Technical Specification Group Terminals Meeting #19, Birmingham, UK, 12-14 March 2003

Source: T1

Title: CR's to TS 34.123-1 v5.2.0 related to NAS test cases

Agenda item: 5.1.3

Document for: Approval

This document contains 16 CRs to TS 34.123-1 v5.2.0. These CRs have been agreed by T1 and are put forward to TSG T for approval.

NOTE: TS 34.123-1 R99, Rel-4 and Rel-5 are all merged into the Rel-5 specification. This means that test cases for the three releases are included in TS 34.123-1 Rel-5 and therefore this is the only release being maintained.

CR related to corrections to NAS test cases:

Spec	CR	Rev	Release	Subject	Cat	Version Current	Version New	Doc-2nd- Level	Work item	Releases affected
34.123-1	408	-	Rel-5	Corrections to GMM Package 1 test cases as T1S030012rev1	F	5.2.0	5.3.0	T1-030032	TEI	R99, Rel- 4, Rel-5
34.123-1	411	-	Rel-5	on Correction to package 4 GMM test case 12.6.1.3.3 Authentication Rejected by the UE / fraudulent network	F	5.2.0	5.3.0	T1-030038	TEI	R99, Rel- 4, Rel-5
34.123-1	443	-	Rel-5	Corrections to package 4 test cases on CC	F	5.2.0	5.3.0	T1-030095	TEI	R99, Rel- 4, Rel-5
34.123-1	444	-	Rel-5	Correction to Tables 10.1.3/2 and 10.1.3/4	F	5.2.0	5.3.0	T1-030096	TEI	R99, Rel- 4, Rel-5
34.123-1	445	-	Rel-5	Corrections to package 4 test cases on MM	F	5.2.0	5.3.0	T1-030097	TEI	R99, Rel- 4, Rel-5
34.123-1	446	-	Rel-5	Correction to low priority TC 12.4.3.2 Periodic routing area updating / accepted / T3312 default value	F	5.2.0	5.3.0	T1-030098	TEI	R99, Rel- 4, Rel-5
34.123-1	447	-	Rel-5	Introduction of a new test case for a PSdetach procedure with the cause "PS services not allowed in this PLMN"	F	5.2.0	5.3.0	T1-030099	TEI	R99, Rel- 4, Rel-5
34.123-1	448	-	Rel-5	Corrections to package 4 test cases on GMM as T1S030221rev1	F	5.2.0	5.3.0	T1-030100	TEI	R99, Rel- 4, Rel-5
34.123-1	449	-	Rel-5	Corrections to package 1 GMM Test Cases	F	5.2.0	5.3.0	T1-030101	TEI	R99, Rel- 4, Rel-5
34.123-1	450	-	Rel-5	Corrections to package 4 GMM test cases on RAB re-establishment	F	5.2.0	5.3.0	T1-030102	TEI	R99, Rel- 4, Rel-5
34.123-1	452	-	Rel-5	Correction to Low Prio SM test case 11.2.3.2	F	5.2.0	5.3.0	T1-030104	TEI	R99, Rel- 4, Rel-5
34.123-1	453	-	Rel-5	Maintenance of low priority test case 11.1.2 PDP context activation requested by the network, successful and unsuccessful	F	5.2.0	5.3.0	T1-030105	TEI	R99, Rel- 4, Rel-5
34.123-1	454	-	Rel-5	Correction to package 3 test case 16.1.2 SMS mobile originated	F	5.2.0	5.3.0	T1-030106	TEI	R99, Rel- 4, Rel-5
34.123-1	461	-	Rel-5	Update of Conformance requirement and Expected sequence in test case 11.1.1.2.1 (Package 3) as T1S030104rev1	F	5.2.0	5.3.0	T1-030114	TEI	R99, Rel- 4, Rel-5
34.123-1	462	-	Rel-5	Update of Conformance requirement and Expected sequence in test case 11.1.1.2.2 (Package 4) as T1S030105rev1	F	5.2.0	5.3.0	T1-030115	TEI	R99, Rel- 4, Rel-5
34.123-1	470	-	Rel-5	Correction to GMM Package 2 test cases	F	5.2.0	5.3.0	T1-030236	TEI	R99, Rel- 4, Rel-5

Tdoc **#** *T1-030032*

3GPP TSG- T1 SIG Meeting #27 San Antonio, Texas, Feb 10th -13th 2003 Tdoc # T1S-030039

	CHANGE REQUEST	CR-Form-v7
	34.123-1 CR 408 #rev - #	Current version: 5.2.0 **
For <u>HELP</u> or	using this form, see bottom of this page or look at the	pop-up text over the 光 symbols.
Proposed chang	e affects: UICC apps光 ME X Radio Ac	cess Network Core Network
Title:	Correction to GMM Package 1 test cases (T1S-03	0012Rev1)
Source:	₩ Motorola	
Work item code:	∀ TEI	Date:
Category:	Use one of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Release: # REL-5 Use one of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change: # As per 3GPP spec 24.008, clause 4.7.4.1.1

"If the MS is to be switched off, the MS shall try for a period of 5 seconds to send the DETACH REQUEST message. If the MS is able to send the DETACH REQUEST message during this time the MS may be switched off."

Clauses 4.7.4.1.2 and 4.7.4.1.3

"In UMTS, if the detach has been sent due to switching off, then the network shall release the resources in the lower layers for this MS (see 3GPP TS 25.331)."

In the case of UE initiated Detach due to power off, as soon as the UE has sent DETACH REQUEST over the air it is permitted to switch off and so there can be no further requirements on the UE. The network could attempt to release the RRC Connection in the normal manner by sending an RRC Connection Release but the UE is not required to respond as it is switched off.

Summary of change: 第 12.2.1.1

Steps 9a, 18a and 25a in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off ."

12.3.1.1

Step 7a in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off."

12.3.1.5

Step 7a in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off ."

12.4.1.1a

Step 31 in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off ."

12.6.1.1

Step 16a in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off ."

12.7.1

Step 13a in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off."

12.9.1

Step 11a in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off."

12.9.2

Step 11a in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off."

Consequences if not approved:

器 Good UE will fail the test

Clauses affected: # 12.2.1.1, 12.3.1.1, 12.3.1.5, 12.4.1.1a, 12.6.1.1, 12.7.1, 12.9.1 and 12.9.2

Other specs affected:

X X

Other core specifications
Test specifications

Э

X O&M Specifications

Other comments: # Affects R99, REL-4 and REL-5 test cases.

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked \$\mathbb{X}\$ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3)	3) With "track changes" disabled, paste the entire CR form (the clause containing the first piece of changed text. Delethe change request.	use CTRL-A to select it) into the specification just in front of the those parts of the specification which are not relevant to

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.

Ston	Direction	Massage	Comments
Step	UE SS	Message	Comments
1	UE		The UE is set to attach to the PS services only
			(see ICS). If this is not supported by the UE,
			goto step 26.
2	UE		The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS		SS checks that the IE "Establishment cause" in
			the received RRC CONNECTION REQUEST
		ATTACH BEOLIECT	message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
3a	<-	AUTHENTICATION AND	INIODIO IGENTITY – INIOI
		CIPHERING REQUEST	
3b	->	AUTHENTICATION AND	
3c	SS	CIPHERING RESPONSE	The SS starts integrity protection.
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	Routing area identity = RAI-1
5a	SS		The SS releases the RRC connection.
6	<-	PAGING TYPE1	Mobile identity = P-TMSI-2
			Paging order is for PS services. Paging cause: Terminating interactive call
6a	SS		SS checks that the IE "Establishment cause" in
			the received RRC CONNECTION REQUEST
			message is set to "Terminating interactive call".
7	->	SERVICE REQUEST	Service type = "paging response"
7a	SS		The SS starts integrity protection and releases
			the RRC connection.
8	UE		The UE is switched off or power is removed
8a	SS		(see ICS). SS checks that the IE "Establishment cause" in
Julia	00		any received RRC CONNECTION REQUEST
			message is set to "Detach" (message not sent
		DETACLIBEOLIECT	if power is removed).
9	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
9a	SS		The SS releases the RRC connection. If no
			RRC CONNECTION RELEASE COMPLETE
			message have been received within 1 second
			then the SS shall consider the UE as switched off.
10	UE		The UE is powered up or switched on and
			initiates an attach (see ICS).
10a	SS		SS checks that the IE "Establishment cause" in
			the received RRC CONNECTION REQUEST message is set to "Registration".
11	->	ATTACH REQUEST	Attach type = 'PS attach'
			Mobile identity = P-TMSI-2
11a		AUTHENTICATION AND	Routing area identity = RAI-1
IIa	<-	CIPHERING REQUEST	
11b	->	AUTHENTICATION AND	
1		CIPHERING RESPONSE	
11c 12	SS	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached'
12	<-	ATTACH ACCEPT	Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Routing area identity = RAI-1
13 14	->	ATTACH COMPLETE Void	
14 14b		Void	
1		1	ı

Step	Direction UE SS	Message	Comments
14c	<-	PAGING TYPE1	Mobile identity = P-TMSI-1
14d	SS		Paging order is for PS services. SS verifies that the UE transmits an RRC CONNECTION REQUEST message. SS will
15	<-	PAGING TYPE1	reject this request. The IE "Establishment cause" is not checked. Mobile identity = P-TMSI-2
16	UE	TAGING THE	Paging order is for PS services. No response from the UE to the request. This is
17	UE		checked for 10 seconds. The UE is switched off or power is removed
17a	SS		(see ICS). SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach" (message not sent if
18	->	DETACH REQUEST	power is removed). Message not sent if power is removed. Detach type = 'power switched off, PS detach'
18a	SS		The SS releases the RRC connection. If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off.
19	UE		The UE is powered up or switched on and initiates an attach (see ICS).
19a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
20	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
20a	<-	AUTHENTICATION AND CIPHERING REQUEST	
20b	->	AUTHENTICATION AND CIPHERING RESPONSE	
20c 21	SS <-	ATTACH ACCEPT	The SS starts integrity protection. No new mobile identity assigned. P-TMSI and P-TMSI signature not included.
22	<-	PAGING TYPE1	Routing area identity = RAI-1 Attach result = 'PS only attached' Mobile identity = P-TMSI-1 Paging order is for PS services.
22a	SS		Paging cause: Terminating interactive call SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
22b		Void	
22c 23 23aa	-> SS	Void SERVICE REQUEST	Service type = "paging response" The SS starts integrity protection and releases the RRC connection.
23a 23b		Void Void	
24	UE		The UE is switched off or power is removed (see ICS).
24a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach" (message not sent if
25	->	DETACH REQUEST	power is removed). Message not sent if power is removed. Detach type = 'power switched off, PS detach'
25a	SS		The SS releases the RRC connection. If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off.

Step	Direc	ction	Message	Comments
	UE	SS		
26	U	E		The UE is set to attach to both the PS and non-PS services (see ICS) and the test is repeated from step 2 to step 25b.

Specific message contents

None.

12.2.1.1.5 Test requirements

At step 2a, 10a and 19a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a and 22a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Terminating Interactive Call".

At step 8a, 17a and 24a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, 11 and 20, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

UE shall 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 message is the IMSI and the Mobile identity in the ATTACH ACCEPT message is the P-TMSI.

At step5, UE shall:

- acknowledge the P-TMSI by sending the ATTACH COMPLETE message.

Case 2) The Mobile identity in the ATTACH REQUEST message is the P-TMSI and the Mobile identity in the ATTACH ACCEPT message is the new P-TMSI.

At step13, UE shall:

- acknowledge the new P-TMSI by sending the ATTACH COMPLETE message.

At step23, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

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 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.

Step	Direction	Message	Comments
	UE SS		
1	UE		The UE is set o attach to the PS services only (see ICS). If that is not supported by the UE, goto step 8.
2	UE		The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
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	
5a	SS		The SS releases the RRC connection.
6	UE		The UE is switched off (see ICS).
6a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
7 7a	->	DETACH REQUEST	message is set to "Detach". Detach type = 'power switched off, PS detach' The SS releases the RRC connection. If no RRC CONNECTION RELEASE COMPLETE
			message have been received within 1 second then the SS shall consider the UE as switched off.
8	UE		The UE is set to attach to both the PS and non-PS services (see ICS) and the test is repeated from step 2 to step 7.

Specific message contents

None.

12.3.1.1.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, when the UE is switched off, UE shall:

- send the DETACH REQUEST message to SS with the Detach type = 'power switched off, PS detach'.

12.3.1.5 PS detach / power off / accepted / PS/IMSI detach

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.

Step	Direction	Message	Comments
-	UE SS		
1	UE		The UE is setto attach to both the PS and non-PS services (see ICS).
2	UE		The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
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	
5a	SS		The SS releases the RRC connection.
6	UE		The UE is switched off (see ICS).
6a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Detach".
7	->	DETACH REQUEST	Detach type = 'power switched off, combined PS / IMSI detach'
7a	SS		The SS releases the RRC connection. If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second
			then the SS shall consider the UE as switched off.

Specific message contents

None.

12.3.1.5.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, when the UE is switched off, UE shall:

- send the DETACH REQUEST message to SS with the Detach type = 'power switched off, combined PS / IMSI detach'.

12.4.1.1a Routing area updating / accepted

12.4.1.1a.1 Definition

12.4.1.1a.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.
- 3) The routing area updating procedure shall also be used by a UE which is attached for PS services if a new PLMN is entered.

Reference

3GPP TS 24.008 clause 4.7.5, 4.7.5.1.

12.4.1.1a.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.

To test the behaviour of the UE if the UE enters the new PLMN.

12.4.1.1a.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 MCC2/MNC1/LAC1/RAC2 (RAI-7).

All three cells are operating in network operation mode II.

The PLMN contains cell C is equivalent to the PLMN that contains cell A.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No UE operation mode A 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 UPDATE 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 UPDATE REQUEST message. The SS accepts the P-TMSI and returns ROUTING AREA UPDATE ACCEPT message without any P-TMSI. Further communication UE SS is performed by the P-TMSI.
- 3) 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 UPDATE COMPLETE message.

Expected Sequence

Step	Direction	Message	Comments
	UE SS		
1	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell".
2	UE		(see note) The UE is set to attach to PS services only (see ICS). If that is not supported by the UE, goto step 32.
3	UE		The UE is powered up or switched on and initiates an attach (see ICS).
3a	SS		The SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
4	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS		The SS starts integrity protection.
5	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Equivalent PLMN: MCC = 2, MNC = 1
6	->	ATTACH COMPLETE	,
6a	SS		The SS releases the RRC connection.
7	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell".
7a	SS		(see note) The SS checks that the IE "Establishment cause" in the received RRC CONNECTION
8	->	ROUTING AREA UPDATE REQUEST	REQUEST message is set to "Registration". Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
8a 9	SS <-	ROUTING AREA UPDATE ACCEPT	The SS starts integrity protection. Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4

Step	Direction UE SS	Message	Comments
10	->	ROUTING AREA UPDATE	
		COMPLETE	
11		Void	
11b		Void	
11c	SS		The SS releases the RRC connection.
11d	<-	PAGING TYPE1	Mobile identity = P-TMSI-1
			Paging order is for PS services.
11e	SS		SS verifies that the UE transmits an RRC
			CONNECTION REQUEST message. SS will
			reject this request. The IE "Establishment
			cause" is not checked.
12	<-	PAGING TYPE1	Mobile identity = P-TMSI-2
40			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
1 44	00		received on cell A.
14	SS		Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Suitable
			neighbour cell".
1			(see note)
15	UE		Cell A is preferred by the UE.
15a	SS		The SS checks that the IE "Establishment
			cause" in the received RRC CONNECTION
			REQUEST message is set to "Registration".
16	->	ROUTING AREA UPDATE	Update type = 'RA updating'
		REQUEST	P-TMSI-1 signature
			Routing area identity = RAI-4
16a	SS		The SS starts integrity protection.
17	<-	ROUTING AREA UPDATE	No new mobile identity assigned.
		ACCEPT	P-TMSI not included.
			Update result = 'RA updated'
			P-TMSI-1 signature
47-	00		Routing area identity = RAI-1
17a 18	SS	DACING TYPE1	The SS releases the RRC connection.
18	<-	PAGING TYPE1	Mobile identity = P-TMSI-1
			Paging order is for PS services. Paging cause = "Terminating interactive call".
18a	SS		The SS checks that the IE "Establishment
Toa	33		cause" in the received RRC CONNECTION
			REQUEST message is set to "Terminating interactive call"
18b		Void	Interactive can
18c		Void	
19		SERVICE REQUEST	service type = "paging response"
19	->	SERVICE REQUEST	service type = paging response
19aa	SS		The SS starts integrity protection.
19a	SS		The SS releases the RRC connection.
'04			The following messages are sent and shall be
			received on cell C.
20	SS		Set the cell type of cell A to the "Suitable
20			neighbour cell".
			Set the cell type of cell C to the "Serving cell".
			(see note)
21	UE		Cell C is preferred by the UE.
22	SS		The SS checks that the IE "Establishment
			cause" in the received RRC CONNECTION
			REQUEST message is set to "Registration".
23	->	ROUTING AREA UPDATE	Update type = 'RA updating'
		REQUEST	P-TMSI-1 signature
			Routing area identity = RAI-1
24	SS		The SS starts integrity protection.
25	<-	ROUTING AREA UPDATE	Update result = 'RA updated'
-	,	ACCEPT	Mobile identity = P-TMSI-3
			P-TMSI-3 signature
			Routing area identity = RAI-7
1	I	I	1

Step	Direction	Message	Comments	
	UE SS			
26	->	ROUTING AREA UPDATE		
		COMPLETE		
27	SS		The SS releases the RRC connection.	
28	UE		The UE is switched off or power is removed	
			(see ICS).	
29	SS		The SS checks that the IE "Establishment	
			cause" in the received RRC CONNECTION	
			REQUEST message is set to "Detach".	
30	->	DETACH REQUEST	Message not sent if power is removed.	
			Detach type = 'power switched off, PS detach'	
31	SS		The SS releases the RRC connection. If no	
			RRC CONNECTION RELEASE COMPLETE	
			message have been received within 1 second	
			then the SS shall consider the UE as switched	
			off .	
32	UE		The UE is set to attach to both the PS and non-	
			PS services (see ICS) and the test is repeated	
			from step 3 to step 31.	
NOTE:			d "Serving cell" are specified in TS34.108 clause	
	6.1 "Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.4.1.1a.5 Test requirements

At step 3a, 7a, 15a and 22 the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 18a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Terminating Interactive Call".

At step 29 the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step13, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- not respond to the paging message for PS domain.

At step16, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step19, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step23, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

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.

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18	UE	The UE is set in UE operation mode A (see					
		ICS) and the test is repeated from step 3 to					
		step 16.					
NOTE:	NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1						
"Reference Radio Conditions for signalling test cases only".							

Specific message contents

None.

12.6.1.1.5 Test requirements

At steps 3a and 10a the UE shall transmit an RRC CONNECTION REQUEST message with the IE "Establishment cause" set to "Registration".

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, 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.

At step11, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- perform routing area updating procedure.

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

The UE is set to attach to PS services only (see ICS). If that is not supported by the UE, goto step 14. The UE is powered up or switched on and initiates an attach (see ICS). SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration". Attach type = 'PS attach' Mobile identity = IMSI AUTHENTICATION AND CIPHERING REQUEST AUTHENTICATION AND CIPHERING RESPONSE BOUNDARY OF THE SPONSE IDENTITY RESPONSE	01	Dinastian		Q
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9 -> IDENTITY RESPONSE 10 <- IDENTITY REQUEST 11 -> IDENTITY RESPONSE 11				
Identity type = IMEISV	_			
11				
ATTACH ACCEPT Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 The SS releases the RRC connection. The UE is switched off or power is removed (see ICS). SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach" (message not received if power is removed). The SS releases the RRC connection. The UE is switched off or power is removed (see ICS). SS checks that the IE "Establishment cause" in any received if power is removed). Message not sent if power is removed. Detach type = 'power switched off, PS detach' The SS releases the RRC connection. If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off. The UE is set to attach to both PS and non-PS services (see ICS) and the test is repeated from				Mobile identity = IMFISV
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services (see ICS) and the test is repeated from	14	UE		
	'-			
				step 2 to step 13b.

Specific message contents

None.

12.7.1.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 12a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step7, when the SS requests an IMSI with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMSI.

At step9, when the SS requests an IMEI with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMEI.

At step11, when the SS requests an IMEISV with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMEISV.

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.

Step	Direction	Message	Comments			
	UE SS					
1	UE		The UE is set to attach to PS services only (see ICS). If that is not supported by the UE, goto step 12.			
2	UE		The UE is powered up or switched on and initiates an attach (see ICS).			
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".			
3	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI			
3a	<-	AUTHENTICATION AND CIPHERING REQUEST				
3b	->	AUTHENTICATION AND CIPHERING RESPONSE				
3c	SS		The SS starts ciphering and integrity protection.			
4	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature			
_		ATTACH COMPLETE	Routing area identity = RAI-1			
5 5a	-> SS	ATTACH COMPLETE	The SS releases the RRC connection.			
6	UE		The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT			
6a	SS		command. The IE "Establishment cause" in the received RRC CONNECTION REQUEST message is not checked.			
7 8	-> <-	SERVICE REQUEST AUTHENTICATION AND	Service type = "signalling",			
9	->	CIPHERING REQUEST AUTHENTICATION AND CIPHERING RESPONSE				
9a	SS	ON TIERNING REGI GROE	The SS starts integrity protection and releases the RRC connection.			
10	UE		The UE is switched off or power is removed (see ICS).			
10a	SS		The SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST is set to "Detach" (not received if			
			power is removed).			
11	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'			
11a	SS		The SS releases the RRC connection. If no RRC CONNECTION RELEASE COMPLETE			
			message have been received within 1 second then the SS shall consider the UE as switched			
			off .			
12	UE		The UE is set to attach to both PS and non-PS			
			services (see ICS) and the test is repeated from			
			step 2 to step 11b.			

Specific message contents

None.

12.9.1.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 10a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step7, 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.

Step	Direction	Message	Comments				
Otep	UE SS	. Wessage	Comments				
1	UE		The UE is set to attach to PS services only (see ICS). If that is not supported by the UE, goto				
2	UE		step 12. The UE is powered up or switched in and initiates an attach (see ICS).				
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST				
3	->	ATTACH REQUEST	message is set to "Registration". Attach type = 'PS attach' Mobile identity = IMSI				
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	Mobile Identity – IMOI				
3b	->	AUTHENTICATION AND CIPHERING RESPONSE					
3c 4	SS <-	ATTACH ACCEPT	The SS starts ciphering and integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1				
5	->	ATTACH COMPLETE					
5a	SS		The SS releases the RRC connection.				
6	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.				
6a	SS		Paging cause = "Terminating interactive call" SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST				
_		05D) #05 D50 J50T	message is set to "Terminating interactive call".				
7 8	-> <-	SERVICE REQUEST AUTHENTICATION AND CIPHERING REQUEST	Service type = "Paging response"				
9	->	AUTHENTICATION AND CIPHERING RESPONSE					
9a	SS		SS starts integrity protection and releases the				
10	UE		RRC connection. The UE is switched off or power is removed (see ICS).				
10a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST				
			message is set to "Detach" (message not sent if power is removed).				
11	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'				
11a	SS		The SS releases the RRC connection. If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second				
			then the SS shall consider the UE as switched off.				
12	UE		The UE is set to attach to both PS and non-PS services (see ICS) and the test is repeated from step 2 to step 11b.				

Specific message contents

None.

12.9.2.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Terminating interactive Call".

At step 10a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, 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".

3GPP TSG- T1 Meeting #18 San Antonio, US, 10th – 14th February 2003

3GPP TSG- T1 SIG Meeting #27 San Antonio, US, 10th – 14th Sept 2003 *Tdoc* **#** *T1-030038*

Tdoc # T1S030098

CHANGE REQUEST							
#	<mark>4.123-1</mark> CR <mark>411 </mark>	Current version: 5.2.0					
For HELP on using this form, see bottom of this page or look at the pop-up text over the % symbols. Proposed change affects: UICC apps% ME X Radio Access Network Core Network							
Title:	Correction to package 4 GMM test case 12.6.1.3.3						
Source: #	/ fraudulent network Ericsson, Motorola						
Work item code: ₩	TEI	<i>Date:</i>					
Category: ∺	Use one of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Release: # REL-5 Use one of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)					
Reason for change: # UE doesn't need to send AUTHENTICATION AND CIPHERING FAILURE message if it receives invalid MAC code in AUTHENTICATION AND CIPHERING REQUEST message second time. UE is allowed to assume that the source of the authentication challenge is not genuine and initiate move to idle mode.							
	As per 25.331, if upper layer informs RRC about should release all RBs and come out of connect In accordance to the LS from CN1 in T1-030006 authentication failure after three consecutive fail alternative to the R99 behaviour to diagnose authenticative authentication failures due to incorrunning.	ted mode. 6 the REL-5 behaviour to diagnose lures should be allowed as an other than the street MAC code while T3318 is					
	Updates needed for changes introduced in Dece (V3.14.0), REL-4 (V4.9.0) and REL-5 (V5.6.0)	ember version of 24.008 for R99					

Summary of change: # Updated conformance requirement, test purpose and test procedure to cope with different behaviour for R99, REL-4 and REL-5 terminals.

Test case updated according to changes introduced in Dec 2002 version of TS

Steps 7b made void.

策 Good UE will fail the test

24.008.

Consequences if

How to create CRs using this form:

Other comments:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

Affects R99, REL-4 and REL-5 test cases.

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

- 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

R99 and REL-4:

- 1. 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.

When it has been deemed by the MS that the source of the authentication challenge is not genuine (authentication not accepted by the MS), the MS shall behave as described in 3GPP 24.008 clause 4.7.7.6.1.

2. In addition to the cases specified in subclause 4.7.7.6, the UE may deem that the network has failed the authentication check after any combination of three consecutive authentication failures, regardless whether 'MAC failure', 'invalid SQN', or 'GSM authentication unacceptable' was diagnosed. The authentication failures shall be considered as consecutive only, if the authentication challenges causing the second and third authentication failure are received by the UE, while the timer T3318 or T3320 started after the previous authentication failure is running.

If the UE deems that the network has failed the authentication check, then it shall request RR or RRC to release the RR connection and the PS signalling connection, if any, and bar the active cell or cells (see 3GPP TS 25.331 and 3GPP TS 04.18).

The UE may deem that the network has failed the authentication check after any combination of three consecutive authentication failures, regardless whether 'MAC failure', 'invalid SQN', or 'GSM authentication unacceptable' was diagnosed. The authentication failures shall be considered as consecutive only, if the authentication challenges causing the second and third authentication failure are received by the UE, while the timer T3318 or T3320 started after the previous authentication failure is running.

Reference

3GPP TS 24.008 clause 4.7.7.6 (f) and 4.7.7.6.1.

REL-5 and later releases:

- 1. 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 occurs:
 - after sending the AUTHENTICATION & CIPHERING FAILURE message with GMM cause 'MAC failure' the timer T3318 expires;
 - the MS detects any combination of the authentication failures: "MAC failure", "invalid SQN", and "GSM authentication unacceptable", during three consecutive authentication challenges. The authentication challenges shall be considered as consecutive only, if the authentication challenges causing the second and third authentication failure are received by the MS, while the timer T3318 or T3320 started after the previous authentication failure is running.

When it has been deemed by the MS that the source of the authentication challenge is not genuine (authentication not accepted by the MS), the MS shall behave as described in 3GPP TS 24.008 subclause 4.7.7.6.1.

2. If the UE deems that the network has failed the authentication check, then it shall request RR or RRC to release the RR connection and the PS signalling connection, if any, and bar the active cell or cells (see 3GPP TS 25.331 and 3GPP TS 44.018).

Reference

3GPP TS 24.008 clause 4.7.7.6 (f) and 4.7.7.6.1.

12.6.1.3.3.3 Test purpose

R99 and REL-4

To test UE treating a cell as barred:

- 1. _when the network sends the second <u>or third_AUTHENTICATION & CIPHERING REQUEST message</u> with invalid MAC code during the timer T3318 is running.
- 2. _when the timer T3318 has expired.

REL-5 or later release:

To test UE treating a cell as barred:

- 1. when the network sends the third 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 with an incorrect Message Authentication Code (MAC) value in its AUTHENTICATION AND CIPHERING REQUEST message.

For R99 and REL-4: SS waits 30 seconds. If the UE sends an AUTHENTICATION AND CIPHERING FAILURE message during this time then the the SS repeats the authentication procedure a third time and then waits 30 seconds. The UE moves into idle mode -and do not make any access attempt on Cell A.

For REL-5 or later relaese: The SS repeats a third time the authentication procedure, again with an incorrect Message Authentication Code (MAC) value in its AUTHENTICATION AND CIPHERING REQUEST message. The UE moves into idle mode and do not make any access attempt on Cell A.

Next, Tthe UE shall attempt to attach to cell B₂, 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 waits for T3318 to expire.

which again fails. In this case T3318 expires after the second attempt.

The UE sends AUTHENTICATION AND CIPHERING FAILURE message to the SS indicating authentication failure.

The SS repeats a third 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.

Step	Direction	Message	Comments					
	UE SS							
1	SS		Set the cell type of cell A to the "Serving cell".					
			Set the cell type of cell B to the "Non-Suitable					
			cell". (see note)					
			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'					
4	<-	AUTHENTICATION AND	Mobility identity = IMSI Request for authentication.					
4	ζ-	CIPHERING REQUEST	Invalid Message Authentication Code (MAC).					
5	->	AUTHENTICATION AND	GMM cause='MAC failure'					
		CIPHERING FAILURE						
6	<-	AUTHENTICATION AND	Request for authentication.					
_		CIPHERING REQUEST	Invalid Message Authentication Code (MAC).					
7	->	AUTHENTICATION AND CIPHERING FAILURE	GMM cause='MAC failure' R99 and REL-4: In case message is not					
		CIT IEKING AILOKE	received within 30s then SS should continue					
			from step 9.					
7a	<-	AUTHENTICATION AND	Request for authentication.					
		CIPHERING REQUEST	Invalid Message Authentication Code (MAC).					
71-		ALITHENTICATION AND	R99 and REL-4: Optional step					
7b	→	AUTHENTICATION AND CIPHERING FAILUREVoid	GMM cause='MAC failure'					
8	SS	OIL FIETUNO FAILURE VOID	SS verifies that the UE does not attempt to					
			access the network for 30s.					
			R99 and REL-4: Optional step					
9	SS		Set the cell type of cell A to the "Non-Suitable					
			cell". Set the cell type of cell B to the "Serving cell".					
			(see note)					
			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					
11	->	ATTACH REQUEST	command. Attach type = 'PS attach'					
''	->	ATTACITREQUEST	Mobility identity = IMSI					
12	<-	AUTHENTICATION AND	Request for authentication.					
		CIPHERING REQUEST	Invalid Message Authentication Code (MAC).					
13	->	AUTHENTICATION AND	GMM cause='MAC failure'					
1.4	66	CIPHERING FAILURE	SS weite T2249 (20e)					
14 15	SS SS		SS waits T3318 (20s) SS verifies that the UE does not attempt to					
'5			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					
NOTE:	access the network for 30s. OTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1							
NOTE:								
"Reference Radio Conditions for signalling test cases only".								

Specific message contents

None.

12.6.1.3.3.5 Test requirements

At step_3, when the UE is powered on or switched on, the UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At After step 45, when the UE have receiveds the first AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC), the UE shall:

- send the AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS.

For R99 and REL-4 UE:

Alternative 1:

- After step 6, when the UE have received the second AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC), the UE shall not attempt to access the network.

Alternative 2:

- At After step 67, when the UE have receivesd the second AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC) from the network during a while the timer T3318 is running, the UE shall send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS; and:
- After step 7a, when the UE have received the third AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC), the UE shall not attempt to access the network.

— send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS.

At step7b, when the UE receives the third 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.

For REL-5 UE:

- After step 6, when the UE receives the second AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC) from the network while the timer T3318 is running, the UE shall send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS; and
- After step 7a, when the UE have received the third AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC), the UE shall not attempt to access the network.

At step8, after the UE sends third AUTHENTICATION AND CIPHERING FAILURE message to the SS, the UE shall:

not attempt to access the network, until the system information data is refreshed.

At step_11, when the activated cell is changed from cell A to cell B, the UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At After step 1213, when the UE have receiveds the AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC), the UE shall:

- send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS.

At step_17, when the timer T3318 have expired, the UE shall:

- not attempt to access the network.

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3GPP TSG-T1 SIG Meeting #27 San Antonio, US, 10th – 14th February 2003 Tdoc # T1-030095

Tdoc **#** *T1S030224*

CHANGE REQUEST											
*	TS 34.1	23-1	CR	443	жrev	-	ж	Current vers	ion:	5.2.0	ж
For <u>HE</u>	_P on using	this for	m, see	bottom of thi	s page or	look	at the	e pop-up text	over	the ૠ syr	mbols.
Proposed o	change affec	ets: l	JICC a	pps#	ME X	Rac	dio A	ccess Networ	·k	Core Ne	etwork
Title:	₩ CF	R to TS	34.123-	-1 REL-5; Co	rrections t	o pac	kage	e 4 test cases	on C	CC	
Source:	₩ <mark>Er</mark> i	icsson									
Work item	code: 郑 <mark> TE</mark>	I						<i>Date:</i> ≭	06/	02/2003	
Category:	Deta	F (corr A (corr B (add C (fundational) D (editational)	rection) respond lition of ctional r torial mo	wing categorie Is to a correction feature), modification of podification) as of the above R 21.900.	on in an ea		elease	R97 R98 R99	the for (GSM (Rele (Rele (Rele (Rele (Rele (Rele		eases:
Reason for	change: 策		reasons ange.	s for the char	iges propo	osed i	in thi	s CR are indi	cated	l in the su	mmary
Summary o	of change: ₩	• (c	Conforn elevant Change details)	t extracts from	n core spe cedure des	ecifica	ations	at of conforma s o general con			

Conformance requirements updated to state the requirement on the UE behaviour when receiving the CM SERVICE REJECT message.

10.1.2.2.3

Expected sequence: step 4, re- activation of the old dedicated channel failure has been removed. It does not make sense to check if the UE reverts back to the old configuration since the re-establishment procedure ends by moving the UE is moved to idle mode (in step 3). The corresponding check in step 5 is replaced by a check whether the UE initiates RRC connection establishment, which it should not since it should not re-attempt MM connection establishment

10.1.2.3.2

Some of the indicated cause values are not really appropriate in this phase
of call establishment stage. Since the actual cause value is not relevant for
this TC, the examples are removed and replaced by a comment in the
expected sequence table suggesting to use cause #47 Resources
unavailable, unspecified

10.1.2.7.1

The conformance requirement refers to the section concerning disconnect
when the mobile supports "Prolonged Clearing Procedure" (option). The rest
of the test case does not include the corresponding details e.g. conformance
requirements, message contents. To resolve this inconsistency, the
reference is changed to the common disconnect procedure with no in band
tones provided.

Changes introduced in T1S030224 (revision of T1S030095):

• Changed "mobile stattion" to UE in conformance requirements.

Consequences if not approved:

If this CR is not approved, the errors indicated above will remain in the test specification

Clauses affected:	第 10.1.2.2.1, 10.1.2.2.3, 10.1.2.3.2, 10.1.2.3.7, 10.1.2.7.1					
	YN					
Other specs	光 Other core specifications					
affected:	Test specifications					
	O&M Specifications					
Other comments:	# Affects both Rel 00 Rel 1 and Rel 5 test cases					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

<Start of modified section>

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

If the service request cannot be accepted, the network returns a CM SERVICE REJECT message to the UE.

If no other MM connection is active, the network may start the RR connection release when the CM SERVICE REJECT message is sent.

If a CM SERVICE REJECT message is received by the UE, timer T3230 shall be stopped, the requesting CM sublayer entity informed. Then the UE shall proceed as follows:

- If the cause value is not #4 or #6 the MM sublayer returns to the previous state (the state where the request was received). Other MM connections shall not be affected by the CM SERVICE REJECT message.
- If cause value #4 is received, the UE aborts any MM connection, deletes any TMSI, LAI and ciphering key sequence number in the SIM, changes the update status to NOT UPDATED (and stores it in the SIM according to clause 4.1.2.2), and enters the MM sublayer state WAIT FOR NETWORK COMMAND. If subsequently the RR connection is released or aborted, this will force the UE to initiate a normal location updating). Whether the CM request shall be memorized during the location updating procedure, is a choice of implementation.
- If cause value #6 is received, the UE aborts any MM connection, deletes any TMSI, LAI and ciphering key sequence number in the SIM, changes the update status to ROAMING NOT ALLOWED (and stores it in the SIM according to clause 4.1.2.2), and enters the MM sublayer state WAIT FOR NETWORK COMMAND. The UE shall consider the SIM as invalid for non-GPRS services until switch-off or the SIM is removed.

References

TS 24.008, clause 4.5.1.1.

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	<- <- -> SS		CM SERVICE REJECT	
2			STATUS ENQUIRY	
3			RELEASE COMPLETE	cause shall be #81 (invalid TI value)
4				repeat steps 2-3 to cover all the
				transaction identifiers from 000110
5	<	(-		The SS releases the RRC connection.

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).

