associated B number shall be blacklisted by the UE until a manual re-set at the UE is performed in respect of that B number. When a repeat attempt to any one B number fails, or is blacklisted, this does not prevent calls being made to other B numbers.

For the categories 1 and 2 above, n shall be 10; for category 3, n shall be 1.

Call attempt	Minimum duration between call attempts
Initial call attempt	-
1st repeat attempt	5 sec
2nd repeat attempt	1 min
3rd repeat attempt	1 min
4th repeat attempt	1 min
5th repeat attempt	3 min
.	
.	
nth repeat attempt	3 min

Reference:

TS 22.001, Annex E.

17.1.2.3 Test purpose

To ensure the correct behaviour of the UE to TS 22.001 Category 3.

17.1.2.4 Method of test

Initial condition.

There shall be no numbers in the list of blacklisted numbers in the UE. The time set between the first re-attempt and the next re-attempt is set to the minimum value possible. The number of re-attempts is set to the lowest possible number, greater than 1, that is supported by the UE. The autocalling function is invoked for the B-party number to be used during the test.

Related ICS/IXIT Statement(s)

ICS: TBD.

IXIT: Description of auto calling management:

- selection of the auto calling;
- indication that the call failed and a re-try is attempted;
- indication that a call finally failed.

Test Procedure

Step	Direction		Message	Comments
	UE	SS		
1	UE			"called number" entered
2	→		GENERIC SETUP PROCEDURE MOBILE ORIGINATED, CS (Up to SETUP)	Establishment cause indicates "originating call".
3	←		RELEASE COMPLETE	Cause value from category 3 of TS 22.001, Annex E.
4	←		RRC CONNECTION RELEASE	
5	→		RRC CONNECTION RELEASE COMPLETE	The signalling link is released
6				The UE is invoking the auto calling function. The time between step 4 and 7 must be minimum 5 sec.
7	→		GENERIC SETUP PROCEDURE MOBILE ORIGINATED, CS (Up to SETUP)	Establishment cause indicates "originating call".
8	←		RELEASE COMPLETE	Cause value from category 3 of TS 22.001, Annex E.
9	←		RRC CONNECTION RELEASE	
10	→		RRC CONNECTION RELEASE COMPLETE	The main signalling link is released
11	UE			Clear the auto calling constraint after a minimum of 2 minutes from step 9.

17.1.2.5 Test requirements

The time between step 4 and 7 must be minimum 5 seconds.

No further call attempt shall be made after step 9.

17.1.3 Constraining the access to a single number (TS 22.001 categories 1 and 2)

17.1.3.1 Definition

This test checks that when an auto-dialled call to a B-party number fails due to a category 2 cause, the time between of retries complies with the requirements, and the number of retries does not exceed that declared by the UE manufacturer, and is never more than 10.

During this test the SETUP messages shall contain the same B-party number.

No manual intervention shall be performed except to initiate and end the test.

17.1.3.2 Conformance requirement

The UE must fulfil the requirements for category 1 and 2, see sub-clause 17.1.2.2.

Reference:

TS 22.001, Annex E.

17.1.3.3 Test purpose

To ensure the correct behaviour of the UE to TS 22.001 Categories 1 and 2.

17.1.3.4 Method of test

Initial condition

There shall be no numbers in the list of blacklisted numbers in the UE. The re-try scheme is set to give the shortest possible intervals between re-tries. The number of re-attempts is set to the maximum possible number (N), that is supported by the UE. The autocalling function is invoked for the B-party number to be used during the test.

Related ICS/IXIT Statement(s)

ICS: TBD

IXIT: Description of auto calling management:

- selection of the auto calling;
- indication that the call failed and a re-try is attempted;
- indication that a call finally failed.

Test Procedure

A, UE originated, generic call setup is performed up to the SETUP message. The SS then releases the establishment with a cause value from category 1 or 2 (TS 22.001, Annex E).

The UE is continuously making new generic call setup attempts invoked by the auto calling function after each RRC CONNECTION RELEASE from the SS.

Step	Direction		Message	Comments
	UE	SS		
1	UE			"called number" entered
2	→		GENERIC SETUP PROCEDURE MOBILE ORIGINATED, CS (Up to SETUP)	Establishment cause indicates "originating call".
3	←		RELEASE COMPLETE	Cause value from category 1 or 2 of TS 22.001, Annex E. This shall be chosen randomly, from both categories. Cause no. 27 shall be excluded if the UE has implemented in category 3 of TS 22.001, as declared in IXIT statement
4	←		RRC CONNECTION RELEASE	
5				The UE is invoking the auto calling function. 1: At the first re-attempt the time between step 4 and 7 must be minimum 5 sec. 2: At the 2nd, 3rd and 4th re-attempt the time between step 4 and 7 must be minimum 1 min. 3: At the 5th to 10th re-attempt the time between step 4 and 7 must be minimum 3 min.
6	→		RRC CONNECTION RELEASE COMPLETE	The signalling link is released
7	→		GENERIC SETUP PROCEDURE MOBILE ORIGINATED, CS (Up to SETUP)	Establishment cause indicates "originating call".
8	←		RELEASE COMPLETE	Cause value from category 1 or 2 of TS 22.001, Annex E. This shall be chosen randomly, from both categories. Cause no. 27 shall be excluded if the UE has implemented in category 3 of TS 22.001, as declared in PIXIT statement
9	←		RRC CONNECTION RELEASE	
10	→		RRC CONNECTION RELEASE COMPLETE	The signalling link is released.
11				The auto calling function shall repeat step 5 to 9 (N-1) times. The UE shall not make more than maximum 10 re-attempts.
12	UE			Clear the auto calling constraint by manual intervention after a minimum of 4 minutes from step 11. Following the final completion of step 11 the UE initiate a call prior to manual intervention.

17.1.3.5 Test requirements

1: At the first re-attempt the time between step 4 and 7 must be minimum 5 sec. 2: At the 2nd, 3rd and 4th re-attempt the time between step 4 and 7 must be minimum 1 min. 3: At the 5th to 10th re-attempt the time between step 4 and 7 must be minimum 3 min.

The UE shall not make more than maximum 10 re-attempts.

17.1.4 Behaviour of the UE when its list of blacklisted numbers is full

17.1.4.1 Definition and applicability

This tests that the UE does not allow autocalling when its list of blacklisted numbers is full.

The number of B-party numbers that can be stored in the list of blacklisted numbers, as stated in the IXIT statement, is M.

This test shall only apply to UE that are capable of autocalling more than M B-party numbers.

17.1.4.2 Conformance requirement

The number of B numbers that can be held in the blacklist is at the manufacturers discretion but there shall be at least 8. However, when the blacklist is full the UE shall prohibit further automatic call attempts to any one number until the blacklist is manually cleared at the UE in respect of one or more B numbers.

Reference

TS 22.001, Annex E.

17.1.4.3 Test purpose

To ensure the correct behaviour of the UE when its list of blacklisted numbers is full.

17.1.4.4 Method of test

Initial condition

The list of blacklisted numbers, in the UE, shall be full. This may be achieved as described in the procedure in clause 17.1.2, applied to M B-party numbers.

Related ICS/IXIT Statement(s)

PICS: TBD.

PIXIT: Description of auto calling management:

- selection of the auto calling;
- indication that the call failed and a re-try is attempted;
- indication that a call finally failed.

Test Procedure

The autocalling function is invoked for a B-party number that is not in the list of blacklisted numbers.

Clear the autocalling constraint by manual intervention after a minimum of 10 s.

17.1.4.5 Test requirements

The UE must not initiate a call.

18 Multi-Layer Functional Tests

The present clause specifies the multi-layer functional test cases that are not covered by the interoperability radio bearer test cases in clause 14 or by any other test cases in the present TS.

Annex A:
Default RRC Message Contents

This clause contains the default values of RRC messages, other than those specified in TS 34.108 clauses 6 and 9. Unless indicated otherwise in specific test cases, they shall be transmitted by the system simulator in RRC messages, and which are required to be received from the UE under test.

The necessary L3 messages are listed in alphabetic order, with the exception of the SYSTEM INFORMATION messages, where it is the information elements which are listed in alphabetic order (this is because some information elements occur in several SYSTEM INFORMATION types).

In this clause, decimal values are normally used. However, sometimes a hexadecimal value, indicated by an "H", or a binary value, indicated by a "B" is used.

Default SYSTEM INFORMATION:

NOTE 1: SYSTEM INFORMATION BLOCK TYPE 1 (except for PLMN type “GSM-MAP”), SYSTEM INFORMATION BLOCK TYPE 8, SYSTEM INFORMATION BLOCK TYPE 9, SYSTEM INFORMATION BLOCK TYPE 10, SYSTEM INFORMATION BLOCK TYPE 14, SYSTEM INFORMATION BLOCK TYPE 15 and SYSTEM INFORMATION BLOCK TYPE 16 messages are not used.

Contents of ACTIVE SET UPDATE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects one integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Integrity protection mode info	Not Present
Ciphering mode info	Not Present
Activation time	(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI	Not Present
CN information info	Not Present
Downlink counter synchronisation info	Not Present
Maximum allowed UL TX power	33dBm
Radio link addition information	(This IE is repeated for addition RL number.)
- Primary CPICH info	
- Primary scrambling code	The value is for additional cell
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0 chips
- Power offset $P_{Pilot-DPDCH}$	TBD
- Secondary CPICH info	Not Present
- DL channelisation code	
- Secondary scrambling code	1
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change	No change
- TPC combination index	0
- SSDT Cell Identity	-a
- Closed loop timing adjustment mode	Not Present
- TFCI combining indicator	TRUE
- SCCPCH Information for FACH	
- Secondary CCPCH info	
- Selection Indicator	Not Present
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- Secondary CPICH info	Not Present
- Secondary scrambling code	1
- SSDT Indicator	FALSE
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Pilot symbol existence	FALSE
- TFCI existence	TRUE
- Fixed or Flexible Position	Flexible
- Timing offset	0
- TFCS	(This IE is repeated for TFC number for PCH and FACH.)
- Normal	
- TFCI Field 1 information	
- CHOICE TFCS representation	Addition
- TFCS addition information	
- CHOICE CTFC Size	Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.
- CTFC information	Refer to TS34.108 clause 6.10 Parameter Set.
- Power offset information	Not Present
- FACH/PCH information	
- TFS	(PCH)
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	(This IE is repeated for TFI number.)
- RLC Size	Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List	(This IE is repeated for TFI number.)
- Number of Transport blocks	Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE mode	FDD
- CHOICE Logical Channel List	ALL

- Semi-static Transport Format information	
- Transmission time interval	Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding	Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate	Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute	Reference to TS34.108 clause 6.10 Parameter Set
- CRC size	Reference to TS34.108 clause 6.10 Parameter Set
- TFS	(FACH)
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	(This IE is repeated for TFI number.)
- RLC Size	Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List	(This IE is repeated for TFI number.)
- Number of Transport blocks	Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE mode	FDD
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding	Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate	Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute	Reference to TS34.108 clause 6.10 Parameter Set
- CRC size	Reference to TS34.108 clause 6.10 Parameter Set
- References to system information blocks	Not Present
Radio link removal information	(This IE is repeated for removal RL number.)
- Primary CPICH info	
- Primary scrambling code	The value is for removal cell
TX Diversity Mode	None
SSDT information	Not Present

Contents of ACTIVE SET UPDATE COMPLETE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink ACTIVE SET UPDATE message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Uplink integrity protection activation info	Not checked
Radio bearer uplink ciphering activation time info	Not checked
Uplink counter synchronisation info	Not checked

Contents of ACTIVE SET UPDATE FAILURE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink ACTIVE SET UPDATE message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Failure cause	Value will be checked

Contents of CELL UPDATE message: TM

Information Element	Value/remark
Message Type	
U-RNTI	Checked to see if it is set to the following values
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
RRC transaction identifier	Checked to see if it is absent
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
START List	Checked to see if the 'CN domain identity' and 'START' IEs are present for all CN domains supported by the UE
- CN domain identity	Checked to see if it is one of the supported CN domains
- START	Checked to see if it is present
AM_RLC error indication (RB2 or RB3)	Checked to see if it is set to 'FALSE'
AM_RLC error indication (RB>3)	Checked to see if it is set to 'FALSE'
Cell update cause	See the test content
Failure cause	Checked to see if it is absent
RB timer indicator	
- T314 expired	Checked to see if it is set to 'FALSE'
- T315 expired	Checked to see if it is set to 'FALSE'
Measured results on RACH	Not checked

Contents of CELL UPDATE CONFIRM message: UM

Information Element	Value/remark
Message Type	
U-RNTI	If this message is sent on CCCH, use the following values. Else, this IE is absent.
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
RRC transaction identifier	Selects an arbitrary integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Integrity protection mode info	Not Present
Ciphering mode info	Not Present
Activation time	Not Present – use default value
New U-RNTI	Not Present
New C-RNTI	Not Present
RRC State indicator	CELL_FACH
UTRAN DRX cycle length coefficient	Not Present
RLC re-establish indicator (RB2 or RB3)	FALSE
RLC re-establish indicator (RB>3)	FALSE
CN information info	Not Present
URA identity	0000 0000 0001B
RB information to release list	Not Present
RB information to reconfigure list	Not Present
RB information to be affected list	Not Present
Downlink counter synchronisation info	Not Present
UL Transport channel information common for all transport channels	Not Present
Deleted TrCH information list	Not Present
Added or Reconfigured TrCH information list	Not Present
CHOICE Mode	Not Present
DL Transport channel information common for all transport channels	Not Present
Deleted TrCH information list	Not Present
Added or Reconfigured TrCH information list	Not Present
Frequency info	Not Present
Maximum allowed UL TX power	Not Present
CHOICE channel requirement	Not Present
CHOICE mode	FDD
- Downlink PDSCH information	Not Present
Downlink information common for all radio links	Not Present
Downlink information per radio link list	Not Present

Contents of MEASUREMENT CONTROL message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an unused integer between 0 to 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Measurement Reporting/Event Trigger Reporting Mode	Event Trigger
Additional measurement list	Not Present
CHOICE Measurement type	Intra-frequency measurement
- Intra-frequency measurement	
- Intra-frequency cell info	
- New intra-frequency cell	
- Intra-frequency cell-id	0
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN number	FALSE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	150
- Primary CPICH Tx power	Not Present
- TX Diversity indicator	FALSE
- Intra-frequency measurement quantity	
- Filter coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	TRUE
- CPICH Ec/N0 reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	TRUE
- CPICH Ec/N0 reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected set cells	Not Present
- Reporting cell status	
- CHOICE reported cell	Report cell within active set and/or monitored cells on used frequency
- Maximum number of reported cells	2
- Measurement validity	Not Present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	64 sec
DPCH Compressed mode status info	Not Present

Contents of MEASUREMENT CONTROL FAILURE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it's set to the identical value for the same IE in the downlink MEASUREMENT CONTROL message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Failure cause	See the test content

Contents of MEASUREMENT REPORT message: AM

Information Element	Value/remark
Message Type	
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Measurement identity	1
Measured Results	
- Intra-frequency measured results	
- Cell measured results	
- Cell Identity	Not present
- SFN-SFN observed time difference	Checked that this IE is absent
- Cell synchronisation information	Checked that this IE is absent
- Primary CPICH info	
- Primary scrambling code	150
- CPICH Ec/N0	Checked that this IE is absent
- CPICH RSCP	Checked that this IE is present
- Pathloss	Checked that this IE is absent
Measured results on RACH	Checked that this IE is absent
Additional measured results	Checked that this IE is absent
Event results	Checked that this IE is absent

Contents of PAGING TYPE 1 message: TM (SMS in CS)

Information Element	Value/remark
Message Type	
Paging record	
- CHOICE Used paging identity	CN identity
- Paging cause	Terminating Low Priority Signalling
- CN domain identity	CS domain
- CHOICE UE identity	
- IMSI (GSM-MAP)	Set to the same octet string as in the IMSI stored in the USIM card
BCCH modification info	Not Present

Contents of PAGING TYPE 1 message: TM (SMS in PS)

Information Element	Value/remark
Message Type	
Paging record	
- CHOICE Used paging identity	CN identity
- Paging cause	Terminating Low Priority Signalling
- CN domain identity	PS domain
- CHOICE UE identity	
- IMSI (GSM-MAP)	Set to the same octet string as in the IMSI stored in the USIM card
BCCH modification info	Not Present

Contents of PAGING TYPE 2 message: AM (Speech in CS)

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Paging cause	Terminating Conversational Call
CN domain identity	CS domain
Paging record type identifier	Select the same type as in the IE “Initial UE Identity” in RRC CONNECTION REQUEST” message.

Contents of PHYSICAL CHANNEL RECONFIGURATION message: AM or UM

Information Element	Condition	Value/remark
Message Type		
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.1 present 23-2. If integrity protection is indicated to be active, this IE is with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A1, A2, A3, A4	CELL_DCH
RRC State indicator	A5, A6	CELL_FACH
UTRAN DRX cycle length coefficient		Not Present
CN information info		Not Present
URA identity		Not Present
Downlink counter synchronisation info		Not Present
Frequency info		
- UARFCN uplink(Nu)		Reference to TS34.108 clause 6.10 Parameter Set
- UARFCN downlink(Nd)		Reference to TS34.108 clause 6.10 Parameter Set
Maximum allowed UL TX power		33dBm
Uplink DPCH info	A1, A2, A3, A4	
- Uplink DPCH power control info		
- DPCCH power offset		-6dB
- PC Preamble		1 frame
- SRB delay		7 frames
- Power Control Algorithm		Algorithm1
- TPC step size		1dB
- Scrambling code type		Long
- Scrambling code number		0 (0 to 16777215)
- Number of DPDCH		Not Present(1)
- spreading factor		SF is reference to TS34.108 clause 6.10 Parameter Set
- TFCI existence		TRUE
- Number of FBI bit		Not Present(0)
- Puncturing Limit		Reference to TS34.108 clause 6.10 Parameter Set
CHOICE Mode		FDD
- Downlink PDSCH information		Not Present
Downlink information common for all radio links	A1, A2, A3, A4	
- Downlink DPCH info common for all RL		
- Timing indicator		Maintain
- CFN-targetSFN frame offset		Not Present
- Downlink DPCH power control information		
- DPC mode		0 (single)
- CHOICE mode		FDD
- DL rate matching restriction information		Not Present
- Spreading factor		Reference to TS34.108 clause 6.10 Parameter Set
- Fixed or Flexible Position		Flexible
- TFCI existence		TRUE
- Number of bits for Pilot bits(SF=128,256)		Not Present
- DPCH compressed mode info		
- TGPSI		1

- TPGS status Flag		inactive
- TGCFN		(Current CFN + (256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence configuration parameters		
- TGMP		FDD Measurement
- TGPRC		62
- TGSN		8
- TGL1		10
- TGL2		5
- TGD		15
- TGPL1		35
- TGPL2		35
- RPP		Mode 1
- ITPITP		Mode 1
- CHOICE UL/DL Mode		DL
- Downlink compressed mode method		SF/2
- Downlink frame type		A
- DeltaSIR1		2.0
- DeltaSIRafter1		1.0
- DeltaSIR2		Not Present
- DeltaSIRafter2		Not Present
- N_Identify_abort		Not Present
- T_Reconfirm_abort		Not Present
- TX Diversity mode		None
- SSDT information		Not Present
- Default DPCH Offset Value		0
Downlink information for each radio links		
- Primary CPICH info		
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		
- Primary CPICH usage for channel estimation		Primary CPICH may be used
- DPCH frame offset		0 chips
- Power offset $P_{Pilot-DPDCH}$		TBD
- Secondary CPICH info		Not Present
- DL channelisation code		
- Secondary scrambling code		1
- Spreading factor		Reference to TS34.108 clause 6.10 Parameter Set
- Code number		SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change		No change
- TPC combination index		0
- SSDT Cell Identity		-a
- Closed loop timing adjustment mode		Not Present
- Secondary CCPCH info		Not Present
- References to system information blocks		Not Present

Condition	Explanation
A1	This IE need for “Non speech in CS”
A2	This IE need for “Speech in CS”
A3	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”

Contents of PHYSICAL CHANNEL RECONFIGURATION COMPLETE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it's set to identical value of the same IE in the downlink PHYSICAL CHANNEL RECONFIGURATION message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Uplink integrity protection activation info	Not checked
COUNT-C activation time	The presence of this IE depends on the following 2 factors: (a) There exists RB(s) mapped to RLC-TM, (b) UE is transiting to CELL_DCH state after the reconfiguration procedure. Else, this IE is absent.
CHOICE mode	FDD
Radio bearer uplink ciphering activation time info	Not checked
Uplink counter synchronisation info	Not checked

Contents of RADIO BEARER SETUP message: AM or UM

Information Element	Condition	Value/remark
Message Type		
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If ciphering is indicated to be active, this IE present with the values of the sub IEs as stated below. Else, this IE is omitted.
- Ciphering mode command		Start
- Ciphering algorithm		Use one of the supported ciphering algorithms
- Ciphering activation time for DPCH		(256+CFN-(CFN MOD 8 + 8))MOD 256
- Radio bearer downlink ciphering activation time info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A1, A2, A3, A4	CELL_DCH
RRC State indicator	A5, A6	CELL_FACH
UTRAN DRX cycle length coefficient		Not Present
CN information info		Not Present
URA identity		Not Present
Signalling RB information to setup		Not Present
RAB information for setup	A1	
- RAB info		
- RAB identity		0000 0001B
- CN domain identity		CS domain
- NAS Synchronization Indicator		Not Present
- Re-establishment timer		
- T314		20 seconds
- RB information to setup		
- RB identity		10
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		TM RLC
- Transmission RLC discard		Not Present
- Segmentation indication		TRUE
- CHOICE Downlink RLC mode		TM RLC
- Segmentation indication		TRUE
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		7
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- Logical channel identity		7
RAB information for setup	A2	
- RAB info		

- RAB identity		0000 0001B
- CN domain identity		CS domain
- NAS Synchronisation Indicator		Not Present
- Re-establishment timer		
- T314		20 seconds
- RB information to setup		
- RB identity		10
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		TM RLC
- Transmission RLC discard		Not Present
- Segmentation indication		TRUE
- CHOICE Downlink RLC mode		TM RLC
- Segmentation indication		TRUE
- RB mapping info		
- Information for each multiplexing option		
- Number of RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		7
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- Logical channel identity		7
- RB information to setup		
- RB identity		11
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		TM RLC
- Transmission RLC discard		Not Present
- Segmentation indication		TRUE
- CHOICE Downlink RLC mode		TM RLC
- Segmentation indication		TRUE
- RB mapping info		
- Information for each multiplexing option		
- Number of RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		2
- Logical channel identity		8
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		7
- Logical channel identity		8
- RB information to setup		(This IE is needed for 12.2 kbps and 10.2 kbps)
- RB identity		12
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		TM RLC
- Transmission RLC discard		Not Present
- Segmentation indication		TRUE
- CHOICE Downlink RLC mode		TM RLC
- Segmentation indication		TRUE
- RB mapping info		
- Information for each multiplexing option		
- Number of RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		3
- Logical channel identity		9
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		

- Number of RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		8
- Logical channel identity		9
RAB information for setup	A3, A4	
- RAB info		
- RAB identity		0000 0001B
- CN domain identity		PS domain
- NAS Synchronization Indicator		Not Present
- Re-establishment timer		
- T314		20 seconds
- RB information to setup		
- RB identity		20
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		AM RLC
- Transmission RLC discard		
- SDU discard mode		Max DAT retransmissions
- MAX_DAT		4
- Timer_MRW		100
- MaxMRW		4
- Transmission window size		8
- Timer_RST		500
- Max_RST		4
- Polling info		
- Timer_poll_prohibit		200
- Timer_poll		200
- Poll_SDU		1
- Last transmission PDU poll		TRUE
- Last retransmission PDU poll		TRUE
- Poll_Windows		99
- CHOICE Downlink RLC mode		AM RLC
- In-sequence delivery		TRUE
- Receiving window size		8
- Downlink RLC status info		
- Timer_status_prohibit		200
- Timer_EPC		200
- Missing PDU indicator		TRUE
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		7
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- Logical channel identity		7
RAB information for setup	A5, A6	
- RAB info		(AM DTCH for PS domain)
- RAB identity		0000 0001B
- CN domain identity		PS domain
- NAS Synchronization Indicator		Not Present
- Re-establishment timer		
- T314		20 seconds
- RB information to setup		
- RB identity		20
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		AM RLC
- Transmission RLC discard		
- CHOICE SDU discard mode		Max DAT retransmissions
- MAX_DAT		4
- Timer_MRW		100