<End of modified section>

<Start of next modified section>

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

If an RR connection failure occurs or the IMSI is deactivated during the establishment of an MM connection, the MM connection establishment is aborted, timers T3230 is stopped, and an indication is given to the CM entity that requested the MM connection establishment. This shall be treated as a rejection for establishment of the new MM connection, and the MM sublayer shall release all active MM connections.

1. RR connection failure or IMSI deactivation

If an RR connection failure occurs or the IMSI is deactivated during the establishment of an MM connection, the MM connection establishment is aborted, timers T3230 is stopped, and an indication is given to the CM entity that requested the MM connection establishment. This shall be treated as a rejection for establishment of the new MM connection, and the MM sublayer shall release all active MM connections.

- 2. In CELL DCH State, after receiving N313 consecutive "out of sync" indications from layer 1 for the established DPCCH physical channel in FDD, and the DPCH associated with mapped DCCHs in TDD, the UE shall:
 - 1> start timer T313;
 - 1> upon receiving N315 successive "in sync" indications from layer 1 and upon change of UE state:
 - 2> stop and reset timer T313.
 - <u>1> if T313 expires:</u>
 - 2> consider it as a "Radio link failure".

Periods in time where neither "in sync" nor "out of sync" is reported by layer 1 do not affect the evaluation of the number of consecutive (resp. successive) "in sync" or "out of sync" indications.

When a radio link failure occurs, the UE shall:

- 1> clear the dedicated physical channel configuration;
- 1> perform actions as specified for the ongoing procedure;
- 1> if no procedure is ongoing or no actions are specified for the ongoing procedure:
 - 2> perform a cell update procedure according to subclause 8.3.1 using the cause "radio link failure".
- 2. In addition, the cell update procedure also serves the following purposes:

<u>..</u>

to act on a radio link failure in the CELL_DCH state;

References

TS 24.008, clause 4.5.1.2<u>a)</u>, clause 5.2.1.1, TS 25.331 clause 8.5.6 and 8.3.1.1 and 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".

To verify that the UE with a CC entity in state U0.1, "MM connection pending", aborts MM connection establishment, stops timer T3230 and returns to idle mode in case an RR connection failure occurs.

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 release the DPCH configuration 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 s. The SS will-checks that the UE will-does not send any message-initiate RRC connection establishment during 60 s.

Expected sequence

Step	Direction		Direction		Direction		Message	Comments										
	UE	SS																
1	S	S		SS release the DPCH configuration to														
				modifies the scrambling code of DPCH														
				for-generateing lower layer failure (radio														
				<u>link failure)</u>														
2	-:	>	CELL UPDATE	CCCH														
3	<	:-	RRC CONNECTION RELEASE	CCCH														
4	S	S		For a period of 60 s the SS checks that														
				the UE does not initiate RRC connection														
																		establishment (since it should not re-
				attempt MM connection establishment)														
				re-modifies the scrambling code of														
				DPCH to the original one.														
5	S	S		SS waits 60 s.														
				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 initiate RRC connection establishment during 60 s.

<End of modified section>

<Start of next modified section>

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

A call control entity of the UE in any call control state shall, upon receipt of a RELEASE COMPLETE message from its peer entity in the network: stop all running call control timers; release the MM connection; and return to the "null" state.

References

TS 24.008, clause 5.4.4.1.3.

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".

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	
1	<-	RELEASE COMPLETE	See specific message content below.
			This test case does not require a
			specific cause value. E.g. value #47,
			resources unavailable, is a suitable
			<u>value</u>
2	<-	STATUS ENQUIRY	
3	->	RELEASE COMPLETE	cause #81 (invalid TI value)
4	SS		repeat steps 2-3 to cover all the
			transaction identifiers from 000110
5	<-		The SS releases the RRC connection.

Specific message contents:

None

RELEASE COMPLETE

1) With a valid cause value among:

related to numbering,

#1 Unassigned (unallocated) number

#3 No route to destination

#22 Number changed

#28 Invalid number format (incomplete number)

related to bearer capabilities,

#8 Operator determined barring

#34 No circuit/channel available

#57 Bearer capability not authorized

#58 Bearer capability not presently available

#63 Service or option not available, unspecified

#65 Bearer service not implemented

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).

<End of modified section>

<Start of next modified section>

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

If a UE receives an RR, MM or CC message with message type not defined for the PD or not implemented by the receiver in acknowledged mode, it shall return a status message (STATUS, MM STATUS depending on the protocol discriminator) with cause # 97 "message type non-existent or not implemented".

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 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 the UE shall return a STATUS message with "Call state" set to state U1, " Call initiated "...

<End of modified section>

<Start of next modified section>

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

The call control entity of the UE in the "disconnect request" state, shall, upon receipt of a DISCONNECT message:

The call control entity of the UE in any state except the "null" state, the "disconnect indication" state, and the "release request" state, shall, upon the receipt of a DISCONNECT message without progress indicator information element or with progress indicator different from #8:

- stop all running call control timers;
- send a RELEASE message;
- start timer T308; and
- enter the "release request" state.

References

TS 24.008 clause 5.4.4.21.2.1.

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 the UE shall return the RELEASE message.

After step 3 the UE shall return a STATUS message with "Call state" set to and enter the CC state U19, "Release Request".

Tdoc # T1S030044

3GPP TSG-T1 SIG Meeting #27 San Antonio, USA, 10th – 12th February 2003

CHANGE REQUEST											
ж 34. ′	123-1	CR <mark>444</mark>	≋rev -	光 Current vers	ion: 5.2.0 ^第						
For <u>HELP</u> on using	For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the ℜ symbols.										
Proposed change affects: UICC apps# ME X Radio Access Network Core Network											
Title: 第 C	R to 34.1	23-1 Rel-5: Corr	ection to Tables	10.1.3/2 and 10.1.3	3/4						
Source: 第 N	okia, ETS	SI									
Work item code:	El			Date: ℜ	10/01/2003						
De	F (corre A (corre B (addi C (func D (edito tailed expl	esponds to a correction of feature), tional modification orial modification)	ction in an earlier re	2 elease) R96 R97 R98 R99	Rel-5 the following releases: (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5) (Release 6)						
Reason for change: 9	€ Authe	ntication procedu	ure needs to be p	erformed before s	ecurity mode control.						
Summary of change: 8			0.1.3/4 modified s rrity mode control	so that authenticat	on procedure is						
Consequences if not approved:	€ Incorr	ect message sec	quence tables								
Clauses affected:	€ 10.1.3	}									
Other specs affected:	X	Other core speci Test specification O&M Specification	ns								

How to create CRs using this form:

Other comments:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

器 Affects R99, Rel-4 and Rel-5

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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 s. The SS will check that the UE will not send any message during 60 s.

Expected sequence

Step	Direction		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 s.		
				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 s.

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	See TS 34.108 clause 7.1.2
			Connection	Establishment cause: Terminating Conversational Call.
2		->	PAGING RESPONSE	Control Callerian Callerian
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	ι	JE		(note 3)
B11		->	CONNECT	U8
12			Radio Bearer Setup Procedure	See TS 34.108 clause 7.1.3
13	<-		CONNECT ACKNOWLEDGE	U10
NOTE 1	: Wit	th signa	al information included in the SETUP message.	
NOTE 2	2: The	e UE is	supporting immediate connect (p = Y/N). See ICS/IXI7	Γ statement.

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	See TS34.108 clause 7.1.2
				Connection	Establishment cause: Terminating
					Conversational Call.
	2	-	->	PAGING RESPONSE	
	<u>2a</u>	3	<u><-</u>	<u>AUTHENTICATION REQUEST</u>	
	2a 2b 3	<- -> <-		<u>AUTHENTICATION RESPONSE</u>	
	3	•	<-	SECURITY MODE COMMAND	
	4	->		SECURITY MODE COMPLETE	
	5	<-		SETUP	U6, (note 1)
L	6	->		CALL CONFIRMED	U9
	A7	->		CONNECT	U8, p = Y, (note 2)
	A8			Radio Bearer Setup Procedure	See TS34.108 clause 7.1.3
	B7	->		ALERTING	U7, $p = N$, (note 2)
	B8			Radio Bearer Setup Procedure	See TS34.108 clause 7.1.3
	B9	ι	JE		(note 3)
	B10	->		CONNECT	U8
	11	-	<-	AUTHENTICATION REQUESTVoid	
	12		>	AUTHENTICATION RESPONSE Void	
Ī	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 10.1.3/3: Void

Table 10.1.3/4: Establishment of an incoming call, procedure 4

Step	Direction		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			
<u>2a</u>	<-		AUTHENTICATION REQUEST			
2a 2b 3	<u><-</u> -≥		AUTHENTICATION RESPONSE			
3	<-		SECURITY MODE COMMAND			
4	->		SECURITY MODE COMPLETE			
5	<-		SETUP	U6, (note 1)		
6	->		CALL CONFIRMED	U9		
7			Radio Bearer Setup Procedure	See TS 34.108 clause 7.1.3		
A8	-	>	CONNECT	U8, p = Y, (note 2)		
B8	_	>	ALERTING	U7, p = N, (note 2)		
B9	L	ΙE		(note 3)		
B10	-	>	CONNECT	Ü8		
11	4	-	AUTHENTICATION REQUESTVoid			
12	-	>	AUTHENTICATION RESPONSE Void			
13	<	<-	CONNECT ACKNOWLEDGE	U10		

NOTE 1: The signal information element is not 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.

3GPP TSG-T1 Meeting #18 San Antonio, TX, USA, 10th – 14th February 2003

3GPP TSG-T1 SIG Meeting #27 San Antonio, TX, USA, 10th – 14th February 2003 *Tdoc* **#** *T1-030097*

Tdoc #T1S030188

		(CHANG	SE REQ	UES	Т			CR-Form-v7	
₩ TS	34.12	<mark>3-1</mark> CR	445	⊭rev	_ #	Current ver	rsion:	5.2.0	Ж	
For HELP on using this form, see bottom of this page or look at the pop-up text over the % symbols. Proposed change affects: UICC apps% ME X Radio Access Network Core Network										
Title:	₩ CR to	TS 34.12	23-1 REL-5;	Corrections	o pack	age 4 test cas	es on M	M		
Source:	器 Erics	son								
Work item code:	:₩ <mark>TEI</mark>					Date: 8	€ 12/0	2/2003		
Category:	F A B C D Detaile	(correction (correspor (addition o (functional (editorial n d explanati	nds to a correct of feature), I modification nodification)	ction in an ear		Release: 8 Use one of 2 ase) R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	of the follo (GSM) (Relea (Relea (Relea	owing rele Phase 2) se 1996) se 1997) se 1998) se 1999) se 4) se 5)	eases:	
Reason for chan	_		ns for the ch ummary of cl		sed in	this CR are inc	dicated i	in the fol	lowing	
Summary of cha		General/s Conformal releva Change details Severa The techas be 9.4.3.5 Gener LOCA is perfonly ac	several TCs rmance requ nt extracts fr ge of RRC pr c) al editorial in ext "after whice een removed al: the test h TION UPDA ormed prior	uirements: re rom core sper rocedure des inprovements ch it waits fo d, since it onl has been cha tas been cha to this (inste- tering, for wh	placem ecification cription r the dis y applie nged to in case ad of th	to general co	the ma UE ign node co	in signall nores the nores pro e securit	ide ling link." cedure y mode	

specification

If this CR is not approved, the errors indicated above will remain in the test

Consequences if

not approved:

Clauses affected:	第 9.4.3.5, 9.5.4, 9.5.5, 9.5.7
	YN
Other specs	器 X Other core specifications 第
affected:	X Test specifications
	X O&M Specifications
	
Other comments:	# Affects Rel 99, Rel 4 and Rel 5 test cases

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

9.4.3.5 Location updating / abnormal cases / Failure due to non-integrity protection

9.4.3.5.1 Definition

9.4.3.5.2 Conformance requirement

The supervision that the integrity protection is activated shall be the responsibility of the MM and GMM layer in the UE (see 3GPP TS 33.102).

No layer 3 signalling messages, except those listed in TS 24.008 clause 4.1.1.1.1, shall be processed by the receiving MM and GMM entities or forwarded to the CM entities, if the integrity protection has not been previously activated for that domain.

Except the messages listed below, no layer 3 signalling messages shall be processed by the receiving MM and GMM entities or forwarded to the CM entities, unless the security mode control procedure is activated for that domain.

- MM messages:

- AUTHENTICATION REQUEST
- AUTHENTICATION REJECT
- IDENTITY REQUEST
- LOCATION UPDATING ACCEPT (at periodic location update with no change of location area or temporary identity)
- LOCATION UPDATING REJECT
- CM SERVICE ACCEPT, if the following two conditions apply:
 - no other MM connection is established; and
 - the CM SERVICE ACCEPT is the response to a CM SERVICE REQUEST with CM SERVICE TYPE IE set to 'emergency call establishment'
- CM SERVICE REJECT
- ABORT

References

TS 24.008 clauses 4.1.1.1.1

9.4.3.5.3 Test purpose

To verify that the UE ignores NAS signalling messages when the security mode procedure is <u>not</u> activated <u>without the integrity protection</u>.

9.4.3.5.4 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

The location updating procedure is started. Upon reception of LOCATION UPDATING REQUEST message from the UE, the SS responds to LOCATION UPDATING ACCEPT message without the integrity protection. The UE shall ignore this message and restart the location updating procedure at expiry of timer T3211. This time the SS starts the authentication procedure and initiates the integrity protection. After receiving LOCATION UPDATING ACCEPT message, the UE shall respond to TMSI REALLOCATION COMPLETE message.

Expected sequence

Step	Direction	Message	Comments
-	UE SS		
1	SS		Set the cell type of cell B to the "Serving cell".
			Set the cell type of cell A to the "non-suitable cell".
			(see note)
2	SS		The SS verifies that the IE "Establishment cause" in the
			received RRC CONNECTION REQUEST message is set
3	\rightarrow	LOCATION UPDATING	to "Registration".
3	7	REQUEST	
4	←	AUTHENTICATION REQUEST	
5	$\stackrel{\cdot}{ o}$	AUTHENTICATION RESPONSE	
6	SS	, to mention the order	The SS does not initiate starts the security mode
			procedure without the integrity protection. The content of
			integrity protection mode info IE in SECURITY MODE
			COMMAND message is specified below.
7	←	LOCATION UPDATING ACCEPT	
8	UE		The UE ignores LOCATION UPDATING ACCEPT
	00		message.
9 10	SS UE		The SS waits T3210 expiry. The UE aborts the RR connection.
11	SS		The SS releases the RRC connection.
12	SS		The SS waits T3211 expiry.
13	SS		The SS verifies that the IE "Establishment cause" in the
			received RRC CONNECTION REQUEST message is set
			to "Registration".
14	\rightarrow	LOCATION UPDATING	
		REQUEST	
15	←	AUTHENTICATION REQUEST	
16	\rightarrow	AUTHENTICATION RESPONSE	
17	SS		The SS starts the security mode procedure with the
			integrity protection. The content of integrity protection
			mode info IE in SECURITY MODE COMMAND message
18	←	LOCATION UPDATING ACCEPT	is specified below.
19	$\stackrel{\backslash}{\Rightarrow}$	TMSI REALLOCATION	
		COMPLETE	
20	SS		The SS releases the RRC connection.
NOTE:			able cell" are specified in TS 34.108 clause 6.1 "Reference
	Radio Con	ditions for signalling test cases only	<u>'</u> .

Specific message contents

Specific message contents for SECURITY MODE COMMAND message (without the integrity protection)

Information Element	Value/remark
Integrity protection mode info	Not Checked

Specific message contents for SECURITY MODE COMMAND message (with the integrity protection)

Information Element	Value/remark
Integrity protection mode info	
 Integrity protection mode command 	Start Start
- Downlink integrity protection activation info	Not Present
- Integrity protection algorithm	UIA1
- Integrity protection initialisation number	SS selects an arbitrary 32 bits number for FRESH

None.

9.4.3.5.5 Test requirement

At step 8 the UE shall ignore the first LOCATION UPDATING ACCEPT message.

At step 14 the UE shall send LOCATION UPDATING REQUEST message after expiry of timer T3211.

At step 16 the UE shall respond to TMSI REALLOCATION COMPLITE message after the UE receives the second LOCATION UPDATING ACCEPT message.

. . .

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.

If a CM SERVICE REJECT message is received by the mobile station, timer T3230 shall be stopped, the requesting CM sublayer entity informed. Then the mobile station shall proceed as follows:

- If the cause value is not #4 or #6 the MM sublayer returns to the previous state (the state where the request was received). Other MM connections shall not be affected by the CM SERVICE REJECT message.

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 Ssstops timer T3230, informs the requesting CM sublayer entity and returns to the previous state.

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 via the rejected MM connection.

Expected sequence

Step	Direction	Message	Comments
	UE SS		
1	UE		A MO CM connection is attempted
2	\rightarrow	RRC CONNECTION	
		REQUESTVoid	
3		RRC CONNECTION SETUPVoid	
4	\rightarrow	RRC CONNECTION SETUP	
		COMPLETE Void	
5	\rightarrow	CM SERVICE REQUEST	A mobile originating CM connection is attempted
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 s. Note: During this period, a new
			mobile originating CM connection should not be
			attempted, since then UE would send a new CM
			SERVICE REQUEST.
8	← <u>SS</u>	RRC CONNECTION RELEASE	SS releases the RRC connection. 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 5 the UE shall send a CM SERVICE REQUEST.

At After step 76 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.

The CM SERVICE REQUEST message contains the:

- mobile identity according to clause 10.5.1.4;
- mobile station classmark 2;

- ciphering key sequence number; and
- CM service type identifying the requested type of transaction (e.g. mobile originating call establishment, emergency call establishment, short message service, supplementary service activation, location services)

<u>...</u>

If a CM SERVICE REJECT message is received by the mobile station, timer T3230 shall be stopped, the requesting CM sublayer entity informed. Then the mobile station shall proceed as follows:

<u>...</u>

- If cause value #4 is received, the mobile station aborts any MM connection, deletes any TMSI, LAI and ciphering key sequence number in the SIM, changes the update status to NOT UPDATED (and stores it in the SIM according to clause 4.1.2.2), and enters the MM sublayer state WAIT FOR NETWORK COMMAND. If subsequently the RR connection is released or aborted, this will force the mobile station to initiate a normal location updating). Whether the CM request shall be memorized during the location updating procedure, is a choice of implementation.

References

TS 24.008 clause 4.5.1.1.

9.5.5.3 Test purpose

To verify that the UE can 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 TMSI.

To verify that 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.

To verify that the UE shall then perform a normal location updating procedure.

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	\rightarrow	RRC CONNECTION	
		REQUEST Void	
3		RRC CONNECTION SETUPVoid	
4	\rightarrow	RRC CONNECTION SETUP	
		COMPLETE Void	
5	\rightarrow	CM SERVICE REQUEST	CKSN = initial value, Mobile identity = TMSI.
6	←	CM SERVICE REJECT	"Reject cause" = "IMSI unknown in VLR".
7	<u>←ss</u>	RRC CONNECTION RELEASE	SS releases the RRC connection. After the sending of
			this message, the Ss waits for the disconnection of the
			main signalling link.
8	→	RRC CONNECTION RELEASE	
_		COMPLETE Void	
9	<u>→ss</u>	RRC CONNECTION REQUEST	SS verifies that the IE "Establishment cause" in the
			received RRC CONNECTION REQUEST message is set
			to: "Registration".
10	← →	RRC CONNECTION SETUP Void	
11	7	RRC CONNECTION SETUP	
12	\rightarrow	COMPLETE Void LOCATION UPDATING	"Oinh ain a laca a ann an
12	7	REQUEST	"Ciphering key sequence number" = "No key is
		REQUEST	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	previous values, the LAC is could FFFE).
14	\rightarrow	AUTHENTICATION RESPONSE	
14a	É	SECURITY MODE COMMAND	
14b	\rightarrow	SECURITY MODE COMPLETE	
15	-	LOCATION UPDATING ACCEPT	"Mobile identity" = new TMSI.
16	\rightarrow	TMSI REALLOCATION	
		COMPLETE	
17	<u>←ss</u>	RRC CONNECTION RELEASE	SS releases the RRC connection. After the sending of
			this message, the Ss waits for the disconnection of the
			main signalling link.
18	\rightarrow	RRC CONNECTION RELEASE	
		COMPLETE Void	

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 <u>8-9</u> the UE shall <u>initiate send an RRC CONNECTION RELEASE message</u>connection establishment with establishment cause set to "Registration".
- 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".

. . . .

9.5.7 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.

At the receipt of the ABORT message the mobile station shall abort any MM connection establishment or call reestablishment procedure and release all MM connections (if any). If cause value #6 is received the mobile station shall delete any TMSI, LAI and ciphering key sequence number stored in the SIM, set the update status to ROAMING NOT ALLOWED (and store it in the SIM according to clause 4.1.2.2) and consider the SIM invalid until switch off or the SIM is removed. As a consequence the mobile station enters state MM IDLE, substate NO IMSI after the release of the RR connection.

The mobile station shall then wait for the network to release the RR connection - see clause 4.5.3.1.

Reference(s)

TS 24.008 clause 4.3.5.2.

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 s. 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 follo	wing messag	ges are sent and shall be received or	n cell B				
1	UE		A mobile originating CM connection is attempted.				
2)	RRC CONNECTION	A mobile originating Civi connection is attempted.				
		REQUESTVoid					
3		RRC CONNECTION SETUPVoid					
4	\rightarrow	RRC CONNECTION SETUP					
	_	COMPLETE Void					
5	\rightarrow	CM SERVICE REQUEST	CKSN = initial value, Mobile identity = TMSI				
6	←	AUTHENTICATION REQUEST					
7	\rightarrow	AUTHENTICATION RESPONSE					
8	É	ABORT	"reject cause" = #6.				
9	SS	7.00111	The SS waits for 5 s.				
10	UE		The UE shall not send any layer 3 message during that				
			time.				
11	<u>←ss</u>	RRC CONNECTION RELEASE	SS releases the RRC connection. After the sending of				
			this message, the SS waits for the disconnection of the				
12	\rightarrow	RRC CONNECTION RELEASE	main signalling link.				
12	7	COMPLETE-Void					
The follo	wing messac	ges are sent and shall be received or	n cell A.				
	<u> </u>						
13	SS		Set the cell type of cell A to the "Serving cell".				
			Set the cell type of cell B to the "non-suitable cell".				
			(see note)				
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.				
40			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 s.				
19	UE		A MO CM connection is attempted.				
1 15	ı OL	I	71 WO OW COMMODITION AUTOMPTON.				

Step	Direction UE SS	Message	Comments
20	UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 s.
21	UE		If the UE supports speech (see ICS), an emergency ca
22	<u>→ss</u>	RRC CONNECTION REQUEST	is attempted. SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is to: "Emergency call".
23	<	RRC CONNECTION SETUPVoid	to- Emergency can.
24	\rightarrow	RRC CONNECTION SETUP COMPLETE-Void	
25	\rightarrow	CM SERVICE REQUEST	"CM service type": Emergency call establishment. CKSN = No key is available, Mobile identity = IMSI
26	←	CM SERVICE ACCEPT	Ottori - He key le avallable, Mebile Identity - Illier
27	→	EMERGENCY SETUP	
28	←	RELEASE COMPLETE	"Cause" = unassigned number.
29	<u>←SS</u>	RRC CONNECTION RELEASE	SS releases the RRC connection. After the sending of this message, the SS waits for the disconnection of the main signalling link.
30	\rightarrow	RRC CONNECTION RELEASE COMPLETE Void	Thair signaling ink.
31	UE		If possible (see ICS) USIM detachment is performed.
32	UE		Otherwise if possible (see ICS) switch off is performed Otherwise the power is removed. The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 s.
33	UE		Depending on what has been performed in step 31 the
34	<u>→ss</u>	RRC CONNECTION REQUEST	UE is brought back to operation. SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is to: "Registration".
35 36	← →	RRC CONNECTION SETUP Void RRC CONNECTION SETUP	io- registration.
37	\rightarrow	COMPLETE Void 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 coded FFFE).
38	←	AUTHENTICATION REQUEST	"CKSN" = CKSN1.
39		AUTHENTICATION RESPONSE	Short - Short.
<u>39a</u>	SS		The SS starts integrity protection
40	→ <u>SS</u> ←	LOCATION UPDATING ACCEPT	"Mobile Identity" = TMSI.
41	\rightarrow	TMSI REALLOCATION COMPLETE	
42	<u>←ss</u>	RRC CONNECTION RELEASE	SS releases the RRC connection. After the sending of this message, the SS waits for the disconnection of the main signalling link.
43	\rightarrow	RRC CONNECTION RELEASE COMPLETE	Than ognaming min.

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 initiate RRC connection establishment 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".

Tdoc **#***T1-030098*

3GPP TSG-T1 SIG Meeting #27 San Antonio, USA, 10th – 12th February 2003

Tdoc #T1S030047

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How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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 clauses 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 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 2	UE ->	ATTACH REQUEST	The UE is powered up or switched on and initiates an attach (see ICS). Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
2a	<-	AUTHENTICATION AND CIPHERING REQUEST	
2b	->	AUTHENTICATION AND CIPHERING RESPONSE	
2c	SS		The SS starts integrity protection.
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 UPDATE REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available or IE not present.
6	SS		The SS verifies that the time between the attach request and the periodic RA updating is T3312
7	<-	ROUTING AREA UPDATE 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

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step5, when the timer T3312 is expired, UE shall:

- initiate the routing area updating procedure with Update type = 'Periodic updating'.

3GPP TSG T WG1 #18 San Antonio, Texas, USA, 10-12 Feb 2003

3GPP TSG T WG1 SIG SWG #27

San Antonio, Texas, USA, 10-12 Feb 2003

Tdoc #T1-030099

Tdoc # T1S030225

Revision of T1S030066

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- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

12.3.2.8 PS detach / rejected / PS services not allowed in this PLMN

12.3.2.8.1 Definition

12.3.2.8.2 Conformance requirement

If the network performs a PS detach procedure with the cause 'PS services not allowed in this PLMN', the UE:

- 1. shall delete any RAI, P-TMSI, P-TMSI signature, and PS ciphering key sequence number stored, shall set the PS update status to GU3 ROAMING NOT ALLOWED (and shall store it according to section 4.1.3.2) and shall change to state GMM-DEREGISTERED.
- 2. shall store the PLMN identity in the "forbidden PLMNs for PS service" list.

<u>If the network performs a PS detach procedure with the cause 'PS services not allowed in this PLMN', the UE operating in UE operation mode A in network operation mode I:</u>

- 3. shall set the timer T3212 to its initial value and restart it, if it is not already running.
- 4. is still IMSI attached for CS services in the network.

Reference(s):

3GPP TS 24.008 subclause 4.7.4.2.2

12.3.2.8.3 Test purpose

Test purpose for Test procedure1

To test the behaviour of the UE if the network initiates a PS detach procedure with the cause "PS services not allowed in this PLMN" (for Conformance requirement1, 2).

Test purpose for Test procedure2

To test the behaviour of the UE operating in UE operation mode A in network operation mode I if the network initiates a PS detach procedure with the cause "PS services not allowed in this PLMN" (for Conformance requirement3, 4).

12.3.2.8.4 Method of test

12.3.2.8.4.1 Test procedure1

Initial conditions

System Simulator:

Two cells cellA in MCC1/MNC1/LAC1/RAC1, cellB in MCC1/MNC2/LAC2/RAC1.

Both two cells are operating in network operation mode II.

The PLMN contains Cell B is equivalent to the PLMN that contains Cell A.

User Equipment:

The UE has a valid TMSI-1, P-TMSI-1 and RAI-1.

Related ICS/IXIT statement(s)

- 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

Two cells are configured.

Cell A transmits with higher power so that the UE attempts an attach procedure to cell A.

The UE initiates a PS attach procedure.

The SS sends a PS detach with the cause "PS services not allowed in this PLMN".

The SS verifies that the UE does not perform a periodic ROUTING AREA UPDATE procedure in this PLMN after the timer T3312 is expired and does not respond a paging for PS services.

Cell B transmits with high power so that the UE attempts an attach procedure to cell B.

The UE initiates a PS attach procedure.

The SS verifies that the UE performs a periodic ROUTING AREA UPDATE procedure when a new PLMN is entered.

Expected sequence

<u>Step</u>	Direction	<u>Message</u>	<u>Comments</u>
	UE SS		
	<u>SS</u>		The following messages are sent and shall be
4	HE		received on cell A. The UE is set in UE operation mode A or C
<u>1</u>	<u>UE</u>		(see ICS).
<u>2</u>	SS		Set the cell type of cell A to the "Serving cell".
	<u> </u>		Set the cell type of cell B to the "Suitable
			neighbour cell "
<u>3</u>	<u>UE</u>		The UE is powered up or switched on and
			initiates an attach (see ICS). Cell A is preferred
			by the UE.
<u>4</u>	<u>-></u>	ATTACH REQUEST	Attach type = 'PS attach'
			Mobile identity = P-TMSI-1 Routing area identity = RAI-1
<u>5</u>		AUTHENTICATION AND	Routing area identity = KAI-1
<u> </u>	<u><-</u>	CIPHERING REQUEST	
<u>6</u>	<u>-></u>	AUTHENTICATION AND	
_		CIPHERING RESPONSE	
<u>7</u> <u>8</u>	<u>SS</u>		The SS starts integrity protection.
<u>8</u>	<u><-</u>	ATTACH ACCEPT	Attach result = ' PS only attached'
			Mobile identity = P-TMSI-2
			P-TMSI-2 signature Routing area identity = RAI-1
			Equivalent PLMNs = MCC1,MNC2
			T3312 = 6minutes
9	->	ATTACH COMPLETE	10012 - 0111111111100
<u>9</u> 10	-> <-	DETACH REQUEST	Detach Type = 're-attach not required'
			Cause = 'PS services not allowed in this PLMN'
<u>11</u>	-> <u>SS</u>	DETACH ACCEPT	
<u>12</u> <u>13</u>	<u>SS</u>	DAGING TYPE	The SS releases the RRC connection.
<u>13</u>	<u><-</u>	PAGING TYPE1	Mobile identity = P-TMSI-2
1.1	HE		Paging order is for PS services. No response from the UE to the request. This is
<u>14</u>	<u>UE</u>		checked for 10 seconds.
<u>15</u>	<u>UE</u>		The SS verifies that the UE does not attempt to
			access the network for T3312.
			The following messages are sent and shall be
			received on cell B.
<u>16</u>	<u>SS</u>		Set the cell type of cell A to the "Suitable
			neighbour cell ".
			Set the cell type of cell B to the "Serving cell " (see note)
<u>17</u>			Cell B is preferred by the UE.
<u></u>			Step 18 is only performed for non-auto attach
			UE.
<u>18</u>		Registration on CS	See TS 34.108
			This is applied only for UE in UE operation
40			mode A.
<u>19</u>			The UE initiates an attach automatically (See ICS), by MMI or AT command.
<u>20</u>	-<	ATTACH REQUEST	Attach type = 'PS attach'
	<u>-></u>		Mobile identity = IMSI
<u>21</u>	<u><-</u>	AUTHENTICATION AND	
		CIPHERING REQUEST	
<u>22</u>	<u>-></u>	AUTHENTICATION AND	
00	00	<u>CIPHERING RESPONSE</u>	The CO starts into with a state
<u>23</u>	<u>SS</u>	ATTACH ACCEPT	The SS starts integrity protection.
<u>24</u>	<u><-</u>	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2
			P-TMSI-2 signature
			Routing area identity = RAI-9
			T3312 = 6minutes
<u>25</u>	<u>-></u>	ATTACH COMPLETE	

<u>26</u>	<u>SS</u>		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
			message is set to "Registration".
<u>27</u>	<u>-></u>	ROUTING AREA UPDATING	<u>Update type = 'Periodic updating'</u>
		REQUEST	P-TMSI-2 signature
			Routing area identity = RAI-9
<u>28</u>	<u><-</u>	ROUTING AREA UPDATING	No new mobile identity assigned.
		ACCEPT	P-TMSI and TMSI not included.
			<u>Update result = 'RA updated'</u>
<u>29</u>	<u>UE</u>		The UE is switched off or power is removed
			(see ICS).
<u>30</u>	<u>-></u>	DETACH REQUEST	Message not sent if power is removed.
			Detach type = 'power switched off,
NOTE:	The defini	tions for "Suitable neighbour cell",	"Non-suitable cell" and "Serving cell" are specified
	in TS34.10	08 clause 6.1 "Reference Radio C	onditions for signalling test cases only".

None.

12.3.2.8.4.2 Test procedure2

Initial conditions

System Simulator:

One cell is operating in network operation mode I: MCC1/MNC1/LAC1/RAC1.

User Equipment:

The UE has a valid TMSI-1, P-TMSI-1 and RAI-1.

Related ICS/IXIT statement(s)

- 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

One cell is configured.

The UE initiates a combined attach procedure.

The SS sends a PS detach with the cause "PS services not allowed in this PLMN".

The SS verifies that the UE performs a periodic location area updating procedure after the timer T3212 is expired.

The SS verifies that the UE responds a paging for CS services.

Expected sequence

Step	Direction	<u>Message</u>	Comments		
	UE SS				
1	<u>UE</u>		The UE is set in UE operation mode A (see		
			ICS).		
<u>2</u>	<u>UE</u>		The UE is powered up or switched on and		
			initiates an attach (see ICS).		
<u>3</u>	<u>-></u>	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach'		
			Mobile identity = P-TMSI-1		
			Routing area identity = RAI-1		
<u>4</u>	<u><-</u>	AUTHENTICATION AND			
		CIPHERING REQUEST			
<u>5</u>	<u>-></u>	AUTHENTICATION AND			
		<u>CIPHERING RESPONSE</u>			
<u>6</u> <u>7</u>	<u>SS</u>		The SS starts integrity protection.		
<u>7</u>	<u><-</u>	ATTACH ACCEPT	Attach result = ' Combined PS/IMSI attached '		
			Mobile identity = P-TMSI-2		
			P-TMSI-2 signature		
			Routing area identity = RAI-1		
<u>8</u> 9	<u>-></u>	ATTACH COMPLETE			
<u>9</u>	<u>-></u> ≤-	DETACH REQUEST	Detach Type = 're-attach not required'		
			Cause = 'PS services not allowed in this PLMN'		
<u>10</u>	<u>-></u>	DETACH ACCEPT			
<u>11</u>			The SS releases the RRC connection		
<u>12</u>	<u>SS</u>		The SS waits for the UE to expiry the timer		
			<u>T3212.</u>		
<u>13</u>	<u>UE</u>	Registration on CS	The UE performs a location update procedure.		
			See TS 34.108		
			Mobile identity = IMSI		
<u>14</u>	<u><-</u>	PAGING TYPE1	Mobile identity = IMSI		
			Paging order is for CS services.		
			Paging cause = "Terminating conversational		
			<u>call"</u>		
<u>15</u>	<u>SS</u>		The SS checks that the IE "Establishment		
			cause" in the received RRC CONNECTION		
			REQUEST message is set to "Terminating		
			interactive call".		
<u>16</u>	<u>-></u>	PAGING RESPONSE	Mobile identity = IMSI		
<u>17</u>			The SS releases the RRC connection		
<u>18</u>	<u>UE</u>		The UE is switched off or power is removed		
			(see ICS).		
<u>19</u>	>	<u>DETACH REQUEST</u>	Message not sent if power is removed.		
			Detach type = 'power switched off'		
NOTE:			on-suitable cell" and "Serving cell" are specified		
	in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

12.3.2.8.5 Test Requirement

<u>12.3.2.8.5.1</u> Test Requirement for Test procedure1

At step4, when the UE is powered up or switched on, the UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step11, when the UE receives DETACH REQUEST message with the cause "PS services not allowed in this PLMN", the UE shall:

- send DETACH ACCEPT message.

At step13, when the UE receives the paging for PS services with "Mobile identity = P-TMSI-2", the UE shall;

- not respond to the paging for PS services.

At step14, when the time T3312 is expired, the UE shall:

- not attempt to access the network.

At step20, when the UE enters the different cell with the equivalent PLMN, the UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step27, when the time T3312 is expired, the UE shall:

<u>-</u> initiate the periodic routing area updating procedure with the information elements specified in the above Expected Sequence.

12.3.2.8.5.2 Test Requirement for Test procedure2

At step3, when the UE is powered up or switched on, the UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step10, when the UE receives DETACH REQUEST message with cause "PS services not allowed in this PLMN", the UE shall:

- send DETACH ACCEPT message.

At step12, while the SS wait for the timer T3312 to expire, the UE shall:

- not perform the periodic location area updating procedure.

At step13, when the T3212 timer is expired, the UE shall:

- initiate the periodic location area updating procedure.

At step16, when the UE receives the paging for CS services with "Mobile identity = IMSI", the UE shall;

- respond to the paging for CS services by sending the PAGING RESPONSE message.

3GPP TSG-T WG1 Meeting #18 San Antonio, TX, USA, Feb 10th-14th, 2003

3GPP TSG-T WG1 SIG Meeting #27 San Antonio, TX, USA, Feb 10th-14th, 2003 Tdoc **#** T1-030100

Tdoc #T1S030226

			CHANGE	REQ	UE	ST				CR-Form-v7
æ	34.123	-1 CR	448	жrev	-	ж	Current vers	ion: 5.	2.0	#
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Reason for change: # General, for all included test cases

The specification of NAS test cases should be focus on the NAS signalling and in general, not show the lower layer signalling (e.g. RRC specific signalling). When certain actions are needed in the lower layers to make the test run correctly, these actions should be indicated in the 'comments' field.