- MaxMRW		4
- Transmission window size		8
- Timer_RST		500
- Max_RST		4
- Polling info		
- Timer_poll_prohibit		200
- Timer_poll		200
- Poll_SDU		1
- Last transmission PDU poll		TRUE
- Last retransmission PDU poll		TRUE
- Poll_Windows		99
- CHOICE Downlink RLC mode		AM RLC
- In-sequence delivery		TRUE
- Receiving window size		8
- Downlink RLC status info		
- Timer_status_prohibit		200
- Timer_EPC		200
- Missing PDU indicator		TRUE
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		7
- CHOICE RLC size list		Explicit
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		6
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH/PCH
- Logical channel identity		6
RB information to be affected	A1, A2, A3, A4	(UM DCCH for RRC)
- RB identity		1
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		1
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		1
RB information to be affected	A1, A2, A3, A4	(AM DCCH for RRC)
- RB identity		2
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		2
- CHOICE RLC size list		All
- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		2
RB information to be affected	A1, A2, A3, A4	(AM DCCH for NAS_DT High priority)

- RB identity		3
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		3
- CHOICE RLC size list		All
- MAC logical channel priority		3
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		3
RB information to be affected	A1, A2, A3, A4	(AM DCCH for NAS_DT Low priority)
- RB identity		4
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		4
- CHOICE RLC size list		All
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		4
RB information to be affected	A5, A6	(UM DCCH for RRC)
- RB identity		1
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		1
- CHOICE RLC size list		Explicit
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH/PCH
- Logical channel identity		1
RB information to be affected	A5, A6	(AM DCCH for RRC)
- RB identity		2
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		2
- CHOICE RLC size list		Explicit
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		3
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH/PCH
- Logical channel identity		2
RB information to be affected	A5, A6	(AM DCCH for NAS_DT High priority)
- RB identity		3
- RB mapping info		
- Information for each multiplexing option		

- RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - Logical channel identity - CHOICE RLC size list - RLC size index - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity		Not Present 1 RACH 3 Explicit Reference to TS34.108 clause 6.10 Parameter Set 4 1 FACH/PCH 3
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - Logical channel identity - CHOICE RLC size list - RLC size index - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity	A5, A6	(AM DCCH for NAS_DT Low priority) 4 Not Present 1 RACH 4 Explicit Reference to TS34.108 clause 6.10 Parameter Set 5 1 FACH/PCH 4
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity - Downlink RLC logical channel info	A5, A6	(TM BCCH for RRC) 6 1 FACH/PCH 5 Not Present
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity - Downlink RLC logical channel info	A5 or A6	(TM PCCH for RRC) 7 1 FACH/PCH 1 Not Present
Downlink counter synchronisation info		Not Present
UL Transport channel information for all transport channels - TFC subset - Allowed Transport Format combination - PRACH TFCS - CHOICE mode - UL DCH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS complete reconfigure information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE Gain Factors - Gain factor βc - Gain factor βd - Reference TFC ID - Power offset Pp-m	A1, A2, A4	 (This IE is repeated for TFC number.) 0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.) Not Present FDD (This IE is repeated for TFC number.) Normal Complete Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Signalled Gain Factor 0 0 Not Present 0dB
UL Transport channel information for all transport channels	A3	

- TFC subset - Allowed Transport Format combination - PRACH TFCS - CHOICE mode - UL DCH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS complete reconfigure information - CHOICE CTFC Size - CTFC information - Power offset information		(This IE is repeated for TFC number.) 0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.) Not Present FDD (This IE is repeated for TFC number.) Normal Complete Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Not Present
UL Transport channel information for all transport channels - TFC subset - Allowed Transport Format combination - PRACH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS complete reconfigure information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE mode - UL DCH TFCS	A5, A6	 (This IE is repeated for TFC number.) 0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.) (This IE is repeated for TFC number.) Normal Complete Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Not Present FDD Not Present
Deleted UL TrCH information - Uplink transport channel type - Transport channel identity	A4	 DCH 15
Deleted UL TrCH information - Uplink transport channel type - UL Transport channel identity - Uplink transport channel type - UL Transport channel identity	A5	 DCH 1 DCH 5
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A1, A2, A3, A4	 DCH 1 Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set ALL Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity	A1, A2, A3, A4	If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.). DCH 5

- TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size		 Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set ALL Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC size - Number of TBs and TTI List - Transmission Time Interval - Number of transport blocks - CHOICE Logical Channel List - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A2	 DCH 2 Dedicated transport channels (This IE is repeated for TFI number) Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Not Present Reference to clause 6.10 Parameter Set All Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC size - Number of TBs and TTI List - Transmission Time Interval - Number of transport blocks - CHOICE Logical Channel List - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A2	(This IE is needed for 12.2 kbps and 10.2 kbps) DCH 3 (This IE is repeated for TFI number) Dedicated transport channels Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Not Present Reference to clause 6.10 Parameter Set All Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set Reference to clause 6.10 Parameter Set
DRAC static information		Not Present
DL Transport channel information common for all transport channel - SCCPCH TFCS - CHOICE mode - CHOICE DL parameters - DL DCH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS complete reconfigure information - CHOICE CTFC Size	A1	 Not Present FDD Independent (This IE is repeated for TFC number.) Normal Complete Number of bits used must be enough to cover

- CTFC information - Power offset information		all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Not Present
DL Transport channel information common for all transport channel - SCCPCH TFCS - CHOICE mode - CHOICE DL parameters - DL DCH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS complete reconfigure - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE Gain Factors - Gain factor ßc - Gain factor ßd - Reference TFC ID - Power offset Pp-m	A2, A3, A4	 Not Present FDD Independent (This IE is repeated for TFC number.) Normal Complete Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to clause 6.10 Parameter Set Signalled Gain Factor 0 0 Not Present 0dB
DL Transport channel information common for all transport channel - SCCPCH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE DL parameters - DL DCH TFCS	A5, A6	 (This IE is repeated for TFC number.) Normal Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Independent Not Present
Deleted DL TrCH information - Downlink transport channel type - Transport channel identity - Downlink transport channel type - Transport channel identity - Downlink transport channel type - Transport channel identity	A4	 DCH 12 DCH 13 DCH 14
Deleted DL TrCH information - Downlink transport channel type - DL Transport channel identity - Downlink transport channel type - Transport channel identity	A5	 DCH 6 DCH 10
Added or Reconfigured DL TrCH information - Downlink transport channel type - DL Transport channel identity - CHOICE DL parameters - Uplink transport channel type - UL TrCH identity - DCH quality target - BLER Quality value - Transparent mode signalling info	A1,A2	 DCH 6 Same as UL DCH 1 -6.3 Not Present
Added or Reconfigured DL TrCH information - Downlink transport channel type - DL Transport channel identity - CHOICE DL parameters - Uplink transport channel type - UL TrCH identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size	A1, A2, A3, A4	If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.). DCH 10 Independent DCH 5 Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter

		Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
- DCH quality target		
- BLER Quality value		-6.3
- Transparent mode signalling info		Not Present
Added or Reconfigured DL TrCH information	A2	
- Downlink transport channel type		DCH
- Transport channel identity		7
- CHOICE DL parameters		SameAsUL
- Uplink transport channel type		DCH
- UL TrCH identity		2
Added or Reconfigured DL TrCH information	A2	(This IE is needed for 12.2 kbps and 10.2 kbps)
- Downlink transport channel type		DCH
- Transport channel identity		8
- CHOICE DL parameters		SameAsUL
- Uplink transport channel type		DCH
- UL TrCH identity		3
- DCH quality target		
- BLER Quality value		-6.3
- Transparent mode signalling info		Not Present
Added or Reconfigured DL TrCH information	A3, A4	
- Downlink transport channel type		DCH
- DL Transport channel identity		6
- CHOICE DL parameters		Independent
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
- DCH quality target		
- BLER Quality value		-6.3
- Transparent mode signalling info		Not Present
Frequency info		
- UARFCN uplink(Nu)		Reference to TS34.108 clause 6.10 Parameter Set
- UARFCN downlink(Nd)		Reference to TS34.108 clause 6.10 Parameter

		Set
Maximum allowed UL TX power		33dBm
CHOICE channel requirement - Uplink DPCH power control info - DPCCH power offset - PC Preamble - SRB delay - Power Control Algorithm - TPC step size - Scrambling code type - Scrambling code number - Number of DPDCH - spreading factor - TFCI existence - Number of FBI bit - Puncturing Limit	A1, A3, A4	Uplink DPCH info -6dB 1 frame 7 frames Algorithm1 1dB Long 0 (0 to 16777215) Not Present(1) SF is reference to TS34.108 clause 6.10 Parameter Set TRUE Not Present(0) Reference to TS34.108 clause 6.10 Parameter Set
CHOICE channel requirement - Uplink DPCH power control info - DPCCH power offset - PC Preamble - SRB delay - Power Control Algorithm - TPC step size - Scrambling code type - Scrambling code number - Number of DPDCH - spreading factor - TFCI existence - Number of FBI bit - Puncturing Limit	A2	Uplink DPCH info -6dB 1 frame 7 frames Algorithm1 1dB Long 0 (0 to 16777215) Not Present(1) SF is reference to clause 6.10 Parameter Set TRUE Not Present(0) Reference to clause 6.10 Parameter Set
CHOICE Mode - Downlink PDSCH information		FDD Not Present
Downlink information common for all radio links - Downlink DPCH info common for all RL - Timing indicator - CFN-targetSFN frame offset - Downlink DPCH power control information - DPC mode - CHOICE mode - DL rate matching restriction information - Spreading factor - Fixed or Flexible Position - TFCI existence - Number of bits for Pilot bits(SF=128,256) - DPCH compressed mode info - TGPSI - TGPS Status Flag - TGCFN - Transmission gap pattern sequence configuration parameters - TGMP - TGPRC - TGSN - TGL1 - TGL2 - TGD - TGPL1 - TGPL2 - RPP - ITP - CHOICE UL/DL Mode - Downlink compressed mode method - Downlink frame type	A1, A2, A3, A4	 Maintain Not Present 0 (single) FDD Not Present Reference to TS34.108 clause 6.10 Parameter Set Flexible TRUE Not Present 1 inactive (Current CFN + (256 – TTI/10msec)) mod 256 FDD Measurement 62 8 10 5 15 35 35 Mode 1 Mode 1 DL SF/2 A

- DeltaSIR1		2.0
- DeltaSIRafter1		1.0
- DeltaSIR2		Not Present
- DeltaSIRafter2		Not Present
- N_Identify_abort		Not Present
- T_Reconfirm_abort		Not Present
- TX Diversity mode		None
- SSDT information		Not Present
- Default DPCH Offset Value		0
Downlink information for each radio link list	A1, A2, A3, A4	
- Primary CPICH info		
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		
- Primary CPICH usage for channel estimation		Primary CPICH may be used
- DPCH frame offset		0 chips
- Power offset $P_{Pilot-DPDCH}$		TBD
- Secondary CPICH info		Not Present
- DL channelisation code		
- Secondary scrambling code		1
- Spreading factor		Reference to TS34.108 clause 6.10 Parameter Set
- Code number		SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change		No change
- TPC combination index		0
- SSDT Cell Identity		-a
- Closed loop timing adjustment mode		Not Present
- Secondary CCPCH info		Not Present
- TFCS		Not Present
- FACH/PCH information		Not Present
- References to system information blocks		Not Present
Downlink information for each radio link list	A5, A6	
- Downlink information for each radio link		
- Choice mode		FDD
- Primary CPICH info		Set to the default value of cell 1.
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		Not present
- Secondary CCPCH info		
- Primary CPICH usage for channel estimation		Primary CPICH may be used
- Power offset $P_{Pilot-DPDCH}$		TBD
- Secondary CPICH info		Not Present
- Secondary scrambling code		Not Present
- STTD indicator		FALSE
- Spreading factor		Reference to clause 6.10 Parameter Set
- Code number		SF-1(SF is reference to clause 6.10 Parameter Set)
- Pilot symbol existence		FALSE
- TFCI existence		TRUE
- Fixed or Flexible position		Flexible
- Timing offset		0
- References to system information blocks		Not present

Condition	Explanation
A1	This IE need for “Non speech in CS”
A2	This IE need for “Speech in CS”
A3	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”

Contents of RADIO BEARER RECONFIGURATION message: AM or UM

Information Element	Condition	Value/remark
Message Type		
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A1, A2, A3, A4	CELL_DCH
RRC State indicator	A5, A6	CELL_FACH
UTRAN DRX cycle length coefficient		Not Present
CN information info		Not Present
URA identity		Not Present
RAB information to reconfigure list		Not Present
RB information to reconfigure list	A1, A2, A3	Not Present
RB information to reconfigure list	A4	
- RB information to reconfigure		(UM DCCH for RRC)
- RB identity		1
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		1
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		1
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for RRC)
- RB identity		2
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		5
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		2
- CHOICE RLC size list		All
- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		2
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT High priority)

- RB identity		3
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		3
- CHOICE RLC size list		All
- MAC logical channel priority		3
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		3
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT Low priority)
- RB identity		4
- PDCP info		Not Present
- RLC info		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		4
- CHOICE RLC size list		All
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		4
- RB information to reconfigure		(AM DTCH)
- RB identity		20
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		7
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- Logical channel identity		7
- RB stop/continue		Not Present
RB information to reconfigure list	A5,A6	
- RB information to reconfigure		(UM DCCH for RRC)
- RB identity		1
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		1
- CHOICE RLC size list		Explicit list
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set

- MAC logical channel priority		2
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- Logical channel identity		1
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for RRC)
- RB identity		2
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		2
- CHOICE RLC size list		Explicit List
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		3
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- Logical channel identity		2
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT High priority)
- RB identity		3
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		3
- CHOICE RLC size list		Explicit list
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- Logical channel identity		3
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT Low priority)
- RB identity		4
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		4
- CHOICE RLC size list		Explicit list
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		5
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- Logical channel identity		4
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DTCH)
- RB identity		20
- PDCP info		Not Present
- CHOICE RLC info type		Not Present
- RB mapping info		

- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		RACH
- Logical channel identity		7
- CHOICE RLC size list		Explicit list
- RLC size index		Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority		6
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- Logical channel identity		6
- RB stop/continue		Not Present
- RB information to reconfigure		(TM BCCH for RRC)
- RB identity		5
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		Not Present
- CHOICE Downlink RLC mode		TM RLC
- Segmentation Indication		TRUE
- RB mapping info		
- Information for each multiplexing option		
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		FACH
- Logical channel identity		5
- RB stop/continue		Not Present
- RB information to reconfigure		(TM PCCH for RRC)
- RB identity		7
- PDCP info		Not Present
- CHOICE RLC info type		RLC info
- CHOICE Uplink RLC mode		Not Present
- CHOICE Downlink RLC mode		TM RLC
- Segmentation Indication		TRUE
- RB mapping info		
- Information for each multiplexing option		
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		PCH
- Logical channel identity		1
- RB stop/continue		Not Present
RB information to be affected	A1, A2, A3	(UM DCCH for RRC)
- RB identity		1
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		1
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		1
RB information to be affected	A1, A2, A3	(AM DCCH for RRC)
- RB identity		2
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		2
- CHOICE RLC size list		All
- MAC logical channel priority		2

- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		10
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		1
- Logical channel identity		2
RB information to be affected	A1, A2, A3	(AM DCCH for NAS_DT High priority)
- RB identity		3
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		3
- CHOICE RLC size list		All
- MAC logical channel priority		3
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		3
RB information to be affected	A1, A2, A3	(AM DCCH for NAS_DT Low priority)
- RB identity		4
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		4
- CHOICE RLC size list		All
- MAC logical channel priority		4
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		4
RB information to be affected	A1, A2, A3	(TM DTCH)
- RB identity		10
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		1
- Logical channel identity		7
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		6
- Logical channel identity		7
RB information to be affected	A2	(DTCH TM)
- RB identity		11
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		2
- Logical channel identity		8
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		7

- Logical channel identity		8
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - UL Transport channel identity - Logical channel identity - CHOICE RLC size list - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - DL DCH Transport channel identity - Logical channel identity	A2	(This IE is needed for 12.2 kbps and 10.2 kbps) 12 Not Present 1 DCH 3 9 All 1 1 DCH 8 9
UL Transport channel information for all transport channels - TFC subset - Allowed Transport Format combination - PRACH TFCS - CHOICE mode - UL DCH TFCS - Normal - TFCI Field 1 information - CHOICE TFCS representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE Gain Factor - Gain factor βc - Gain factor βd - Reference TFC ID - Power offset Pp-m	A1, A2, A3, A4	 (This IE is repeated for TFC number.) 0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.) Not Present FDD (This IE is repeated for TFC number.) Addition Refer to TS34.108 clause 6.10 Parameter Set Signalled Gain Factor 0 0 Not Present 0dB
UL Transport channel information for all transport channels - TFC subset - Allowed Transport Format combination - PRACH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS complete reconfigure information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE mode - UL DCH TFCS	A5, A6	 (This IE is repeated for TFC number.) 0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.) Not Present Normal Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Not Present FDD Not Present
Deleted UL TrCH information	A1, A2, A3	Not Present
Deleted UL TrCH information - Uplink transport channel type - Transport channel identity	A4	 DCH 15
Deleted UL TrCH information - Uplink transport channel type - Transport channel identity - Uplink transport channel type - Transport channel identity	A5	 DCH 1 DCH 5
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity	A1, A2, A3, A4	 DCH 5

- TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size		 Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set ALL Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A4	 DCH 1 Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set ALL Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set
DRAC static information		Not Present
DL Transport channel information common for all transport channel - SCCPCH TFCS - CHOICE DL parameters - DL DCH TFCS - Normal - TFCI Field 1 information - CHOICE TFCS representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE Gain Factors - Gain factor βc - Gain factor βd - Reference TFC ID - Power offset Pp-m	A1, A3	 Not Present Independent (This IE is repeated for TFC number.) Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Signalled Gain Factor 0 0 Not Present 0dB
DL Transport channel information common for all transport channel - SCCPCH TFCS - CHOICE DL parameters	A2, A4	 Not Present Independent

- DL DCH TFCS - Normal - TFCI Field 1 information - CHOICE TFCS representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information		(This IE is repeated for TFC number.) Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Not Present
DL Transport channel information common for all transport channel - SCCPCH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE TFCS representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE DL parameters - DL DCH TFCS	A5, A6	 (This IE is repeated for TFC number.) Normal Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Not Present Independent Not Present
Deleted DL TrCH information	A1, A2, A3, A6	Not Present
Deleted DL TrCH information - Downlink transport channel type - Transport channel identity - Downlink transport channel type - Transport channel identity - Downlink transport channel type - Transport channel identity	A4	 DCH 12 DCH 13 DCH 14
Deleted DL TrCH information - Downlink transport channel type - Transport channel identity - Downlink transport channel type - Transport channel identity	A5	 DCH 6 DCH 10
Added or Reconfigured DL TrCH information - Downlink transport channel type - Transport channel identity - CHOICE DL parameters - Uplink transport channel type - UL TrCH Identity - DCH quality target - BLER Quality value - Transparent mode signalling info	A1	 DCH 10 Same as UL DCH 5 -6.3 Not Present
Added or Reconfigured DL TrCH information - Downlink transport channel type - DL Transport channel identity - CHOICE DL parameters - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute	A2, A3, A4	 DCH 10 Independent Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set ALL Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set

- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
- DCH quality target		
- BLER Quality value		-6.3
- Transparent mode signalling info		Not Present
Frequency info		
- UARFCN uplink(Nu)		Reference to TS34.108 clause 6.10 Parameter Set
- UARFCN downlink(Nd)		Reference to TS34.108 clause 6.10 Parameter Set
Maximum allowed UL TX power		33dBm
CHOICE channel requirement	A1, A2, A3, A4	Uplink DPCH info
-Uplink DPCH power control info		
- DPCCH power offset		-6dB
- PC Preamble		1 frame
- SRB delay		7 frames
- Power Control Algorithm		Algorithm1
- TPC step size		1dB
- Scrambling code type		Long
- Scrambling code number		0 (0 to 16777215)
- Number of DPDCH		Not Present(1)
- spreading factor		SF is reference to TS34.108 clause 6.10 Parameter Set
- TFCI existence		TRUE
- Number of FBI bit		Not Present(0)
- Puncturing Limit		Reference to TS34.108 clause 6.10 Parameter Set
CHOICE channel requirement	A5, A6	Not Present
CHOICE Mode		FDD
- Downlink PDSCH information		Not Present
Downlink information common for all radio links	A1, A2, A4	
- Downlink DPCH info common for all RL		
- Timing indicator		Maintain
- CFN-targetSFN frame offset		Not Present
- Downlink DPCH power control information		
- DPC mode		0 (single)
- CHOICE mode		FDD
- DL rate matching restriction information		Not Present
- Spreading factor		Reference to TS34.108 clause 6.10 Parameter Set
- Fixed or Flexible Position		Flexible
- TFCI existence		TRUE
- Number of bits for Pilot bits(SF=128,256)		Not Present
- DPCH compressed mode info		
- TGPSI		1
- TGPS Status Flag		Inactive
- TGCFN		(Current CFN + (256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence configuration parameters		
- TGMP		FDD Measurement
- TGPRC		62
- TGSN		8
- TGL1		10
- TGL2		5
- TGD		15
- TGPL1		35
- TGPL2		35
- RPP		Mode 1
- ITP		Mode 1
- CHOICE UL/DL Mode		DL
- Downlink compressed mode method		SF/2
- Downlink frame type		A
- DeltaSIR1		2.0
- DeltaSIRafter1		1.0
- DeltaSIR2		Not Present
- DeltaSIRafter2		Not Present

- N_Identify_abort		Not Present
- T_Reconfirm_abort		Not Present
- TX Diversity mode		None
- SSDT information		Not Present
- Default DPCH Offset Value		0
Downlink information for each radio link list		
-Downlink information for each radio link	A1, A2, A3, A4	
- Choice mode		FDD
- Primary CPICH info		
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		
- Primary CPICH usage for channel estimation		Primary CPICH may be used
- DPCH frame offset		0 chips
- Power offset $P_{Pilot-DPDCH}$		TBD
- Secondary CPICH info		Not Present
- Secondary scrambling code		
- channelisation code		
- DL channelisation code		
- Secondary scrambling code		1
- Spreading factor		Reference to TS34.108 clause 6.10 Parameter Set
- Code number		SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change		No change
- TPC combination index		0
- SSDT Cell Identity		-a
- Closed loop timing adjustment mode		Not Present
- Secondary CCPCH info		Not Present
- Downlink information for each radio link	A5, A6	
- Choice mode		FDD
- Primary CPICH info		Set to the default value of cell 1.
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		Not present
- Secondary CCPCH info		
- Primary CPICH usage for channel estimation		Primary CPICH may be used
- Secondary CPICH info		Not Present
- Secondary scrambling code		Not Present
- STTD indicator		FALSE
- Spreading factor		Reference to clause 6.10 Parameter Set
- Code number		SF-1(SF is reference to clause 6.10 Parameter Set)
- Pilot symbol existence		FALSE
- TFCI existence		TRUE
- Fixed or Flexible position		Flexible
- Timing offset		0
- References to system information blocks		Not present
- References to system information blocks		Not Present

Condition	Explanation
A1	This IE need for “Non speech in CS”
A2	This IE need for “Speech in CS”
A3	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”

Contents of RADIO BEARER RECONFIGURATION COMPLETE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if the value is identical to the same IE in the downlink RADIO BEARER RECONFIGURATION COMPLETE message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Uplink integrity protection activation info	Not checked
COUNT-C activation time	The presence of this IE depends on the following 2 factors: (a) There exists RB(s) mapped to RLC-TM and (b) UE is transiting to CELL_DCH state after the reconfiguration procedure. Else, this IE is absent.
CHOICE mode	FDD
Radio bearer uplink ciphering activation time info	Not checked
Uplink counter synchronisation info	Not checked