The value of the IE "Establishment cause" can not be tested on RRC test cases as the value is selected by NAS depending on the NAS procedures. Therefore it should be part of the NAS test cases, but included in the comments field of the expected sequence.

TC 12.2.1.2 PS attach / rejected / IMSI invalid / illegal UE

The cause value in the ATTACH REJECT message is in the test case currently stated to be "Illegal UE". There is no such cause value, and it is ambigious since the possible interpretation would either be "Illegal MS" or "Illegal ME".

TC 12.2.1.4 PS attach / rejected / PLMN not allowed

In the conformance requirement it says

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

However, in the HPLMN, PS attach should still be allowed.

12.2.1.5a PS attach / rejected / roaming not allowed in this location area

The conformance requirement is not in line with the core specification. The number '6' in "The UE shall be capable of storing at least 6 entries in the list of 'Forbidden location areas for roaming" is not correct.

12.2.1.5b PS attach / rejected / No Suitable Cells In Location Area
Start of authentication and integrity protection is missing during the first attach procedure in the test case.

12.2.1.5d PS attach / rejected / PS services not allowed in this PLMN
The conformance requirement is not in line with the core specification.
Start of authentication and integrity protection is missing during the first attach procedure in the test case.

12.2.1.10 PS attach / abnormal cases / Failure due to non-integrity protection
Starting the security mode control procedure without the integrity protection
mode info (to omit start of integrity protection) but with ciphering mode info is felt
like a remote scenario.

12.4.1.1b Routing area updating / accepted / Signalling connection reestablishment

The beginning of the test case is not in line with the initial condition. Since the initial condition states that the UE has a valid TMSI, P-TMSI1 should be used in the ATTACH REQUEST and ATTACH ACCEPT messages.

12.4.1.4a Routing area updating / rejected / location area not allowed In the expected sequence there is an erroneous cell reselection. Also, the conformance requirement is not accurate. The UE shall perform a cell selection when receiving this cause value and is thus is allowed to perform a routing area update.

12.4.1.4b Routing area updating / rejected / No Suitable Cells In Location Area Conformance requirement is not in line with the core specification. In case of rejection of the routing area updating procedure with cause "No suitable cell sin location area", the MM/GMM contexts shall not be deleted. Therefore a new routing area updating procedure can be performed even if a new PLMN is entered.

The initial condition and test procedure contain also errors.

12.4.1.4c Routing area updating / rejected / PS services not allowed in this PLMN

At rejection of a routing area updating procedure with cause "PS services not allowed in this PLMN", the equivalent PLMN list shall not be deleted. The UE can perform a routing area update procedure even if a new PLMN is entered after the rejection.

12.4.1.4d Routing area updating / rejected / Roaming not allowed in this location area

At rejection of a routing area updating procedure with cause "Roaming not allowed in this location area", the UE may perform a routing area update procedure instead of a PS attach procedure even if a new PLMN is entered after the rejection.

12.4.3.4 Periodic routing area updating / no cell available Minor fault in the test requirement.

12.6.1.3.1 GMM cause 'MAC failure'

In the test procedure whether the UE starts a timer upon receipt of AUTHENTICATION AND CIPHERING FAILURE message is irrelevant because of not checking of internal timers in the UE. Furthermore, the timer T3214 is incorrect according to core specs (It shall be T3318). Finally, whether the timer T3360 and T3318 are set to appropriate values is also irrelevant to the purpose of the current test case.

In step 13 of the expected sequence, the SS sends an IDENTITY REQUEST message to the UE. According to core specs –TS 24.008– section 4.7.7.6 states the following:

Upon receipt of an AUTHENTICATION & CIPHERING FAILURE message from the MS with GMM cause 'MAC failure' or 'GSM authentication unacceptable' the network may initiate the identification procedure described in clause 4.7.8. This is to allow the network to obtain the IMSI from the MS.

The identification procedure, which is optional, is performed upon receipt of the authentication failure message, but before the second authentication request message sent by the SS. Hence, asthe test requirements states that an identification procedure is needed to be sent, that procedure has to reflect as much as possible a real scenario where the identification procedure may be sent at receipt of the authentication failure message.

12.6.1.3.2 GMM cause 'Synch failure'

In the test procedure whether the UE starts a timer upon receipt of AUTHENTICATION AND CIPHERING FAILURE message is irrelevant because of not checking of internal timers in the UE. Furthermore, the timer T3214 is incorrect according to core specs (It shall be T3320). Finally, whether the timer T3360 and T3320 are set to appropriate values is also irrelevant to the purpose of the current test case.

12.9.3 Service Request / rejected / Illegal MS

The conformance requirements section is not completed. According to core specs –TS 24.008– a UE operating in mode A shall in addition take new actions.

Upon receipt of cause value #3 (Illegal MS) the SIM shall be considered as invalid for GPRS services until switching off or the SIM is removed. At present, 12.9.4 is not fully compliant with the core specification –TS 24.008– stating an expected sequence where it is mandated to removed the SIM and inserted again. The expected sequence is currently not taking into account that an UE can also be powered up or switched on according to standards.

12.9.4 Service Request / rejected / PS services not allowed

Upon receipt of cause value #7 (PS services not allowed) the SIM shall be considered as invalid for GPRS services until switching off or the SIM is removed. At present, 12.9.4 is not fully compliant with the core specification –TS 24.008– stating an expected sequence where it is mandated to removed the SIM and inserted again. The expected sequence is currently not taking into account that an UE can also be powered up or switched on according to standards.

12.9.5 Service Request / rejected / MS identity cannot be derived by the network Nothing specific.

12.9.6 Service Request / rejected / PLMN not allowed

The conformance requirements section is incorrect in bullet 3 stating that the UE stores the LAI or the PLMN identity in the appropriate forbidden list. According to core specs –TS 24.008– the UE shall store the PLMN identity, but not the LAI.

12.9.7b Service Request / rejected / No suitable Cells In Location Area
The conformance requirements section is incorrect in bullet 2 stating that the UE stores the LAI or the PLMN identity in the list of 'forbidden location areas for roaming'. According to core specs –TS 24.008– the UE shall store the LAI, but not the PLMN identity. Changes proposed in Tdoc T1S030048 merged into this CR.

In step 10 of the expected sequence, the UE sends an ATTACH REQUEST message to the SS. That is incorrect according to core specs from R99 onwards. The state of the UE after receiving #15 is GMM.REGISTERED and the RAI, GPRS-CKSN, P-TMSI, ... are not deleted which indicates that a valid GMM context(s) still exists and the UE is still attached to the network. Furthermore, TS 24.008 (Section 4.7.5) and TS 23.122 (Section 4.5.2) mandate any UE, which is attached for GPRS services, to use the routing area updating procedure even if a

new PLMN is entered. In consequence of all mentioned the current test case has to be corrected.

According to the applicability of the 12.9.7b defined in TS 34.123-2 is C12 which means applicable to UE in operation mode A and C, but the expected sequence and the ICS/IXIT statements only allow UE in operation mode A.

The method of test states that the network mode of operation of all cells is 'II'. That is incorrect following the expected sequence of the test case. The network mode of operation has to be 'I' in order to perform successfully a Combined PS attach procedure, but due to the fact that the applicability of the 12.9.7b is UE in operation mode A and C, the expected sequence has to be corrected keeping the network mode of operation of the cells like II'.

12.9.7c Service Request / rejected / Roaming not allowed in this location area In step 14 of the expected sequence, the UE sends an ATTACH REQUEST message to the SS. That is incorrect according to core specs from R99 onwards. The state of the UE after receiving #13 is GMM.REGISTERED and the RAI, GPRS-CKSN, P-TMSI, ... are not deleted which indicates that a valid GMM context(s) still exists and the UE is still attached to the network. Furthermore, TS 24.008 (Section 4.7.5) and TS 23.122 (Section 4.5.2) mandate any UE, which is attached for GPRS services, to use the routing area updating procedure even if a new PLMN is entered. In consequence of all mentioned the current test case has to be corrected.

According to the applicability of the 12.9.7c defined in TS 34.123-2 is C12 which means applicable to UE in operation mode A and C, but the expected sequence and the ICS/IXIT statements only allow UE in operation mode A.

The method of test states that the network mode of operation of all cells is 'l', but due to the fact that the applicability of the 12.9.7c is UE in operation mode A and C, the expected sequence has to be corrected changing the network mode of operation of the cells to 'll'.

12.9.8 Service Request / Abnormal cases / Access barred due to access class control
Nothing specific.

Summary of change: ₩

TC 12.2.1.2 PS attach / rejected / IMSI invalid / illegal UE

The cause value in the ATTACH REJECT message is stated to be "Illegal MS".

TC 12.2.1.4 PS attach / rejected / PLMN not allowed

In the conformance requirement statement an exception for the PLMN is added.

12.2.1.5a PS attach / rejected / roaming not allowed in this location area
The conformance requirement is corrected. The number '6' in "The UE shall be
capable of storing at least 6 entries in the list of 'Forbidden location areas for
roaming" is changed to '10'.

12.2.1.5b PS attach / rejected / No Suitable Cells In Location Area
Start of authentication and integrity protection is added after step 4 in the
Expected sequence.

12.2.1.5d PS attach / rejected / PS services not allowed in this PLMN In the conformance requirement, the PLMN selection vs cell selection for different UE operational modes is clarified.

Start of authentication and integrity protection is added after step 4 in the Expected sequence.

12.2.1.10 PS attach / abnormal cases / Failure due to non-integrity protection
Step 7 is removed (this means, not starting the security mode control procedure

at all)

- gives the same effect as above
- removes unnecessary complexity (start of ciphering) in the test case.

Specific RRC message contents are removed.

12.4.1.1b Routing area updating / accepted / Signalling connection reestablishment

P-TMSI1 are used in the ATTACH REQUEST and ATTACH ACCEPT messages of steps 3 and 4.

RRC messages removed and replaced with comments. Verification of the establishment cause is added.

12.4.1.4a Routing area updating / rejected / location area not allowed

The conformance requirement is corrected.

The expected sequence, step 17, is corrected regarding which cell the UE will actually select (D instead of C).

12.4.1.4b Routing area updating / rejected / No Suitable Cells In Location Area The conformance requirement corrected.

The attach procedure is replaced with the routing area updating procedure in the expected sequence.

Other, minor clarifications.

12.4.1.4c Routing area updating / rejected / PS services not allowed in this PLMN

The conformance requirement is updated.

Routing area updating insterad of PS attach is performed after step 17. And, authentication and start of integrity is added.

12.4.1.4d Routing area updating / rejected / Roaming not allowed in this location area

The conformance requirement is corrected.

RRC message details are removed, replaced with comments when necessary.

Routing area updating insterad of PS attach is performed at step 21 in test procedure 1. And, authentication and start of integrity is added.

12.4.3.4 Periodic routing area updating / no cell available

The word "combined" in "combined PS attach procedure" removed.

12.6.1.3.1 GMM cause 'MAC failure'

The test requirements, test procedure and expected sequence have been corrected according to the reason for change.

12.6.1.3.2 GMM cause 'Synch failure'

The test requirements, test procedure and expected sequence have been corrected according to the reason for change.

12.9.3 Service Request / rejected / Illegal MS

The test requirements, test procedure and expected sequence have been corrected according to the reason for change.

12.9.4 Service Request / rejected / PS services not allowed

The test requirements and expected sequence have been corrected according to the reason for change.

12.9.5 Service Request / rejected / MS identity cannot be derived by the network The expected sequence has been corrected according to the reason for change.

12.9.6 Service Request / rejected / PLMN not allowed

The conformance requirements, test requirements and expected sequence have been corrected according to the reason for change.

12.9.7b Service Request / rejected / No suitable Cells In Location Area
The conformance requirements, method of test, test requirements, test
procedure and expected sequence have been corrected according to the reason
for change.

12.9.7c Service Request / rejected / Roaming not allowed in this location area
The test requirements and expected sequence have been corrected according to the reason for change.

12.9.8 Service Request / Abnormal cases / Access barred due to access class control

The expected sequence has been corrected according to the reason for change.

Consequences if not approved:

Misleading/incomplete conformance requirements. Ambigious test cases. Good UE will fail. Insufficient test coverage. The test cases can not test the UE correctly.

Clauses affected:	# 12.2.1.2, 12.2.1.4, 12.2.1.5a, 12.2.1.5b, 12.2.1.5d, 12.2.1.10, 12.4.1.1b,
	12.4.1.4a, 12.4.1.4b, 12.4.1.4c, 12.4.1.4d, 12.4.3.4, 12.6.1.3.1, 12.6.1.3.2,
	12.9.3, 12.9.4, 12.9.5, 12.9.6, 12.9.7b, 12.9.7c, 12.9.8
Other specs affected:	Y N X Other core specifications X Test specifications O&M Specifications
Other comments:	# Affects REL-5, REL-4 and R99.

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked \(\mathcal{H} \) contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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 MSUE', 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 MSUE' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.
- 3) If the network rejects a PS attach procedure from the User Equipment with the cause 'Illegal MSUE', the User Equipment shall delete the LAI.

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 MSUE'.

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 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
2	SS		ICS). The SS is set in network operation mode II.
	33		Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Non-Suitable
			cell".
			Set the cell type of cell C to the "Non-Suitable cell".
			(see note)
3	UE		The UE is powered up or switched on and
			initiates an attach (see ICS). Cell A is preferred by the UE.
3a	UE	Registration on CS	See TS 34.108
		3	This is applied only for UE in UE operation
		ATTACH BEOLIEGT	mode A.
4	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1
			Routing area identity = RAI-1
5	<-	ATTACH REJECT	GMM cause = 'Illegal MSUE'.
			The following messages are sent and shall be received on cell B.
6	SS		Set the cell type of cell A to the "Non-Suitable
			cell".
			Set the cell type of cell B to the "Serving cell".
7	UE		(see note) 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		Set the cell type of cell B to the "Non-Suitable
			cell".
			Set the cell type of cell C to the "Serving cell".
12	UE		(see note) 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
4.5			(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.
18	UE	Registration on CS	See TS 34.108
			This is applied only for UE in UE operation mode A.
			Parameter mobile identity is IMSI.
19	UE		The UE initiates an attach (see ICS).
20	->	ATTACH REQUEST	Attach type = 'PS attach'
20a	<-	AUTHENTICATION AND	Mobile identity = IMSI
200		CIPHERING REQUEST	
20b	->	AUTHENTICATION AND	
20c	SS	CIPHERING RESPONSE	The SS starts integrity protection.
200	1 33	I	The 33 starts integrity protection.

21	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature		
			Routing area identity = RAI-2		
22	->	ATTACH COMPLETE			
23	UE		The 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'		
NOTE:	The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1				
	"Reference Radio Conditions for signalling test cases only".				

None.

12.2.1.2.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, 10, 13 and 15, UE shall:

- not send the ATTACH REQUEST message to SS, even if there is an instruction of attach request from MMI or from AT command.

At step20, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

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. (except for the HPLMN)
 - 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.

12.2.1.5a PS attach / rejected / roaming not allowed in this location area

12.2.1.5a.1 Definition

12.2.1.5a.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 106 entries in the list of 'Forbidden location areas for roaming'.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.5b PS attach / rejected / No Suitable Cells In Location Area

12.2.1.5b.1 Definition

12.2.1.5b.2 Conformance requirement

- (1) If the network rejects a PS attach procedure from the User Equipment with the cause 'No Suitable Cells In 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 not delete the list of "equivalent PLMNs".
 - 1.5 perform PS attach when a new location area is entered.

Reference

3GPP TS 24.008 clauses 4.7.3.1.

12.2.1.5b.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'No Suitable Cells In Location Area'.

12.2.1.5b.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6)

All three cells are operating in network operation mode II.

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

User Equipment:

The UE has a valid P-TMSI-1 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 SS rejects a PS attach with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall search for a suitable cell in a different location area on the same PLMN and shall perform PS attach procedure in that cell.

Expected Sequence

Step	Direction UE SS	Message	Comments
			The following messages are sent and shall be received on cell A.
1	UE		The UE is set in UE operation mode A (see ICS).
2	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-suitable cell".
			Set the cell type of cell C to the "Non-suitable cell". (see note)
3	UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
4	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
<u>4a</u>	<u><-</u>	AUTHENTICATION AND CIPHERING REQUEST	,
<u>4b</u>	<u>-></u>	AUTHENTICATION AND CIPHERING RESPONSE	
<u>4c</u> 5	<u>SS</u> <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-1
6	<-	DETACH REQUEST	Routing area identity = RAI-1 Equivalent PLMNs = MCC2,MNC1 Detach type = re-attach required
7 8	-> SS	DETACH ACCEPT	Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". (see note) The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C
9	UE	Registration on CS	See TS 34.108 This is applied only in case of UE operation mode A.
10	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1
11	<-	ATTACH REJECT	Routing area identity = RAI-1 GMM cause = 'No Suitable Cells In Location
12	SS		Area' The SS initiates the RRC connection release. The following message are sent and shall be received on cell C.
13 14	UE UE	Registration on CS	See TS 34.108 The UE initiates an attach automatically, by MMI or by AT command.
15	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
16	<-	AUTHENTICATION AND CIPHERING REQUEST	
17	->	AUTHENTICATION AND CIPHERING RESPONSE	
18 19	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature PALIC
20 21	-> UE	ATTACH COMPLETE	Routing area identity = RAI-6 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'
NOTE:	The definit	ions for "Suitable neighbour	cell", "Non-suitable cell" and "Serving cell" are specified
	in TS 34.10	08 clause 6.1 "Reference Ra	adio Conditions for signalling test cases only".

None.

12.2.1.5b.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step15, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach procedure.

12.2.1.5d PS attach / rejected / PS services not allowed in this PLMN

12.2.1.5d.1 Definition

12.2.1.5d.2 Conformance requirement

- 1) If the network rejects a PS attach procedure from the User Equipment with the cause 'PSGPRS services not allowed in this PLMN' the User Equipment shall:
 - 1.1 delete any RAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number.
 - 1.2 set the PS update status to GU3 ROAMING NOT ALLOWED.
 - 1.3 store the PLMN identity in the "forbidden PLMNs for PS service" list.
 - 1.4 perform a PLMN selection instead of a cell selection, if the UE is in UE operation mode C.
- 2) If the UE is in UE operation mode A <u>or B</u> and the network is in network operation mode II the User Equipment shall:
 - 2.1 be still IMSI attached for CS services in the network..

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.5d.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 service not allowed in this PLMN'.

12.2.1.5d.4 Method of test

Initial condition

System Simulator:

Three cells cell A with MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC2/MNC1/LAC1/RAC2 (RAI-7).

All three cells are operating in network operation mode II (in case of UE operation mode A).

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

User Equipment:

The UE has a valid P-TMSI-1, 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 'PS service not allowed in this PLMN'. The SS checks that the UE performs PS attach with attach type = PS attach when a new equivalent PLMN is entered.

Expected Sequence

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
1	UE		received on cell A. The UE is set in UE operation mode A (see ICS).
2	SS		The SS is set in network operation mode II.
			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-suitable cell". Set the cell type of cell C to the "Non-suitable cell"
3	UE		(see note) The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred
4	UE	Registration on CS	by the UE. See TS 34.108 This is applied only for UE in UE operation mode A.
5	->	ATTACH REQUEST	Mobile identity = TMSI-1 Attach type = 'PS attach' Mobile identity = P-TMSI-1
<u>5a</u>	<u><-</u>	AUTHENTICATION AND CIPHERING REQUEST	_
<u>5b</u>	<u>-></u>	AUTHENTICATION AND CIPHERING RESPONSE	
<u>5c</u>	SS		The SS starts integrity protection.
6	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 Routing area identity = RAI-1 Equivalent PLMNs = MCC2,MNC1
7 8	<- ->	DETACH REQUEST DETACH ACCEPT	Detach type = re-attach required
9	SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell"
10	->	ATTACH REQUEST	(see note) Attach type = 'PS attach' Mobile identity = P-TMSI-1
11	<-	ATTACH REJECT	GMM cause = 'PS service not allowed in this PLMN'
12	UE		The UE performs PLMN selection. The following messages are sent and shall be received on cell C.
13	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
14	<-	AUTHENTICATION AND CIPHERING REQUEST	
15	->	AUTHENTICATION AND CIPHERING RESPONSE	
16	SS		The SS starts integrity protection.
17	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-7
18 19	-> UE	ATTACH COMPLETE PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
20	SS		No response from the UE to the request. This is checked for 10 seconds.
21 22	-> <-	RRC CONNECTION REQUEST RRC CONNECTION SETUP	sc.noa ioi io osociido.

23	->	RRC CONNECTION SETUP			
24	->	PAGING RESPONSE			
25	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.		
26	->	RRC CONNECTION RELEASE 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'		
NOTE:	The definitions for "Suitable neighbour cell", "Non-suitable cell" and "Serving cell" are specified				
	in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

None.

12.2.1.5d.5 Test requirements

At step5 and 10, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step12, UE shall:

- perform PLMN selection.

At step13, UE shall:

- perform PS attach procedure with Mobile identity = IMSI to the equivalent cell.

At step21, UE shall:

- respond the Paging for CS domain service.

12.2.1.10 PS attach / abnormal cases / Failure due to non-integrity protection

12.2.1.10.1 Definition

12.2.1.10.2 Conformance requirement

The supervision that the integrity protection is activated shall be the responsibility of the MM and GMM layer in the UE (see 3GPP TS 33.102).

No layer 3 signalling messages, except those listed in TS 24.008 clause 4.1.1.1.1, shall be processed by the receiving MM and GMM entities or forwarded to the CM entities, if the integrity protection has not been previously activated for that domain.

Reference(s):

3GPP TS 24.008 clause 4.1.1.1.1

12.2.1.10.3 Test purpose

To verify that the UE ignores NAS signalling messages when the security mode procedure is activated without the integrity protection.

12.2.1.10.4 Method of test

Initial Conditions

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS Statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No

Test procedure

The attach procedure is initiated. Upon reception of ATTACH REQUEST message from the UE, the SS responds to with an ATTACH ACCEPT message without the integrity protection. The UE shall ignore this message and re-transmit ATTACH REQUEST message at expiry of timer T3310.

This time the SS starts the authentication procedure and initiates the integrity protection. After receiving ATTACH ACCEPT message, the UE shall respond to ATTACH COMPLETE message.

Expected Sequence

5	Step	Dire	ction	Message	Comments
		UE	SS		
	1 2	UE UE			The UE is set in UE operation mode A (see ICS). The UE is powered up or switched on and initiates an attach procedure (see ICS).
	3	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
	4	-	>	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
	5	<	<-	AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Set PS-CKSN
	6	-	>	AUTHENTICATION AND CIPHERING RESPONSE	RES
	7	S	S <mark>S</mark>	<u>Void</u>	The SS starts the security mode procedure without the integrity protection. The content of integrity protection mode info IE in SECURITY MODE COMMAND message is specified below.
	8 9		<- JE	ATTACH ACCEPT	The UE ignores ATTACH ACCEPT message.
	10		SS		The SS waits 15 sec (T3310).
	11	-	>	ATTACH REQUEST	The UE re-transmits the message. The SS verifies that the period of time between the ATTACH REQUEST messages corresponds to the value of T3310. Attach type = 'PS attach' Mobile identity = IMSI
	12	<	<-	AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Set PS-CKSN
	13	-	>	AUTHENTICATION AND CIPHERING RESPONSE	RES
	14				The SS starts the security mode procedure with the integrity protection. The content of integrity protection mode info IE in SECURITY MODE COMMAND message is specified below.
	15	<	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI
	16 17		> JE	ATTACH COMPLETE	The UE is switched off or power is removed (see
	18	-	>	DETACH REQUEST	ICS). Message not sent if power is removed.
	19				Detach type = 'power switched off, PS detach' The SS releases the RRC connection.

Specific Message Contents

Specific message contents for SECURITY MODE COMMAND message (without the integrity protection)

Information Element	Value/remark	
Integrity protection mode info	Not Checked	

Specific message contents for SECURITY MODE COMMAND message (with the integrity protection)

Information Element	Value/remark
Integrity protection mode info	
- Integrity protection mode command	Start
- Downlink integrity protection activation info	Not Present
- Integrity protection algorithm	UIA1
- Integrity protection initialisation number	SS selects an arbitrary 32 bits number for FRESH

None.

12.2.1.10.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step9, UE shall;

- ignore the first ATTACH ACCEPT message.

At step11, UE shall;

- re-transmit ATTACH REQUEST message after expiry of timer T3310.

At step16, UE shall;

- respond to ATTACH COMPLETE message after the UE receives the second ATTACH ACCEPT message.

12.4.1.1b Routing area updating / accepted / Signalling connection re-establishment

12.4.1.1b.1 Definition

12.4.1.1b.2 Conformance requirement

When the UE receives an indication from the lower layers that the RRC connection has been released with cause "Directed signalling connection re-establishment", then the UE shall enter PMM-IDLE mode and initiate immediately a normal routing area update procedure (the use of normal or combined procedure depends on the network operation mode in the current serving cell) regardless whether the routing area has been changed since the last update or not.

Reference

3GPP TS 24.008 clause 4.7.2.5, 4.7.5.1

12.4.1.1b.3 Test purpose

To test the behaviour of the UE if the UE receives a RRC CONNECTION RELEASE message with cause = "Directed signalling connection re-establishment".

12.4.1.1b.4 Method of test

Initial condition

System Simulator:

One cell(Cell A) in MCC1/MNC1/LAC1/RAC1 (RAI-1) operating in network operation mode I. ATT flag is set to 0.

User Equipment:

The UE has a valid TMSI, P-TMSI-1 and RAI-1

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A
UE operation mode C
Switch off on button
Yes/No
Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

- a) The UE initiates a Service request procedure in order to establish the PS signalling connection for the upper layer signalling.
- b) After the Service request procedure is complete, the SS sends the RRC CONNECTION RELEASE message with cause = "Directed signalling connection re-establishment" to the UE.
- c) After the UE release the RRC connection, the UE initiate immediately a normal routing area update procedure.

Expected Sequence

Step	Direc	ction	Message	Comments
	UE	SS		
1 2	U	_		The UE is set in UE operation mode A (see ICS). The UE is powered up or switched on and
				initiates an attach (see ICS).

Ston	Direction	Maccaga	Comments
Step		Message	Comments
		ATTACH DECLIEGT	A (
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach'
			Mobile identity = P-TMSI1 IMSI TMSI status = no valid TMSI available
0-		ALITHENITION TION AND	+MSI status = no valid +MSI available
3a	<-	AUTHENTICATION AND	
26		CIPHERING REQUEST	
3b	->	AUTHENTICATION AND	
2-	00	CIPHERING RESPONSE	The CC starts into suit, and testion
3c 4	SS	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached'
4	<-	ATTACH ACCEPT	
			Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Mobile identity =IMSI
_		ATTACH COMPLETE	Routing area identity = RAI-1
5 6	-> UE	ATTACH COMPLETE	The LIC initiates on upper lover signalling of
0	UE		The UE initiates an upper-layer signalling, e.g.,
			Active PDP Context request, by MMI or by AT
7		CEDVICE DECLIECT	command.
7	->	SERVICE REQUEST	Service type = "signalling",
8	<-	AUTHENTICATION AND	
		CIPHERING REQUEST	
9	->	AUTHENTICATION AND	
40	00	CIPHERING RESPONSE	The CO initiates a security was decountral
10	SS		The SS initiates a security mode control
11	. 00	RRC CONNECTION RELEASE	procedurestarts integrity protection. The SS releases the RRC connection, using
11	<u> </u>	RRO COININECTION RELEASE	Release cause=Directed Signalling Connection
			Re-establishment
12	->	RRC CONNECTION RELEASE	Ine-establishment
12		COMPLETE Void	
13	<u>->SS</u>	RRC CONNECTION REQUEST	SS verifies that the IE "Establishment cause" in
13	-> 00	INC COMMECTION REQUEST	the received RRC CONNECTION REQUEST
			message is set to "Call re-establishment".
14	<-	RRC CONNECTION SETUP	message is set to Can re-establishment.
15	- →	RRC CONNECTION SETUP	
'5	_	COMPLETE	
16	->	ROUTING AREA UPDATE	Update type = 'RA updating'
.0		REQUEST	P-TMSI-1 signature
			Routing area identity = RAI-1
17	<-	ROUTING AREA UPDATE	Update result = 'RA updated'
''	`	ACCEPT	Mobile identity = P-TMSI-1
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	P-TMSI-1 signature
			Routing area identity = RAI-1
18	->	ROUTING AREA UPDATE	
		COMPLETE	
19	UE		The UE is switched off or power is removed
	5		(see ICS).
20	->	DETACH REQUEST	Message not sent if power is removed. Detach
-0			type = 'power switched off, PS detach'
	l		rype - power switched oil, i o detach

None.

12.4.1.1b.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step16, UE shall;

- initiate the routing area updating procedure whether the routing area has been changed since the last update or not.

12.4.1.4a Routing area updating / rejected / location area not allowed

12.4.1.4a.1 Definition

12.4.1.4a.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, P-TMSI signature and TMSI, LAI and ciphering key sequence number.
 - 1.3 store the LA in the 'forbidden location areas for regional provision of service'.
 - 1.4 not delete the list of "equivalent PLMNs".
 - 1.5 perform a cell selection.
- 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 <u>may perform PS attachrouting area update</u> when a new location area is entered.
 - 2.2 shall delete the list of forbidden LAs after switch off (power off).

Reference

3GPP TS 24.008 clauses 4.7.5.1.

12.4.1.4a.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.

12.4.1.4a.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), cell D in MCC2/MNC1/LAC2/RAC1(RAI-6).

All four cells are operating in network operation mode II.

The PLMN contains Cell D is equivalent to the PLMN that contains Cell C.

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		Set the cell type of cell A to the "Non-Suitable
			cell".
			Set the cell type of cell B to the "Non-Suitable
			cell". Set the cell type of cell C to the "Serving cell".
			Set the cell type of cell D to the "Non-Suitable
			cell".
2	UE		(see note) The UE is set in UE operation mode C (see
	OE OE		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.
3a	UE	Registration on CS	See TS 34.108
		Trogramment on the	This is applied only for UE in UE operation
		ATTA OLI DEGLISOT	mode A.
4	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4a	<-	AUTHENTICATION AND	
		CIPHERING REQUEST	
4b	->	AUTHENTICATION AND	
4c	SS	CIPHERING RESPONSE	The SS starts integrity protection.
5	<-	ATTACH ACCEPT	Attach result = 'PS only attached'
			Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Routing area identity = RAI-3 Equivalent PLMNs = MCC2,MNC1
6	->	ATTACH COMPLETE	Equivalent i Emite = me ez,imte i
			The following messages are sent and shall be
7	SS		received on cell B. Set the cell type of cell B to the "Serving cell".
,	33		Set the cell type of cell C to the "Non-Suitable
			cell".
	00		(see note)
8 8a	SS		Cell B is preferred by the UE. The following step is only performed for UE
Julia			Operation Mode A.
8b	UE	Registration on CS	See TS34.108
			Parameter mobile identity is IMSI
9	->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature
			Routing area identity = RAI-3
10	<-	ROUTING AREA UPDATE	GMM cause = 'Location Area not allowed'
11		REJECT PAGING TYPE1	Mobile identity = P-TMSI-1
''	<-	I AGING LIFET	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		Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Non-Suitable
			cell". (see note)
13a	UE		The UE performs cell selection.
14	UE		Cell A is preferred by the UE.
15	UE		No ATTACH REQUEST sent to SS
I	I	I	(SS waits 30 seconds)

Step	Direction UE SS	Message	Comments
	1		The following messages are sent and shall be
16	SS		received on cell C. Set the cell type of cell A to the "Non-Suitable
			cell".
			Set the cell type of cell D to the "Serving cell". (see note)
16a	UE		The UE performs cell selection.
17	UE		Cell DC is preferred by the UE. The following messages are sent and shall be
47-			received on cell D.
17a			The following step is only performed for UE Operation Mode A.
17b	UE	Registration on CS	See TS34.108 Parameter mobile identity is IMSI
	UE		The UE initiates a PS attach either
18	->	ATTACH REQUEST	automatically or manually (see ICS). Attach type = 'PS attach'
10	->	ATTACITICEQUEST	Mobile identity = IMSI
19	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2
			P-TMSI-2 signature
20	->	ATTACH COMPLETE	Routing area identity = RAI-6
21	UÉ	ATTACTIOONI LETE	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
24	->	ATTACH REQUEST	or switched on and initiates an attach (see ICS). Attach type = 'PS attach'
			Mobile identity = P-TMSI-2
24a	<-	AUTHENTICATION AND	Routing area identity = RAI-3
24b	->	CIPHERING REQUEST AUTHENTICATION AND	
240		CIPHERING RESPONSE	
24c 25	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached'
20		7.117.0117.0021 1	Mobile identity = P-TMSI-1
			P-TMSI-1 signature Routing area identity = RAI-6
26	->	ATTACH COMPLETE	· ·
	SS		The following messages are sent and shall be received on cell A.
27			Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell D to the "Non-Suitable cell".
20			(see note)
28 28a			Cell A is preferred by the UE. The following step is only performed for UE
28b	UE	Registration on CS	Operation Mode A. See TS34.108
200		_	Parameter mobile identity is IMSI
29	->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature
			Routing area identity = RAI-3
30	<-	ROUTING AREA UPDATE 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).
I	I	I	((doc 100).

Step	Direction	Message	Comments
	UE SS		
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 32 to step 32.
NOTE:			
	"Reference Radio Conditions for signalling test cases only".		

None.

12.4.1.4a.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, UE shall:

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step12, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step12 and 15, when in the same location area, UE shall

- not perform PS attach procedure.

At step18, when a new location area is entered, UE shall

- perform the PS attach procedure.

At step24, when the USIM is replaced, UE shall;

- perform the PS attach procedure.

At step29, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

12.4.1.4b Routing area updating / rejected / No Suitable Cells In Location Area

12.4.1.4b.1 Definition

12.4.1.4b.2 Conformance requirement

- 1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:
 - 1.1 store the LA or the PLMN identity in the 'forbidden location areas for roaming'.
 - 1.2 search for a suitable cell in a different location area on the same PLMN.
 - 1.3 not delete equivalent PLMNs list.

1.4 not delete the MM and GMM contexts

Reference

3GPP TS 24.008 clauses 4.7.5.1.

12.4.1.4b.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure with the cause 'No Suitable Cells In Location Area'.

To test that the UE deletes the list of forbidden LAs when power is switched off'.

12.4.1.4b.4 Method of test

Initial condition

System Simulator:

Four cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell D in MCC1/MNC1/LAC1/RAC2 (RAI-4),

All three-four cells are operating in network operation mode II.

The PLMN contains Cell C is equivalent to the PLMN that contains Cell D.

The PLMNs of cells A, B, C and D are all equivalent.

User Equipment:

The UE has valid IMSI.

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

Test procedure

The SS rejects a routing area updating with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall perform PS attach procedure when the UE enters a suitable cell in a different location area on the same PLMN.

Expected Sequence

Step	Direction	Message	Comments	
•	UE SS			
	SS		The following message are sent and shall be	
	00		received on cell D.	
1	SS		Set the cell type of cell A to the "Suitable neighbour cell".	
			Set the cell type of cell B to the "Suitable	
			neighbour cell".	
			Set the cell type of cell C to the "Suitable	
			neighbour cell". Set the cell type of cell D to the "Serving cell".	
			(see note)	
2	UE		The UE is powered up or switched on and	
			initiates an attach (see ICS). Cell D is preferred	
		ATTACH DECHECT	by the UE.	
3	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI	
3a	<-	AUTHENTICATION AND	Wobile Identity = IWO	
		CIPHERING REQUEST		
3b	->	AUTHENTICATION AND		
20	00	CIPHERING RESPONSE	The SS starte integrity protection	
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached'	
	,	7.1.7.6017.602.1	Mobile identity = P-TMSI-1	
			P-TMSI-1 signature	
			Routing area identity = RAI-4	
5	->	ATTACH COMPLETE	Equivalent PLMNs = MCC2,MNC1	
6	SS	ATTACK COM LETE	Set the cell type of cell A to the "Serving cell".	
			Set the cell type of cell B to the "Suitable	
			neighbour cell".	
			Set the cell type of cell C to the "Suitable neighbour cell".	
			Set the cell type of cell D to the "Suitable	
			neighbour cell".	
			(see note)	
			The SS configures power level of each Cell as follows.	
			Cell A > Cell B = Cell C	
			Cell A is preferred by the UE.	
7	->	ROUTING AREA UPDATE	Update type = 'RA updating'	
		REQUEST	P-TMSI-1 signature Routing area identity = RAI-4	
8	<-	ROUTING AREA UPDATE	GMM cause = 'No Suitable Cells In Location	
	•	REJECT	Area'	
			The following message are sent and shall be	
9	_	ROUTING AREA UPDATE	received on cell B. Update type = 'RA updating' Attach type = 'PS	
9	->	REQUESTATTACH REQUEST	attach'	
			Mobile identity = P-TMSI-1 signature	
			Routing area identity = RAI-4	
10	<-	ROUTING AREA UPDATE	Update result = 'RA updated' Attach result = 'PS	
		ACCEPTATTACH ACCEPT	only attached' Mobile identity = P-TMSI-2	
			P-TMSI-2 signature	
			Routing area identity = RAI-3	
11	->	ATTACH ROUTING AREA		
12	->	UPDATE COMPLETE DETACH REQUEST	Message not sent if power is removed.	
12	-/	DE IAOIT NEQUEST	Detach type = 'power switched off, PS detach'	
NOTE:			d "Serving cell" are specified in TS34.108 clause	
	6.1 "Reference Radio Conditions for signalling test cases only".			