Contents of RADIO BEARER RELEASE message: AM or UM (The others of speech in CS)

Information Element	Value/remark
Message Type	
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Integrity protection mode info	Not Present
Ciphering mode info	Not Present
Activation time	(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI	Not Present
New C-RNTI	Not Present
RRC State indicator	CELL_DCH
UTRAN DRX cycle length coefficient	Not Present
CN information info	Not Present
URA identity	Not Present
RAB information to reconfigure list	Not Present
RB information to release	
- RB identity	10
RB information to be affected	(UM DCCH for RRC)
- RB identity	1
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- Logical channel identity	1
- CHOICE RLC size list	All
- MAC logical channel priority	1
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	DCH
- DL DCH Transport channel identity	10
- Logical channel identity	1
RB information to be affected	(AM DCCH for RRC)
- RB identity	2
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- Logical channel identity	2
- CHOICE RLC size list	All
- MAC logical channel priority	2
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	DCH
- DL DCH Transport channel identity	10
- Logical channel identity	2
RB information to be affected	(AM DCCH for NAS_DT High priority)
- RB identity	3
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- Logical channel identity	3
- CHOICE RLC size list	All
- MAC logical channel priority	3
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1

- Downlink transport channel type	DCH
- DL DCH Transport channel identity	10
- Logical channel identity	3
RB information to be affected	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- RB mapping info	
- RLC logical channel mapping indicator	Not Present
- Information for each multiplexing option	
- Number of uplink RLC logical channels	1
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- Logical channel identity	4
- CHOICE RLC size list	All
- MAC logical channel priority	4
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	DCH
- DL DCH Transport channel identity	10
- Logical channel identity	4
UL Transport channel information for all transport channels	
- TFC subset	(This IE is repeated for TFC number.)
- Allowed Transport Format combination	0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.)
- PRACH TFCS	Not Present
- CHOICE mode	FDD
- UL DCH TFCS	(This IE is repeated for TFC number.)
- Normal	
- TFCI Field 1 information	
- CHOICE CTFC representation	Addition
- TFCS addition information	
- CHOICE CTFC Size	Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.
- CTFC information	Refer to TS34.108 clause 6.10 Parameter Set
- Power offset information	
- CHOICE Gain Factor	Signalled Gain Factor
- Gain factor βc	0
- Gain factor βd	0
- Reference TFC ID	Not Present
- Power offset Pp-m	0dB
Deleted UL TrCH Information	
- Transport channel identity	1
Added or Reconfigured UL TrCH information	If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.).
- Uplink transport channel type	DCH
- UL Transport channel identity	5
- TFS	
- CHOICE Transport channel type	Dedicated transport channels
- Dynamic Transport format information	(This IE is repeated for TFI number)
- RLC Size	Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List	(This IE is repeated for TFI number.)
- Transmission Time Interval	Not Present
- Number of Transport blocks	Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list	ALL
- Semi-static Transport Format information	
- Transmission time interval	Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding	Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate	Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute	Reference to TS34.108 clause 6.10 Parameter Set
- CRC size	Reference to TS34.108 clause 6.10 Parameter Set
CPCH set ID	Not Present
DRAC static information	Not Present
DL Transport channel information common for all transport channel	
- SCCPCH TFCS	Not Present
- CHOICE DL parameters	Independent
- DL DCH TFCS	(This IE is repeated for TFC number.)

- Normal	
- TFCI Field 1 information	
- CHOICE CTFC representation	Addition
- TFCS addition information	
- CHOICE CTFC Size	Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.
- CTFC information	Refer to TS34.108 clause 6.10 Parameter Set
- Power offset information	Not Present
Deleted DL TrCH Information	
- Transport channel identity	6
Added or Reconfigured DL TrCH information	If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.).
- Downlink transport channel type	DCH
- DL Transport channel identity	10
- CHOICE DL parameters	Independent
- TFS	
- CHOICE Transport channel type	Dedicated transport channels
- Dynamic Transport format information	(This IE is repeated for TFI number)
- RLC Size	Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List	(This IE is repeated for TFI number.)
- Transmission Time Interval	Not Present
- Number of Transport blocks	Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list	ALL
- Semi-static Transport Format information	
- Transmission time interval	Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding	Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate	Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute	Reference to TS34.108 clause 6.10 Parameter Set
- CRC size	Reference to TS34.108 clause 6.10 Parameter Set
- DCH quality target	
- BLER Quality value	-6.3
- Transparent mode signalling info	Not Present
Frequency info	
- UARFCN uplink(Nu)	Reference to TS34.108 clause 6.10 Parameter Set
- UARFCN downlink(Nd)	Reference to TS34.108 clause 6.10 Parameter Set
Maximum allowed UL TX power	33dBm
Uplink DPCH info	
- Uplink DPCH power control info	
- DPCCH power offset	-6dB
- PC Preamble	1 frame
- SRB delay	7 frames
- Power Control Algorithm	Algorithm1
- TPC step size	1dB
- Scrambling code type	Long
- Scrambling code number	0 (0 to 16777215)
- Number of DPDCH	Not Present(1)
- spreading factor	SF is reference to TS34.108 clause 6.10 Parameter Set
- TFCI existence	TRUE
- Number of FBI bit	Not Present(0)
- Puncturing Limit	Reference to TS34.108 clause 6.10 Parameter Set
CHOICE Mode	FDD
- Downlink PDSCH information	Not Present
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing indicator	Maintain
- CFN-targetSFN frame offset	Not Present
- Downlink DPCH power control information	
- DPC mode	0 (single)
- CHOICE mode	FDD
- DL rate matching restriction information	Not Present
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Fixed or Flexible Position	N/A
- TFCI existence	FALSE
- Number of bits for Pilot bits(SF=128,256)	Reference to TS34.108 clause 6.10 Parameter Set
- DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	inactive
- TGCFN	(Current CFN + (256 – TTI/10msec)) mod 256

- Transmission gap pattern sequence configuration parameters	
- TGMP	FDD Measurement
- TGPRC	62
- TGSN	8
- TGL1	10
- TGL2	5
- TGD	15
- TGPL1	35
- TGPL2	35
- RPP	Mode 1
- ITP	Mode 1
- CHOICE UL/DL Mode	DL
- Downlink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	2.0
- DeltaSIRafter1	1.0
- DeltaSIR2	Not Present
- DeltaSIRafter2	Not Present
- N_Identify_abort	Not Present
- T_Reconfirm_abort	Not Present
- TX Diversity mode	None
- SSDT information	Not Present
- Default DPCH Offset Value	0
Downlink information for each radio link list	
- Downlink information for each radio link	
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	100
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0 chips
- Power offset $P_{Pilot-DPDCH}$	TBD
- Secondary CPICH info	Not Present
- DL channelisation code	
- Secondary scrambling code	1
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change	No change
- TPC combination index	0
- SSDT Cell Identity	-a
- Closed loop timing adjustment mode	Not Present
- Secondary CCPCH info	Not Present
- References to system information blocks	Not Present

Contents of RADIO BEARER RELEASE message: AM or UM (Speech in CS)

Information Element		Value/remark
Message Type		
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A2, A3, A4	CELL_DCH
RRC State indicator	A5, A6	CELL_FACH
UTRAN DRX cycle length coefficient		Not Present
CN information info		Not Present
Signalling Connection release indication		Not Present
URA identity		Not Present
RAB information to reconfigure list		Not Present
RB information to release	A2	
- RB identity		10
RB information to release	A2	
- RB identity		11
RB information to release	A2	
- RB identity		12
RB information to release	A3, A4, A5, A6	
- RB identity		20
RB information to release	A4	
- RB identity		6
RB information to release	A4	
- RB identity		7
RB information to be affected	A2, A3, A4	(UM DCCH for RRC)
- RB identity		1
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		1
- CHOICE RLC size list		All
- MAC logical channel priority		1
- Downlink RLC logical channel info		
- Number of downlink RLC logical channels		1
- Downlink transport channel type		DCH
- DL DCH Transport channel identity		10
- Logical channel identity		1
RB information to be affected	A2, A3, A4	(AM DCCH for RRC)
- RB identity		2
- RB mapping info		
- Information for each multiplexing option		
- RLC logical channel mapping indicator		Not Present
- Number of uplink RLC logical channels		1
- Uplink transport channel type		DCH
- UL Transport channel identity		5
- Logical channel identity		2
- CHOICE RLC size list		All
- MAC logical channel priority		2
- Downlink RLC logical channel info		

- Number of downlink RLC logical channels - Downlink transport channel type - DL DCH Transport channel identity - Logical channel identity		1 DCH 10 2
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - UL Transport channel identity - Logical channel identity - CHOICE RLC size list - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - DL DCH Transport channel identity - Logical channel identity	A2, A3, A4	(AM DCCH for NAS_DT High priority) 3 Not Present 1 DCH 5 3 All 3 1 DCH 10 3
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - UL Transport channel identity - Logical channel identity - CHOICE RLC size list - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - DL DCH Transport channel identity - Logical channel identity	A2, A3, A4	(AM DCCH for NAS_DT Low priority) 4 Not Present 1 DCH 5 4 All 4 1 DCH 10 4
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - Logical channel identity - CHOICE RLC size list - RLC size index - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity	A5, A6	(UM DCCH for RRC) 1 Not Present 1 RACH 1 Explicit list Reference to TS34.108 clause 6.10 Parameter Set 2 1 FACH 1
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - Logical channel identity - CHOICE RLC size list - RLC size index - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity	A5, A6	(AM DCCH for RRC) 2 Not Present 1 RACH 2 Explicit list Reference to TS34.108 clause 6.10 Parameter Set 3 1 FACH 2

RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - Logical channel identity - CHOICE RLC size list - RLC size index - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity	A5, A6	(AM DCCH for NAS_DT High priority) 3 Not Present 1 RACH 3 Explicit list Reference to TS34.108 clause 6.10 Parameter Set 4 1 FACH 3
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - RLC logical channel mapping indicator - Number of uplink RLC logical channels - Uplink transport channel type - Logical channel identity - CHOICE RLC size list - RLC size index - MAC logical channel priority - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - DL Transport channel identity - Logical channel identity	A5, A6	(AM DCCH for NAS_DT Low priority) 4 Not Present 1 RACH 4 Explicit list Reference to TS34.108 clause 6.10 Parameter Set 5 1 FACH 1 4
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity	A5, A6	(TM BCCH for RRC) 6 1 FACH 5
RB information to be affected - RB identity - RB mapping info - Information for each multiplexing option - Downlink RLC logical channel info - Number of downlink RLC logical channels - Downlink transport channel type - Logical channel identity	A5, A6	(TM PCCH for RRC) 7 1 PCH 1
Downlink counter synchronisation info		Not Present
UL Transport channel information for all transport channels - TFC subset - Allowed Transport Format combination - PRACH TFCS - CHOICE mode - UL DCH TFCS - Normal - TFCI Field 1 information - CHOICE CTFC representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE Gain Factor - Gain factor βc	A2, A4	 (This IE is repeated for TFC number.) 0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.) Not Present FDD (This IE is repeated for TFC number.) Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Signalled Gain Factor 0

- Gain factor βd - Reference TFC ID - Power offset Pp-m		0 Not Present 0dB
UL Transport channel information for all transport channels - TFC subset - Allowed Transport Format combination - PRACH TFCS - CHOICE mode - UL DCH TFCS - Normal - TFCI Field 1 information - CHOICE CTFC representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information	A3	 (This IE is repeated for TFC number.) 0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.) Not Present FDD (This IE is repeated for TFC number.) Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Not Present
UL Transport channel information for all transport channels - TFC subset - Allowed Transport Format combination - PRACH TFCS - CHOICE TFCI signalling - TFCI Field 1 information - CHOICE CTFC representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE mode - UL DCH TFCS	A5, A6	 (This IE is repeated for TFC number.) 0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.) (This IE is repeated for TFC number.) Normal Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Not Present FDD Not Present
Deleted UL TrCH Information - Uplink transport channel type	A2, A5	 DCH
- Transport channel identity		1
Deleted UL TrCH Information - Uplink transport channel type	A2	 DCH
- Transport channel identity		2
Deleted UL TrCH Information - Uplink transport channel type - Transport channel identity	A2	 DCH 3
Deleted UL TrCH Information - Uplink transport channel type	A3	 DCH
- Transport channel identity		6
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding	A2, A3, A4	If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.). DCH 5 Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set ALL Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set

- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10 Parameter Set
- CRC size		Reference to TS34.108 clause 6.10 Parameter Set
CPCH set ID		Not Present
DRAC static information		Not Present
DL Transport channel information common for all transport channel	A2, A3, A4	
- SCCPCH TFCS		Not Present
- CHOICE DL parameters		Independent
- DL DCH TFCS		(This IE is repeated for TFC number.)
- Normal		
- TFCI Field 1 information		
- CHOICE CTFC representation		Addition
- TFCS addition information		
- CHOICE CTFC Size		Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.
- CTFC information		Refer to TS34.108 clause 6.10 Parameter Set
- Power offset information		Not Present
DL Transport channel information common for all transport channel	A5, A6	
- SCCPCH TFCS		(This IE is repeated for TFC number.)
- CHOICE TFCI signalling		Normal
- TFCI Field 1 information		
- CHOICE CTFC representation		Addition
- TFCS addition information		
- CHOICE CTFC Size		Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.
- CTFC information		Refer to TS34.108 clause 6.10 Parameter Set
- Power offset information		Not Present
- CHOICE DL parameters		Independent
- DL DCH TFCS		Not Present
Deleted DL TrCH Information	A2, A3, A5	
- Downlink transport channel type		DCH
- Transport channel identity		6
Deleted DL TrCH Information	A2	
- Downlink transport channel type		DCH
- Transport channel identity		7
Deleted DL TrCH Information	A2	
- Downlink transport channel type		DCH
- Transport channel identity		8
Added or Reconfigured DL TrCH information	A2, A3, A4	If TrCH reconfiguration is executed then this is needed(e.g. The rate of SRB for DCCH is changed.).
- Downlink transport channel type		DCH
- DL Transport channel identity		10
- CHOICE DL parameters		Independent
- TFS		
- CHOICE Transport channel type		Dedicated transport channels
- Dynamic Transport format information		(This IE is repeated for TFI number)
- RLC Size		Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List		(This IE is repeated for TFI number.)
- Transmission Time Interval		Not Present
- Number of Transport blocks		Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE Logical Channel list		ALL
- Semi-static Transport Format information		
- Transmission time interval		Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding		Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate		Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute		Reference to TS34.108 clause 6.10

- CRC size		Parameter Set Reference to TS34.108 clause 6.10 Parameter Set
- DCH quality target - BLER Quality value - Transparent mode signalling info		 -6.3 Not Present
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)		 Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set
Maximum allowed UL TX power		33dBm
CHOICE channel requirement - Uplink DPCH power control info - DPCCH power offset - PC Preamble - SRB delay - Power Control Algorithm - TPC step size - Scrambling code type - Scrambling code number - Number of DPDCH - spreading factor - TFCI existence - Number of FBI bit - Puncturing Limit	A2, A2, A4	Uplink DPCH info -6dB 1 frame 7 frames Algorithm1 1dB Long 0 (0 to 16777215) Not Present(1) SF is reference to TS34.108 clause 6.10 Parameter Set TRUE Not Present(0) Reference to TS34.108 clause 6.10 Parameter Set
CHOICE Mode - Downlink PDSCH information		FDD Not Present
Downlink information common for all radio links - Downlink DPCH info common for all RL - Timing indicator - CFN-targetSFN frame offset - Downlink DPCH power control information - DPC mode - CHOICE mode - DL rate matching restriction information - Spreading factor - Fixed or Flexible Position - TFCI existence - Number of bits for Pilot bits(SF=128,256) - DPCH compressed mode info - TGPSI - TGPS Status Flag - TGCFN - Transmission gap pattern sequence configuration parameters - TGMP - TGPRC - TGSN - TGL1 - TGL2 - TGD - TGPL1 - TGPL2 - RPP - ITP - CHOICE UL/DL Mode - Downlink compressed mode method - Downlink frame type - DeltaSIR1 - DeltaSIRafter1 - DeltaSIR2 - DeltaSIRafter2	A2, A3, A4	 Maintain Not Present 0 (single) FDD Not Present Reference to TS34.108 clause 6.10 Parameter Set N/A FALSE Reference to TS34.108 clause 6.10 Parameter Set 1 inactive (Current CFN + (256 – TTI/10msec)) mod 256 FDD Measurement 62 8 10 5 15 35 35 Mode 1 Mode 1 DL SF/2 A 2.0 1.0 Not Present Not Present

- N_Identify_abort		Not Present
- T_Reconfirm_abort		Not Present
- TX Diversity mode		None
- SSDT information		Not Present
- Default DPCH Offset Value		0
Downlink information for each radio link list	A2, A3, A4	
- Downlink information for each radio link		
- CHOICE mode		FDD
- Primary CPICH info		
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		
- Primary CPICH usage for channel estimation		Primary CPICH may be used
- DPCH frame offset		0 chips
- Power offset $P_{Pilot-DPDCH}$		TBD
- Secondary CPICH info		Not Present
- DL channelisation code		
- Secondary scrambling code		1
- Spreading factor		Reference to TS34.108 clause 6.10 Parameter Set
- Code number		SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change		No change
- TPC combination index		0
- SSDT Cell Identity		-a
- Closed loop timing adjustment mode		Not Present
- Secondary CCPCH info		Not Present
Downlink information common for all radio links	A5, A6	
- Downlink information for each radio link		
- Choice mode		FDD
- Primary CPICH info		Set to the default value of cell 1.
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		Not present
- Secondary CCPCH info		
- Primary CPICH usage for channel estimation		Primary CPICH may be used
- Power offset $P_{Pilot-DPDCH}$		TBD
- Secondary CPICH info		Not Present
- Secondary scrambling code		Not Present
- STTD indicator		FALSE
- Spreading factor		Reference to clause 6.10 Parameter Set
- Code number		SF-1(SF is reference to clause 6.10 Parameter Set)
- Pilot symbol existence		FALSE
- TFCI existence		TRUE
- Fixed or Flexible position		Flexible
- Timing offset		0
- References to system information blocks		Not Present

Condition	Explanation
A1	This IE need for “Non speech in CS”
A2	This IE need for “Speech in CS”
A3	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”

Contents of UTRAN MOBILITY INFORMATION message: AM or UM

Information Element	Value/remark
Message Type	
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Integrity protection mode info	Not Present
Ciphering mode info	Not Present
New U-RNTI	See the test content
New C-RNTI	See the test content
UE Timers and constants in connected mode	
- T301	2000 milliseconds
- N301	2
- T302	4000 milliseconds
- N302	3
- T304	1000 milliseconds
- N304	3
- T305	60 minutes
- T307	50 seconds
- T308	320 milliseconds
- T309	8 seconds
- T310	320 milliseconds
- N310	5
- T311	500 milliseconds
- T312	5 seconds
- N312	200
- T313	10 seconds
- N313	200
- T314	20 seconds
- T315	30 seconds
- N315	200
- T316	50 seconds
- T317	1800 seconds
CN information info	Not Present
URA identity	Not present
Downlink counter synchronisation info	Not Present

Contents of UTRAN MOBILITY INFORMATION CONFIRM message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the value of the same IE in downlink UTRAN MOBILITY INFORMATION message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
COUNT-C activation time	The presence of this IE depends on the following 2 factors: (a) There exists RB(s) mapped to RLC-TM, (b) UE is transiting to CELL_DCH state after the reconfiguration procedure. Else, this IE is absent.
Uplink integrity protection activation info	Not checked
Radio bearer uplink ciphering activation time info	Not checked
Uplink counter synchronisation info	Not checked

Contents of RRC CONNECTION REJECT message: UM

Information Element	Value/remark
Message Type	
Initial UE identity	Set to the UE's IMSI (GSM-MAP) or TMSI.
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Rejection cause	Unspecified
Wait Time	0
Redirection info	Not Present

Contents of RRC CONNECTION SETUP message: UM (Transition to CELL_FACH)

Information Element	Value/remark
Message Type	
Initial UE identity	Reference to TS34.108 clause 6.10 Parameter Set
RRC transaction identifier	Arbitrarily select a integer between 0 and 3
Activation time	(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI	
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
New C-RNTI	0000 0000 0000 0001B
RRC state indicator	CELL_FACH
UTRAN DRX cycle length coefficient	5 (2 to 12)
Capability update requirement	
- UE radio access capability update requirement	FALSE
- System specific capability update requirement	Not Present
Signalling RB information to setup	(UM DCCH for RRC)
- RB identity	1
- CHOICE RLC info type	RLC info
- CHOICE Uplink RLC mode	UM RLC
- Transmission RLC discard	
- SDU discard mode	Max DAT retransmissions
- MAX_DAT	4
- Timer_MRW	100
- MaxMRW	4
- CHOICE Downlink RLC mode	UM RLC
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	RACH
- Logical channel identity	1
- CHOICE RLC size list	Explicit list
- RLC size index	Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority	2
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	FACH
- Logical channel identity	1
Signalling RB information to setup	(AM DCCH for RRC)
- RB identity	2
- CHOICE RLC info type	RLC info
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	Max DAT retransmissions
- MAX_DAT	4
- Timer_MRW	100
- MaxMRW	4
- Transmission window size	8
- Timer_RST	500
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	200
- Timer_poll	200
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Windows	99
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	8
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	200
- Missing PDU indicator	TRUE
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present

- Number of uplink RLC logical channels	1
- Uplink transport channel type	RACH
- Logical channel identity	2
- CHOICE RLC size list	Explicit list
- RLC size index	Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority	3
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	FACH
- Logical channel identity	2
Signalling RB information to setup	(AM DCCH for NAS_DT High priority)
- RB identity	3
- CHOICE RLC info type	RLC info
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	Max DAT retransmissions
- MAX_DAT	4
- Timer_MRW	100
- MaxMRW	4
- Transmission window size	8
- Timer_RST	500
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	200
- Timer_poll	200
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Windows	99
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	8
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	200
- Missing PDU indicator	TRUE
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	RACH
- Logical channel identity	3
- CHOICE RLC size list	Explicit list
- RLC size index	Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority	4
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	FACH
- Logical channel identity	3
Signalling RB information to setup	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- CHOICE RLC info type	RLC info
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	Max DAT retransmissions
- MAX_DAT	4
- Timer_MRW	100
- MaxMRW	4
- Transmission window size	8
- Timer_RST	500
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	200
- Timer_poll	200
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Windows	99

- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	8
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	200
- Missing PDU indicator	TRUE
- RB mapping info	
- Information for each multiplexing option	
- RLC logical channel mapping indicator	Not Present
- Number of uplink RLC logical channels	1
- Uplink transport channel type	RACH
- Logical channel identity	4
- CHOICE RLC size list	Explicit list
- RLC size index	Reference to TS34.108 clause 6.10 Parameter Set
- MAC logical channel priority	5
- Downlink RLC logical channel info	
- Number of downlink RLC logical channels	1
- Downlink transport channel type	FACH
- Logical channel identity	4
UL Transport channel information for all transport channels	
- TFC subset	(This IE is repeated for TFC number.)
- Allowed Transport Format combination	0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.)
- PRACH TFCS	Not Present
- CHOICE mode	FDD
- UL DCH TFCS	Not Present
Added or Reconfigured UL TrCH information	
- Transport channel identity	15
- TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	(This IE is repeated for TFI number)
- RLC Size	Reference to TS34.108 clause 6.10 Parameter Set
- Number of TBs and TTI List	(This IE is repeated for TFI number.)
- Number of Transport blocks	Reference to TS34.108 clause 6.10 Parameter Set
- CHOICE mode	FDD
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	Reference to TS34.108 clause 6.10 Parameter Set
- Type of channel coding	Reference to TS34.108 clause 6.10 Parameter Set
- Coding Rate	Reference to TS34.108 clause 6.10 Parameter Set
- Rate matching attribute	Reference to TS34.108 clause 6.10 Parameter Set
- CRC size	Reference to TS34.108 clause 6.10 Parameter Set
DL Transport channel information common for all transport channel	
- SCCPCH TFCS	(This IE is repeated for TFC number.)
- CHOICE TFCI signalling	Normal
- TFCI Field 1 information	
- CHOICE CTFC representation	Complete
- TFCS complete reconfigure information	
- CHOICE CTFC Size	Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.
- CTFC information	Refer to TS34.108 clause 6.10 Parameter Set
- Power offset information	Not Present
- CHOICE DL parameters	Independent
- DL DCH TFCS	Not Present
Frequency info	
- UARFCN uplink(Nu)	Reference to TS34.108 clause 6.10 Parameter Set
- UARFCN downlink(Nd)	Reference to TS34.108 clause 6.10 Parameter Set
Maximum allowed UL TX power	33dBm
CHOICE channel requirement	Not Present
Downlink information common for all radio links	Not Present
Downlink information for each radio link list	
- Downlink information for each radio link	
- Choice mode	FDD
- Primary CPICH info	Set to the default value of cell 1.

- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	Not present
- Secondary CCPCH info	
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- Secondary CPICH info	Not Present
- Secondary scrambling code	Not Present
- STTD indicator	FALSE
- Spreading factor	Reference to clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to clause 6.10 Parameter Set)
- Pilot symbol existence	FALSE
- TFCI existence	TRUE
- Fixed or Flexible position	Flexible
- Timing offset	0
- References to system information blocks	Not present

Contents of RRC STATUS message: AM

Information Element	Value/remark
Message Type	
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Identification of received message	Not Present
- Received message type	
- RRC transaction identifier	
Protocol error information	
- Protocol error cause	Value will be checked.

Contents of SECURITY MODE FAILURE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if the value is the identical to the same IE in the downlink SECURITY MODE COMMAND message.
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Failure cause	Value will be checked

Contents of TRANSPORT CHANNEL RECONFIGURATION message: AM or UM

Information Element	Condition	Value/remark
Message Type		
RRC transaction identifier		Arbitrarily selects an integer between 0 and 3
Integrity check info		The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code		SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number		SS provides the value of this IE, from its internal counter.
Integrity protection mode info		Not Present
Ciphering mode info		Not Present
Activation time		(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI		Not Present
New C-RNTI		Not Present
RRC State indicator	A1, A2, A3, A4	CELL_DCH
RRC State indicator	A5, A6	CELL_DCH
UTRAN DRX cycle length coefficient		Not Present
CN information info		Not Present
URA identity		Not Present
Downlink counter synchronisation info		Not Present
UL Transport channel information for all transport channels	A1, A2, A3, A4	
- TFC subset		(This IE is repeated for TFC number.)
- Allowed Transport Format combination		0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.)
- PRACH TFCS		Not Present
- CHOICE mode		FDD
- UL DCH TFCS		(This IE is repeated for TFC number.)
- Normal		
- TFCI Field 1 information		
- CHOICE CTFC representation		Addition
- TFCS addition information		
- CHOICE CTFC Size		Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.
- CTFC information		Refer to TS34.108 clause 6.10 Parameter Set
- Power offset information		
- CHOICE Gain Factors		Signalled Gain Factors
- Gain factor βc		0
- Gain factor βd		0
- Reference TFC ID		Not Present
- Power offset Pp-m		0dB
UL Transport channel information for all transport channels	A5, A6	
- TFC subset		(This IE is repeated for TFC number.)
- Allowed Transport Format combination		0 to MaxTFCValue-1 (MaxTFCValue is refer to TS34.108 clause 6.10 Parameter Set.)
- PRACH TFCS		(This IE is repeated for TFC number.)
- CHOICE TFCI signalling		Normal
- TFCI Field 1 information		
- CHOICE CTFC representation		Addition
- TFCS addition information		
- CHOICE CTFC Size		Number of bits used must be enough to cover all combinations of CTFC from clause 6.10.
- CTFC information		Refer to TS34.108 clause 6.10 Parameter Set
- Power offset information		Not Present
- CHOICE mode		FDD
- UL DCH TFCS		Not Present
Added or Reconfigured UL TrCH information	A1, A2, A3, A4	

- Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel List - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size		DCH 5 Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set ALL Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set
Added or Reconfigured UL TrCH information - Uplink transport channel type - UL Transport channel identity - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A4	 DCH 1 Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set ALL Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set
DRAC static information		Not Present
DL Transport channel information common for all transport channel - SCCPCH TFCS - CHOICE DL parameters - DL DCH TFCS - Normal - TFCI Field 1 information - CHOICE CTFC representation - TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information	A1, A2, A3, A4	 Not Present Independent (This IE is repeated for TFC number.) Addition Number of bits used must be enough to cover all combinations of CTFC from clause 6.10. Refer to TS34.108 clause 6.10 Parameter Set Not Present
DL Transport channel information common for all transport channel - SCCPCH TFCS - Normal - TFCI Field 1 information - CHOICE CTFC representation	A5, A6	 (This IE is repeated for TFC number.) Addition

- TFCS addition information - CHOICE CTFC Size - CTFC information - Power offset information - CHOICE DL parameters - DL DCH TFCS		 Refer to TS34.108 clause 6.10 Parameter Set Not Present Independent Not Present
Added or Reconfigured DL TrCH information - Downlink transport channel type - DL Transport channel identity - CHOICE DL parameters - Uplink transport channel type - UL TrCH Identity - DCH quality target - BLER Quality value - Transparent mode signalling info	A1, A2	 DCH 10 Same as UL DCH 5 -6.3 Not Present
Added or Reconfigured DL TrCH information - Downlink transport channel type - DL Transport channel identity - CHOICE DL parameters - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size - DCH quality target - BLER Quality value - Transparent mode signalling info	A3, A4	 DCH 10 Independent Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set ALL Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set -6.3 Not Present
Added or Reconfigured DL TrCH information - Downlink transport channel type - DL Transport channel identity - CHOICE DL parameters - TFS - CHOICE Transport channel type - Dynamic Transport format information - RLC Size - Number of TBs and TTI List - Transmission Time Interval - Number of Transport blocks - CHOICE Logical Channel list - Semi-static Transport Format information - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	A4	 DCH 6 Independent Dedicated transport channels (This IE is repeated for TFI number) Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set ALL Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10

		Parameter Set
- DCH quality target		
- BLER Quality value		-6.3
- Transparent mode signalling info		Not Present
Frequency info		
- UARFCN uplink(Nu)		Reference to TS34.108 clause 6.10 Parameter Set
- UARFCN downlink(Nd)		Reference to TS34.108 clause 6.10 Parameter Set
Maximum allowed UL TX power		33dBm
CHOICE channel requirement	A1, A2, A3, A4	Uplink DPCH info
-Uplink DPCH power control info		
- DPCCH power offset		-6dB
- PC Preamble		1 frame
- SRB delay		7 frames
- Power Control Algorithm		Algorithm1
- TPC step size		1dB
- Scrambling code type		Long
- Scrambling code number		0 (0 to 16777215)
- Number of DPDCH		Not Present(1)
- spreading factor		SF is reference to TS34.108 clause 6.10 Parameter Set
- TFCI existence		TRUE
- Number of FBI bit		Not Present(0)
- Puncturing Limit		Reference to TS34.108 clause 6.10 Parameter Set
CHOICE Mode		FDD
- Downlink PDSCH information		Not Present
Downlink information common for all radio links	A1, A2, A3, A4	
- Downlink DPCH info common for all RL		
- Timing indicator		Maintain
- CFN-targetSFN frame offset		Not Present
- Downlink DPCH power control information		
- DPC mode		0 (single)
- CHOICE mode		FDD
- DL rate matching restriction information		Not Present
- Spreading factor		Reference to TS34.108 clause 6.10 Parameter Set
- Fixed or Flexible Position		Flexible
- TFCI existence		TRUE
- Number of bits for Pilot bits(SF=128,256)		Not Present
- DPCH compressed mode info		
- TGPSI		1
- TGPS Status Flag		inactive
- TGCFN		(Current CFN + (256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence configuration parameters		
- TGMP		FDD Measurement
- TGPRC		62
- TGSN		8
- TGL1		10
- TGL2		5
- TGD		15
- TGPL1		35
- TGPL2		35
- RPP		Mode 1
- ITP		Mode 1
- CHOICE UL/DL Mode		DL
- Downlink compressed mode method		SF/2
- Downlink frame type		A
- DeltaSIR1		2.0
- DeltaSIRafter1		1.0
- DeltaSIR2		Not Present
- DeltaSIRafter2		Not Present
- N_Identify_abort		Not Present

- T_Reconfirm_abort		Not Present
- TX Diversity mode		None
- SSDT information		Not Present
- Default DPCH Offset Value		0
Downlink information for each radio link list	A1, A2, A3, A4	
- Downlink information for each radio links		
- CHOICE mode		FDD
- Primary CPICH info		
- Primary scrambling code		100
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		
- Primary CPICH usage for channel estimation		Primary CPICH may be used
- DPCH frame offset		0 chips
- Power offset $P_{Pilot-DPDCH}$		TBD
- Secondary CPICH info		Not Present
- DL channelisation code		
- Secondary scrambling code		1
- Spreading factor		Reference to TS34.108 clause 6.10 Parameter Set
- Code number		SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change		No change
- TPC combination index		0
- SSDT Cell Identity		-a
- Closed loop timing adjustment mode		Not Present
- Secondary CCPCH info		Not Present
Downlink information for each radio link list	A5, A6	
- Downlink information for each radio link		
- Choice mode		FDD
- Primary CPICH info		Set to the default value of cell 1.
- PDSCH with SHO DCH info		Not Present
- PDSCH code mapping		Not Present
- Downlink DPCH info for each RL		Not present
- Secondary CCPCH info		
- Primary CPICH usage for channel estimation		Primary CPICH may be used
- Power offset $P_{Pilot-DPDCH}$		TBD
- Secondary CPICH info		Not Present
- Secondary scrambling code		Not Present
- STTD indicator		FALSE
- Spreading factor		Reference to clause 6.10 Parameter Set
- Code number		SF-1(SF is reference to clause 6.10 Parameter Set)
- Pilot symbol existence		FALSE
- TFCI existence		TRUE
- Fixed or Flexible position		Flexible
- Timing offset		0
- References to system information blocks		Not Present

Condition	Explanation
A1	This IE need for “Non speech in CS”
A2	This IE need for “Speech in CS”
A3	This IE need for “Packet to CELL_DCH from CELL_DCH in PS”
A4	This IE need for “Packet to CELL_DCH from CELL_FACH in PS”
A5	This IE need for “Packet to CELL_FACH from CELL_DCH in PS”
A6	This IE need for “Packet to CELL_FACH from CELL_FACH in PS”

Contents of TRANSPORT CHANNEL RECONFIGURATION COMPLETE message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if the value is identical to the same IE in the downlink TRANSPORT CHANNEL RECONFIGURATION message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Uplink integrity protection activation info	Not checked
COUNT-C activation time	The presence of this IE depends on the following 2 factors: (a) There exists RB(s) mapped to RLC-TM and (b) UE is transiting to CELL_DCH state after the reconfiguration procedure. Else, this IE is absent.
Radio bearer uplink ciphering activation time info	Not checked
Uplink counter synchronisation info	Not checked

Contents of TRANSPORT FORMAT COMBINATION CONTROL message: AM or UM (in CELL_DCH)

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
DPCH TFCS in Uplink	
- Allowed Transport format combination index	0 (The TFC is constructed from ALL TF0)

Contents of UE CAPABILITY ENQUIRY message: AM or UM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Capability update requirement	
- UE radio access capability update requirement	TRUE
- System specific capability update requirement list	UE only supports 1 system
- System specific capability update requirement	GSM

Contents of UE CAPABILITY INFORMATION message: AM

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if the value is identical to the same IE in the downlink UE CAPABILITY ENQUIRY message.
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
UE radio access capability	Value will be checked. Stated capability must be compatible with 34.123-2 (ICS statements) and the user settings
- ICS Version	
- PDCP Capability	
- RLC Capability	
- Transport channel capability	
- RF Capability	
- Physical channel capability	
- UE multi-mode/multi-RAT capability	
- Security Capability	
- LCS Capability	
- Measurement capability	
UE system specific capability	Value will be checked. UE must include the classmark information for the supported RAT

Contents of UE CAPABILITY INFORMATION CONFIRM message: UM

Information Element	Value/remark
Message Type	
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.

Contents of URA UPDATE message: TM

Information Element	Value/remark
Message Type	
U-RNTI	
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
RRC transaction identifier	Checked to see if it is absent
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
URA update cause	See the test content
Protocol error indicator	Checked to see if it is absent or set to 'FALSE'
Protocol error information	Checked to see if it is absent

Contents of URA UPDATE CONFIRM message: UM

Information Element	Value/remark
Message Type	
U-RNTI	If this message is sent on CCCH, use the following values. Else, this IE is absent.
- SRNC identity	0000 0000 0001B
- S-RNTI	0000 0000 0000 0000 0001B
RRC transaction identifier	Arbitrarily selects and integer between 0 and 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC message sequence number	SS provides the value of this IE, from its internal counter.
Integrity protection mode info	Not Present
Ciphering mode info	Not Present
New U-RNTI	Not Present
New C-RNTI	Not Present
RRC state indicator	URA_PCH
UTRAN DRX cycle length coefficient	Not Present
CN information info	Not Present
URA identity	See the test content
Downlink counter synchronisation info	Not Present

Annex B (informative): Core specification versions to which test cases relate

The table B/1 lists for each section of this specification the related core specification version on which the test cases were based. Where the test cases have been partially updated towards the next released version, but this work has not completed yet, each change request considered is listed in the final column.

Section number	Section heading	Related core specifications	Current version supported	Current change requests taken into account
6	Idle mode operations	25.304	3.6.0	
		23.122	3.6.0	
		31.102	3.5.0	
		25.133	3.5.0	
		TS 03.22	8.4.0	
		TS 05.08	8.8.0	
7.1	MAC	25.321	3.7.0	
7.2	RLC	25.322	3.5.0	
7.3	PDCP	25.323	3.4.0	
7.4	BMC	25.324	3.4.0	
8	Radio Resource Control (RRC)	25.331	3.6.0	
		04.18	9.0.0	
9	Elementary procedures of mobility management	24.008	3.7.0	
10	Circuit Switched Call Control (CC)	24.008	3.7.0	
11	Session Management Procedures	24.008	3.6.0	
12	Elementary procedure for Packet Switched Mobility Management	24.008	3.7.0	
13	General Tests	24.008	3.3.0	
14	Radio Bearer Services	N/A		
15	Supplementary Services	N/A		
16	Short message service (SMS)	23.040	3.5.0	
		23.041	3.3.0	
		24.011	3.6.0	
17	User Equipment features (MMI, VHE, MexE, SAT)			

Annex C (informative): Change history

Meeting -1st-Level	Doc-1st-Level	CR	Rev	Subject	Cat	Version-Current	Version -New	Doc-2nd-Level
TP-08				Approval of the specification		2.0.0	3.0.0	
TP-09	TP-000135	001		Idle mode test cases	F	3.0.0	3.1.0	T1-000165
TP-09	TP-000135	002		Section 8, RRC Tests: RLCSize	C	3.0.0	3.1.0	T1-000169
TP-09	TP-000135	003		Section 8, RRC Tests: HFN	C	3.0.0	3.1.0	T1-000170
TP-09	TP-000135	004		Section 8, RRC Tests: RLCParam	C	3.0.0	3.1.0	T1-000171
TP-09	TP-000135	005		Section 8, RRC Tests: RBIdentity	C	3.0.0	3.1.0	T1-000172
TP-09	TP-000135	006		Section 8, RRC Tests: TrCHParam	C	3.0.0	3.1.0	T1-000173
TP-09	TP-000135	007		Section 8, RRC Tests: UECapability	C	3.0.0	3.1.0	T1-000174
TP-09	TP-000135	008		Section 8, RRC Tests: RBMapping	C	3.0.0	3.1.0	T1-000175
TP-09	TP-000135	009		Section 8, RRC Tests: PagingCause	C	3.0.0	3.1.0	T1-000176
TP-09	TP-000135	010		Section 8, RRC Tests: RRCConnRelease-TM	B	3.0.0	3.1.0	T1-000177
TP-09	TP-000135	011		Section 8, RRC Tests: SignallingRelease	B	3.0.0	3.1.0	T1-000178
TP-09	TP-000135	012		Section 8, RRC Tests: CipheringAndIntegrity	C	3.0.0	3.1.0	T1-000179
TP-09	TP-000135	013		Section 8, RRC Tests: Countercheck_rev	B	3.0.0	3.1.0	T1-000180
TP-09	TP-000135	014		Section 8, RRC Tests: RLCInfo	C	3.0.0	3.1.0	T1-000181
TP-09	TP-000135	015		Section 8, RRC Tests: CompressedMode	C	3.0.0	3.1.0	T1-000182
TP-09	TP-000135	016		Section 8, RRC Tests: SIB	F	3.0.0	3.1.0	T1-000183
TP-09	TP-000135	017		Section 8, RRC Tests: PhyCH	D	3.0.0	3.1.0	T1-000184
TP-09	TP-000135	018		Section 8, RRC Tests: Measurement	C	3.0.0	3.1.0	T1-000185
TP-09	TP-000135	019		Section 8, RRC Tests: FailureCases	C	3.0.0	3.1.0	T1-000186
TP-09	TP-000135	020		Section 8, RRC Tests: TFCS	C	3.0.0	3.1.0	T1-000187
TP-09	TP-000135	021		Section 8, RRC Tests: DPCHFrameOffset	C	3.0.0	3.1.0	T1-000188
TP-09	TP-000135	022		Section 8, RRC Tests: ReEstablishmentTimer	C	3.0.0	3.1.0	T1-000189
TP-09	TP-000135	023		Section 8, RRC Tests: InterFrequencyHardHandOver	F	3.0.0	3.1.0	T1-000206
TP-09	TP-000135	024		clause 12.4.1.5 "Routing area updating / abnormal cases / attempt counter check / miscellaneous reject causes"	C	3.0.0	3.1.0	T1-000211
TP-09	TP-000135	025		SM test cases	C	3.0.0	3.1.0	T1-000208
TP-09	TP-000135	026		MM: Authentication	F	3.0.0	3.1.0	T1-000207
TP-09	TP-000135	027		Update of radio bearer test cases (aligned to GSMA ISG version 1.3)	F	3.0.0	3.1.0	T1-000213
TP-09	TP-000135	028		MAC tests	B	3.0.0	3.1.0	T1-000218
TP-09	TP-000135	029		PDCP tests	B	3.0.0	3.1.0	T1-000166
TP-09	TP-000135	030		BMC tests	B	3.0.0	3.1.0	T1-000167
TP-09	TP-000135	031		RRC updates	F	3.0.0	3.1.0	T1-000168
TP-09	TP-000135	032		clause 12.6.1.2 "Authentication rejected"	F	3.0.0	3.1.0	T1-000210
TP-09	TP-000135	033		clause 12.6 "PS authentication and ciphering"	C	3.0.0	3.1.0	T1-000209
TP-10	TP-000218	034		Application of integrity mode protection to signalling message by default	F	3.1.0	3.2.0	T1-000297
TP-10	TP-000218	035		New teset cases for CS intersystem handover	B	3.1.0	3.2.0	T1-000300
TP-10	TP-000218	036		CR to 34.123-1, Annex B, Mapping of test cases to core specification versions	D	3.1.0	3.2.0	T1-000319
TP-10	TP-000218	037		Application of ciphering during conformance testing and changes to integrity mode protection related messages	C	3.1.0	3.2.0	T1-000286
TP-10	TP-000218	038		Idle Mode test cases in chapter 6	F	3.1.0	3.2.0	T1-000288
TP-10	TP-000218	039		Update to RLC test cases	F	3.1.0	3.2.0	T1-000301
TP-10	TP-000218	040		Technical Corrections to RRC test cases in clause 8	F	3.1.0	3.2.0	T1-000292
TP-10	TP-000218	041		Updates to clause 8 and Annex A due to RAN2 core specifications modifications	C	3.1.0	3.2.0	T1-000293
TP-10	TP-000218	042		Editorial modification for CC test cases (Clause 10)	D	3.1.0	3.2.0	T1-000289
TP-10	TP-000218	043		Update of radio bearer test cases	F	3.1.0	3.2.0	T1-000290
TP-10	TP-000218	044		Update of Session Management test cases	B	3.1.0	3.2.0	T1-000298
TP-10	TP-000218	045		Modification to the “Authentication rejected by the UE” test case	F	3.1.0	3.2.0	T1-000308
TP-10	TP-000218	046		Update to 16. SMS test specification	F	3.1.0	3.2.0	T1-000309
TP-10	TP-000218	047		Correction to MM tests	D	3.1.0	3.2.0	T1-000310
TP-11	TP-010021	048		Idle mode test cases	F	3.2.0	3.3.0	T1-010076
TP-11	TP-010021	049		Updates to clause 8 of TS 34.123-1 version 3.2.0	F	3.2.0	3.3.0	T1-010106
TP-11	TP-010021	050		Update to GMM test case.	F	3.2.0	3.3.0	T1-010086
TP-11	TP-010021	051		Update to 16. SMS test specification	D	3.2.0	3.3.0	T1-010090
TP-11	TP-010021	052		Annex B: Update of versions of core specifications	F	3.2.0	3.3.0	T1-010091
TP-12	TP-010121	053		Idle mode tests	F	3.3.0	3.4.0	T1-010167
TP-12	TP-010121	054		Clause 7.2: Update of RLC tests to 25.322 v3.5.0	F	3.3.0	3.4.0	T1-010170

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TP-12	TP-010121	055		Corrections to Clause 7.2: RLC test case updates	F	3.3.0	3.4.0	T1-010171
TP-12	TP-010121	056		Corrections to clause 7.3 PDCP	F	3.3.0	3.4.0	T1-010173
TP-12	TP-010121	057		Corrections to clause 7.4 BMC	F	3.3.0	3.4.0	T1-010174
TP-12	TP-010121	058		7.1 Update to MAC test cases	F	3.3.0	3.4.0	T1-010175
TP-12	TP-010121	059		Modifications to the functional testing of CPCH related UE test cases	C	3.3.0	3.4.0	T1-010176
TP-12	TP-010121	060		Transmission RLC discard	F	3.3.0	3.4.0	T1-010178
TP-12	TP-010121	061		Updates to RRC test case	F	3.3.0	3.4.0	T1-010179
TP-12	TP-010121	062		Deletion of intersystem handover tests GERAN to UTRAN	F	3.3.0	3.4.0	T1-010181
TP-12	TP-010121	063		Corrections to CC test cases	F	3.3.0	3.4.0	T1-010183
TP-12	TP-010121	064		Corrections to Emergency call test cases	F	3.3.0	3.4.0	T1-010184
TP-12	TP-010121	065		Corrections to test of autocalling restrictions	F	3.3.0	3.4.0	T1-010185
TP-12	TP-010121	066		Corrections to call re-establishment tests in CC	F	3.3.0	3.4.0	T1-010187
TP-12	TP-010121	067		MM test case update	F	3.3.0	3.4.0	T1-010189
TP-12	TP-010121	068		CR to 34.123-1	F	3.3.0	3.4.0	T1-010193
TP-12	TP-010121	069		SMS Update	F	3.3.0	3.4.0	T1-010194
TP-12	TP-010121	070		SMS test specification	F	3.3.0	3.4.0	T1-010196
TP-12	TP-010121	071		Update to GMM test cases	F	3.3.0	3.4.0	T1-010235
TP-12	TP-010121	072		GMM service request test cases	F	3.3.0	3.4.0	T1-010236
TP-12	TP-010121	073		GMM authentication reject test cases	F	3.3.0	3.4.0	T1-010237
TP-12	TP-010121	074		Modifications to Clause 12 (GMM)	F	3.3.0	3.4.0	T1-010202
TP-12	TP-010121	075		Correction in test case 11.1, because of problems in core-specs	F	3.3.0	3.4.0	T1-010203
TP-12	TP-010121	076		Procedure and Expected Sequence Corrections to 11.1.2.	F	3.3.0	3.4.0	T1-010204
TP-12	TP-010121	077		Adding section for multi-layer functional testing	D	3.3.0	3.4.0	T1-010207
TP-12	TP-010121	078		Update of interoperability radio bearer test cases	F	3.3.0	3.4.0	T1-010208
TP-12	TP-010121	079		CR to TS 34.123-1 Update of Table B/1	D	3.3.0	3.4.0	T1-010217