None.

12.4.1.4b.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, UE shall;

- initiate the routing area updating procedure.

At step9, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach routing area updating procedure.

12.4.1.4c Routing area updating / rejected / PS services not allowed in this PLMN

12.4.1.4c.1 Definition

12.4.1.4c.2 Conformance requirement

If the network rejects a routing area updating procedure from the User Equipment with the cause 'PS service not allowed in this PLMN', the User Equipment shall:

- delete any RAI, P-TMSI, P-TMSI signature, and PS ciphering key sequence number stored.
- shall set the PS update status to GU3 ROAMING NOT ALLOWED.
- store the PLMN identity in the "forbidden PLMNs for PS service" list.
- not delete the equivalent PLMN list

UE shall perform the following actions depending on the update type, UE operation mode and network operation mode.

- 1) UE is in UE operation mode C
 - UE shall perform a PLMN selection instead of a cell selection.
- 2) UE is in UE operation mode A, update type = periodic updating and Network is in network operation mode I UE shall set the timer T3212 to its initial value and restart it, if it is not already running.
- 3) UE is in UE operation mode A and Network is in network operation mode II.
 - UE shall be still IMSI attached for CS services in the network.

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.4c.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 'PS services not allowed in this PLMN'.

12.4.1.4c.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 MCC2/MNC1/LAC1/RAC1 (RAI-2).

All three cells are operating in network operation mode II (in case of UE operation mode A).

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

User Equipment:

The UE has a valid P-TMSI-1, RAI-1.

The UE is in UE operation mode C.

Related ICS/IXIT statements

Support of PS service 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 SS rejects a routing area updating with the cause value 'PS services not allowed in this PLMN'. The SS checks that the UE performs PLMN selection.

Step	Direction UE SS	Message	Comments
			The following messages are sent and shall be received on cell A.
1	UE		The UE is set in UE operation mode C (see
2	SS		ICS). The SS is set in network operation mode II.
			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable
			cell". Set the cell type of cell C to the "Non-Suitable
			cell". (see note)
3	UE		The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred
4		ATTACH REQUEST	by the UE. Attach type = 'PS attach'
7	->	ATTAOTTREQUEST	Mobile identity = P-TMSI-1
4a	<-	AUTHENTICATION AND	Routing area identity = RAI-1
4b	->	CIPHERING REQUEST AUTHENTICATION AND	
4c	SS	CIPHERING RESPONSE	The SS starts integrity protection.
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
			Equivalent PLMNs = MCC2,MNC1
_			The following messages are sent and shall be received on cell B.
6	SS		Set the cell type of cell A to the "Suitable neighbour cell".
			Set the cell type of cell B to the "Serving cell". (see note)
7 8	UE ->	ROUTING AREA UPDATE	Cell B is preferred by the UE. Update type = 'RA updating'
		REQUEST	Routing area identity = RAI-1
9	<-	ROUTING AREA UPDATE REJECT	GMM cause = 'PS services not allowed in this PLMN'
10	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 PAGING TYPE1 (used for NW-mode II).
11	UE		Paging order is for PS services. No response from the UE to the request. This is
			checked for 10 seconds.
12	SS		Set the cell type of cell B to the "Non-Suitable cell".
			Set the cell type of cell A to the "Serving cell". (see note)
13 14	UE UE		The UE performs PLMN selection. No ATTACH REQUEST sent to the SS
12	SS		(SS waits 30 seconds). Set the cell type of cell A to the "Non-Suitable
			cell". Set the cell type of cell C to the "Serving cell".
17	->	ATTACH REQUESTROUTING	(see note) Update type = 'RA updating'Attach type = 'PS
		AREA UPDATE REQUEST	attach' Mobile identity = IMSI
<u>17a</u>	<u><-</u>	AUTHENTICATION AND CIPHERING REQUEST	
<u>17b</u>	<u>-></u>	AUTHENTICATION AND CIPHERING RESPONSE	
<u>17c</u>	<u>ss</u>	OIL FIERING REGI ONGE	The SS starts integrity protection.

18	<-	ATTACH ACCEPTROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Attach result = 'PS enly attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
19	->	ATTACH-ROUTING AREA UPDATE COMPLETE	Roduing area identity – IVAI-2
20	UE		The UE is switched off or power is removed (see ICS).
21	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE:	The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".		

None.

Test procedure2

Initial condition

System Simulator:

One cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) operating in network operation mode I.

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

The UE is in UE operation mode 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 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. The SS rejects a routing area updating with the cause value 'PS services not allowed in this PLMN'. The UE sets the timer T3212 to its initial value and restart it, if it is not already running.

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 = 'PS attach' Mobile identity = P-TMSI-1
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	Routing area identity = RAI-1
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
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	13312 = 6 minutes
5 6	->	ROUTING AREA UPDATE REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature
7	<-	ROUTING AREA UPDATE REJECT	Routing area identity = RAI-1 GMM cause = 'PS services not allowed in this PLMN'
8	SS	1120201	The SS verifies that the time between the attach and the periodic RA updating is T3312
9	->	ROUTING AREA UPDATE REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1
10	<-	ROUTING AREA UPDATE REJECT	GMM cause = 'PS services not allowed in this PLMN'
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'
NOTE:			e neighbour cell" and "Serving cell" are specified
	in TS34.10	8 clause 6.1 "Reference Radio Cond	ditions for signalling test cases only".

Specific message contents

None.

12.4.1.4c.5 Test requirements

Test requirement for Test procedure1

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step11, after the routing area updating procedure is rejected with GMM cause = 'PS service not allowed in this PLMN', UE shall;

- not respond to the paging message for PS domain.

At step13, UE shall,

- initiate PLMN selection.

At step17, UE shall;

- initiate the **PS** attachrouting area update procedure.

Test requirement for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step6, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step7, after the routing area updating procedure is rejected with GMM cause = 'PS service not allowed in this PLMN', UE shall;

- set the timer T3212 to its initial value and restart it.

At step8, UE shall,

- not initiate periodic routing area updating procedure.

At step9, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step10, after the routing area updating procedure is rejected with GMM cause = 'PS service not allowed in this PLMN', UE shall;

- set the timer T3212 to its initial value and restart it.

At step11, UE shall,

- not initiate periodic routing area updating procedure.

12.4.1.4d Routing area updating / rejected / Roaming not allowed in this location area

12.4.1.4d.1 Definition

12.4.1.4d.2 Conformance requirement

- 1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'roaming not allowed in this location area' the User Equipment:
 - 1.1 shall not perform PS attach when in the same location area.
 - 1.2 shall store the LA in the 'forbidden location areas for roaming'.
 - 1.3 may perform <u>routing area updating PS attach</u> when a new location area is entered.
- 2) The User Equipment shall reset the list of 'Forbidden location areas for roaming' and not delete the MM/GMM contexts when switched off or when the USIM is removed.

Reference

3GPP TS 24.008 clause 4.7.5.2.

12.4.1.4d.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 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.

12.4.1.4d.4 Method of test

12.4.1.4d.4.1 Test procedure1

Initial condition

System Simulator:

Two cells, cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell B in MCC2/MNC1/LAC2/RAC1 (RAI-6). 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

The SS rejects a routing area updating with the cause value 'Roaming not allowed in this area'. A new attempt for a PS attach is not possible. Successful PS attach procedure is performed in another location area. The UE is moved back to the 1st location area. A routing area updating shall not be performed, as the LA is on the forbidden list.

Step	Direction UE SS	Message	Comments
	SS SS		The following messages are sent and shall be
1	SS		received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable
			neighbour cell". (see note)
2	UE		The UE is powered up or switched on and initiates an attach (see ICS).
3	UE	Registration on CS	See TS34.108 Parameter mobile identity is IMSI
4	->	ATTACH REQUEST	SS allocates Mobile identity = TMSI-1. Attach type = ' PS attach ' Mobile identity = IMSI
4a	<-	AUTHENTICATION AND	TMSI status = no valid TMSI available
4b	->	CIPHERING REQUEST AUTHENTICATION AND	
4c	SS	CIPHERING RESPONSE	The SS starts integrity protection.
5	<-	ATTACH ACCEPT	Attach result = 'PS only attached'
			Mobile identity = P-TMSI-2
			P-TMSI-2 signature Routing area identity = RAI-2
6	->	ATTACH COMPLETE	Routing area identity = RAI-2
			The following messages are sent and shall be
_	00		received on cell B.
7	SS		Set the cell type of cell A to the "Suitable neighbour cell".
			Set the cell type of cell B to the "Serving cell".
			(see note)
8	UE	DOLITING AREA LIRRATE	Cell B is preferred by the UE.
9	->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature
		The Gold I	Routing area identity = RAI-2
10	<-	ROUTING AREA UPDATE	GMM cause = 'Roaming not allowed in this
11	UE	REJECT	area' The UE initiates an attach by MMI or by AT
12	UE		command. No ATTACH REQUEST sent to SS
13	<-	PAGING TYPE1	(SS waits 30 seconds). Mobile identity = P-TMSI-2
14	UE		Paging order is for PS services. No response from the UE to the request. This is
	OL.		checked for 10 seconds.
15	<-	PAGING TYPE1	Mobile identity = TMSI-1 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
17	SS		received on cell A. Set the cell type of cell A to the "Serving cell".
17	33		Set the cell type of cell B to the "Suitable
			neighbour cell".
1.5			(see note)
18 19	UE UE	Registration on CS	Cell A is preferred by the UE. See TS 34.108
19	UE	nregistration on Co	Location Update Procedure initiated from the
			UE.
000			Parameter mobile identity is TMSI-1.
20	UE		The UE initiates an attach automatically (see ICS), by MMI or by AT command.
21	->	ATTACH REQUESTROUTING	Attach type = 'PS attach' Update type = 'RA
		AREA UPDATE REQUEST	updating'
		l	Mobile identity = P-TMSI-2

Step	Direction UE SS	Message	Comments
<u>21a</u>	<u><-</u>	AUTHENTICATION AND	
046		CIPHERING REQUEST	
<u>21b</u>	<u>-></u>	AUTHENTICATION AND CIPHERING RESPONSE	
<u>21c</u>	<u>SS</u>	SI TIETRITO REGI STIGE	The SS starts integrity protection.
22	<-	ATTACH ACCEPT ROUTING	Attach result = 'PS only attached' Update result
		AREA UPDATE ACCEPT	= 'RA updated' Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Routing area identity = RAI-2
23	->	ROUTING AREA UPDATE	
24	<-	ATTACH COMPLETE PAGING TYPE1	Mobile identity = TMSI-1
		. 7.6	Paging order is for CS services.
25	->	RRC CONNECTION	
26		REQUESTVoid RRC CONNECTION SETUPVoid	
27	→	RRC CONNECTION SETUP	
		COMPLETE Void	
28	->	PAGING RESPONSE	Mobile identity = TMSI-1
29	<u> </u>	RRC CONNECTION RELEASE	The SS releases the RRC connection. After sending of this message, the SS waits for
			disconnection of the CS signalling link.
30	→	RRC CONNECTION RELEASE	
31	<-	COMPLETE Void PAGING TYPE1	 Mobile identity = P-TMSI-1
31		I AGING THE	Paging order is for PS services.
32	→	RRC CONNECTION	
33		REQUESTVoid RRC CONNECTION SETUPVoid	
34	← →	RRC CONNECTION SETUP	
		COMPLETE Void	
35	->	SERVICE REQUEST	service type = "paging response"
36	<u>←SS</u>	RRC CONNECTION RELEASE	The SS releases the RRC connection.
37	->	RRC CONNECTION RELEASE	
		COMPLETE Void	T. () .
			The following messages are sent and shall be received on cell B.
38	SS		Set the cell type of cell A to the "Suitable
			neighbour cell".
			Set the cell type of cell B to the "Serving cell". (see note)
39	UE		No ROUTING AREA UPDATE REQUEST sent
			to SS
40		DACING TYPE1	(SS waits 30 seconds).
40	<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
41	UE		No response from the UE to the request. This is
110==			checked for 10 seconds.
NOTE:			d "Serving cell" are specified in TS34.108 clause
6.1 "Reference Radio Conditions for signalling test cases only".			

12.4.1.4d.4.2 Test procedure2

Initial condition

System Simulator:

Two cells, cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell B in MCC2/MNC1/LAC2/RAC1 (RAI-6). Both cells are operating in network operation mode II.

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
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 'Roaming not allowed in this area'. The UE is switched off for 10 seconds and switched on again. The SS checks that a PS attach is possible on the cell on which the previous 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.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
1	SS		received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable
			neighbour cell". (see note)
2	UE		The UE is powered up or switched on and initiates an attach (see ICS.
3	UE	Registration on CS	See TS34.108 Parameter mobile identity is IMSI
4	->	ATTACH REQUEST	SS allocates Mobile identity = TMSI-1. Attach type = ' PS attach ' Mobile identity =IMSI
4a	-	AUTHENTICATION AND	TMSI status = no valid TMSI available
	<-	CIPHERING REQUEST	
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c 5	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached'
		ATTAOTTAOOLIT	Mobile identity = P-TMSI-2
			P-TMSI-2 signature Routing area identity = RAI-2
6	->	ATTACH COMPLETE	
			The following messages are sent and shall be received on cell B.
7	SS		Set the cell type of cell A to the "Suitable neighbour cell".
			Set the cell type of cell B to the "Serving cell".
8	UE		(see note) Cell B is preferred by the UE.
9	->	ROUTING AREA UPDATE	Update type = 'RA updating'
		REQUEST	P-TMSI-2 signature Routing area identity = RAI-2
10	<-	ROUTING AREA UPDATE REJECT	GMM cause = 'Roaming not allowed in this area'
11	UE	TCOLOT	The UE initiates an attach by MMI or by AT command.
12	UE		No ATTACH REQUEST sent to SS
13	<-	PAGING TYPE1	(SS waits 30 seconds). Mobile identity = P-TMSI-2
14	UE		Paging order is for PS services. No response from the UE to the request. This is
15	<-	PAGING TYPE1	checked for 10 seconds. Mobile identity = TMSI-1
16	UE		Paging order is for CS services. The UE shall not initiate an RRC connection.
17	UE		This is checked during 3 seconds. If possible (see ICS) USIM removal is
			performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is
18	UE		removed. The UE gets the USIM replaced, is powered up
19	UE	Registration on CS	or switched on. See TS 34.108
20	UE		Location Update Procedure initiated from the UE.
	UE		The UE initiates an attach automatically (see ICS) by MMI or AT command.
21	->	ATTACH REQUEST	Attach type = ' PS attach ' Mobile identity =IMSI TMSI status = no valid TMSI available
22a	<-	AUTHENTICATION AND CIPHERING REQUEST	TIVISI SIALUS = TIO VAIIU TIVISI AVAIIADIE

Cton	Direction	Magaga	Comments	
Step	UE SS	Message	Comments	
001-	1	ALITUENTICATION AND		
22b	->	AUTHENTICATION AND		
00	00	CIPHERING RESPONSE	TI 00 1 1 1 1 1	
22c	SS	ATTAOU AGGERT	The SS starts integrity protection.	
22	<-	ATTACH ACCEPT	Attach result = 'PS only attached'	
			Mobile identity = P-TMSI-1	
			P-TMSI-1 signature	
			Routing area identity = RAI-6	
			Mobile identity = TMSI-1	
23	->	ATTACH COMPLETE		
24	<-	PAGING TYPE1	Mobile identity = TMSI-1	
			Paging order is for CS services.	
25	>	RRC CONNECTION		
		REQUESTVoid		
26	-<-	RRC CONNECTION SETUPVoid		
27	->	RRC CONNECTION SETUP		
		COMPLETE Void		
28	->	PAGING RESPONSE	Mobile identity = TMSI-1	
29	<u> </u>	RRC CONNECTION RELEASE	The SS releases the RRC connection. 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	
32	->	RRC CONNECTION		
		REQUESTVoid		
33	<-	RRC CONNECTION SETUP Void		
34	->	RRC CONNECTION SETUP		
		COMPLETE Void		
35	->	SERVICE REQUEST	service type = "paging response"	
			7. 1 0 0 1	
36	<u>SS</u> ←	RRC CONNECTION RELEASE	The SS releases the RRC connection.	
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'	
NOTE:	The definit	ions for "Suitable neighbour cell" and	d "Serving cell" are specified in TS34.108 clause	
	6.1 "Reference Radio Conditions for signalling test cases only".			

None.

12.4.1.4d.5 Test requirements

Test requirements for Test procedure1

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step9, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the routing area update procedure with the information elements specified above Expected Sequence

At step12, when the SS rejects the routing area update procedure with GMM cause = 'Roaming not allowed in this area', UE shall:

- not initiate a PS attach procedure.

At step14, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

At step16, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step21, UE shall:

- initiate the **PS** attachrouting area update procedure.

At step28, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step35, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step41, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

Test requirements for Test procedure2

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step9, UE shall:

- initiate the routing area update procedure with the information elements specified above Expected Sequence.

At step14, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

At step16, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step21, UE shall:

- initiate the PS attach procedure.

At step28, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step35, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

12.4.3.4 Periodic routing area updating / no cell available

12.4.3.4.5 Test requirements

At step2, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step16, 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".

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
UE operation mode C
Switch off on button
Yes/No
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.

Step	Direction UE SS	Message	Comments
	UE 33		The following messages are sent and shall be
			received on cell A.
1	SS		Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Non-Suitable
			cell".
0			(see note 1)
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		gete etep zet
4			The following messages are sent and shall be
_			received on cell A.
5	UE		The UE is powered up or switched on and
50	SS		initiates an attach (see ICS). The SS verifies that the IE "Establishment
<u>5a</u>	33		cause" in the received RRC CONNECTION
			REQUEST message is set to "Registration".
6	->	ATTACH REQUEST	Attach type = 'PS attach'
			Mobility identity = IMSI
7	<-	AUTHENTICATION AND	Request authentication.
		CIPHERING REQUEST	Invalid Message Authentication Code (MAC).
9	->	AUTHENTICATION AND	GMM cause='MAC failure'
3		CIPHERING FAILURE	OWIN Cause INAC failure
<u>9a</u>	<-	IDENTITY REQUEST	Identity type = IMSI
<u>9b</u>	<mark><-</mark> ->	IDENTITY RESPONSE	Mobile identity = IMSI
10	<-	AUTHENTICATION AND	Request authentication.
4.4		CIPHERING REQUEST	Including PS-CSKN-1
11	->	AUTHENTICATION AND CIPHERING RESPONSE	RES
12	SS	OII FIERING REGI GINGE	The SS checks the RES value and starts
			integrity protection.
13	<-	VoidIDENTITY REQUEST	Identity type = IMSI
14	->	VoidIDENTITY RESPONSE	Mobile identity = IMSI
15 16	_	Void ATTACH ACCEPT	Attach result = 'PS only attached'
10	<-	ATTACITACCEFT	Mobile identity = P-TMSI-2
			P-TMSI-2 signature
			Routing area identity = RAI-1
17	->	ATTACH COMPLETE	
<u>17a</u>	<u>SS</u>		The SS releases the RRC connection.
			The following messages are sent and shall be received on cell B.
18	SS		Set the cell type of cell A to the "Non-Suitable
.5			cell".
			Set the cell type of cell B to the "Serving cell".
			(see note_1)
<u>18a</u>	<u>SS</u>		The SS verifies that the IE "Establishment
			cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
19	->	ROUTING AREA UPDATE	Update type = 'RA updating'
.0		REQUEST	P-TMSI-2 signature
			Routing area identity = RAI-1
			PS-CKSN-1
20	SS		The SS checks the value of PS-CKSN is
04		DOLITING ADEA LIBBATE	checkedand starts integrity protection.
21	<-	ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Routing area identity = RAI-2
22	->	ROUTING AREA UPDATE	
		COMPLETE	
23	UE		The UE is switched off or power is removed
			(see ICS).

24	->		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.
NOTE:	The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".		

None.

12.6.1.3.1.5 Test requirements

At step6, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information element specified in the above Expected Sequence.

At step9, when the UE receives the AUTHENTICATION AND CIPHERING REQUEST with Invalid Message Authentication Code, UE shall:

- send the AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS

At step110, when the UE receives the second AUTHENTICATION AND CIPHERING REQUEST message (containing a valid MAC) from SS, UE shall:

- send the AUTHENTICATION AND CIPHERING RESPONSE message to SS.

At step9b13, when the UE receives the IDENTITY REQUEST message with Identity type = IMSI from SS, UE shall:

- send the IDENTITY RESPONSE message with Mobile identity = IMSI 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
UE operation mode C
Switch off on button
Yes/No
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.

Step	Direction	Message	Comments
	UE SS		
			The following messages are sent and shall be
			received on cell A.

Step	Direction UE SS	Message	Comments
1	SS		Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Non-Suitable cell".
			(see note_1)
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
3	UE		received on cell A. The UE is powered up or switched on and
			initiates an attach (see ICS).
<u>3a</u>	<u>SS</u>		The SS verifies that the IE "Establishment
			cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
4	->	ATTACH REQUEST	Attach type = 'PS attach'
5	<-	AUTHENTICATION AND	Mobility identity = IMSI Request authentication.
		CIPHERING REQUEST	SQN is out of range.
6 7	SS	Void	The SS starts the timer T3360
/	->	AUTHENTICATION AND CIPHERING FAILURE	GMM cause = 'Synch failure' AUTS parameter
8	SS	OII FIERING FAILURE	set new authentication vectors. (re-
			synchronisation)
9	<-	AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Including PS-CKSN-1
10	->	AUTHENTICATION AND	RES
44	00	CIPHERING RESPONSE	The CO sheets the DEC value and starts
11	SS		The SS checks the RES value and starts integrity protection.
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 CC releases the DDC compaction
<u>13a</u>	<u>SS</u>		The SS releases the RRC connection. The following messages are sent and shall be
			received on cell B.
14	SS		Set the cell type of cell A to the "Non-Suitable cell".
			Set the cell type of cell B to the "Serving cell".
	00		(see note 1)
<u>14a</u>	<u>SS</u>		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION
			REQUEST message is set to "Registration".
15	->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature
		INLEGOLO I	Routing area identity = RAI-1
10	00		PS-CKSN-1
16	SS		The SS checks the value of PS-CKSN is checked and starts integrity protection.
17	<-	ROUTING AREA UPDATE	Update result = 'RA updated'
		ACCEPT	Mobile identity = P-TMSI-1 P-TMSI-1 signature
			Routing area identity = RAI-2
18	->	ROUTING AREA UPDATE	
19	UE	COMPLETE	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'
			Potati type – power switched on, i o detach
21	UE		The UE is set in UE operation mode A (see
	UE UE		ICS) and the test is repeated from step 1 to
			step 20.

Step	Direction	Message	Comments
	UE SS		
NOTE:	The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause6.1		
	"Reference Radio Conditions for signalling test cases only".		

None.

12.6.1.3.2.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information element specified in the above Expected Sequence.

At step7, when the UE receives the AUTHENTICATION AND CIPHERING REQUEST message(SQN is out of range.), UE shall:

- send the AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'synch failure' to the SS

At step<u>9</u>10, when the UE receives the second AUTHENTICATION AND CIPHERING REQUEST message from SS, UE shall:

- send the AUTHENTICATION AND CIPHERING RESPONSE message to SS.

At step15, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- perform routing area updating procedure.

12.9.3 Service Request / rejected / Illegal MS

12.9.3.1 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. <u>A</u> UE operating in MS operation A shall in addition to set the update status to U3 ROAMING NOT ALLOWED.
- 2) delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number. <u>A UE operating in MS operation A shall in addition delete any TMSI, LAI and ciphering key sequence number.</u>
- 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, 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

USIM removal possible without powering down 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.

Step	Direction UE SS	Message	Comments
1	UE		The following message are sent and shall be received on cell A. The UE is set in UE operation mode C (see ICS).
2	SS		The SS is set in network operation mode II and
3	UE		activates cell A. The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
<u>3a</u>	<u>ss</u>		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
4	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS	CIPHERING RESPONSE	The SS starts ciphering and integrity protection.
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 7	UE	Void	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	<- UE	SERVICE REJECT	Reject cause = "Illegal MS" 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 13	UE	Void	The UE is switched off.
14	UE		The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
<u>14a</u>	<u>SS</u>		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
15	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
15a	<-	AUTHENTICATION AND CIPHERING REQUEST	
15b	->	AUTHENTICATION AND CIPHERING RESPONSE	
15c 16	SS <-	ATTACH ACCEPT	The SS starts ciphering and integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
17 18	-> UE	ATTACH COMPLETE	The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
19 20	-> <-	SERVICE REQUEST SERVICE REJECT	Service type = "signalling" Reject cause = "Illegal MS"

Step	Direction	Message	Comments
	UE SS	_	
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.
23	UE		(SS waits 30 seconds) If possible (see ICS) USIM replacement is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed USIM is removed.
24	UE	Void	USIM is inserted.
25	UE	<u>Void</u>	The UE initiates a PS attach, by MMI or by AT command.
<u>25a</u>	<u>SS</u>		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
26	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
26a	<-	AUTHENTICATION AND CIPHERING REQUEST	,
26b	->	AUTHENTICATION AND CIPHERING RESPONSE	
26c	SS		The SS starts ciphering and integrity protection.
27	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature
			Routing area identity = RAI-1
28	->	ATTACH COMPLETE	j
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"
31	<-	AUTHENTICATION AND CIPHERING REQUEST	
32	->	AUTHENTICATION AND CIPHERING RESPONSE	
33	SS		The SS initiate a security mode control procedure.
34	SS		After the security mode control procedure is completed, the SS releases RRC connection.
35	UE		The UE is switched off or power is removed
36	->	DETACH REQUEST	(see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach'

None.

12.9.3.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step11, when the UE receives the SERVICE REJECT message with cause "Illegal MS" UE shall:

- not attempt to access the network.

At step15, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step22, when the UE receives the SERVICE REJECT message with cause "Illegal MS" UE shall:

- not attempt to access the network.

At step26, when the <u>UE gets the USIM</u> is replaced, is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step30, UE shall:

- initiate the service request procedure.

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 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.

Step	Direction UE SS	Message	Comments
1	UE		The following message are sent and shall be received on cell A. The UE is set in UE operation mode C (see
2	SS		ICS). The SS is set in network operation mode II and
3	UE		activates cell A. The UE is powered up or switched on and
0-	00		initiates an attach (see ICS). Cell A is preferred by the UE.
<u>3a</u>	<u>SS</u>		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
4	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	Trouting area lability = 10 tr
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c 5	SS <-	ATTACH ACCEPT	The SS starts ciphering and integrity protection. No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6 7	UE	Void	The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT
8 9 10	-> <- UE	SERVICE REQUEST SERVICE REJECT	command. Service type = "signalling" Reject cause = "PS services not allowed" The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT
11	SS		command. The SS verifies that the UE does not attempt to access the network.
12 13	UE	Void	(SS wait 30seconds) The UE is switched off.
14	UE	70.0	The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
<u>14a</u>	<u>SS</u>		The SS verifies that the IE "Establishmen cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
15	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
15a	<-	AUTHENTICATION AND CIPHERING REQUEST	mesure identity – inter
15b	->	AUTHENTICATION AND CIPHERING RESPONSE	
15c 16	SS <-	ATTACH ACCEPT	The SS starts ciphering and integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature
17 18	-> UE	ATTACH COMPLETE	Routing area identity = RAI-2 The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT
19 20 21	-> <- UE	SERVICE REQUEST SERVICE REJECT	command. Service type = "signalling" Reject cause = "PS services not allowed" The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.

Step	Direction	Message	Comments
	UE SS		
22	SS		The SS verifies that the UE does not attempt to
			access the network.
20	UE		(SS wait 30seconds)
23	05		The UE gets the USIM replaced, is powered up or switched on. USIM is removed.
24	UE	Void	USIM is inserted.
25	UE		The UE initiates a PS attach, by MMI or by AT
			command.
<u>25a</u>	<u>SS</u>		The SS verifies that the IE "Establishment
			cause" in the received RRC CONNECTION
26	->	ATTACH REQUEST	REQUEST message is set to "Registration". Attach type = 'PS attach'
20	->	ATTACITREQUEST	Mobile identity = IMSI
26a	<-	AUTHENTICATION AND	INIODIO Identity – INIOI
		CIPHERING REQUEST	
26b	->	AUTHENTICATION AND	
		CIPHERING RESPONSE	
26c	SS	ATTACLLACOEDT	The SS starts ciphering and integrity protection.
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
20		SERVICE REQUEST	command. Service type = "signalling"
30	->	AUTHENTICATION AND	Service type = Signalling
		CIPHERING REQUEST	
32	->	AUTHENTICATION AND	
		CIPHERING RESPONSE	
33	SS		The SS initiate a security mode control
0.4	00		procedure.
34	SS		After the security mode control procedure is completed, the SS releases RRC connection.
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, PS detach'

12.9.4.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step11, when the UE receives the SERVICE REJECT message with cause "PS services not allowed" UE shall:

- not attempt to access the network.

At step15, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step22, when the UE receives the SERVICE REJECT message with cause "PS services not allowed" UE shall:

- not attempt to access the network.

At step26, when the <u>UE gets the USIM</u> is replaced, is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step30, UE shall:

- initiate the service request procedure.

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 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).

Step	Direction UE SS	Message	Comments
	02 00		The following message are sent and shall be
1	UE		received on cell A. 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.
<u>3a</u>	SS		The SS verifies that the IE "Establishment
			cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
4	->	ATTACH REQUEST	Attach type = 'PS attach'
			Mobile identity = P-TMSI-1
4a	<-	AUTHENTICATION AND	Routing area identity = RAI-1
46		CIPHERING REQUEST	
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS	ATTACH ACCEPT	The SS starts ciphering and integrity protection.
5	<-	ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included.
			Routing area identity = RAI-1
6		Void	Attach result = 'PS only attached'
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
10a	SS		procedure. The SS verifies that the IE "Establishment
	<u> </u>		cause" in the received RRC CONNECTION
11	->	ATTACH REQUEST	REQUEST message is set to "Registration". Attach type = 'PS attach'
115		ALITHENITICATION AND	Mobile identity = IMSI
11a	<-	AUTHENTICATION AND CIPHERING REQUEST	
11b	->	AUTHENTICATION AND CIPHERING RESPONSE	
11c	SS	CIPHERING RESPONSE	The SS starts ciphering and integrity protection.
12	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2
			P-TMSI-2 signature
13	-> !!E	ATTACH COMPLETE	
14	UE		The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT
15		SEDVICE DECLIFOR	command.
15 16	-> <-	SERVICE REQUEST AUTHENTICATION AND	Service type = "signalling"
47		CIPHERING REQUEST	
17	->	AUTHENTICATION AND CIPHERING RESPONSE	
18	SS		The SS initiate a security mode control
19	SS		procedure. After the security mode control procedure is
			completed, the SS releases RRC connection.
20	UE		The UE is switched off or power is removed (see ICS).
21	->	DETACH REQUEST	Message not sent if power is removed.
			Detach type = 'power switched off, PS detach'

None.

12.9.5.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step11, when the UE receives the SERVICE REJECT message with cause "MS identity cannot be derived by the network" 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 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.

Step	Direction UE SS	Message		Comments
1	UE		re Th	he following message are sent and shall be eceived on cell A. he UE is set in UE operation mode C (see
2	SS			CS). he SS is set in network operation mode II.
3	UE		Se Se ce (se	et the cell type of cell A to the "Serving cell". et the cell type of cell B to the "Non-Suitable ell". see note) he UE is powered up or switched on and
3			ini by	itiates an attach (see ICS). Cell A is preferred y the UE.
<u>3a</u>	<u>SS</u>		ca	he SS verifies that the IE "Establishment ause" in the received RRC CONNECTION EQUEST message is set to "Registration".
4	->	ATTACH REQUEST	At Mo	ttach type = 'PS attach' lobile identity = P-TMSI-1 outing area identity = RAI-1
4a	<-	AUTHENTICATION AND		caming area racinary
4b	->	CIPHERING REQUEST AUTHENTICATION AND CIPHERING RESPONSE		
4c	SS			he SS starts ciphering and integrity protection.
5	<-	ATTACH ACCEPT	P- Ro	o new mobile identity assignedTMSI and P-TMSI signature not included. outing area identity = RAI-1 ttach result = 'PS only attached'
6 7	UE	Void	Th Ac	he UE initiates an upper-layer signalling, e.g., ctive PDP Context request, by MMI or by AT
8 9 10	-> <- UE	SERVICE REQUEST SERVICE REJECT	Se Re	ommand. ervice type = "signalling" eject cause = "PLMN not allowed" he UE stores the LAI or the PLMN identity in
11	UE		Tr	ne "forbidden PLMN list". he UE initiates an upper-layer signalling, e.g., ctive PDP Context request, by MMI or by AT
12	SS		co Th ac	ommand. he SS verifies that the UE does not attempt to coess the network.
13 14	<- UE	PAGING TYPE1	Pa No	SS wait 30second) aging order is for PS service o response from the UE to the request. This is necked for 10 seconds.
15	SS		be Se ce	he following messages shall be sent and shall e received on cell B. et the cell type of cell A to the "Non-Suitable ell". et the cell type of cell B to the "Serving cell".
16 17	UE UE		Če Tr	ee note) ell B is preferred by the UE. he UE initiates an attach automatically, by
<u>17a</u>	<u>SS</u>		Th	IMI or by AT command. he SS verifies that the IE "Establishment ause" in the received RRC CONNECTION
18	->	ATTACH REQUEST	RI At	EQUEST message is set to "Registration". ttach type = 'PS attach' lobile identity = IMSI
18a	<-		AND	issue isomity – imor
18b	->	CIPHERING REQUEST AUTHENTICATION CIPHERING RESPONSE	AND	
18c	SS		Tr	he SS starts ciphering and integrity protection.

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		
NOTE:	The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1			
	"Reference Radio Conditions for signalling test cases only".			

None.

12.9.6.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step 912, when the UE receives the SERVICE REJECT message with cause "PLMN not allowed", UE shall:

- not perform a PS attach procedure in the same PLMN.

At step13, when the UE receives the paging message for PS domain UE shall:

- not respond to the paging message for PS domain.

At step18, UE shall:

- perform PS attach procedure.

12.9.7b Service Request / rejected / No Suitable Cells In Location Area

12.9.7b.1 Definition

12.9.7b.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "No Suitable Cells In Location Area", the UE shall:

- set the GPRS update status to GU3 ROAMING NOT ALLOWED and shall change to state GMM-REGISTERED.LIMITED-SERVICE.
- 2) store the LAI or the PLMN identity in the list of 'forbidden location areas for roaming'.
- If no RRC connection exists, the UE shall perform the following additional actions immediately. If the UE is operating in operation mode A and an RRC connection exists, the UE shall perform these actions when the RRC connection is subsequently released:
- 13) if the UE is IMSI attached, the UE shall set the update status to U3 ROAMING NOT ALLOWED and shall reserve the location update attempt counter. The new MM state is MM IDLE.
- 2) search for a suitable cell in a different location area on the same PLMN.

Reference

TS 24.008 clauses 4.7.13.4

12.9.7b.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "No Suitable Cells In Location Area".

12.9.7b.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in 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.

User Equipment:

The UE has 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 rejects a Service request with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall perform <u>routing area updating PS attach</u> procedure when the UE enters a suitable cell in a different location area on the same PLMN.

Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set on the cell so follows. Cell B is Cell C to the "Suitable neighbour cell". Set on the cell so follows. Cell B is Cell C to the "Suitable neighbour cell". Set on the cell so follows. Cell A is Cell	Step	Direction	Message	Comments
Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C The UE estain UE operation mode CA (see (CS). If UE operation mode Ca (call a particular). And the UE operation mode Call and the UE op				
neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". (see note) The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C The UE is set in UE operation mode CA (see CS). If UE operation mode CA (see CS). If UE operation mode C is not supported, goto step 15 The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. 2a SS The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration". AUTHENTICATION AND CIPHERING REQUEST AUTHENTICATION AND CIPHERING RESPONSE ATTACH ACCEPT ATTACH COMPLETE The SS starts ciphering and integrity protection. Attach result = "Combined PS only/-IMSI attached". Mobile identity = TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1 The SS initiates the RRC connection release. The UE initiates a PS call, by MMI or by AT command. SERVICE REJECT SERVICE REJECT SERVICE REJECT The SS releases the RRC connection Telease. The UE initiates a PS call, by MMI or by AT command. Service type = "signalling". Reject cause = "No Suitable Cells In Location Area". The SS releases the RRC connection The Service on cell B. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION Attach Tool and CIPHERING REQUEST AUTHENTICATION AND CIPHERING REQUEST A		l		
Set the cell type of cell C to the "Suitable neighbour cell", (see note) The SS configures power level of each Cell as follows. Cell A - Cell B - Cell C 1 UE 1 UE 2 UE 3 SS 4 C- Cell B - Cell C 4 The UE is set in UE operation mode CA (see CS). If UE operation mode CA (see CS). If UE operation mode C is not supported, goto step 15 The UE is powered up or switched on and initiates an attach (see IcS). Cell A is preferred by the UE. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION RECUEST message is set to 'Registration', Attach type = "PS attach Combined PS / IMSI attache", Mobile identity = IMSI TMSI status - no valid TMSI available 3 AUTHENTICATION AND CIPHERING RESPONSE ATTACH ACCEPT 4 C ATTACH COMPLETE 5 S ATTACH COMPLETE 5 S SERVICE REQUEST SERVICE REQUEST SERVICE REJECT 5 S SERVICE REQUEST SERVICE REJECT 6 SS The UE initiates a PS call, by MMI or by AT command. Service type = "Signallings". Reject cause = ""No Suitable Cells in Location Area". The SS releases the RRC connection The following message are sent and shall be received on cell B. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION RESPONSE 10 ATTACH-ROUTING AREA UPDATE REQUEST 10 AUTHENTICATION AND CIPHERING REQUEST AUTHENTICATION AND CIPHERING REQUEST 10 AUTHENTICATION AND CIPHERING RESPONSE 10 C SS 11 C ATTACH-ROUTING AREA UPDATE REPORTED A AUTHENTICATION AND CIPHERING RESPONSE 10 C SS 11 C ATTACH-ROUTING AREA UPDATE ACCEPT 12 ATTACH-ROUTING AREA UPDATE ACCEPT 13 UE The UE is switched off or power is removed				
neighbour ceil*. (see note) The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C The UE is set in UE operation mode CA (see CS). If UE operation mode CA (see CS). If UE operation mode C is not supported, acto step 15 The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. 2a SS The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration". AUTHENTICATION AND CIPHERING REQUEST AUTHENTICATION AND CIPHERING RESPONSE The SS starts ciphering and integrity protection. Attach result = "Combined PS only-IMSI attached". ATTACH COMPLETE The SS starts ciphering and integrity protection. Attach result = "Combined PS only-IMSI attached". Mobile identity = P.TMSI-1 P.TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1 The SS initiates the RRC connection release. The UE initiates a PS call, by MMI or by AT command. Service type = "signalling". Reject cause = "No Suitable Cells In Location Area". The SS releases the RRC connection The Service type = "Signalling". Reject cause = "No Suitable Cells In Location Area". The SS releases the RRC connection The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION AID CIPHERING REQUEST AUTHENTICATION AND CIPHERING REQUEST AUTHE				
(see note) The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C The UE is set in UE operation mode CA (see CS). If UE operation mode CA (see CS) and initiates an attach (see ICS). Cell A is preferred by the UE. The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION RECUEST attach". ATTACH REQUEST AUTHENTICATION AND CIPHERING REQUEST AUTHENTICATION AND CIPHERING RESPONSE ATTACH ACCEPT ATTACH ACCEPT ATTACH COMPLETE SERVICE REQUEST The UE initiates an PS call, by MMI or by AT command. Service type = ""signalling": Reject cause = ""No Suitable Cells in Location Area" in the received RRC Connection The SS releases the RRC connection The SS releases th				
The SS configures power level of each Cell as follows. Cell A> Cell B = Cell C The UE is set in UE operation mode CA (see ICS). If UE operation mode CA (see ICS). If UE operation mode C is not supported, goto step 15 The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. 2a SS SS ATTACH REQUEST ATTACH REQUEST AUTHENTICATION AND CIPHERING REQUEST AUTHENTICATION AND CIPHERING RESPONSE CATTACH ACCEPT ATTACH ACCEPT ATTACH COMPLETE The SS starts ciphering and integrity protection. Attach result = "Combined PS only." IMSI attached." Mobile identity = TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1 The SS initiates the RRC connection release. The UE initiates a PS call, by MMI or by AT command. Service type = "PS signalling". The SS releases the RRC connection The following message are sent and shall be received RRC cONNECTION REQUEST AUTHENTICATION AND CIPHERING REQUEST AUTHENTICATION AND CIPHERING REQUEST AUTHENTICATION AND CIPHERING RESPONSE ATTACH-ROUTING AREA UPDATE ACCEPT The SS releases the RRC connection The SS starts ciphering and integrity protection. Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = RAI-1 The SS starts ciphering and integrity protection. Mobile identity = P-TMSI-2 P-TMSI-2 signature Routes Part Authentication Authentication Authentication Authentication Authentication Authentic				
Cell A > Cell B = Cell C				The SS configures power level of each Cell as
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12 -> ATTACH ROUTING AREA UPDATE COMPLETE 13 UE The UE is switched off or power is removed				
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13 UE The UE is switched off or power is removed	'-	->		
(see ICS).	13	UE		

14	->	DETACH REQUEST	
<u>15</u>	<u>UE</u>		The UE is set to attach to both the PS and non-
			PS services (see ICS) and the test is repeated
			from step 2 to step 14.
NOTE:	The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause		
	6.1 "Reference Radio Conditions for signalling test cases only".		

None.

12.9.7b.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step10, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the <u>routing area updating</u>PS attach procedure.

12.9.7c Service Request / rejected / Roaming not allowed in this location area

12.9.7c.1 Definition

12.9.7c.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "Roaming not allowed in this location area", the UE shall:

- 1) set the PS update status to GU3 ROAMING NOT ALLOWED
- 2) store the LAI in the list of "forbidden location areas for roaming".
- 3) perform a PLMN selection.

Reference

TS 24.008 clauses 4.7.13.4

12.9.7c.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "Roaming area not allowed in this location area".

12.9.7c.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 MCC2/MNC1/LAC1/RAC1 (RAI-2)

All three cells are operating in network operation mode \mathbf{I} .

User Equipment:

The UE has a valid P-TMSI-1 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

The SS rejects a Service request with the cause value 'Roaming not allowed in this location area'. The SS checks that the UE shall not perform PS attach procedure when the UE enters a different location area.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be received on cell A.
1	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell".
2	UE		(see note) The UE is set in UE operation mode CA (see ICS). If Ue operation mode C is not supported,
3	UE		goto step 19 The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred
<u>3a</u>	<u>SS</u>		by the UE. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
4	->	ATTACH REQUEST	Attach type = 'Combined-PS / IMSI-attach'-or "PS Attach while IMSI attached" Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	Routing area identity = KAI-1
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c 5	SS <-	ATTACH ACCEPT	The SS starts ciphering and integrity protection. No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached'
6 7	SS UE		Routing area identity = RAI-1 The SS initiates the RRC connection release. The UE initiates a PS call, by MMI or by AT command.
8 9	-> <-	SERVICE REQUEST SERVICE REJECT	Service type = "signalling" Reject cause = "roaming not allowed in this location area"
9 <u>a</u> 10 11	SS UE SS		The SS releases the RRC connection. The UE performs PLMN selection. Set the cell type of cell A to the "Non-Suitable cell".
12	UE SS		Set the cell type of cell B to the "Serving cell". (see note) The SS verifies that the UE does not attempt to access the network. No ATTACH REQUEST sent to the SS
13	SS		(SS waits 30 seconds). Set the cell type of cell B to the "-Non-Suitable cell".
<u>13a</u>	<u>ss</u>		Set the cell type of cell C to the "-Serving cell". (see note) The following messages are sent and shall be received on cell C. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION
14	->	ATTACH ROUTING AREA UPDATE REQUEST	REQUEST message is set to "Registration". Attach Update type = 'Combined PSRA / updating IMSI attach' or "PS Attach while IMSI attached"
14a	<-	AUTHENTICATION AND	Mobile identity = P-TMSI-1 Old Rrouting area identity = RAI-1
14a	->	CIPHERING REQUEST AUTHENTICATION AND	
טדי		CIPHERING RESPONSE	

14c 15	SS <-	ATTACH ROUTING AREA UPDATE ACCEPT	The SS starts integrity protection. AttachUpdate result = 'Combined RAPS / updatedIMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-2
16	->	ATTACH ROUTING AREA UPDATE COMPLETE	g a care con
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, combined PS / IMSI detach'
<u>19</u>	<u>UE</u>		The UE is set to attach to both the PS and non-PS services (see ICS) and the test is repeated from step 3 to step 18.
NOTE:	The defini	tions for "Suitable neighbour cell"	and "Serving cell" are specified in TS34.108 clause
	6.1 "Refer	ence Radio Conditions for signalli	ng test cases only".

Specific message contents

None.

12.9.7c.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step12, when the UE enters a same location area, UE shall:

- not initiate the combined PS attach procedure.

At step142, when the UE enters a different location area, UE shall:

- initiate the <u>routing area updating</u> embined PS attach procedure with information elements specified in the above Expected Sequence.

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 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.

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.
<u>4a</u>	<u>SS</u>		The SS verifies that the IE "Establishment
			cause" in the received RRC CONNECTION
			REQUEST message is set to "Registration".
5	->	ATTACH REQUEST	Attach type = 'PS attach'
			Mobile identity = P-TMSI-2
_			Routing area identity = RAI-1
5a	<-	AUTHENTICATION AND	
		CIPHERING REQUEST	
5b	->	AUTHENTICATION AND	
	00	CIPHERING RESPONSE	The CC starts sink aring and integrity protection
5c	SS	ATTACH ACCEPT	The SS starts ciphering and integrity protection.
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	Routing area identity = RAI-1
8	-> UE	ATTACITOOMFLETE	The UE initiates an upper-layer signalling, e.g.,
0	OL.		Active PDP Context request, by MMI or by AT
			command.
9	->	SERVICE REQUEST	Service Type = "signalling".
10	<-	AUTHENTICATION AND	Service Type - Signalling .
10		CIPHERING REQUEST	
11	->	AUTHENTICATION AND	
''		CIPHERING RESPONSE	
11a	SS	S. T.E.K.II O KEOI OI OI	The SS initiates a security mode control
			procedure.
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

At step2, when the UE access class x is barred, UE shall:

- not perform Service Request procedure.

At step5, when the UE access class x is barred, UE shall:

- initiate the PS attach procedure.

At step9, UE shall:

- perform Service Request procedure.

3GPP TSG-T1/SIG Meeting #27 San Antonio, February 10th-14th, 2003

Tdoc T1S030223

	CHANGE REQUEST
*	34.123-1 CR 449
For <u>HELP</u> o	n using this form, see bottom of this page or look at the pop-up text over the
Proposed chang	ge affects: 第 (U)SIM ME/UE X Radio Access Network Core Network
Title:	# CR to 34.123-1 REL-5; Corrections to package 1 GMM Test Cases (revision of T1S030056)
Source:	# Anite Telecoms # Anite Telecoms
Work item code	: 策 TEI Date: 策 27/1/2003
	## F Use one of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900. ### CS domain registration / detach message exchange will interfere with the expected sequences, as currently specified, in these Package 1 GMM test cases simulating a Network Mode II environment. #### Add the following additional initial conditions, to each test case listed below. Upon the SS: to modify the SIB1 "CN domain specific NAS system information", for the CS Domain. Upon the UE: to ensure that it is CS domain registered at test start.
Consequences not approved:	
Clauses affected	d:
Other specs affected:	# Other core specifications # Test specifications O&M Specifications
Other comment	S: # Affects R99 RFI -4 and RFI -5 test cases

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked \(\mathcal{H} \) contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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 the present document.

The terms 'PS/CS mode of operation' and 'PS mode of operation' are not used in the present document 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

RAI-6: MCC2/MNC1/LAC2/RAC1

RAI-7: MCC2/MNC1/LAC1/RAC2

RAI-8: MCC1/MNC2/LAC1/RAC1

RAI-9: MCC1/MNC2/LAC2/RAC1

RAI10: MCC1/MNC2/LAC1/RAC2

RAI-11: MCC1/MNC3/LAC1/RAC1

RAI-12: MCC1/MNC1/LAC2/RAC2

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.

The SIB1 IE "CN domain specific NAS system information", for the CS Domain, is set to value "00 00" (to prevent repeated CS domain registration and/or IMSI Detach by UEs in operation mode A).

User Equipment:

The UE has a valid IMSI.

The UE has been registered in the CS domain.

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 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.

Step	Direction	Message	Comments
4	UE SS		The LIE is not to stack to the DO services.
1	UE		The UE is set to attach to the PS services only (see ICS). If this is not supported by the UE, goto step 26.
2	UE		The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	,
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS	ATTAOU AGGERT	The SS starts integrity protection.
4	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature
5		ATTACH COMPLETE	Routing area identity = RAI-1
5 5a	-> SS	ATTACTICOWIFLETE	The SS releases the RRC connection.
6	<-	PAGING TYPE1	Mobile identity = P-TMSI-2
			Paging order is for PS services.
6a	SS		Paging cause: Terminating interactive call SS checks that the IE "Establishment cause" in
Va	00		the received RRC CONNECTION REQUEST
			message is set to "Terminating interactive call".
7	->	SERVICE REQUEST	Service type = "paging response"
7a	SS		The SS starts integrity protection and releases
. ~			the RRC connection.
8	UE		The UE is switched off or power is removed (see ICS).
8a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach" (message not sent
9	->	DETACH REQUEST	if power is removed). Message not sent if power is removed. Detach type = 'power switched off, PS detach'
9a	SS		The SS releases the RRC connection.
10	UE		The UE is powered up or switched on and
10a	SS		initiates an attach (see ICS). SS checks that the IE "Establishment cause" in
10a			the received RRC CONNECTION REQUEST message is set to "Registration".
11	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 Routing area identity = RAI-1
11a	<-	AUTHENTICATION AND CIPHERING REQUEST	
11b	->	AUTHENTICATION AND CIPHERING RESPONSE	
11c	SS		The SS starts integrity protection.
12	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature
13 14 14b	->	ATTACH COMPLETE Void Void	Routing area identity = RAI-1
14c	<-	PAGING TYPE1	Mobile identity = P-TMSI-1
			Paging order is for PS services.

Step	Direction	Message	Comments
	UE SS		
14d	SS		SS verifies that the UE transmits an RRC CONNECTION REQUEST message. SS will reject this request. The IE "Establishment cause" is not checked.
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).
17a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach" (message not sent if power is removed).
18	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
18a	SS		The SS releases the RRC connection.
19	UE		The UE is powered up or switched on and
			initiates an attach (see ICS).
19a 20	SS ->	ATTACH REQUEST	SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration". Attach type = 'PS attach'
20	->	ATTACITREQUEST	Mobile identity = P-TMSI-1 Routing area identity = RAI-1
20a	<-	AUTHENTICATION AND CIPHERING REQUEST	
20b	->	AUTHENTICATION AND CIPHERING RESPONSE	
20c	SS		The SS starts integrity protection.
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.
22a	SS		Paging cause: Terminating interactive call SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
22b		Void	
22c		Void	
23 23aa	-> SS	SERVICE REQUEST	Service type = "paging response" The SS starts integrity protection and releases the RRC connection.
23a		Void	
23b		Void	
24	UE		The UE is switched off or power is removed (see ICS).
24a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach" (message not sent if power is removed).
25	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
25a	SS		The SS releases the RRC connection.
26	UE		The UE is set to attach to both the PS and non-PS services (see ICS) and the test is repeated from step 2 to step 25ab.

Specific message contents

None.

12.2.1.1.5 Test requirements

At step 2a, 10a and 19a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a and 22a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Terminating Interactive Call".

At step 8a, 17a and 24a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, 11 and 20, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

UE shall 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 message is the IMSI and the Mobile identity in the ATTACH ACCEPT message is the P-TMSI.

At step5, UE shall:

- acknowledge the P-TMSI by sending the ATTACH COMPLETE message.

Case 2) The Mobile identity in the ATTACH REQUEST message is the P-TMSI and the Mobile identity in the ATTACH ACCEPT message is the new P-TMSI.

At step13, UE shall:

- acknowledge the new P-TMSI by sending the ATTACH COMPLETE message.

At step23, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

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.
- 3) If the network rejects a PS attach procedure from the User Equipment with the cause 'Illegal UE', the User Equipment shall delete the LAI.

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 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.

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
	00		ICS).
2	SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Non-Suitable
			cell".
			Set the cell type of cell C to the "Non-Suitable
			cell". (see note)
3	UE		The UE is powered up or switched on and
			initiates an attach (see ICS). Cell A is preferred
			by the UE.
3a	UE	Registration on CS	See TS 34.108
			This is applied only for UE in UE operation mode A.
4	->	ATTACH REQUEST	Attach type = 'PS attach'
		·	Mobile identity = P-TMSI-1
_		ATT A OLI DE JEOT	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		Set the cell type of cell A to the "Non-Suitable
			cell".
			Set the cell type of cell B to the "Serving cell".
7	UE		(see note) 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
10	UE		command. No ATTACH REQUEST sent to the SS
10	OE		(SS waits 30 seconds).
			The following messages are sent and shall be
l			received on cell C.
11	SS		Set the cell type of cell B to the "Non-Suitable cell".
			Set the cell type of cell C to the "Serving cell".
			(see note)
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
16	UE		(SS waits 30 seconds). If possible (see ICS) switch off is performed.
10	UE		Otherwise the power is removed.
17	UE		The UE is powered up or switched on.
18	UE	Registration on CS	See TS 34.108
			This is applied only for UE in UE operation
			mode A. Parameter mobile identity is IMSI.
19	UE		The UE initiates an attach (see ICS).
20	->	ATTACH REQUEST	Attach type = 'PS attach'
00		ALITHENTIOATION	Mobile identity = IMSI
20a	<-	AUTHENTICATION AND CIPHERING REQUEST	
20b	->	AUTHENTICATION AND	
~		CIPHERING RESPONSE	
20c	SS		The SS starts integrity protection.

21	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
22	->	ATTACH COMPLETE	Routing area lacinity = 10 ti 2
23	UE		The 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'
NOTE:	The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1		
	"Reference Radio Conditions for signalling test cases only".		

Specific message contents

None.

12.2.1.2.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, 10, 13 and 15, UE shall:

 not send the ATTACH REQUEST message to SS, even if there is an instruction of attach request from MMI or from AT command.

At step20, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

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

- 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 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.

Step	Direction UE SS	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".
2	UE		(see note) The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported,
3	UE		goto step 17. The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred
3a	SS		by the UE. SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
4	->	ATTACH REQUEST	message is set to "Registration". Attach type = 'PS attach' Mobile identity = P-TMSI-1
5 5a	<- SS	ATTACH REJECT	Routing area identity = RAI-1 GMM cause = 'PS services not allowed' The SS releases the RRC connection.
6	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell".
7 8	UE UE		(see note) Cell B is preferred by the UE. No ATTACH REQUEST sent to the SS
9	UE		(SS waits 30 seconds). 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
10a	SS		ICS). SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
11	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
11a	<-	AUTHENTICATION AND CIPHERING REQUEST	
11b	->	AUTHENTICATION AND CIPHERING RESPONSE	
11c 12	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
13 14	-> UE	ATTACH COMPLETE	The UE is switched off or power is removed
15	->	DETACH REQUEST	(see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach'
15a	SS		The SS releases the RRC connection.
16	UE		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note) The UE is set in UE operation mode A(see
			ICS) and the test is repeated from step 3 to step 15.

NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".

Specific message contents

None.

12.2.1.3.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step8, UE shall:

- not perform a PS attach procedure.

At step11, after the UE is switched on or a USIM is replaced, UE shall:

- perform the PS attach procedure.

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/MNC2/LAC1/RAC1 (RAI-8), cell B in MCC1/MNC2/LAC1/RAC1 (RAI-8), cell C in MCC1/MNC2/LAC2/RAC1 (RAI-9) 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 and RAI-8. UE is Idle Updated on cell A.

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.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
1	UE		received on cell A. The UE is set in UE operation mode C (see
'	OL		ICS).
2	SS		The SS is set in network operation mode II.
			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable
			cell".
			Set the cell type of cell C to the "Non-Suitable cell".
			Set the cell type of cell D to the "Non-Suitable cell".
			(see note)
3	UE		The UE is powered up or switched on and
			initiates an attach (see ICS). Cell A is preferred by the UE.
3a	UE	Registration on CS	See TS 34.108
			This is applied only for UE in UE operation mode A.
4	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1
			Routing area identity = RAI-8
5 6	<- UE	ATTACH REJECT	GMM cause = 'PLMN not allowed' No ATTACH REQUEST sent to SS
0	OL		(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		Set the cell type of cell A to the "Non-Suitable cell".
			Set the cell type of cell B to the "Serving cell".
9	UE		(see note) 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
12	SS		received on cell C. Set the cell type of cell B to the "Non-Suitable
12	00		cell".
			Set the cell type of cell C to the "Serving cell". (see note)
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
15	SS		received on cell D. Set the cell type of cell C to the "Non-Suitable
			cell".
			Set the cell type of cell D to the "Serving cell". (see note)
16	UE	Pogiatration on CC	Cell D is preferred by the UE. See TS 34.108
17	UE	Registration on CS	This is applied only for UE in UE operation
18	UE		mode A.
10	UE		The UE initiates an attach automatically, by MMI or by AT command.
19	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
19a	<-	AUTHENTICATION AND	INIODIRE IDENTITY — INIOI
19b	->	CIPHERING REQUEST AUTHENTICATION AND	
		CIPHERING RESPONSE	
19c	SS	l	The SS starts integrity protection.

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	Trouming allow restricts	
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'	
NOTE:	The definit	e definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1		
	"Reference Radio Conditions for signalling test cases only".			

12.2.1.4.4.2 Test procedure 2

Initial condition

System Simurator:

One cell operating in network operation mode II: MCC2/MNC1/LAC1/RAC1 (RAI-2). 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 and RAI-2. UE is Idle Updated on cell A.

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.

Step	Direction	Message	Comments
	UE SS		
1	UE		The UE is set in UE operation mode C or A
			(see ICS).
2	UE		The UE is powered up or switched on and
			initiates an attach (see ICS).
2a	UE	Registration on CS	See TS 34.108
			This is applied only for UE in UE operation
			mode A.
3	->	ATTACH REQUEST	Attach type = 'PS attach'
			Mobile identity = P-TMSI-1
			Routing area identity = RAI-2
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
		ATTACLIBECLIEGT	MMI or by AT command.
9	->	ATTACH REQUEST	Attach type = 'PS attach'
0-		ALITHENTICATION AND	Mobile identity = IMSI
9a	<-	AUTHENTICATION AND	
9b	_	CIPHERING REQUEST AUTHENTICATION AND	
90	->	CIPHERING RESPONSE	
9c	SS	CIFTIERING RESPONSE	The SS starts integrity protection.
10	- -	ATTACH ACCEPT	Attach result = 'PS only attached'
10		ATTACTTACCETT	Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Routing area identity = RAI-2
11	->	ATTACH COMPLETE	Trousing aroundonary – True Z
12	UÉ		The UE is switched off or power is removed
'-	0_		(see ICS).
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

Test requirements for test procedure 1

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, UE shall:

- not perform PS attach procedure.

UE shall 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,

At step11, UE shall:

- not perform PS attach procedure.

Case2) UE is in the same PLMN, and this PLMN is not selected manually

At step14, UE shall:

- not perform PS attach procedure.

Case3) UE is in a new PLMN.

At step19, UE shall:

- perform the PS attach procedure.

Test requirements for test procedure 2

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step5, UE shall:

- not perform PS attach procedure.

At step9, when the UE is in the new PLMN, and this PLMN is selected manually, UE shall

- perform the PS attach procedure.

12.2.1.5a PS attach / rejected / roaming not allowed in this location area

12.2.1.5a.1 Definition

12.2.1.5a.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.

12.2.1.5a.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.

12.2.1.5a.4 Method of test

12.2.1.5a.4.1 Test procedure 1

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2, Not HPLMN), cell B in

MCC2/MNC1/LAC2/RAC1 (RAI-6, Not HPLMN) and cell C in MCC2/MNC1/LAC1/RAC2 (RAI-7, Not HPLMN).

All three cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1 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
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.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
1	UE		received on cell A. The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported,
2	SS		goto step 19. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable
3	UE		cell". (see note) The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred
3a	UE	Registration on CS	by the UE. See TS 34.108 This is applied only for UE in UE operation
4	->	ATTACH REQUEST	mode A. Attach type = 'PS attach' Mobile identity = P-TMSI-1
5	<-	ATTACH REJECT	Routing area identity = RAI-2 GMM cause = 'Roaming not allowed in this area'
6	UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
7	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell".
8 9	UE UE	Registration on CS	Set the cell type of cell B to the "Serving cell". (see note) Cell B is preferred by the UE. See TS 34.108 This is applied only for UE in UE operation mode A.
10	UE		Parameter mobile identity is IMSI. The UE initiates an attach automatically, by MMI or by AT command.
11	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
11a	<-	AUTHENTICATION AND CIPHERING REQUEST	
11b	->	AUTHENTICATION AND CIPHERING RESPONSE	
11c 12	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature
13 14	-> UE	ATTACH COMPLETE	Routing area identity = RAI-6 The UE initiates a PS detach (without power
15 16	-> <-	DETACH REQUEST DETACH ACCEPT	off) by MMI or by AT command . Detach type = 'normal detach, PS detach'
17	SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell".
18 19	UE UE		(see note) Cell C is preferred by the 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	Set the cell type of cell C to the "Non-Suitable		
		cell".		
		(see note)		
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.		
NOTE:	The definit	The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1		
	"Reference Radio Conditions for signalling test cases only".			

12.2.1.5a.4.2 Test procedure 2

Initial condition

System Simulator:

One cell in MCC2/MNC1/LAC1/RAC1 (RAI-2, Not HPLMN) operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1 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 updating with the cause value 'Roaming not allowed in this area'. The UE is switched off for 10 s 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 attach 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.

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 ICS). 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).
2a	UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
3	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-2
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
8	UE	Registration on CS	initiates an attach (see ICS). See TS 34.108 This is applied only for UE in UE operation
9	->	ATTACH REQUEST	mode A. Parameter mobile identity is IMSI Attach type = 'PS attach' Mobile identity = IMSI
9a	<-	AUTHENTICATION AND CIPHERING REQUEST	
9b	->	AUTHENTICATION AND CIPHERING RESPONSE	
9c 10	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature
11 12	-> UE	ATTACH COMPLETE	Routing area identity = RAI-2 The UE is switched off or power is removed
13	->	DETACH REQUEST	(see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach'

12.2.1.5a.4.3 Test procedure 3

Initial condition

System Simulator:

Six cells (not simultaneously activated), cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2, Not HPLMN), cell B in MCC2/MNC1/LAC2/RAC1 (RAI-3, Not HPLMN), cell C in MCC2/MNC1/LAC3/RAC1 (Not HPLMN), cell D in MCC2/MNC1/LAC4/RAC1 (Not HPLMN), cell E in MCC2/MNC1/LAC5/RAC1 (Not HPLMN), cell F in MCC2/MNC1/LAC6/RAC1 (Not HPLMN).

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 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'. 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.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
			received on cell A.
1	SS		The SS is set in network operation mode II.
			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable
			cell".
			Set the cell type of cell C to the "Non-Suitable
			cell".
			Set the cell type of cell D to the "Non-Suitable cell".
			Set the cell type of cell E to the "Non-Suitable
			cell".
			Set the cell type of cell F to the "Non-Suitable cell".
			(see note)
2	UE		The UE is set in UE operation mode C (see
2	.ue		ICS).
3	UE		The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred
			by the UE.
3a	UE	Registration on CS	See TS 34.108
			This is applied only in case of UE operation mode A.
4	->	ATTACH REQUEST	Attach type = 'PS attach'
			Mobile identity = P-TMSI-1
5	_	ATTACH REJECT	Routing area identity = RAI-2 GMM cause = 'Roaming not allowed in this
3	<-	ATTACH REJECT	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		Set the cell type of cell A to the "Non-Suitable
			cell".
			Set the cell type of cell B to the "Serving cell". (see note)
8	UE		Cell B is preferred by the UE.
9	UE	Registration on CS	See TS 34.108
			This is applied only in case of UE operation mode A.
			Parameter mobile identity is IMSI.
10	UE		The UE initiates an attach automatically, by
1.1		ATTACH DECHEST	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
40			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		Set the cell type of cell B to the "Non-Suitable cell".
			Set the cell type of cell C to the "Serving cell".
			(see note)
15 16	UE	Pogiatration on CS	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.
4-			Parameter mobile identity is IMSI.
17	UE		The UE initiates an attach automatically, by MMI or by AT command.
18	->	ATTACH REQUEST	Attach type = 'PS attach'
			Mobile identity = IMSI

Step	Direction UE SS	Message	Comments
19	<-	ATTACH REJECT	GMM cause = 'Roaming not allowed in this
20	UE		area' No ATTACH REQUEST sent to SS (SS waits 30 seconds).
			The following messages are sent and shall be received on cell D.
21	SS		Set the cell type of cell C to the "Non-Suitable
			cell". Set the cell type of cell D to the "Serving cell".
22	UE		(see note) 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.
0.4			Parameter mobile identity is IMSI.
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
27	UE		area' No ATTACH REQUEST sent to SS
			(SS waits 30 seconds). The following messages are sent and shall be
			received on cell E.
28	SS		Set the cell type of cell D to the "Non-Suitable cell".
			Set the cell type of cell E to the "Serving cell".
29	UE		(see note) 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		Parameter mobile identity is IMSI. The UE initiates an attach automatically, by
32	->	ATTACH REQUEST	MMI or by AT command. Attach type = 'PS attach'
22			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
35	SS		received on cell F. Set the cell type of cell E to the "Non-Suitable
			cell". Set the cell type of cell F to the "Serving cell".
26	UE		(see note)
36 37	UE	Registration on CS	Cell F is preferred by the UE. See TS 34.108
			This is applied only for UE in UE operation mode A.
38	UE		The UE initiates an attach automatically, by
39	->	ATTACH REQUEST	MMI or by AT command. Attach type = 'PS attach'
40	<-	ATTACH REJECT	Mobile identity = IMSI GMM cause = 'Roaming not allowed in this
41	UE		area' No ATTACH REQUEST sent to SS
71	OL.		(SS waits 30 seconds)
			The following messages are sent and shall be received on cell E.
42	SS		Set the cell type of cell E to the "Serving cell". Set the cell type of cell F to the "Non-Suitable
			cell".
1		l	(see note)

Step	Direction	Message	Comments
	UE SS		
43	SS		Cell E is preferred by the UE.
44	UE		The UE initiates an attach automatically, by
			MMI or by AT command.
45	UE		No ATTACH REQUEST sent to SS
			(SS waits 30 seconds).
			The following messages are sent and shall be
40	SS		received on cell C.
46	55		Set the cell type of cell C to the "Serving cell".
			Set the cell type of cell E to the "Non-Suitable cell".
			(see note)
47	SS		Cell C is preferred by the UE.
48	ÜE		The UE initiates an attach automatically, by
			MMI or by AT command.
49	UE		No ATTACH REQUEST sent to SS
			(SS waits 30 seconds).
			The following messages are sent and shall be
			received on cell A.
50	SS		Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell C to the "Non-Suitable cell".
			(see note)
51	SS		Cell A will be preferred by the UE.
52	UE		The UE initiates an attach automatically, by
			MMI or by AT command.
53	UE		No ATTACH REQUEST sent to SS
			(SS waits 30 seconds).
NOTE:	The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1		
	"Reference Radio Conditions for signalling test cases only".		

12.2.1.5a.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 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.

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	
2	SS		ICS). The SS is set in network operation mode II.	
2	55		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell".	
3	UE		(see note) The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred	
3a	UE	Registration on CS	by the UE. See TS 34.108	
			This is applied only in case of UE operation mode A.	
4	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1	
			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).	
7	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell".	
8	UE	Registration on CS	Set the cell type of cell B to the "Serving cell". (see note) See TS 34.108 This is applied only for UE in UE operation mode A.	
9	UE		Parameter mobile identity is IMSI. The UE initiates an attach automatically, by	
10	->	ATTACH REQUEST	MMI or by AT command. Attach type = 'PS attach' Mobile identity = IMSI	
10a	<-	AUTHENTICATION AND CIPHERING REQUEST	Mobile Identity – IMOI	
10b	->	AUTHENTICATION AND CIPHERING RESPONSE		
10c	SS		The SS starts integrity protection.	
11	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1	
			P-TMSI-1 signature	
12	_~	ATTACH COMPLETE	Routing area identity = RAI-1	
13	-> UE	ATTACITOOMI LETE	The UE is switched off or power is removed	
13			(see ICS).	
14	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'	
NOTE:				

6.1 "Reference Radio Conditions for signalling test cases only".

Specific message contents

None.

12.2.1.5a.5 Test requirements

Test requirements for Test procedure1

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, when the UE receives the ATTACH REJECT message with GMM cause = 'Roaming not allowed in this area', UE shall:

- not perform the PS attach procedure.

At step11, when the new location area is entered, UE shall:

- perform the PS attach procedure

At step19, when the rejected location area is entered, UE shall

- not perform PS attach procedure.

Test requirements for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step5, after the UE receives the ATTACH REJECT message with GMM cause = 'Roaming not allowed in this area', UE shall:

- not perform PS attach procedure.

At step9, when the UE is switched off or USIM is replaced, UE shall:

- perform the PS attach procedure.

Test requirements for Test procedure3

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, 13, 20, 27, 34 and 41, after the UE receives the ATTACH REJECT message with GMM cause = 'Roaming not allowed in this area', UE shall:

- not perform PS attach procedure.

At step11, 18, 25, 32 and 39, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step45, 49 and 53, UE shall:

- not perform PS attach procedure.

Test requirements for Test procedure4

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, when the UE receives the ATTACH REJECT message with GMM cause = 'Roaming not allowed in this area', UE shall:

- not perform PS attach procedure.

At step10, when a new location area is entered, UE shall:

- perform the PS attach procedure.

12.2.1.5b PS attach / rejected / No Suitable Cells In Location Area

12.2.1.5b.1 Definition

12.2.1.5b.2 Conformance requirement

- (1) If the network rejects a PS attach procedure from the User Equipment with the cause 'No Suitable Cells In 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 not delete the list of "equivalent PLMNs".
 - 1.5 perform PS attach when a new location area is entered.

Reference

3GPP TS 24.008 clauses 4.7.3.1.

12.2.1.5b.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'No Suitable Cells In Location Area'.

12.2.1.5b.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6)

All three cells are operating in network operation mode II.

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

User Equipment:

The UE has a valid P-TMSI-1 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 SS rejects a PS attach with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall search for a suitable cell in a different location area on the same PLMN and shall perform PS attach procedure in that cell

Step	Direction UE SS	Message	Comments
			The following messages are sent and shall be received on cell A.
1	UE		The UE is set in UE operation mode A (see
2	SS		ICS). Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-suitable
			cell". Set the cell type of cell C to the "Non-suitable cell". (see note)
3	UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
4	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1
5	<-	ATTACH ACCEPT	Routing area identity = RAI-1 Attach result = 'PS only attached' Mobile identity = P-TMSI-1 Posting area identity = RAI-1
			Routing area identity = RAI-1 Equivalent PLMNs = MCC2,MNC1
6 7	<- ->	DETACH REQUEST DETACH ACCEPT	Detach type = re-attach required
8	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell".
			(see note) The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C
9	UE	Registration on CS	See TS 34.108 This is applied only in case of UE operation
10	->	ATTACH REQUEST	mode A. Attach type = 'PS attach' Mobile identity = P-TMSI-1
11	<-	ATTACH REJECT	Routing area identity = RAI-1 GMM cause = 'No Suitable Cells In Location Area'
12	SS		The SS initiates the RRC connection release. The following message are sent and shall be received on cell C.
13 14	UE UE	Registration on CS	See TS 34.108 The UE initiates an attach automatically, by MMI or by AT command.
15	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
16	<-	AUTHENTICATION AND CIPHERING REQUEST	
17	->	AUTHENTICATION AND CIPHERING RESPONSE	
18	SS	4774011400557	The SS starts integrity protection.
19	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-6
20 21	-> UE	ATTACH COMPLETE	The UE is switched off or power is removed
22	->	DETACH REQUEST	(see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Suitable neighbour cell", "Non-suitable cell" and "Serving cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.2.1.5b.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step15, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach procedure.

12.2.1.5c PS attach / rejected / Location area not allowed

12.2.1.5c.1 Definition

12.2.1.5c.2 Conformance requirement

- 1) If the network rejects a PS attach procedure from the User Equipment with the cause 'Location area not allowed' the User Equipment shall:
 - 1.1 delete any RAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number.
 - 1.2 set the PS update status to GU3 ROAMING NOT ALLOWED.
 - 1.3 reset the attach attempt counter.
 - 1.4 store the LAI in the list of "forbidden location areas for regional provision of service".
 - 1.1 perform a cell selection.
 - 1.2 not delete the list of "equivalent PLMNs".
- 2) If the network rejects a PS attach procedure from the User Equipment with the cause 'Location area not allowed' and if the User Equipment is IMSI attached via MM procedures the User Equipment shall:
 - 2.1 set the update status to U3 ROAMING NOT ALLOWED.
 - 2.2 delete any TMSI, LAI and ciphering key sequence number.
 - 2.3 reset the location update attempt counter.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.5c.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'Location area not allowed'.

12.2.1.5c.4 Method of test

Initial condition

System Simulator:

Three cells cell A with MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6).

All three cells are operating in network operation mode II (in case of UE operation mode A).

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

User Equipment:

The UE has a valid P-TMSI-1, 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 'Location area not allowed'. The SS checks that the UE does not perform MM IMSI attach while in the same location area and performs PS attach when a new equivalent PLMN is entered.

Step	Direction UE SS	Message	Comments	
	SS		The following messages are sent and shall be	
	00		received on cell A.	
1	UE		The UE is set in UE operation mode A (see ICS).	
2	SS		The SS is set in network operation mode II.	
			Set the cell type of cell A to the "Serving cell".	
			Set the cell type of cell B to the "Non-suitable	
			cell ".	
			Set the cell type of cell C to the " Non-suitable cell "	
			(see note)	
3	UE	Registration on CS	See TS 34.108	
			This is applied only for UE in UE operation mode A.	
4	->	ATTACH REQUEST	Attach type = 'PS attach'	
			Mobile identity = P-TMSI-1	
_				
5	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1	
			Routing area identity = RAI-1	
			Equivalent PLMNs = MCC2,MNC1	
6	<-	DETACH REQUEST	Detach type = re-attach required	
7	->	DETACH ACCEPT		
8	SS		The SS is set in network operation mode II.	
			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable	
			neighbour cell ".	
			Set the cell type of cell C to the " Suitable	
			neighbour cell "	
			(see note)	
			The SS configures power level of each Cell as follows.	
			Cell A > Cell B > Cell C	
9	UE		The UE is powered up or switched on and	
			initiates an attach (see ICS). Cell A is preferred	
10		ATTACH REQUEST	by the UE.	
10	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1	
11	<-	ATTACH REJECT	GMM cause = 'Location area not allowed'	
12	UE		The UE performs cell selection.	
			The following messages are sent and shall be	
13		ATTACH REQUEST	received on cell C. Attach type = 'PS attach'	
13	->	ATTACH REQUEST	Mobile identity = IMSI	
14	<-	AUTHENTICATION AND		
		CIPHERING REQUEST		
15	->	AUTHENTICATION AND		
16	SS	CIPHERING RESPONSE	The SS starts integrity protection.	
17	- <-	ATTACH ACCEPT	Attach result = 'PS only attached'	
''	•		Mobile identity = P-TMSI-2	
			P-TMSI-2 signature	
4.0		ATTACH COMPLETE	Routing area identity = RAI-6	
18 19	-> UE	ATTACH COMPLETE	No MM IMSI attach request sent to SS	
19	J OL		(SS waits 30 seconds).	
20	UE		The UE is switched off or power is removed	
			(see ICS).	
21	->	DETACH REQUEST	Message not sent if power is removed.	
NOTE:	The definit	ions for "Suitable neighbour cell" "N	Detach type = 'power switched off, PS detach' Jon-suitable cell" and "Serving cell" are specified	
INOIL.			ditions for signalling test cases only".	

3GPP

Specific message contents

None.

12.2.1.5c.5 Test requirements

At step4 and 10, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step12, UE shall:

- perform cell selection.

At step13, UE shall:

- perform PS attach procedure with Mobile identity = IMSI.

At step19, UE shall:

- not perform MM IMSI attach

12.2.1.5d PS attach / rejected / PS services not allowed in this PLMN

12.2.1.5d.1 Definition

12.2.1.5d.2 Conformance requirement

- 1) If the network rejects a PS attach procedure from the User Equipment with the cause 'PS service not allowed in this PLMN' the User Equipment shall:
 - 1.1 delete any RAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number.
 - 1.2 set the PS update status to GU3 ROAMING NOT ALLOWED.
 - 1.3 store the PLMN identity in the "forbidden PLMNs for PS service" list.
 - 1.4 perform a PLMN selection instead of a cell selection.
- 2) If the UE is in UE operation mode A and the network is in network operation mode II the User Equipment shall:
 - 2.1 be still IMSI attached for CS services in the network..

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.5d.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 service not allowed in this PLMN'.

12.2.1.5d.4 Method of test

Initial condition

System Simulator:

Three cells cell A with MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC2/MNC1/LAC1/RAC2 (RAI-7).

All three cells are operating in network operation mode II (in case of UE operation mode A).

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

User Equipment:

The UE has a valid P-TMSI-1, 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 'PS service not allowed in this PLMN'. The SS checks that the UE performs PS attach with attach type = PS attach when a new equivalent PLMN is entered.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
1	UE		received on cell A. The UE is set in UE operation mode A (see ICS).
2	SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Non-suitable
			cell ". Set the cell type of cell C to the " Non-suitable
			cell " (see note)
3	UE		The UE is powered up or switched on and
			initiates an attach (see ICS). Cell A is preferred by the UE.
4	UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation
			mode A.
5	->	ATTACH REQUEST	Mobile identity = TMSI-1 Attach type = 'PS attach'
			Mobile identity = P-TMSI-1
6	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1
			Routing area identity = RAI-1
7	<-	DETACH REQUEST	Equivalent PLMNs = MCC2,MNC1 Detach type = re-attach required
8	->	DETACH ACCEPT	
9	SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Suitable
			neighbour cell ". Set the cell type of cell C to the " Suitable
			neighbour cell " (see note)
10	->	ATTACH REQUEST	Attach type = 'PS attach'
11	<-	ATTACH REJECT	Mobile identity = P-TMSI-1 GMM cause = 'PS service not allowed in this
			PLMN'
12	UE		The UE performs PLMN selection. The following messages are sent and shall be
40		ATTACH DECHECT	received on cell C.
13	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
14	<-	AUTHENTICATION AND CIPHERING REQUEST	
15	->	AUTHENTICATION AND	
16	SS	CIPHERING RESPONSE	The SS starts integrity protection.
17	<-	ATTACH ACCEPT	Attach result = 'PS only attached'
			Mobile identity = P-TMSI-2 P-TMSI-2 signature
10		ATTACH COMPLETE	Routing area identity = RAI-7
18 19	-> UE	PAGING TYPE1	Mobile identity = TMSI-1
20	SS		Paging order is for CS services. No response from the UE to the request. This
20	33		is checked for 10 seconds.
21 22	-> <-	RRC CONNECTION REQUEST RRC CONNECTION SETUP	
23	->	RRC CONNECTION SETUP	
24	->	COMPLETE PAGING RESPONSE	
25	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for
1			disconnection of the CS signalling link.

26	->	RRC CONNECTION RELEASE COMPLETE	
27	UE		The UE is switched off or power is removed (see ICS).
28	->	DETACH REQUEST	Message not sent if power is removed.
20	-/	DETACTIVEQUEST	
			Detach type = 'power switched off, combined
			PS / IMSI detach'
NOTE:	The definitions for "Suitable neighbour cell", "Non-suitable cell" and "Serving cell" are specified		
	in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".		

Specific message contents

None.

12.2.1.5d.5 Test requirements

At step5 and 10, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step12, UE shall:

- perform PLMN selection.

At step13, UE shall:

- perform PS attach procedure with Mobile identity = IMSI to the equivalent cell.

At step21, UE shall:

- respond the Paging for CS domain service.

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 (Cell is changed).

12.2.1.6.4 Method of test

12.2.1.6.4.1 Test procedure1

Initial condition

An access class x (0-15) is arbitrarily chosen. 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 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.

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,
3			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 initiates a PS attach either
			automatically or manually (see ICS).
7	->	ATTACH REQUEST	Attach type = 'PS attach'
			Mobile identity = P-TMSI-1
7a	<-	AUTHENTICATION AND	Routing area identity = RAI-1
1 a	\ <u>-</u>	CIPHERING REQUEST	
7b	->	AUTHENTICATION AND	
		CIPHERING RESPONSE	
7c	SS		The SS starts integrity protection.
8	<-	ATTACH ACCEPT	Attach result = 'PS only attached'
			Mobile identity = P-TMSI-2
			P-TMSI-2 signature
9	->	ATTACH COMPLETE	Routing area identity = RAI-1
10	UE	ATTACTIOOMI LETE	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 3 to
			step 11.

12.2.1.6.4.2 Test procedure2

Initial condition

An access class x (0-15) is arbitrarily chosen. 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-2 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. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable	
	ue.		neighbour ceil". (see note)	
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	
6	SS		received on cell B.	
6	33		Set the cell type of cell A to the "Suitable neighbour cell".	
			Set the cell type of cell B to the "Serving cell".	
7	UE		(see note) The UE initiates an attach either automatically	
		ATTACH DECUEOT	or manually (see ICS).	
8	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2	
8a	<-	AUTHENTICATION AND	Routing area identity = RAI-1	
J		CIPHERING REQUEST		
8b	->	AUTHENTICATION AND CIPHERING RESPONSE		
8c	SS		The SS starts integrity protection.	
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	T. UE: 31	
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'	
NOTE:			d "Serving cell" are specified in TS34.108 clause	
	6.1 "Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.2.1.6.5 Test requirements

Test requirements for Test procedure1

At step4, when the UE access class x is barred, UE shall:

- not perform a PS attach procedure.

At step7, when the UE access class x is granted, UE shall:

initiate the PS attach procedure.

Test requirements for Test procedure2

At step5, when the UE access class x is barred, UE shall:

- not perform a PS attach procedure.

At step8, when the serving cell is changed, UE shall:

- initiate the PS attach procedure.

12.2.1.7 PS attach / abnormal cases / change of routing area

12.2.1.7.1 Definition

12.2.1.7.2 Conformance requirement

When a change of 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:

One cell with MCC1/MNC1/LAC1/RAC1 (RAI-1)

The cell is operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1 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 receive a new routing area code. The UE shall re-initiate a PS attach procedure in the new routing area.

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.	
	00		Set the cell type of cell A to the "Serving cell".	
			(see note)	
3	UE		The UE is powered up or switched on and	
			initiates an attach (see ICS). Cell A is preferred	
20	SS		by the UE.	
3a	33		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST	
			message is set to "Registration".	
4	->	ATTACH REQUEST	Attach type = 'PS attach'	
			Mobile identity = P-TMSI-1	
_	00		Routing area identity = RAI-1	
5	SS		No response to the ATTACH REQUEST message is given by the SS.	
6		Void	message is given by the ee.	
6a	<-	UTRAN MOBILITY	The SS conveys updated CN system	
		INFORMATION	information for the PS domain to the UE in	
			connected mode, including a new routing area	
6b	->	UTRAN MOBILITY	code.	
OD	->	INFORMATION CONFIRM		
7	UE		The UE automatically re-initiates the attach.	
8	->	ATTACH REQUEST	Attach type = 'PS attach'	
			Mobile identity = P-TMSI-1	
8a	<-	AUTHENTICATION AND	Routing area identity = RAI-1	
oa	ζ-	CIPHERING REQUEST		
8b	->	AUTHENTICATION AND		
		CIPHERING RESPONSE		
8c	SS		The SS starts integrity protection.	
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.	
11a			Detach type = 'power switched off, PS detach' The SS releases the RRC connection.	
NOTE:	The definit	l ions for "Non-Suitable cell" and "Ser	rving cell" are specified in TS34.108 clause 6.1	
.,,	"Reference Radio Conditions for signalling test cases only".			
to the same of the				

Specific message contents

UTRAN MOBILITY INFORMATION (step 6a)

The contents of the UTRAN MOBILITY INFORMATION message in this test case is identical to the default message in TS 34.108, with the following exceptions.

Information Element	Value/remark
New U-RNTI	Not Present
New C-RNTI	Not Present
UE Timers and constants in connected mode	Not Present
CN information info	
- PLMN identity	Not Present
- CN common GSM-MAP NAS system information	Not Present
- CN domain related information	
- CN domain identity	CS domain
- CN domain specific GSM-MAP NAS system info	
- T3212	30
- ATT	1
- CN domain specific DRX cycle length coefficient	7
- CN domain related information	
- CN domain identity	PS domain
- CN domain specific GSM-MAP NAS system info	2400
- RAC	RAC-2
- NMO	1 (Network Mode of Operation II)
- CN domain specific DRX cycle length coefficient	/

12.2.1.7.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected sequence.

At step8, as the UE has received a new RAI in the UTRAN MOBILITY INFORMATION message before the ATTACH ACCEPT message or the ATTACH REJECT message is received by the UE, the UE shall:

- abort the PS attach procedure and re-initiate the 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 and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C
UE operation mode A
Switch off on button
Yes/No
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
			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

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, 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

- 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 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.

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
4	SS		Routing area identity = RAI-1 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 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	Trouting area luctitity - ITAL-1
14	UÉ	7	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

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

UE shall perform the following actions depending on the Detach type in the DETACH REQUEST message.

Case1) Detach type = 're-attach not required' GMM cause is not re-attach

At step6, when the 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) Detach type = 're-attach required'

At step11, when the 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.

12.2.1.10 PS attach / abnormal cases / Failure due to non-integrity protection

12.2.1.10.1 Definition

12.2.1.10.2 Conformance requirement

The supervision that the integrity protection is activated shall be the responsibility of the MM and GMM layer in the UE (see 3GPP TS 33.102).

No layer 3 signalling messages, except those listed in TS 24.008 clause 4.1.1.1.1, shall be processed by the receiving MM and GMM entities or forwarded to the CM entities, if the integrity protection has not been previously activated for that domain.

Reference(s):

3GPP TS 24.008 clause 4.1.1.1.1

12.2.1.10.3 Test purpose

To verify that the UE ignores NAS signalling messages when the security mode procedure is activated without the integrity protection.

12.2.1.10.4 Method of test

Initial Conditions

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

Related ICS Statements

Support of PS service Yes/No
UE operation mode A Yes/No
Switch off on button Yes/No

Test procedure

The attach procedure is initiated. Upon reception of ATTACH REQUEST message from the UE, the SS responds to ATTACH ACCEPT message without the integrity protection. The UE shall ignore this message and re-transmit ATTACH REQUEST message at expiry of timer T3310.

This time the SS starts the authentication procedure and initiates the integrity protection. After receiving ATTACH ACCEPT message, the UE shall respond to ATTACH COMPLETE message.

Step	Direction		Message	Comments
	UE	SS		
1	Ü	Е		The UE is set in UE operation mode A (see ICS).
2	U	E		The UE is powered up or switched on and initiates
3		S		an attach procedure (see ICS). SS checks that the IE "Establishment cause" in
3	٥	3		the received RRC CONNECTION REQUEST
				message is set to "Registration".
4	-:	>	ATTACH REQUEST	Attach type = 'PS attach'
_			ALITUENTION TION AND OIDLIEDING	Mobile identity = IMSI
5	<	ξ-	AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Set PS-CKSN
6	_	>	AUTHENTICATION AND CIPHERING	RES
			RESPONSE	I L
7	S	S		The SS starts the security mode procedure
				without the integrity protection. The content of
				integrity protection mode info IE in SECURITY MODE COMMAND message is specified below.
8	<	(-	ATTACH ACCEPT	WODE COMMAND message is specified below.
9		E		The UE ignores ATTACH ACCEPT message.
10		S		The SS waits 15 sec (T3310).
11	-:	>	ATTACH REQUEST	The UE re-transmits the message.
				The SS verifies that the period of time between the ATTACH REQUEST messages corresponds
				to the value of T3310.
				Attach type = 'PS attach'
4.0			ALITUENTION TION AND OIDLIEDING	Mobile identity = IMSI
12	<	ξ-	AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Set PS-CKSN
13	_	>	AUTHENTICATION AND CIPHERING	RES
			RESPONSE	
14				The SS starts the security mode procedure with
				the integrity protection. The content of integrity
				protection mode info IE in SECURITY MODE COMMAND message is specified below.
15	<	(-	ATTACH ACCEPT	Attach result = 'PS only attached'
				Mobile identity = P-TMSI
16		>	ATTACH COMPLETE	
17	l U	E		The UE is switched off or power is removed (see
18		>	DETACH REQUEST	ICS). Message not sent if power is removed.
'			DE COLLINE GOLO!	Detach type = 'power switched off, PS detach'
19				The SS releases the RRC connection.

Specific Message Contents

Specific message contents for SECURITY MODE COMMAND message (without the integrity protection)

Information Element	Value/remark
Integrity protection mode info	Not Checked

Specific message contents for SECURITY MODE COMMAND message (with the integrity protection)

Information Element	Value/remark
Integrity protection mode info	
 Integrity protection mode command 	Start
 Downlink integrity protection activation info 	Not Present
- Integrity protection algorithm	UIA1
- Integrity protection initialisation number	SS selects an arbitrary 32 bits number for FRESH

12.2.1.10.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step9, UE shall;

- ignore the first ATTACH ACCEPT message.

At step11, UE shall;

- re-transmit ATTACH REQUEST message after expiry of timer T3310.

At step16, UE shall;

- respond to ATTACH COMPLETE message after the UE receives the second ATTACH ACCEPT message.

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

- 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.

Step	Direction UE SS	Message	Comments
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).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	Tivioi status – no valid Tivioi avaliable
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity =IMSI
5	->	ATTACH COMPLETE	Routing area identity = RAI-1
5a	SS	ATTINGIT GOME ELTE	The SS releases the RRC connection and waits 5s to allow the UE to read system information.
6	<-	PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services. Paging cause = "Terminating conversational call"
7	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating conversational call".
8 9		Void Void	cuii .
10 11	-> SS	PAGING RESPONSE	Mobile identity = IMSI The SS releases the RRC connection and waits 5s to allow the UE to read system information.
12 13	<-	Void PAGING TYPE1	Mobile identity = P-TMSI-1
13a	SS		Paging for PS services Paging cause = "Terminating interactive call" SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
13b 13c 14 14aa 14a 14b	-> SS SS	Void Void SERVICE REQUEST Void	message is set to "Terminating interactive call". service type = "paging response" The SS starts integrity protection. The SS releases the RRC connection.
15	UE		The UE is switched off or power is removed
15a	SS		(see ICS). SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST
16	->	DETACH REQUEST	message is set to "Detach". Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
16a	SS		If the power was not removed, the SS releases the RRC connection.
17	UE		The UE is powered up or switched on and initiates an attach (see ICS).

Step	Direction UE SS	Message	Comments
17a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
18	->	ATTACH REQUEST	message is set to "Registration". Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 TMSI status = no valid TMSI available Routing area identity = RAI-1
18a	<-	AUTHENTICATION AND CIPHERING REQUEST	Routing area identity – IVAI-1
18b	->	AUTHENTICATION AND CIPHERING RESPONSE	
18c 19	SS <-	ATTACH ACCEPT	The SS starts integrity protection. 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 21	->	ATTACH COMPLETE Void	Trouting area identity = 10 tr
21b 21c	SS	Void	The SS releases the RRC connection and waits 5s to allow the UE to read system information.
22	<-	PAGING TYPE 1	Mobile identity = TMSI-1 Paging order is for CS services. Paging cause = "Terminating conversational call"
23	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating conversational call".
24 25 26		Void Void PAGING RESPONSE	Mobile identity = TMSI-1
27	-> SS		The SS releases the RRC connection and waits 5s to allow the UE to read system information.
28 29	<-	Void PAGING TYPE1	Mobile identity = P-TMSI-2 Paging for PS services
29a	SS		Paging cause = "Terminating interactive call" SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
29b 29c		Void Void	
30 30aa 30a	-> SS SS	SERVICE REQUEST	service type = "paging response" The SS starts integrity protection. The SS releases the RRC connection and waits 5s to allow the UE to read system information.
30b 31	<-	Void PAGING TYPE1	Mobile identity = P-TMSI-1 Paging for PS services Paging acuse = "Torminating interactive call"
32	UE		Paging cause = "Terminating interactive call" 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).
33a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST
34	->	DETACH REQUEST	message is set to "Detach". Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

Step	Direction	Message	Comments
34a	UE SS		If the power was not removed, the SS releases
			the RRC connection.
35	UE		The UE is powered up or switched on and
35a	SS		initiates an attach (see ICS). SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
36	->	ATTACH REQUEST	message is set to "Registration". Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-2 Routing area identity = RAI-1 TMSI status = valid TMSI available
36a	<-	AUTHENTICATION AND CIPHERING REQUEST	
36b	->	AUTHENTICATION AND CIPHERING RESPONSE	
36c	SS		The SS starts integrity protection.
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
37a	SS		The SS releases the RRC connection and waits 5s to allow the UE to read system information.
38	<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging for PS services Paging cause = "Terminating interactive call"
38a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
38b		Void	
38c 39		Void SERVICE REQUEST	convice type - "paging respect"
39 39aa	-> SS	SERVICE REQUEST	service type = "paging response" The SS starts integrity protection.
39a	SS		The SS releases the RRC connection.
39b		Void	
40	UE		The UE is switched off or power is removed (see ICS).
40a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".
41	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
42	SS		If the power was not removed, the SS releases
			the RRC connection.

Specific message contents

None.

12.2.2.1.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

Case 1) SS accept the combined PS attach procedure (signalled by an IMSI) and allocates a P-TMSI.

At step5, UE shall

- send the ATTACH COMPLETE message.

At step10, when the UE receives the paging message for CS domain with Mobile identity = IMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step14, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

Case 2) SS accepts the combined PS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI and TMSI.

At step20, UE shall:

- send the ATTACH COMPLETE message.

At step26, when the UE receives the paging message for CS domain with Mobile identity = TMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step30, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

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.

At step39, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

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.

12.2.2.3 Test purpose

Test purpose1

To test the behaviour of the UE if the network accepts the PS attach procedure with indication PS only, GMM cause TMSI unknown in HLR'.

Test purpose2

To test the behaviour of the UE which does not support an automatic MM IMSI attach if the network accepts the PS attach procedure with indication PS only, GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.

Test purpose 3

To test the behaviour of the UE which supports an automatic MM IMSI attach 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

12.2.2.4.1 Test procedure1

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
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
4	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature GMM cause = 'IMSI unknown in HLR' Routing area identity = RAI-1
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'

12.2.2.4.2 Test procedure2

Initial condition

System Simulator:

One cell operating in network operation mode I. T3212 and T3302 is set to 6 minutes.

User Equipment:

The UE has a valid TMSI, P-TMSI 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 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. The UE sends a ROUTING AREA UPDATE REQUEST message. The SS returns a 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. The ROUTING AREA UPDATE 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.

Step	Direction UE SS	Message	Comments
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 Routing area identity = RAI-1 TMSI status = valid TMSI available or IE is omitted
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. 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 7	->	ATTACH COMPLETE ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-2 signature Routing area identity = RAI-1
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
11	<-	ROUTING AREA UPDATE ACCEPT	Routing area identity = RAI-1 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	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-4 signature Routing area identity = RAI-1
13	SS		The SS verifies that the time between the previous routing area update accept and
14	<-	ROUTING AREA UPDATE ACCEPT	routing area update request is T3311. 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)

Step	Direction	Message	Comments
	UE SS		
16	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-5 signature Routing area identity = RAI-1
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)
18-20		(void)	,
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.

12.2.2.4.3 Test procedure 3

Initial condition

System Simulator:

One cell operating in network operation mode I. T3212 and T3302 is set to 6 minutes.

User Equipment:

The UE has a valid TMSI, P-TMSI 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 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. The UE sends a ROUTING AREA UPDATE REQUEST message. The SS returns a 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. The ROUTING AREA UPDATE 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.

Expected Sequence

Step	Direction UE SS	Message	Comments
1	UE		Automatic MM IMSI attach procedure is
2	UE		indicated (see ICS). The UE is powered up or switched on and
	02		initiates an attach (see ICS).
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1
			Routing area identity = RAI-1
			TMSI status = valid TMSI available or IE is omitted
3a	<-	AUTHENTICATION AND	
3b	->	CIPHERING REQUEST AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
4	<-	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)
5	->	ROUTING AREA UPDATE	Update type = 'Combined RA / LA updating
		REQUEST	with IMSI attach' P-TMSI-2 signature
			Routing area identity = RAI-1
6	<-	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)
7	->	ROUTING AREA UPDATE	Update type = 'Combined RA / LA updating
		REQUEST	with IMSI attach'
			P-TMSI-3 signature Routing area identity = RAI-1
8	<-	ROUTING AREA UPDATE	No new mobile identity assigned.
		ACCEPT	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
9	-~	ROUTING AREA UPDATE	chosen) Update type = 'Combined RA / LA updating
9	->	REQUEST	with IMSI attach'
			P-TMSI-4 signature
10	SS		Routing area identity = RAI-1 The SS verifies that the time between the
			previous routing area update accept and
11	<-	ROUTING AREA UPDATE	routing area update request is T3311. No new mobile identity assigned.
''		ACCEPT	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)
12	->	ROUTING AREA UPDATE	Update type = 'Combined RA / LA updating
		REQUEST	with IMSI attach' P-TMSI-5 signature
			Routing area identity = RAI-1
			TMSI status = no valid TMSI available

Step	Direction	Message	Comments
	UE SS	_	
13	SS		The SS verifies that the time between the previous routing area update accept and routing area update request is T3311.
14	<-	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)
15	UE		An automatic MM IMSI attach procedure is initiated.
16	UE	Registration on CS	Optional step. See TS 34.108
			This is applied only for UE in UE operation mode A.
			Parameter mobile identity is TMSI Steps 4917 - 5523 are only performed if the UE has performed the Registration Procedure in step 4116.
17	<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
18	->	RRC CONNECTION REQUEST	aging crass is is: co solutions.
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, PS detach'

Specific message contents

None.

12.2.2.5 Test requirements

Test requirements for Test porpose1

At step3, when the UE is powered up or switched on, UE shall:

- initiate the Combined PS attach procedure with information elements specified in the above Expected Sequence.

At step7, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

Test requirements for Test porpose2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the Combined PS attach procedure with information elements specified in the above Expected Sequence.

At step7, 10, 12 and 16, when the routing area updating attempt counter is less than 5 and the stored RAI is equal to the RAI of the current serving cell, UE shall:

- perform the combined routing area update procedure indicating "combined RA/LA updating with IMSI attach".

Test requirements for Test porpose3

At step3, when the UE is powered up or switched on, UE shall:

- initiate the Combined PS attach procedure with information elements specified in the above Expected Sequence.

At step5, 7, 9 and 11, when the routing area updating attempt counter is less than 5 and the stored RAI is equal to the RAI of the current serving cell, UE shall:

- perform the combined routing area update procedure indicating "combined RA/LA updating with IMSI attach".

At step16, UE shall:

- perform MM location updating procedure.

At step21, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

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 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		Registration on CS	See TS 34.108
			Location updating type = IMSI attach. The SS allocates TMSI-1
4	<-	PAGING TYPE1	Mobile identity = P-TMSI-1
4	ζ-	FAGING TIFET	Paging order is for PS services.
5	UE		No response from the UE to the request. This
	OL.		is checked for 10 seconds.
6	UE		The UE is triggered to perform a PS attach.
7	->	ATTACH REQUEST	Attach type = 'PS attach while IMSI attached' or
			'Combined PS / IMSI attached'
			Mobile identity =P-TMSI-1
			Routing area identity = RAI-1
7a	<-	AUTHENTICATION AND	
		CIPHERING REQUEST	
7b	->	AUTHENTICATION AND	
_	00	CIPHERING RESPONSE	TI 00
7c	SS	ATTACLLACOEDT	The SS starts integrity protection.
8	<-	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
9	<-	PAGING TYPE1	Mobile identity = P-TMSI-1
			Paging order is for PS services.
10	->	RRC CONNECTION REQUEST	
11	<-	RRC CONNECTION SETUP	
12	->	RRC CONNECTION SETUP	
		COMPLETE	
13	->	SERVICE REQUEST	service type = "paging response"
,.		DD0 0011150T:0::57:5:5	
14	<-	RRC CONNECTION RELEASE	
15	->	RRC CONNECTION RELEASE 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, 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.

At step5, UE shall:

- not respond to the paging message for PS domain.

At step7, when the UE is requested to attach for PS services, UE shall:

- perform the combined PS attach procedure.

At step13, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

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

- 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.

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:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and 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 I.

User Equipment:

The UE has a valid TMSI-1, P-TMSI-1 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 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. 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.

Step	Direction UE SS	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".
2	UE		Set the cell type of cell C to the "Non-Suitable cell". (see note) The UE is set in UE operation mode A (see
3	UE		ICS). The UE is powered up or switched on and
4	->	ATTACH REQUEST	initiates an attach (see ICS). Cell A is preferred by the UE. Attach type = 'Combined PS / IMSI attach' or 'PS attach while IMSI attached' Mobile identity = P-TMSI-1
5 6	<- UE	ATTACH REJECT PAGING TYPE1	Routing area identity = RAI-1 TMSI status = valid TMSI available or IE is omitted GMM cause 'Illegal ME'. Mobile identity = TMSI-1Paging order is for CS services.
7	UE		The UE shall not initiate an RRC connection.
8	<-	PAGING TYPE1	This is checked during 3 seconds. Mobile identity = IMSI Paging order is for CS services
9	UE		The UE shall not initiate an RRC connection. This is checked during 3 seconds.
10	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
11	UE		No response from the UE to the request. This is checked for 10 seconds.
12	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell".
13 14	UE UE		Set the cell type of cell B to the "Serving cell". (see note) Cell B is preferred by the UE. No ATTACH REQUEST sent to the SS (SS waits 30 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	SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell".
18 19	UE UE		(see note) Cell C is preferred by the UE. No ATTACH REQUEST sent to the SS
20	<-	PAGING TYPE1	(SS waits 30 seconds). Mobile identity = IMSI Paging order is for PS services
21	UE		No response from the UE to the request. This
22	UE		is checked for 10 seconds. If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.

Step	Direction	Message	Comments	
	UE SS			
23	UE		The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).	
24	UE		Step 25 is only performed for non-auto attach UE.	
25	UE	Registration on CS	A location updating procedure is initiated. See TS34.108	
26	UE		Parameter Mobile identity is IMSI. UE initiates an attach automatically (see ICS), by MMI or AT commands.	
27	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'PS attach while IMSI attached' Mobile identity = IMSI TMSI status = no valid TMSI available	
27a	<-	AUTHENTICATION AND CIPHERING REQUEST	Tivot status – no valia Tivot available	
27b	->	AUTHENTICATION AND CIPHERING RESPONSE		
27c	SS		The SS starts integrity protection.	
28	<-	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	
29	->	ATTACH COMPLETE		
30	<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.	
31	->	RRC CONNECTION REQUEST		
32	<-	RRC CONNECTION SETUP		
33	->	RRC CONNECTION SETUP COMPLETE		
34	->	PAGING RESPONSE	Mobile identity = TMSI-2	
35	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.	
36	->	RRC CONNECTION RELEASE COMPLETE		
37	UE		The UE is switched off or power is removed (see ICS).	
38	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'	
NOTE:			rving cell" are specified in TS34.108 clause 6.1	
	"Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.2.2.4.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, 9 and 16, when the UE receives the paging message for CS domain, UE shall,

- not respond to the paging message for CS domain.

At step11 and 21, when the UE receives the paging message for PS domain, UE shall,

- not respond to the paging message for PS domain.

At step27, when the USIM is replaced, UE shall:

- perform the combined PS attach procedure.

At step34, when the UE receives the paging message for CS domain, UE shall,

- respond to the paging message for CS domain by sending the RAGING RESPONSE message.

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-1, P-TMSI-1 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/N

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.

The following messages are sent and shall received on cell A. Set the cell type of cell A to the "Serving ce Set the cell type of cell B to the "Non-Suital cell". (see note) The UE is set in UE operation mode A (see ICS). The UE is powered up or switched on and initiates an attach (see ICS). Cell A is prefe by the UE. ATTACH REQUEST ATTACH REQUEST ATTACH REJECT ATTACH REJECT ATTACH REJECT The UE is powered up or switched on and initiates an attach (see ICS). Cell A is prefe by the UE. ATTACH REJECT ATTACH REJECT ATTACH REJECT ATTACH REJECT The UE is powered up or switched on and initiates an attach (see ICS). Cell A is prefe by the UE. ATTACH REJECT ATTACH REQUEST ATTAC	
received on cell A. Set the cell type of cell A to the "Serving ce Set the cell type of cell B to the "Non-Suital cell". (see note) The UE is set in UE operation mode A (see ICS). The UE is powered up or switched on and initiates an attach (see ICS). Cell A is prefe by the UE. ATTACH REQUEST ATTACH REQUEST ATTACH REJECT ATTACH REJECT Sommar area identity = P-TMSI-1 Routing area identity = RAI-1 GMM cause 'PS services and non-PS servinot allowed' The SS verifies that the UE does not attern access the network. (SS waits 30 seconds). Mobile identity = IMSI Paging order is for CS services. The UE shall not initiate an RRC connection This is checked during 3 seconds. Mobile identity = P-TMSI-1 Paging order is for PS Paging. No response from the UE to the request. This is checked for 10 seconds Set the cell type of cell B to the "Serving ce (see note) (void) The SS verifies that the UE does not attern access the network. (SS waits 30 seconds). Mobile identity = P-TMSI-1 Paging order is for PS Paging. No response from the UE to the request. This is checked for 10 seconds Set the cell type of cell B to the "Serving ce (see note) The SS verifies that the UE does not attern access the network. (SS waits 30 seconds). Mobile identity = IMSI Paging order is for CS services. The UE Shall not initiate an RRC connection the services. The UE shall not initiate an RRC connection the paging order is for CS services. The UE shall not initiate an RRC connection the paging order is for CS services. The UE shall not initiate an RRC connection the paging order is for CS services. The UE shall not initiate an RRC connection the paging order is for CS services. The UE shall not initiate an RRC connection the services. The UE shall not initiate an RRC connection the service services. The UE shall not initiate an RRC connection the paging order is for CS services. The UE shall not initiate an RRC connection the paging order is for CS services.	he
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16 <- PAGING TYPE1 Mobile identity = P-TMSI-1	
Paging order is for PS services.	
17 UE No response from the UE to the request. The is checked for 10seconds.	IIS
18 UE If possible (see ICS) switch off is performed	ı. l
Otherwise the power is removed.	
The UE is powered up or switched.]
20 UE Registration on CS See TS 34.108	
This step is applied only for non-auto attact UE.	1
Location Update Procedure initiated from the	e
UE. Parameter mobile identity is IMSI.	
21 UE UE initiates an attach automatically (see IC	S),
by MMI or AT commands. 22 -> ATTACH REQUEST Attach type = 'Combined PS / IMSI attach' or ATTACH REQUEST Attach type = 'Combined PS / IMSI attach' or ATTACH REQUEST Attach type = 'Combined PS / IMSI attach' or ATTACH REQUEST Attach type = 'Combined PS / IMSI attach' or ATTACH REQUEST	\r
'PS attach while IMSI attached'	"
Mobile identity = IMSI	
TMSI status = no valid TMSI available	
22a <- AUTHENTICATION AND	
CIPHERING REQUEST 22b -> AUTHENTICATION AND	
22b -> AUTHENTICATION AND	
22c SS The SS starts integrity protection.	

Step	Direction	Message	Comments	
	UE SS			
23	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1	
24	_	ATTACH COMPLETE	Routing area identity = RAI-2	
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	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging is for PS services.	
33	->	RRC CONNECTION REQUEST		
34	<-	RRC CONNECTION SETUP		
35	->	RRC CONNECTION SETUP COMPLETE		
36	->	SERVICE REQUEST	Service type = "paging response"	
37	<-	RRC CONNECTION RELEASE	71 1 3 3 1	
38	->	RRC CONNECTION RELEASE COMPLETE		
39	UE		The UE is switched off or power is removed (see ICS).	
40	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'	
NOTE:	The definit	ions for "Non-Suitable cell" and "Ser	ving cell" are specified in TS34.108 clause 6.1	
	"Reference Radio Conditions for signalling test cases only".			

None.

12.2.2.5.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8 and 14, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step10 and 17, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step22, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure.

At step29, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step36, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

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

- 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.

ATT flag set to 1

User Equipment:

The UE has a valid TMSI, P-TMSI-1 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 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.

Step	Direction UE SS	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable
2 2a	UE UE	Registration on CS	cell". (see note) The UE is powered up or switched on. See TS 34.108 This step is applied only for non-auto attach UE.
2b 3	UE ->	ATTACH REQUEST	Location Update Procedure initiated from the UE. Parameter mobile identity is TMSI-1. UE initiates an attach automatically (see ICS), via MMI or AT commands. Attach type = 'Combined PS / IMSI attach' or
		ATT NOT THE GOLD!	'PS attach while IMSI attached' Mobile identity =P-TMSI-1 Routing area identity = RAI-1
4 5	<- UE	ATTACH REJECT	GMM cause 'PS services not allowed' An automatic MM IMSI attach procedure is initiated.
6	UE	Registration on CS	See TS 34.108 Location updating type = IMSI attach. The SS allocates TMSI-2.
7	<-	PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
8 9	-> <-	RRC CONNECTION REQUEST RRC CONNECTION SETUP	
10	->	RRC CONNECTION SETUP	
11 12	-> <-	PAGING RESPONSE RRC CONNECTION RELEASE	Mobile identity = TMSI-2 After sending of this message, the SS waits for disconnection of the CS signaling link.
13	->	RRC CONNECTION RELEASE COMPLETE	
14	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell".
15 16 17	UE UE UE	Registration on CS	Set the cell type of cell B to the "Serving cell". (see note) Cell B is preferred by the UE. A location updating procedure is initiated. See TS 34.108 Location updating type = normal.
18	<-	PAGING TYPE1	The SS allocates TMSI-1. Mobile identity = TMSI-1 Paging order is for CS services.
19 20 21	-> <- ->	RRC CONNECTION REQUEST RRC CONNECTION SETUP RRC CONNECTION SETUP COMPLETE	aging order is for de services.
22 23	-> <-	PAGING RESPONSE RRC CONNECTION RELEASE	Mobile identity = TMSI-1 After sending of this message, the SS waits for disconnection of the CS signalling link.
24	->	RRC CONNECTION RELEASE COMPLETE	
25	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging is for PS services
26	UE		No response from the UE to the request. This is checked for 10seconds.
27	UE		If possible (see ICS) switch off is performed. Otherwise the power is removed.

Step	Direction	Message	Comments	
	UE SS			
27a	UE		If switch off is performed then UE performs	
			IMSI detach procedure.	
28	UE		The UE is powered up or switched.	
28a	UE	Registration on CS	See TS 34.108	
			This step is applied only for non-auto attach UE.	
			Location Update Procedure initiated from the	
			UE. Parameter mobile identity is TMSI-1.	
28b	UE		UE initiates an attach automatically (see ICS),	
			via MMI or AT commands.	
29	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or	
			'PS attach while IMSI attached'	
			Mobile identity = IMSI	
29a	<-	AUTHENTICATION AND		
		CIPHERING REQUEST		
29b	->	AUTHENTICATION AND		
		CIPHERING RESPONSE		
29c	SS		The SS starts integrity protection.	
30	<-	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	
31	->	ATTACH COMPLETE		
32	<-	PAGING TYPE1	Mobile identity = TMSI-2	
			Paging order is for CS services.	
33	->	RRC CONNECTION REQUEST		
34	<-	RRC CONNECTION SETUP		
35	->	RRC CONNECTION SETUP		
00		COMPLETE	M I I I I I I I I I I I I I I I I I I I	
36	->	PAGING RESPONSE	Mobile identity = TMSI-2	
37	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for	
20		DDC CONNECTION DELEASE	disconnection of the CS signalling link.	
38	->	RRC CONNECTION RELEASE		
20	UE	COMPLETE	The LIE is quitabled off or newer is remayed	
39	UE		The UE is switched off or power is removed	
40		DETACH REQUEST	(see ICS). Message not sent if power is removed.	
40	->	DETACH REQUEST		
			Detach type = 'power switched off, combined	
NOTE:	The deficit	iona for "Non Cuitable call" and "Ca	PS / IMSI detach	
NOTE:			rving cell" are specified in TS34.108 clause 6.1	
"Reference Radio Conditions for signalling test cases only".				

"Reference Radio Conditions for signalling test cases only"

Specific message contents

None.

12.2.2.6.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step6, if the UE is PS class A, UE shall:

perform the MM IMSI attach procedure.

At step11, 22 and 36, when the UE receives the paging message for CS domain, UE shall:

respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step26, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step29, UE shall:

- perform the PS attach procedure.

12.2.2.7a Combined PS attach / rejected / location area not allowed

12.2.2.7a.1 Definition

12.2.2.7a.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'.
 - 1.4 not delete the list of "equivalent PLMNs".
 - 1.5 perform a cell selection.
- 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.

12.2.2.7a.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.

12.2.2.7a.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/LAC2/RAC1 (RAI-6). All cells are operating in network operation mode I.

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

User Equipment:

The UE has a valid TMSI, P-TMSI 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 PS attach attempted automatically by outstanding request 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.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
			received on cell A.
1	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable
			cell".
			Set the cell type of cell C to the "Non-Suitable
			cell". (see note)
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.
3a	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or
			"PS Attach while IMSI attached"
			Mobile identity = P-TMSI-1 Routing area identity = RAI-1
3b	<-	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
			Equivalent PLMNs = MCC2,MNC1
3c	<-	DETACH REQUEST DETACH ACCEPT	Detach type = re-attach required
3d 4	-> ->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or
	,		"PS Attach while IMSI attached"
			Mobile identity = P-TMSI-1
5	<-	ATTACH REJECT	Routing area identity = RAI-1 GMM cause 'Location Area not allowed'
6	UÈ	7.1.7.6.1.1.20201	No LOCATION UPDATING REQ with type
			'IMSI attach' is sent to the SS
7	<-	PAGING TYPE1	(SS waits 30 seconds). Mobile identity = TMSI
'		TAGING TITE!	Paging order is for CS services.
8	UE		The UE shall not initiate an RRC connection.
9	<-	PAGING TYPE1	This is checked during 3 seconds. Mobile identity = P-TMSI-1
		TAGING TITE!	Paging order 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		Set the cell type of cell A to the "Non-Suitable
			cell".
			Set the cell type of cell B to the "Serving cell". (see note)
11a	UE		The UE performs cell selection.
12	UE		Cell B is preferred by the UE. No ATTACH REQUEST or LOCATION
13	UE		UPDATING REQUEST OF LOCATION
			(SS waits 60 seconds)
15	<-	PAGING TYPE1	Mobile identity = P-TMSI-1
16	UE		Paging order is for PS services. No response from the UE to the request. This
.0	0.		is checked for 10seconds.
17	UE		The UE initiates an attach by MMI or AT
18			command. No attach is performed by the UE. This is
10			checked for 10 seconds.
			The following messages are sent and shall be
			received on cell C.

Step	Direction UE SS	Message	Comments
19	SS		Set the cell type of cell B to the "Non-Suitable
19a 20	UE UE		cell". Set the cell type of cell C to the "Serving cell". (see note) The UE performs cell selection Cell C is preferred by the UE. Step 20a and 20b are only performed by an UE which will not initiate a PS attach automatically
20a conditio	UE	Registration on CS	(see ICS) Parameter Mobile identity is IMSI. See TS 34.108
nal 20b conditio nal	UE		UE initiates an attach via MMI or AT commands.
21	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
21a	<-	AUTHENTICATION AND CIPHERING REQUEST	
21b	->	AUTHENTICATION AND CIPHERING RESPONSE	
21c 22	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-6
23 24	-> <-	ATTACH COMPLETE PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
25 26 27	-> <- ->	RRC CONNECTION REQUEST RRC CONNECTION SETUP RRC CONNECTION SETUP COMPLETE	
28 29	-> <-	PAGING RESPONSE RRC CONNECTION RELEASE	Mobile identity = TMSI-1 After sending of this message, the SS waits for disconnection of the CS signalling link.
30	->	RRC CONNECTION RELEASE	
31	<-	COMPLETE PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
32 33 34	-> <- ->	RRC CONNECTION REQUEST RRC CONNECTION SETUP RRC CONNECTION SETUP COMPLETE	
35 36 37	-> <- ->	SERVICE REQUEST RRC CONNECTION RELEASE RRC CONNECTION RELEASE COMPLETE	Service type = "paging response"
38	UE		The UE is switched off or power is removed
39	->	DETACH REQUEST	(see ICS). Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
40	UE		The following messages are sent and shall be received on cell B. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
41	UE		Cell B is preferred by the UE. The UE is powered up or switched on and initiates an attach (see ICS).
42			Step 43 is only performed for non-auto attach UE.

Step	Direc	ction	Message	Comments
-	UE	SS		
43	_	E	Registration on CS	See TS 34.108
44	U	E		UE initiates an attach automatically (see ICS), by MMI or AT commands.
45	_	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or
43			ATTACITICEQUEST	"PS Attach while IMSI attached"
				Mobile identity = P-TMSI-1
				Routing area identity = RAI-6
45a	<	:-	AUTHENTICATION AND	
4			CIPHERING REQUEST	
45b	-;	>	AUTHENTICATION AND	
45c	9	S	CIPHERING RESPONSE	The SS starts integrity protection.
46		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached'
		•	71171617166211	Mobile identity = P-TMSI-2
				P-TMSI-2 signature
				Mobile identity = TMSI-2
				Routing area identity = RAI-4
47		->	ATTACH COMPLETE	Makila idaysis. TMOLO
48	•	<-	PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
49		->	RRC CONNECTION REQUEST	Paging order is for C3 services.
50		<-	RRC CONNECTION SETUP	
51		>	RRC CONNECTION SETUP	
			COMPLETE	
52	-	->	PAGING RESPONSE	Mobile identity = TMSI-2
53		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for
54			RRC CONNECTION RELEASE	disconnection of the CS signalling link.
34		>	COMPLETE	
55		<-	PAGING TYPE1	Mobile identity = P-TMSI-2
				Paging order is for PS services.
56	-:	>	RRC CONNECTION REQUEST	
57		:-	RRC CONNECTION SETUP	
58	-:	>	RRC CONNECTION SETUP	
59	_	->	COMPLETE SERVICE REQUEST	service type = "paging response"
60		 :-	RRC CONNECTION RELEASE	service type = paging response
61		· >	RRC CONNECTION RELEASE	
			COMPLETE	
62	U	E		The UE is switched off or power is removed
				(see ICS).
63	-	->	DETACH REQUEST	Message not sent if power is removed.
				Detach type = 'power switched off, combined PS / IMSI detach'
NOTE:	The	definit	l ions for "Non-Suitable cell" and "Sei	rving cell" are specified in TS34.108 clause 6.1
INOIL.			e Radio Conditions for signalling test	
Telestico radio contantono for digitaling tost dades only .				

None.

12.2.2.7a.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence

At step6, when the UE receives the ATTACH REJECT message with GMM cause = 'Location Area not allowed', UE shall:

- not initiate MM location updating procedure.

At step8, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step10 and 16, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step13 and 18, when the UE is in the same location area, UE shall:

- not perform PS attach procedure.

At step21, when the UE enters a new location area, UE shall

- perform the combined PS attach procedure.

At step28 and 52, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step35 and 59, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step45, when the UE is powered up or switched on, UE shall:

- perform the combined PS attach procedure.

12.2.2.7b Combined PS attach / rejected / No Suitable Cells In Location Area

12.2.2.7b.1 Definition

12.2.2.7b.2 Conformance requirement

- 1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', 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 roaming'.
 - 1.4 not delete the list of "equivalent PLMNs".
- 2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:
 - 2.1 search for a suitable cell in a different location area on the same PLMN.

Reference

3GPP TS 24.008 clauses 4.7.3.2.

12.2.2.7b.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure with the cause 'No Suitable Cells In Location Area'.

12.2.2.7b.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2)

User Equipment:

The UE has valid TMSI, P-TMSI and RAI

The PLMN contains Cell C is equivalent to the PLMN that contains 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 SS rejects a combined PS attach with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall search for a suitable cell in a different location area on the same PLMN and shall perform combined PS attach procedure in that cell

Step	Direction UE SS	Message	Comments
1	SS		The following message are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".
2	UE		Set the cell type of cell C to the "Non-Suitable cell". (see note) The UE is set in UE operation mode A (see
3	UE		ICS). The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred
4	->	ATTACH REQUEST	by the UE. Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1
5	<-	ATTACH ACCEPT	Routing area identity = RAI-1 Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-2 signature Mobile identity = TMSI-1
6 7	<- ->	DETACH REQUEST DETACH ACCEPT	Routing area identity = RAI-1 Equivalent PLMNs = MCC2,MNC1 Detach type = re-attach required
8	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". (see note) The SS configures power level of each Cell as follows.
9	->	ATTACH REQUEST	Cell A > Cell B = Cell C Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1
10	<-	ATTACH REJECT	Routing area identity = RAI-1 GMM cause = 'No Suitable Cells In Location
11	SS		Area' The SS initiates the RRC connection release. The following message are sent and shall be received on cell B.
12	UE		The UE initiates an attach automatically, by MMI or by AT command.
13	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
14	<-	AUTHENTICATION AND CIPHERING REQUEST	
15	->	AUTHENTICATION AND CIPHERING RESPONSE	
16 17	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2
18	->	ATTACH COMPLETE	Routing area identity = RAI-3
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, PS detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

3GPP

None.

12.2.2.7b.5 Test requirements

At step4 and 9, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected sequence.

At step13, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- initiate the combined PS attach procedure.

12.2.2.7c Combined PS attach / rejected / Roaming not allowed in this location area

12.2.2.7c.1 Definition

12.2.2.7c.2 Conformance requirement

- 1) If the network rejects a PS attach procedure from the User Equipment with the cause 'Roaming area not allowed in this location area' the User Equipment shall:
 - 1.1 delete any RAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number.
 - 1.2 set the PS update status to GU3 ROAMING NOT ALLOWED.
 - 1.3 delete any TMSI, LAI and ciphering key sequence number.
 - 1.4 store the LAI in the list of "forbidden location areas for roaming".
 - 1.5 perform a PLMN selection.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.2.7c.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'Roaming not allowed in this location area'.

12.2.2.7c.4 Method of test

Initial condition

System Simulator:

Three cells cell A with MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) , cell C in MCC1/MNC1/LAC2/RAC2 (RAI-12)

All three cells are operating in network operation mode I.

User Equipment:

The UE has valid TMSI, P-TMSI and RAI.

Related ICS/IXIT statements

Support of PS service 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 area not allowed in this location area'. The SS checks that the UE performs PLMN selection.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
			received on cell A.
1	SS		Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Non-Suitable
			cell". Set the cell type of cell C to the "Non-Suitable
			cell".
			(see note)
2	UE		The UE is set in UE operation mode A (see
3	UE		ICS).
3	OE.		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' or
			"PS Attach while IMSI attached"
			Mobile identity = P-TMSI-1 Routing area identity = RAI-1
5	<-	ATTACH REJECT	GMM cause = 'Roaming area not allowed in
		7.1.7.6.1.11.20201	this location area'
6	UE		No LOCATION UPDATING REQ and ATTACH
			REQ with type 'IMSI attach' is sent to the SS
7	<-	 PAGING TYPE1	(SS waits 30 seconds). Mobile identity = TMSI
,	ζ-	FAGING TIFET	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
10	->		Paging order is for PS services. No response from the UE to the request.
10	-7		This is checked for 10 seconds
11	UE		UE performs PLMN selection.
			The following messages are sent and shall be
12	SS		received on cell B. Set the cell type of cell A to the "Non-Suitable
12	33		cell".
			Set the cell type of cell B to the "Serving cell".
			(see note)
13	UE		Cell B is preferred by the UE.
14	UE		No LOCATION UPDATING REQ is sent to SS (SS waits 60 seconds)
15	->	ATTACH REQUEST	Attach type = 'PS attach'
		·	Mobile identity = IMSI
15a	<-	AUTHENTICATION AND	
15b		CIPHERING REQUEST AUTHENTICATION AND	
130	->	CIPHERING RESPONSE	
15c	SS		The SS starts integrity protection.
16	<-	ATTACH ACCEPT	Attach result = 'PS only attached'
			Mobile identity = P-TMSI-2 P-TMSI-2 signature
			Routing area identity = RAI-4
17	->	ATTACH COMPLETE	To all ing area recribing – roll i
			The following messages are sent and shall be
40	60		received on cell C.
18	SS		Set the cell type of cell B to the "Non-Suitable cell".
			Set the cell type of cell C to the "Serving cell".
			(see note)
19	UE		Cell C is preferred by the UE.
20	UE	Registration on CS	Parameter Mobile identity is IMSI.
21	UE		See TS 34.108 UE initiates an attach automatically (see ICS)
	J 0L		via MMI or AT commands.
(*)	•	•	· '

Step	Direction	Message	Comments	
	UE SS]		
22	<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.	
23		RRC CONNECTION REQUEST	raging order is for C3 services.	
23	->	RRC CONNECTION REQUEST		
25	<-	RRC CONNECTION SETUP		
25	->	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 order is for PS services.	
30	->	RRC CONNECTION REQUEST		
31	<-	RRC CONNECTION SETUP		
32	->	RRC CONNECTION SETUP COMPLETE		
33	->	SERVICE REQUEST	Service type = "paging response"	
34	<-	RRC CONNECTION RELEASE		
35	->	RRC CONNECTION RELEASE COMPLETE		
36	UE		The UE is switched off or power is removed (see ICS).	
37	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'	
NOTE:	i o i mior de dici			

None.

12.2.2.7c.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, UE shall:

- not perform MM IMSI attach and PS attach.

At step8, UE shall:

- not respond to paging for CS domain service.

At step10, UE shall:

- not respond to paging for PS domain service.

At step15, UE shall:

- perform PS attach procedure.

At step20, UE shall:

- perform MM IMSI attach procedure.

12.2.2.7d Combined PS attach / rejected / PS services not allowed in this PLMN

12.2.2.7d.1 Definition

12.2.2.7d.2 Conformance requirement

- 1) If the network rejects a PS attach procedure from the User Equipment with the cause 'PS service not allowed in this PLMN' the User Equipment shall:
 - 1.1 delete any RAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number.
 - 1.2 set the PS update status to GU3 ROAMING NOT ALLOWED.
 - 1.3 store the PLMN identity in the "forbidden PLMNs for PS service" list.
- 2) If the UE is in UE operation mode A the User Equipment shall:
 - 2.1 perform IMSI attach for non-GPRS services by use of the MM IMSI attach procedure.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.2.7d.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 service not allowed in this PLMN'.

12.2.2.7d.4 Method of test

Initial condition

System Simulator:

Two cells cell A with MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2). All two cells are operating in network operation mode I.

The PLMN contains Cell B is equivalent to the PLMN that contains Cell A.

User Equipment:

The UE has a valid P-TMSI-1, 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 'PS service not allowed in this PLMN'. The SS checks that the UE does not perform PS attach and performs an IMSI attach for non-PS services by use of the MM IMSI attach procedure when in the same cell.

After the cell is changed to equivalent PLMN, the UE shall perform PS attach procedure.

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 A (see
2	SS		ICS). The SS is set in network operation mode I.
	33		Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Non-suitable
			cell ".
			(see note)
3	UE		The UE is powered up or switched on and
			initiates an attach (see ICS). Cell A is preferred
		D	by the UE.
4	UE	Registration on CS	See TS 34.108
			This is applied only for UE in UE operation mode A.
5	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach'
		/// // CITICE GOLOT	Mobile identity =P-TMSI-1
			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	_	DETACH REQUEST	Equivalent PLMNs = MCC2,MNC1 Detach type = re-attach required
8	<- ->	DETACH REQUEST	Detach type = re-attach required
9	UE	Registration on CS	See TS 34.108
	02	Trogionation on oo	This is applied only for UE in UE operation
			mode A.
10	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach'
			Mobile identity =P-TMSI-1
44		ATTACLIDE IFOT	Routing area identity = RAI-1
11	<-	ATTACH REJECT	GMM cause = 'PS service not allowed in this PLMN'
12	UE		No ATTACH REQUEST sent to the SS
'-	OL		(SS waits 30 seconds).
13	SS		Set the cell type of cell A to the "Non-suitable
			cell ".
			Set the cell type of cell B to the "Serving cell".
			(see note)
			The following messages are sent and shall be
14	->	ATTACH REQUEST	received on cell B. Attach type = 'PS attach'
'-	-/	ATTAOTTREQUEST	Mobile identity = IMSI
15	<-	AUTHENTICATION AND	
		CIPHERING REQUEST	
16	->	AUTHENTICATION AND	
	00	CIPHERING RESPONSE	
17	SS	ATTACH ACCEPT	The SS starts integrity protection.
18	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2
			P-TMSI-2 signature
			Routing area identity = RAI-2
19	->	ATTACH COMPLETE	7 <u>9</u>
20	UE		The UE is switched off or power is removed
			(see ICS).
21	->	DETACH REQUEST	Message not sent if power is removed.
			Detach type = 'power switched off, combined
NOTE:	The deficit	ione for "Cuitable paighbour ac"	PS / IMSI detach' d "Serving cell" are specified in TS34.108 clause
INOIE.	THE UEHIN	ions for Sultable neighbour cell and	a Serving cell are specified in 1334.100 clause

TE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".

None.

12.2.2.7d.5 Test requirements

At step5 and 10, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step4 and 9, UE shall:

- perform MM IMSI attach.

At step12, UE shall:

- not perform PS attach procedure.

At step14, UE shall:

- perform PS attach procedure.

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'

'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 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

Switch off on button Yes/No

Test procedure

The UE initiates a combined PS attach procedure (attempt counter zero).

The SS rejects the attach with an arbitrarily chosen cause code.

The UE initiates a new combined PS attach procedure (attempt counter one) after T3311 expires.

The SS rejects the attach with an arbitrarily chosen cause code.

The UE initiates a new combined PS attach procedure (attempt counter two) after T3311 expires.

The SS rejects the attach with an arbitrarily chosen cause code.

The UE initiates a new combined PS attach procedure (attempt counter three) after T3311 expires.

The SS rejects the attach with an arbitrarily chosen cause code.

The UE initiates a new combined PS attach procedure (attempt counter four) after T3311 expires.

The SS rejects the attach with an arbitrarily chosen 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.

Step	Direction UE SS	Message	Comments
1	UE		The UE is set in UE operation mode A (see
2	UE		ICS). The UE is powered up or switched on and
3	->	ATTACH REQUEST	initiates an attach (see ICS). Attach type = 'Combined PS / IMSI attach'
	-/	ATTAOTTREQUEST	Mobile identity =P-TMSI-1
4	<-	ATTACH REJECT	Routing area identity = RAI-1 Arbitrary chosen GMM cause
	`		T3302 with value 10 min.
5	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1
	00		Routing area identity = RAI-1
6	SS		The SS verifies that the time between the attach reject and attach request is T3311
7	<-	ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
8	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach'
			Mobile identity = P-TMSI-1 Routing area identity = RAI-1
9	SS		The SS verifies that the time between the
10	<-	ATTACH REJECT	attach reject and attach request is T3311 Arbitrarily chosen GMM cause
10	ζ-	ATTACIT RESECT	T3302 with value 10 min.
11	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1
			Routing area identity = RAI-1
12	SS		The SS verifies that the time between the attach reject and attach request is T3311
13	<-	ATTACH REJECT	Arbitrarily chosen GMM cause
14	->	ATTACH REQUEST	T3302 with value 10 min. Attach type = 'Combined PS / IMSI attach'
'-		ATTACHT REGELOT	Mobile identity =P-TMSI-1
15	SS		Routing area identity = RAI-1 The SS verifies that the time between the
	00		attach reject and attach request is T3311
16	<-	ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
17	UE	Registration on CS	See TS 34.108
(option al step)			This is applied only for UE in UE operation mode A. Location Update Procedure may be
			initiated from the UE.
20	<-	PAGING TYPE1	Parameter mobile identity is IMSI. Paging order is for PS services.
21	UE		Mobile identity = P-TMSI-1 No response from the UE to the request. This
21	UE		is checked for 10seconds.
21a	->	ATTACH REQUEST	Attach type = 'Combined PS/IMSI attach' or 'PS attach while IMSI attached'
			Mobile identity = IMSI
22	SS		TMSI status =no valid TMSI available The SS verifies that the UE does not attempt to
22			attach for T3302.
23	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' 'PS attach while IMSI attached'
			Mobile identity = IMSI
23a	<-	AUTHENTICATION AND	TMSI status = no valid TMSI available
		CIPHERING REQUEST	
23b	->	AUTHENTICATION AND CIPHERING RESPONSE	
23c	SS		The SS starts integrity protection.

Step	Direction UE SS	Message	Comments
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	Trodding area lacinity = 10 tr
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'

None.

12.2.2.8.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

UE shall 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

At step6, 9, 12 and 15, when the timer T3311 timeout has occurred, UE shall:

- repeat the combine PS attach procedure.

Case2) A combined PS attach procedure is rejected with the attempt counter five

At step21, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

Case3) The T3302 expires

At step23, UE shall:

- re-initiate the new combined PS attach procedure.

At step30, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step34, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

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

- 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 valid TMSI, P-TMSI and RAI. UE is Idle Updated.

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
Re-attach automatically when the network commands a detach with no cause value 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.

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.

Step	Direction UE SS	Message	Comments
1	UE		The UE is set in UE operation mode A (see
2	UE		ICS). 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
4	SS		Routing area identity = RAI-1 The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
5 6 7	<- ->	DETACH REQUEST DETACH ACCEPT (void)	Detach type = 're-attach not required'
8 9	UE	(void)	The UE is attached by MMI or AT command if the UE does not re-attach automatically upon receiving a network initiated detach with no
10	->	ATTACH REQUEST	cause value, (see IXIT). Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1
11	SS		Routing area identity = RAI-1 The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
12 13	<- UE	DETACH REQUEST	Detach type = 're-attach required' The UE ignores the DETACH REQUEST message and continue with the attach
14	<-	ATTACH ACCEPT	procedure Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2
15 16	-> <-	ATTACH COMPLETE PAGING TYPE1	Routing area identity = RAI-1 Mobile identity = TMSI-2 Paging order is for CS services.
17 18 19	-> <- ->	RRC CONNECTION REQUEST RRC CONNECTION SETUP RRC CONNECTION SETUP COMPLETE	aging craci is for co services.
20 21	-> <-	PAGING RESPONSE RRC CONNECTION RELEASE	Mobile identity = TMSI-2 After sending of this message, the SS waits for disconnection of the CS signalling link.
22	->	RRC CONNECTION RELEASE COMPLETE	and the state of t
23	<-	PAGING TYPE1	Paging order is for PS services. Mobile identity = P-TMSI-2
23a 23b 23c	-> <- ->	RRC CONNECTION REQUEST RRC CONNECTION SETUP RRC CONNECTION SETUP COMPLETE	
24 24a 24b	-> <- ->	SERVICE REQUEST RRC CONNECTION RELEASE RRC CONNECTION RELEASE	Service type = "paging response"
25	UE	COMPLETE	The UE is switched off or power is removed
26	->	DETACH REQUEST	(see ICS). 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

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

UE shall perform the following actions depending on the Detach type described below.

Case1) Detach type is not re-attach

At step6, UE shall:

- respond to DETACH REQUEST message by sending DETACH ACCEPT message.

Case2) Detach type is re-attach

At step13, UE shall:

- ignore the PS detach procedure.

At step15, UE shall:

- send the ATTACH COMPLETE message.

At step20, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step24, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

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.

The SIB1 IE "CN domain specific NAS system information", for the CS Domain, is set to value "00 00" (to prevent repeated CS domain registration and/or IMSI Detach by UEs in operation mode A).

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

The UE has been registered in the CS domain.

Related ICS/IXIT statements

Support of PS service Yes/No UE operation mode C Yes/No UE operation mode A 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	ÜE		The UE is set o attach to the PS services only (see ICS). If that is not supported by the UE, goto step 8.
2	UE		The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
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	3
5a	SS		The SS releases the RRC connection.
6	UE		The UE is switched off (see ICS).
6a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Detach".
7 7a	->	DETACH REQUEST	Detach type = 'power switched off, PS detach' The SS releases the RRC connection.
8	UE		The UE is set to attach to both the PS and non-PS services (see ICS) and the test is repeated from step 2 to step 7a.

Specific message contents

None.

12.3.1.1.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, when the UE is switched off, 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

- 1) The UE detaches the IMSI for PS services if the UE is ordered to do so with MMI or AT commands.
- 2) Upon completion of the subsequent attach, routing area update, service request or detach procedure the used P-TMSI signature shall be deleted.

Reference

3GPP TS 24.008 clause 4.7.4.1.

3GPP TS 24.008 clause 4.7.1.3

12.3.1.2.3 Test purpose

To test the behaviour of the UE for the detach procedure, including treatment of P-TMSI signature.

12.3.1.2.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

The SIB1 IE "CN domain specific NAS system information", for the CS Domain, is set to value "00 00" (to prevent repeated CS domain registration and/or IMSI Detach by UEs in operation mode A).

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

The UE has been registered in the CS domain.

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

UE PS Release Yes/No

Test procedure

The UE performs a PS attach procedure.

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.

The UE performs a PS attach procedure.

The UE sends a DETACH REQUEST message to the SS.

Step	Direction	Message	Comments
	UE SS		
1	UE		The UE is set to attach to the PS services only (see ICS). If that is not supported by the UE, goto step 18.
2	UE		The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	Treating area restrict, the restrict of the re
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
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	Routing area identity = RAI-1
5a	ss	TATTAGIT GOIWII EETE	The SS releases the RRC connection.
5		(void)	
6	UE		The UE initiates a PS detach (without power off) by MMI or AT command.
6a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Detach"
7 7a	-> SS	DETACH REQUEST	Detach type = 'normal detach, PS detach' The SS starts integrity protection.
8	<-	DETACH ACCEPT	
8a	SS		The SS releases the RRC connection.
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	UE		The UE initiates an attach by MMI or AT commands
12	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1
13	<-	ATTACH ACCEPT	Routing area identity = RAI-1 No new mobile identity assigned Attach result = 'PS only attached'
14	UE		Routing area identity = RAI-1 The UE initiates a PS detach (without power off) by MMI or AT command.
15	->	DETACH REQUEST	Detach type = 'normal detach, PS detach'
16	SS -> MS	DETACH ACCEPT	Dotaon type – normal detaon, i o detaon
17	22 /0	(void)	
18	UE	,	The UE is set to attach to both PS and non-PS services (see ICS) and the test is repeated
			from step 2 to step 16.

Specific message contents

None.

12.3.1.2.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step7 and 15, UE shall:

- sends the DETACH REQUEST message(without power off) to SS.

At step10, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step 12, UE shall

- initiate ATTACH REQUEST message without P-TMSI signature IE.

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 and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C
UE operation mode A
Switch off on button
Yes/No
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.

Step	Direction UE SS	Message	Comments
1	UE		The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 25.
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 Routing area identity = RAI-1
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	Routing area identity – IVAI-1
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. 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 7 8	-> SS SS	DETACH REQUEST	Detach type = 'normal detach, PS detach' No response is given from the SS. The SS verifies that the time between the detach requests is 15 seconds
9 10 11	-> SS SS	DETACH REQUEST	Detach type = 'normal detach, PS detach' No response is given from the SS. The SS verifies that the time between the
12 13 14	-> SS SS	DETACH REQUEST	detach requests is 15 seconds Detach type = 'normal detach, PS detach' No response is given from the SS. The SS verifies that the time between the
15 16 17	-> SS SS	DETACH REQUEST	detach requests is 15 seconds Detach type = 'normal detach, PS detach' No response is given from the SS. The SS verifies that the time between the
18 19	-> SS	DETACH REQUEST	detach requests is 15 seconds Detach type = 'normal detach, PS detach' No response is given from the SS within 40 seconds and SS verifies that the UE will not send a DETACH REQUEST again.
20 21	UE ->	ATTACH REQUEST	Initialte a PS attach Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
21a	<-	AUTHENTICATION AND CIPHERING REQUEST	
21b	->	AUTHENTICATION AND CIPHERING RESPONSE	
21c 22	SS <-	ATTACH ACCEPT	The SS starts integrity protection. 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.

None.

12.3.1.3.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attaché procedure with the information elements specified in the above Expected Sequence.

At step9, 12, 15 and 18, when a T3321 expires with the attempt counter less than five, UE shall:

- initiate the new PS detach procedure.

At step19, when the attempt counter is greater than or equal to five, UE shall:

- not repeat the PS detach procedure.

At step20, UE shall:

- initiate the PS attaché 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 following test procedure is repeated for sequence counter k = 1,2,3:

The UE performs a PS attach.

The UE initiates a PS detach. The SS initiates a P-TMSI REALLOCATION COMMAND message (k=1), a GMM STATUS message (k=2) and a GMM INFORMATION message (k=3). The UE shall ignore the GMM common messages and continue with the PS detach procedure. The sending of the P-TMSI REALLOCATION COMMAND message (k=1), the GMM STATUS message (k=2), the GMM INFORMATION message (k=3) and the DETACH ACCEPT message shall be completed within Timer T3321 -10%.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

Expected Sequence

The test sequence is repeated for $k = 1 \dots 3$

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
3a	<-	AUTHENTICATION AND	
24		CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS	OII TIERNING REGI GINGE	The SS starts integrity protection.
4	<-	ATTACH ACCEPT	Attach result = 'PS only attached'
			Mobile identity = P-TMSI-1
			P-TMSI-1 signature
_		ATTACH COMPLETE	Routing area identity = RAI-1
5	-> UE	ATTACH COMPLETE	The UE initiates a detach (without power off) by
	OL		MMI or AT command.
7	->	DETACH REQUEST	Detach type = 'normal detach, PS detach'
A8	SS		The SS sends a P-TMSI REALLOCATION
(k=1)		D 71401 D 7441 0 0 4 710 11	COMMAND message
9A (k=1)	<-	P-TMSI REALLOCATION COMMAND	
10A	UE	COMMAND	The UE ignores the message. This is verified
(k=1)	<u> </u>		for 10 seconds.
`8B	SS		The SS sends a GMM STATUS message
(k=2)		CAMA OTATUO	
9B (k=2)	<-	GMM STATUS	
10C	UE		The UE ignores the message. This is verified
(k=2)	<u> </u>		for 10 seconds.
8C	SS		The SS sends a GMM INFORMATION
(k=3)		CAMA INICODA A TIONI	message
9C (k=3)	<-	GMM INFORMATION	
10C	UE		The UE ignores the message which is verified
(k=3)			for 10 seconds or if GMM INFORMATION
1			message not implemented, sends a GMM
			STATUS with GMM Cause 'Message type non-
11	<-	DETACH ACCEPT	existent or not implemented'. The SS responds to the DETACH REQUEST
12	<- <-	PAGING TYPE1	Mobile identity = P-TMSI-1
'-	,		Paging order is for PS services.
13	UE		No response from the UE to the request. This
			is checked for 10 seconds.

Note: Steps 8x, 9x, 10x and 11 shall be completed within Timer T3321 -10%.

Specific message contents

None.

12.3.1.4.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step 10A, 10B, 10C and 13, 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 message.

12.3.1.5 PS detach / power off / accepted / PS/IMSI detach

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.

Step	Direction	Message	Comments
	UE SS		
1	UE		The UE is setto attach to both the PS and non-PS services (see ICS).
2	UE		The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
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	
5a	SS		The SS releases the RRC connection.
6	UE		The UE is switched off (see ICS).
6a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
7	->	DETACH REQUEST	message is set to "Detach". Detach type = 'power switched off, combined PS / IMSI detach'
7a	SS		The SS releases the RRC connection.

Specific message contents

None.

12.3.1.5.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, when the UE is switched off, UE shall:

- send the DETACH REQUEST message to SS with the Detach type = 'power switched off, combined PS / IMSI detach'.

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
User requested combined PS and non-PS detached without powering off 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.

Step	Direction	Message	Comments
-	UE SS]	
1	UE		The UE is set to attach to both the PS and non-
			PS services (see ICS).
2	UE		The UE is powered up or switched on and
			initiates an attach (see ICS).
2a	SS		The SS checks that the IE "Establishment
			cause" in the received RRC CONNECTION
3	->	ATTACH REQUEST	REQUEST message is set to "Registration". Attach type = 'Combined PS / IMSI attach'
3	->	ATTACH REQUEST	Mobile identity = IMSI
			TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND	TWO states - no valid Two dvalidsio
		CIPHERING REQUEST	
3b	->	AUTHENTICATION AND	
		CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
4	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached'
			Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Mobile identity = TMSI-1
_	_	ATTACH COMPLETE	Routing area identity = RAI-1
5 5a	-> SS	ATTACH COMPLETE	The SS releases the RRC connection.
6	UE		The UE initiates a detach (without power off) by
	OL.		MMI or AT command (see ICS).
6a	SS		The SS checks that the IE "Establishment
			cause" in the received RRC CONNECTION
			REQUEST message is set to "Detach".
7	->	DETACH REQUEST	Detach type = 'normal detach, combined PS /
			IMSI detach'
8	<-	DETACH ACCEPT	
8a	SS		The SS releases the RRC connection.
9	<-	PAGING TYPE1	Mobile identity = P-TMSI-1
40			Paging order is for PS services.
10	UE		No response from the UE to the request. This
11	_	PAGING TYPE1	is checked for 10 seconds. Mobile identity = IMSI
''	<-	I AGING LIFET	Paging order is for CS services.
12	UE		The UE shall not initiate an RRC connection.
12			This is checked during 3 seconds.

Specific message contents

None.

12.3.1.6.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step10, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step12, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

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
User requested non-PS detached 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.

Step	Direction UE SS	Message	Comments
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
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	TIVISI Status = 110 Vallu TIVISI available
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1
5	->	ATTACH COMPLETE	Routing area identity = RAI-1
6	UE		The UE initiates a detach for non-PS services (without power off) (see ICS).
7 8	-> <-	DETACH REQUEST DETACH ACCEPT	Detach type = 'normal detach, IMSI detach'
9	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
9a 9b	->	RRC CONNECTION REQUEST RRC CONNECTION SETUP	aging order to to the continues.
9c	<- ->	RRC CONNECTION SETUP	
10	->	COMPLETE SERVICE REQUEST	service type = "paging response"
10a 10b	<- ->	RRC CONNECTION RELEASE RRC CONNECTION RELEASE COMPLETE	
11	<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
12	UE		Paging order is for RRC connection. 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 with IMSI attach" P-TMSI-1 signature
15	<-	ROUTING AREA UPDATE ACCEPT	Routing area identity = RAI-1 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 19 20	-> <- ->	RRC CONNECTION REQUEST RRC CONNECTION SETUP RRC CONNECTION SETUP COMPLETE	3 3 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
21 22	-> <-	PAGING RESPONSE RRC CONNECTION RELEASE	Mobile identity = TMSI-1 After sending of this message, the SS waits for
23	->	RRC CONNECTION RELEASE COMPLETE	disconnection of the CS signalling link.
24	UE	OOM LETE	The UE is switched off or power is removed (see ICS).

Step	Dire	ction	Message	Comments
	UE	SS		
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

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step10, after the detach procedure (Detach type = 'normal detach, IMSI detach') is completed, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step12, after the detach procedure (Detach type = 'normal detach, IMSI detach') is completed, UE shall:

- not respond to the paging message for CS.

At step21, after the routing area updating procedure (Update type = 'Combined RA/LA updating') is completed, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

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
User requested combined PS and non-PS detached without powering off Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

Sufficient time is given for the UE to identify the neighbour cell before the UE is triggered to initiate a PS detach procedure. The DETACH ACCEPT message is delayed from the SS.

The UE performs a cell reselection to a cell in a new routing area and performs a routing area update procedure.

The UE shall re-initiate a PS detach procedure when the routing area update procedure is finished.

The UE deletes the logical link.

Step	Direction	Message	Comments
	UE SS		
	SS		The following messages are sent and shall be
1	SS		received on cell A. Set the cell type of cell A to the "Serving cell".
'	33		Set the cell type of cell B to the "Non-Suitable
			cell".
			(see note)
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
4	->	ATTACH REQUEST	by the UE. Attach type = 'Combined PS / IMSI attach'
7	-/	ATTAOTTREGGEST	Mobile identity = IMSI
			TMSI status = no valid TMSI available
4a	<-	AUTHENTICATION AND	
		CIPHERING REQUEST	
4b	->	AUTHENTICATION AND	
	00	CIPHERING RESPONSE	T. 00
4c	SS	ATTACILACOERT	The SS starts integrity protection.
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	
6a	SS		SS waits 30 sec.
7	UE		The UE initiates a PS detach (without power
0	_	DETACH BEOLIEST	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
4.0	00		received on cell B.
10	SS		Set the cell type of cell A to the "Suitable neighbour cell".
			Set the cell type of cell B to the "Serving cell".
			(see note)
			Cell B is preferred by the UE.
11	UE		The UE performs a RA update in the new cell.
12	->	ROUTING AREA UPDATE	Update type = 'Combined RA/LA updating'
		REQUEST	P-TMSI-1 signature
			Routing area identity = RAI-1
			TMSI status = valid TMSI available or IE omitted
13	<-	ROUTING AREA UPDATE	Update result = 'Combined RA/LA updated'
10		ACCEPT	Space Todak - Sombined 117 VE/1 apacted
			Mobile identity = P-TMSI-2
			P-TMSI-2 signature
			Routing area identity = RAI-4
14	->	ROUTING AREA UPDATE	
15		COMPLETE	The detach is automatically to attempted
15	->	DETACH REQUEST	The detach is automatically re-attempted. Detach type = 'normal detach, combined PS /
			IMSI detach'
16	<-	DETACH ACCEPT	
NOTE:		ions for "Non-Suitable cell", "Suitabl	e neighbour cell" and "Serving cell" are specified
	in TS34.10	08 clause 6.1 "Reference Radio Con	ditions for signalling test cases only".

Specific message contents

None.

12.3.1.8.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step12, when a change of cell into a new routing area is performed before DETACH ACCEPT message is received by the UE, UE shall:

- abort a PS detach procedure.
- perform routing area updating procedure.

At step15, when the UE completes a routing area updating procedure, UE shall:

- re-initiate the PS detach 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
Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

User requested combined PS and non-PS detached without powering off 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 reattach 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
		ATTACLIBECLIEGT	initiates an attach (see ICS).
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach'
			Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND	TWO Status = 110 valid TWO available
Ja		CIPHERING REQUEST	
3b	->	AUTHENTICATION AND	
OD.		CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
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
_		DETA OLI DEGLIEGE	off) by MMI or AT command.
7	->	DETACH REQUEST	Detach type = 'normal detach, combined PS /
0		DETACLIBEOLIECT	IMSI detach
8	<- ->	DETACH REQUEST DETACH ACCEPT	Detach type = 're-attach not required' 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
	`	THE THE	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

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, when the UE receives DETACH REQUEST message from SS before UE initiated PS detach procedure has been completed, UE shall:

- send the DETACH ACCEPT message to SS.

At step12, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step14, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

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).

The SIB1 IE "CN domain specific NAS system information", for the CS Domain, is set to value "00 00" (to prevent repeated CS domain registration and/or IMSI Detach by UEs in operation mode A).

User Equipment:

The UE has a valid IMSI.

The UE has been registered in the CS domain.

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.

Step	Direction	Message	Comments
	UE SS		
1	SS		The SS is set in network operation mode II.
2	UE		The UE is set to either attach to PS only or
			both the PS and non-PS services (see ICS).
3	UE		The UE is powered up or switched on and
			initiates an attach (see ICS).
3a	SS		The SS checks that the IE "Establishment
			cause" in the received RRC CONNECTION
		ATTA OLI DEOLIEGE	REQUEST message is set to "Registration".
4	->	ATTACH REQUEST	Attach type = 'PS attach'
		ALITUENTION TION AND	Mobile identity = IMSI
4a	<-	AUTHENTICATION AND	
416	_	CIPHERING REQUEST	
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS	CIPHERING RESPONSE	The SS starts integrity protection.
5	<-	ATTACH ACCEPT	Attach result = 'PS only attached'
		ATTACTTACCETT	Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Routing area identity = RAI-1
6	->	ATTACH COMPLETE	Trouming arounds have
7	SS		The SS initiates a PS detach.
8	<-	DETACH REQUEST	Detach type = 're-attach not required'
9	->	DETACH ACCEPT	
9a	SS		The SS releases the RRC connection.
10	<-	PAGING TYPE1	Mobile identity = P-TMSI-1
			Paging order is for PS services.
11	UE		No response from the UE to the request except
			from a possible ATTACH REQUEST (UE may
			send an ATTACH REQUEST when the Detach
			type = 're-attach not required'). This is checked
			for 10 seconds.

Specific message contents

None.

12.3.2.1.5 Test requirements

At step 3a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, when the UE receives the DETACH REQUEST message from SS and the detach type IE indicates 're-attach not required', the UE shall:

- send DETACH ACCEPT message to SS.

At step11, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain, except from a possible ATTACH REQUEST.

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 orders 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 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.

Step	Direction UE SS	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".
2	UE		(see note) The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported,
3	UE		goto step 22. The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred
3a	UE	Registration on CS	by the UE. See TS 34.108 This is applied only for UE in UE operation
4	->	ATTACH REQUEST	mode A. Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	Routing area identity = KAI-1
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c 5	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature
6	->	ATTACH COMPLETE	Routing area identity = RAI-1
7 8	<-	DETACH ACCEPT	Detach type = 're-attach not required' Cause = 'PS services not allowed'
0	->	DETACH ACCEPT	The following messages are sent and shall be
9	SS		received on cell B. Set the cell type of cell A to the "Non-Suitable cell".
			Set the cell type of cell B to the "Serving cell". (see note)
10	UE		Cell B is preferred by the UE. Step 11 is only performed for UE Operation Mode A.
11	UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
12			Parameter mobile identity is IMSI. The UE initiates an attach automatically (see
13	UE		ICS), by MMI or AT commands. No ATTACH REQUEST sent to the SS
14	UE		(SS waits 30 seconds). If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS)
			switch off is performed. Otherwise the power is removed.
15	UE		The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
16	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
16a	<-	AUTHENTICATION AND CIPHERING REQUEST	
16b	->	AUTHENTICATION AND CIPHERING RESPONSE	
16c	SS		The SS starts integrity protection.

17	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature	
40		ATTACUL COMPLETE	Routing area identity = RAI-2	
18	->	ATTACH 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, PS detach'	
21			Set the cell type of cell A to the "Serving cell".	
			Set the cell type of cell B to the "Non-Suitable	
			cell".	
			(see note)	
22	UE		The UE is set in UE operation mode A (see	
			ICS) and the test is repeated from step 3 to	
			step 18.	
NOTE:	OTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1			
	"Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.3.2.2.5 Test requirements

At step4 and 15, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the UE receives the DETACH REQUEST message (Detach type = 're-attach not required', Cause = 'PS services not allowed') from SS, UE shall:

- send DETACH ACCEPT message.

At step13, UE shall:

- not perform PS attach procedure.

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

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.

Step	Direction UE SS	Message	Comments
1	UE SS		The UE is set in UE operation mode A (see
'	02		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
0 -		ALITHENTICATION AND	TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND	
		CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
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	Trouming area racrimly
6	SS		The SS initiates a detach for non-PS services.
7	<-	DETACH REQUEST	Detach type = 'IMSI detach'
9	-> UE	DETACH ACCEPT	The UE initiates an attach for non-PS services
9	UE UE		(see ICS).
10	->	ROUTING AREA UPDATE	Update type = 'Combined RA/LA updating with
		REQUEST	IMSI attach'
			P-TMSI-1 signature
			Routing area identity = RAI-1
11	<-	ROUTING AREA UPDATE	TMSI status = no valid TMSI available Update result = 'Combined RA/LA updating'
''		ACCEPT	Mobile identity = P-TMSI-2
		7.00=	P-TMSI-2 signature
			Mobile identity = TMSI-1
4.0		DOLUTING A DEA LUDBATE	Routing area identity = RAI-1
12	->	ROUTING AREA UPDATE COMPLETE	
13	<-	PAGING TYPE1	Mobile identity = TMSI-1
'	`		Paging order is for CS services.
14	->	RRC CONNECTION REQUEST	
15	<-	RRC CONNECTION SETUP	
16	->	RRC CONNECTION SETUP	
17		COMPLETE PAGING RESPONSE	Mobile identity = TMSI-1
18	-> <-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for
'	`	THE CONTROL THE PROPERTY OF TH	disconnection of the CS signalling link.
19	->	RRC CONNECTION RELEASE	
		COMPLETE	
20	UE		The UE is switched off or power is removed
21	->	DETACH REQUEST	(see ICS). Message not sent if power is removed.
21		DETAGITICEQUEST	Detach type = 'power switched off, combined
		_	PS / IMSI detach'

Specific message contents

None.

12.3.2.3.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the UE receives the DETACH REQUEST message with Detach type = 'IMSI detach', UE shall;

- send the DETACH ACCEPT message to SS.

At step10, after the completion of the detach procedure, UE shall;

- perform combined routing area updating procedure.

At step17, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

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 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 detaches for PS services. The UE automatically performs a new combined PS attach procedure (for PS and non-PS services) and PS and CS services are possible.

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
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	Routing area identity = RAI-1
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS	O	The SS starts integrity protection.
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	DETA OLI DEGLIEGE	The SS initiates a detach with re-attach.
7	<-	DETACH REQUEST	Detach type = 're-attach required'
8	->	DETACH ACCEPT	A
9	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
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	
13	->	COMPLETE SERVICE REQUEST	service type = "paging response"
13a	_	DDC CONNECTION DELEASE	
13b	<- ->	RRC CONNECTION RELEASE 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
22	->	DETACH REQUEST	(see ICS). 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

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the UE receives DETACH REQUEST message with Detach type = 're-attach required', UE shall;

- send DETACH ACCEPT message to SS.

At step9, after UE completed PS detach procedure with Detach type = 're-attach required', UE shall:

- initiate the combined PS attach procedure.

At step13, when the UE receives the paging message for PS domain, UE shall;

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step18, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

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 MCC2/MNC1/LAC1/RAC2 (RAI-2, Not HPLMN), cell B in MCC2/MNC1/LAC1/RAC2 (RAI-7, Not HPLMN), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6, Not

HPLMN).

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
PS attach attempted automatically by outstanding request 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.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
1	SS		received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".
			Set the cell type of cell C to the "Non-Suitable cell ". (see note)
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
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c 5	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached'
			Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-2
6	->	ATTACH COMPLETE	Routing area identity = RAI-2
7	<-	DETACH REQUEST	Detach type = 're-attach not required' Cause 'Location Area not allowed'
8	->	DETACH ACCEPT	Cades Eccation / trea flet allowed
9	UE		No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS
10	<-	PAGING TYPE1	(SS waits 30 seconds). Mobile identity = TMSI-1
44			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	UE		No response from the UE to the request. This is checked for 10 seconds
14	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell".
			Set the cell type of cell B to the "Serving cell".
15	UE		(see note) 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
18	UE		(SS waits 30 seconds) No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS
19	<-	PAGING TYPE1	(SS waits 30 seconds). Mobile identity = TMSI-1
20	UE		Paging order is for CS services. The UE shall not initiate an RRC connection.
21	<-	PAGING TYPE1	This is checked during 3 seconds. Mobile identity = P-TMSI-1
22		-	Paging order is for PS services. No response from the UE to the request.
			This is checked for 10 seconds

Step	Direction UE SS	Message	Comments
23	SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell".
24	UE		(see note) Cell C is preferred by the UE. Step 25 and 26 are only performed by an UE which will not initiate a PS attach automatically
25 conditio nal	UE	Registration on CS	(see ICS) See TS34.108 Parameter mobile identity is IMSI.
26 conditio	UE		The UE initiates an attach by MMI or AT command.
27	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
28	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-6
29 30	-> <-	ATTACH COMPLETE PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
31 32 33	-> <- ->	RRC CONNECTION REQUEST RRC CONNECTION SETUP RRC CONNECTION SETUP COMPLETE	aging order is for de services.
34 35	-> <-	PAGING RESPONSE RRC CONNECTION RELEASE	Mobile identity = TMSI-1 After sending of this message, the SS waits for disconnection of the CS signalling link.
36 37	-> <-	RRC CONNECTION RELEASE COMPLETE PAGING TYPE1	Mobile identity = P-TMSI-1
38 39 40	-> <- ->	RRC CONNECTION REQUEST RRC CONNECTION SETUP RRC CONNECTION SETUP	Paging order is for PS services.
41 42 43	-> <- ->	COMPLETE SERVICE REQUEST RRC CONNECTION RELEASE RRC CONNECTION RELEASE COMPLETE	service type = "paging response"
44	UE		The UE is switched off or power is removed (see ICS).
45	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
46	UE		The following messages are sent and shall be received on cell B. Set the cell type of cell B to the "Serving cell". Set the cell type of cell C to the "Non-Suitable cell".
47	UE		(see note) Cell B is preferred by the UE. The UE is powered up or switched on and initiates an attach (see ICS). Step 48 is only performed for non-auto attach
48	UE	Registration on CS	UE. See TS34.108
49	UE		Parameter mobile identity is TMSI-1 UE initiates an attach automatically (see ICS), by MMI or AT commands.

Step	Direction UE SS	Message	Comments
50	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-6
51	<-	ATTACH ACCEPT	TMSI status = valid TMSI available Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-7
52	->	ATTACH COMPLETE	
53	<-	PAGING TYPE1	Mobile identity = TMSI-2
			Paging order is for CS services.
54	->	RRC CONNECTION REQUEST	
55	<-	RRC CONNECTION SETUP	
56	->	RRC CONNECTION SETUP	
		COMPLETE	
57	->	PAGING RESPONSE	Mobile identity = TMSI-2
58	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for
			disconnection of the CS signalling link.
59	->	RRC CONNECTION RELEASE COMPLETE	
60	<-	PAGING TYPE1	Mobile identity = P-TMSI-2
	,	TAGING TITE!	Paging order is for PS services.
61	->	RRC CONNECTION REQUEST	aging cracino for 1 5 dervisees.
62	<-	RRC CONNECTION SETUP	
63	->	RRC CONNECTION SETUP	
		COMPLETE	
64	->	SERVICE REQUEST	service type = "paging response"
65	<-	RRC CONNECTION RELEASE	
66	->	RRC CONNECTION RELEASE	
		COMPLETE	
67	UE		The UE is switched off or power is removed
			(see ICS).
68	->	DETACH REQUEST	Message not sent if power is removed.
			Detach type = 'power switched off, combined
<u> </u>			PS / IMSI detach'
NOTE:			
	"Reference Radio Conditions for signalling test cases only".		

Specific message contents

None.

12.3.2.5.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the UE receive the DETACH REQUEST message (Detach type = 're-attach not required', Cause = 'Location Area not allowed') from SS, UE shall:

- send the DETACH ACCEPT message.

UE shall perform the following action depending on UE location.

1) UE is in the same location area.

At step9 and 18, UE shall:

- not perform location updating procedure.

At step11 and 20, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for PS domain.

At step13 and 22, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step17, UE shall;

- not perform PS attach procedure.
- 2) UE is in the new location area.

At step27, UE shall;

- perform the combined PS attach procedure.

At step34, when the UE receives the paging message for CS domain with Mobile identity = IMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step41, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step50, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence

At step57, when the UE receives the paging message for CS domain with Mobile identity = IMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step64, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

12.3.2.6 PS detach / rejected / No Suitable Cells In Location Area

12.3.2.6.1 Definition

12.3.2.6.2 Conformance requirement

- 1. If the network performs a PS detach procedure with the cause 'No Suitable Cells In Location Area', the User Equipment shall:
 - 1.1 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.
 - 1.2 store the LA in the 'forbidden location areas for roaming'.

Reference

3GPP TS 24.008 clauses 4.7.4.2.

12.3.2.6.3 Test purpose

To test the behaviour of the UE if the network sends the DETACH REQUEST message with the cause 'No Suitable Cells In Location Area'.

12.3.2.6.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in 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.

User Equipment:

The UE has 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 sends a DETACH REQUEST message with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall not perform combined PS attach while in the same location area on the same PLMN. The SS checks that the UE shall perform PS attach when the UE enters a suitable cell in a different location area on the same PLMN.

Step	Direction	Message	Comments	
	UE SS			
	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell".	
			Set the cell type of cell C to the "Suitable neighbour cell".	
			(see note)	
			The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C	
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). Cell A is preferred by the UE.	
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available	
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	Timer status = 110 value Timer available	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE		
3c	SS		The SS starts integrity protection.	
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	<-	DETACH REQUEST	Detach type = 're-attach not required' Cause 'No Suitable Cells In Location Area'	
7	->	DETACH COMPLETE	The fellowing research and all healths	
8	UE		The following message are sent and shall be received on cell B. The UE initiates an attach automatically, by	
9	->	ATTACH REQUEST	MMI or by AT command. Attach type = 'Combined PS / IMSI attach'	
			Mobile identity = IMSI TMSI status = no valid TMSI available	
10	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2	
4.4		ATTACH COMPLETE	Routing area identity = RAI-	
11 12	-> UE	ATTACH COMPLETE	The UE is switched off or power is removed	
13	->	DETACH REQUEST	(see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach'	
NOTE:				

6.1 "Reference Radio Conditions for signalling test cases only".

Specific message contents

None.

12.3.2.6.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach procedure.

12.3.2.7 PS detach / rejected / Roaming not allowed in this location area

12.3.2.7.1 Definition

12.3.2.7.2 Conformance requirement

- 1) If the network performs a PS detach procedure with the cause 'Roaming area not allowed in this location area' the User Equipment shall:
 - 1.1 delete any RAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number.
 - 1.2 set the GPRS update status to GU3 ROAMING NOT ALLOWED.
 - 1.3 reset the attach attempt counter.
 - 1.4 store the LAI in the list of "forbidden location areas for roaming".
 - 1.5 perform a PLMN selection.
- 2) If the UE is IMSI attached via MM procedures, the UE shall in addition:
 - 2.1 delete any TMSI, LAI and ciphering key sequence number.
 - 2.2 reset the location update attempt counter.

Reference

3GPP TS 24.008 clauses 4.7.4.2.

12.3.2.7.3 Test purpose

To test the behaviour of the UE if the network orders the PS detach procedure with the cause 'Roaming area not allowed in this location area '.

12.3.2.7.4 Method of test

Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC2/MNC1/LAC1/RAC2 (RAI-2, Not HPLMN), cell B in MCC2/MNC1/LAC1/RAC2 (RAI-7, Not HPLMN), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6, Not HPLMN).

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 'Roaming area not allowed in this location area '. 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.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
			received on cell A.
1	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable
			cell".
			Set the cell type of cell C to the "Non-Suitable
			cell". (see note)
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
4a	<-	AUTHENTICATION AND	
4b	->	CIPHERING REQUEST AUTHENTICATION AND	
10		CIPHERING RESPONSE	
4c	SS		The SS starts integrity protection.
5	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Mobile identity = TMSI-1
6	->	ATTACH COMPLETE	Routing area identity = RAI-2
7	<-	DETACH REQUEST	Detach type = 're-attach not required'
			Cause 'Roaming not allowed in this location area '
8	->	DETACH ACCEPT	alea
9	UE		No LOCATION UPDATING REQ with type
			'IMSI attach' is sent to the SS (SS waits 30 seconds).
10	<-	PAGING TYPE1	Mobile identity = TMSI-1
11	UE		Paging order is for CS services. The UE shall not initiate an RRC connection.
''	OL		This is checked during 3 seconds.
12	<-	PAGING TYPE1	Mobile identity = P-TMSI-1
13	UE		Paging order is for PS services. 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		Set the cell type of cell A to the "Non-Suitable
			cell".
			Set the cell type of cell B to the "Serving cell". (see note)
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
4.0	.,-		(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 = TMSI-1
20	UE		Paging order is for CS services. The UE shall not initiate an RRC connection.
		DA 01110 TVDE /	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

Step	Direction	Message	Comments
	UE SS		T. (!!
23	SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell".
24	UE		(see note) Cell C is preferred by the UE. Step 25 is only performed for non-auto attach
25	UE	Registration on CS	UE. See TS34.108 Parameter mobile identity is IMSI.
26	UE		The UE initiates an attach automatically (See
27	->	ATTACH REQUEST	ICS), by MMI or AT command. Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
28	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-6
29 30	-> <-	ATTACH COMPLETE PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
31 32 33	-> <- ->	RRC CONNECTION REQUEST RRC CONNECTION SETUP RRC CONNECTION SETUP COMPLETE	raying order is for CS services.
34 35	-> <-	PAGING RESPONSE RRC CONNECTION RELEASE	Mobile identity = TMSI-1 After sending of this message, the SS waits for disconnection of the CS signalling link.
36	->	RRC CONNECTION RELEASE COMPLETE	allocation of the cooliginaling link.
37	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
38 39 40	-> <- ->	RRC CONNECTION REQUEST RRC CONNECTION SETUP RRC CONNECTION SETUP COMPLETE	
41 42 43	-> <- ->	SERVICE REQUEST RRC CONNECTION RELEASE RRC CONNECTION RELEASE COMPLETE	service type = "paging response"
44	UE	OOM LETE	The UE is switched off or power is removed
45	->	DETACH REQUEST	(see ICS). Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
46	UE		The following messages are sent and shall be received on cell B. Set the cell type of cell B to the "Serving cell". Set the cell type of cell C to the "Non-Suitable cell".
47	UE		(see note) Cell B is preferred by the UE. The UE is powered up or switched on and initiates an attach (see ICS). Step 48 is only performed for non-auto attach UE.
48	UE	Registration on CS	See TS34.108 Parameter mobile identity is TMSI-1
49	UE		UE initiates an attach automatically (see ICS), by MMI or AT commands.

Step	Direction UE SS	Message	Comments
50	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach'
51	-> <-	ATTACH ACCEPT	Mobile identity = P-TMSI-1 Routing area identity = RAI-6 TMSI status = valid TMSI available Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2
			P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-7
52	->	ATTACH COMPLETE	
53	<-	PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
54	->	RRC CONNECTION REQUEST	
55	<-	RRC CONNECTION SETUP	
56	->	RRC CONNECTION SETUP COMPLETE	
57	->	PAGING RESPONSE	Mobile identity = TMSI-2
58	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
59	->	RRC CONNECTION RELEASE COMPLETE	
60	<-	PAGING TYPE1	Mobile identity = P-TMSI-2
			Paging order is for PS services.
61	->	RRC CONNECTION REQUEST	
62	<-	RRC CONNECTION SETUP	
63	->	RRC CONNECTION SETUP COMPLETE	
64	->	SERVICE REQUEST	service type = "paging response"
65	<-	RRC CONNECTION RELEASE	
66	->	RRC CONNECTION RELEASE COMPLETE	
67	UE		The UE is switched off or power is removed (see ICS).
68	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1			
"Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.3.2.7.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the UE receive the DETACH REQUEST message (Detach type = 're-attach not required', Cause = 'Roaming not allowed in this location area') from SS, UE shall:

- send the DETACH ACCEPT message.

UE shall perform the following action depending on UE location.

1) UE is in the same location area.

At step9 and 18, UE shall:

- not perform location updating procedure.

At step11 and 20, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for PS domain.

At step13 and 22, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step17, UE shall;

- not perform PS attach procedure.
- 2) UE is in the new location area.

At step27, UE shall;

- perform the combined PS attach procedure.

At step34, when the UE receives the paging message for CS domain with Mobile identity = IMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step41, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step50, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence

At step57, when the UE receives the paging message for CS domain with Mobile identity = IMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step64, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

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.

12.4.1.1a Routing area updating / accepted

12.4.1.1a.1 Definition

12.4.1.1a.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.
- 3) The routing area updating procedure shall also be used by a UE which is attached for PS services if a new PLMN is entered.

Reference

3GPP TS 24.008 clause 4.7.5, 4.7.5.1.

12.4.1.1a.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.

To test the behaviour of the UE if the UE enters the new PLMN.

12.4.1.1a.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 MCC2/MNC1/LAC1/RAC2 (RAI-7).

All three cells are operating in network operation mode II.

The PLMN contains cell C is equivalent to the PLMN that contains cell A.

The SIB1 IE "CN domain specific NAS system information", for the CS Domain, is set to value "00 00" (to prevent repeated CS domain registration and/or IMSI Detach by UEs in operation mode A) in all cells.

User Equipment:

The UE has a valid IMSI.

The UE has been registered in the CS domain.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A
UE operation mode C
Switch off on button
Yes/No
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 UPDATE 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 UPDATE REQUEST message. The SS accepts the P-TMSI and returns ROUTING AREA UPDATE ACCEPT message without any P-TMSI. Further communication UE SS is performed by the P-TMSI.
- 3) 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 UPDATE COMPLETE message.

Expected Sequence

	Step	Dire UE	SS	Message	Comments
•					The following messages are sent and shall be received on cell A.

Step	Direction UE SS	Message	Comments
1	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell".
2	UE		(see note) The UE is set to attach to PS services only (see ICS). If that is not supported by the UE,
3	UE		goto step 32. The UE is powered up or switched on and initiates an attach (see ICS).
3a	SS		The SS checks that the IE "Establishment cause" in the received RRC CONNECTION
4	->	ATTACH REQUEST	REQUEST message is set to "Registration". Attach type = 'PS attach' Mobile identity = IMSI
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c 5	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Equivalent PLMN: MCC = 2, MNC = 1
6 6a	-> SS	ATTACH COMPLETE	The SS releases the RRC connection.
7	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell".
7a	SS		(see note) The SS checks that the IE "Establishment cause" in the received RRC CONNECTION
8	->	ROUTING AREA UPDATE REQUEST	REQUEST message is set to "Registration". Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
8a 9	SS <-	ROUTING AREA UPDATE ACCEPT	The SS starts integrity protection. Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature
10 11	->	ROUTING AREA UPDATE COMPLETE Void	Routing area identity = RAI-4
11b 11c 11d	SS <-	Void Void PAGING TYPE1	The SS releases the RRC connection. Mobile identity = P-TMSI-1
11e	SS		Paging order is for PS services. SS verifies that the UE transmits an RRC CONNECTION REQUEST message. SS will
12	<-	PAGING TYPE1	reject this request. The IE "Establishment cause" is not checked. Mobile identity = P-TMSI-2 Paging order is for PS services.
13	UE		No response from the UE to the request. This is checked for 10 seconds.
14	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)

Step	Direction UE SS	Message	Comments
15	UE		Cell A is preferred by the UE.
15a	SS		The SS checks that the IE "Establishment
			cause" in the received RRC CONNECTION
			REQUEST message is set to "Registration".
16	->	ROUTING AREA UPDATE	Update type = 'RA updating'
		REQUEST	P-TMSI-1 signature
			Routing area identity = RAI-4
16a	SS		The SS starts integrity protection.
17	<-	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included.
		ACCEPT	Update result = 'RA updated'
			P-TMSI-1 signature
			Routing area identity = RAI-1
17a	SS		The SS releases the RRC connection.
18	<-	PAGING TYPE1	Mobile identity = P-TMSI-1
			Paging order is for PS services.
			Paging cause = "Terminating interactive call".
18a	SS		The SS checks that the IE "Establishment
			cause" in the received RRC CONNECTION
			REQUEST message is set to "Terminating
10h		Void	interactive call"
18b 18c		Void	
19	->	SERVICE REQUEST	service type = "paging response"
		SERVICE REGIST	paging response
19aa	SS		The SS starts integrity protection.
19a	SS		The SS releases the RRC connection.
			The following messages are sent and shall be
	00		received on cell C.
20	SS		Set the cell type of cell A to the "Suitable
			neighbour cell". Set the cell type of cell C to the "Serving cell".
			(see note)
21	UE		Cell C is preferred by the UE.
22	SS		The SS checks that the IE "Establishment
			cause" in the received RRC CONNECTION
			REQUEST message is set to "Registration".
23	->	ROUTING AREA UPDATE	Update type = 'RA updating'
		REQUEST	P-TMSI-1 signature Routing area identity = RAI-1
24	SS		The SS starts integrity protection.
25	<-	ROUTING AREA UPDATE	Update result = 'RA updated'
	,	ACCEPT	Mobile identity = P-TMSI-3
			P-TMSI-3 signature
			Routing area identity = RAI-7
26	->	ROUTING AREA UPDATE	
27	CC	COMPLETE	The CC releases the DDC secretion
27	SS		The SS releases the RRC connection.
28	UE		The UE is switched off or power is removed
			(see ICS).
29	SS		The SS checks that the IE "Establishment
			cause" in the received RRC CONNECTION
			REQUEST message is set to "Detach".
30	->	DETACH REQUEST	Message not sent if power is removed.
24	60		Detach type = 'power switched off, PS detach'
31	SS UE		The SS releases the RRC connection. The UE is set to attach to both the PS and non-
32	l oe		PS services (see ICS) and the test is repeated
			from step 3 to step 31.
NOTE:	The definit	ions for "Suitable neighbour cell" an	d "Serving cell" are specified in TS34.108 clause
		ence Radio Conditions for signalling	

None.

12.4.1.1a.5 Test requirements

At step 3a, 7a, 15a and 22 the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 18a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Terminating Interactive Call".

At step 29 the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step13, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- not respond to the paging message for PS domain.

At step16, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step19, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step23, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

12.4.1.1b Routing area updating / accepted / Signalling connection re-establishment

12.4.1.1b.1 Definition

12.4.1.1b.2 Conformance requirement

When the UE receives an indication from the lower layers that the RRC connection has been released with cause "Directed signalling connection re-establishment", then the UE shall enter PMM-IDLE mode and initiate immediately a normal routing area update procedure (the use of normal or combined procedure depends on the network operation mode in the current serving cell) regardless whether the routing area has been changed since the last update or not.

Reference

3GPP TS 24.008 clause 4.7.2.5, 4.7.5.1

12.4.1.1b.3 Test purpose

To test the behaviour of the UE if the UE receives a RRC CONNECTION RELEASE message with cause = "Directed signalling connection re-establishment".

12.4.1.1b.4 Method of test

Initial condition

System Simulator:

One cell(Cell A) in MCC1/MNC1/LAC1/RAC1 (RAI-1) operating in network operation mode I. ATT flag is set to 0.

User Equipment:

The UE has a valid TMSI, P-TMSI-1 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 initiates a Service request procedure in order to establish the PS signalling connection for the upper layer signalling.
- b) After the Service request procedure is complete, the SS sends the RRC CONNECTION RELEASE message with cause = "Directed signalling connection re-establishment" to the UE.
- c) After the UE release the RRC connection, the UE initiate immediately a normal routing area update procedure.

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
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
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	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	SS		The SS initiates a security mode control procedure.
11	<-	RRC CONNECTION RELEASE	Release cause=Directed Signalling Connection Re-establishment

Step	Direction	Message	Comments
	UE SS		
12	->	RRC CONNECTION RELEASE	
		COMPLETE	
13	->	RRC CONNECTION REQUEST	
14	<-	RRC CONNECTION SETUP	
15	->	RRC CONNECTION SETUP	
		COMPLETE	
16	->	ROUTING AREA UPDATE	Update type = 'RA updating'
		REQUEST	P-TMSI-1 signature
			Routing area identity = RAI-1
17	<-	ROUTING AREA UPDATE	Update result = 'RA updated'
		ACCEPT	Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Routing area identity = RAI-1
18	->	ROUTING AREA UPDATE	
		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, PS detach'

None.

12.4.1.1b.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step16, UE shall;

- initiate the routing area updating procedure whether the routing area has been changed since the last update or

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 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.

Step	Direction UE SS	Message	Comments
1	UE		The following messages are sent and shall be received on cell A. The UE is set in UE operation mode C (see
2	SS		ICS). The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable
			cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
3	UE		The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3a	UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
4	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a 4b	<- ->	AUTHENTICATION AND CIPHERING REQUEST AUTHENTICATION AND	
4-	00	CIPHERING RESPONSE	The CC starts into suity must still
4c 5	SS <-	ATTACH ACCEPT	The SS starts integrity protection. 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
6	SS		received on cell B. Set the cell type of cell A to the "Suitable neighbour cell".
			Set the cell type of cell B to the "Serving cell". (see note)
7 8	UE ->	ROUTING AREA UPDATE REQUEST	Cell B is preferred by the UE. Update type = 'RA updating'
9	<-	ROUTING AREA UPDATE REJECT	Routing area identity = RAI-1 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.
12	SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell".
12			Set the cell type of cell C to the "Serving cell". (see note)
13 14	UE UE		Cell C is preferred by the UE. No ATTACH REQUEST sent to the SS
15	UE		(SS waits 30 seconds). If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is
16	UE		removed. The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see
16a			ICS). Step 16b is only performed by UE in operation mode A

16b	UE	Registration on CS	See TS 34.108	
17	->	ATTACH REQUEST	Parameter mobile identity is IMSI. Attach type = 'PS attach' Mobile identity = IMSI	
17a	<-	AUTHENTICATION AND CIPHERING REQUEST	inosiie ideniikų – iniei	
17b	->	AUTHENTICATION AND CIPHERING RESPONSE		
17c	SS		The SS starts integrity protection.	
18	<-	ATTACH ACCEPT	Attach result = 'PS only attached'	
			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. Detach	
			type = 'power switched off, PS detach'	
NOTE:	The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified			
	in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

None.

12.4.1.2.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step11, after the routing area updating procedure is rejected with GMM cause = 'Illegal ME', UE shall;

- not respond to the paging message for PS domain.

At step14, UE shall,

- not initiate PS attach procedure.

At step17, after the UE is powered up or USIM is replaced, UE shall;

- initiate the PS attach procedure.

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 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.

Step	Direction UE SS	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".
2	UE		(see note) 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
4	->	ATTACH REQUEST	by the UE. Attach type = 'PS attach' Mobile identity =P-TMSI-1 Routing area identity = RAI-1
4a	<-	AUTHENTICATION AND	Trodding area identity = 1774 1
4b	->	CIPHERING REQUEST AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS		The SS starts integrity protection.
5	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Pouting area identity = PAL1
6	->	ATTACH COMPLETE	Routing area identity = RAI-1
7	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the " Suitable neighbour cell ". Set the cell type of cell B to the "Serving cell".
8 9	UE ->	ROUTING AREA UPDATE REQUEST	(see note) Cell B is preferred by the UE. Update type = 'RA updating' P-TMSI-2 signature
10	<-	ROUTING AREA UPDATE REJECT	Routing area identity = RAI-1 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
13a	<-	AUTHENTICATION AND CIPHERING REQUEST	,
13b	->	AUTHENTICATION AND CIPHERING RESPONSE	
13c 14	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature
15	->	ATTACH COMPLETE	Routing area identity = RAI-4
16	UÉ		The UE is switched off or power is removed
17	->	DETACH REQUEST	(see ICS). 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.

Step	Dire	ction	Message	Comments
	UE	SS		
20	U	E		No response from the UE to the request, as the UE has detached locally. This is checked for 10 seconds.
NOTE:		The definitions for "Non-Suitable cell", Suitable neighbour cell and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".		

None.

12.4.1.3.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

UE shall perform the following actions depending on the implementation of the UE.

Case 1) UE supports an Automatic PS attach procedure.

At step13, UE shall;

- initiate the PS attach procedure.

Case 2) UE does not support an Automatic PS attach procedure.

At step20, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

12.4.1.4a Routing area updating / rejected / location area not allowed

12.4.1.4a.1 Definition

12.4.1.4a.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, P-TMSI signature and TMSI, LAI and ciphering key sequence number.
 - 1.3 store the LA in the 'forbidden location areas for regional provision of service'.
 - 1.4 not delete the list of "equivalent PLMNs".
 - 1.5 perform a cell selection.
- 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.

12.4.1.4a.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.

12.4.1.4a.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), cell D in MCC2/MNC1/LAC2/RAC1(RAI-6).

All four cells are operating in network operation mode II.

The PLMN contains Cell D is equivalent to the PLMN that contains Cell C.

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.

Step	Direction	Message	Comments
	UE SS		
	SS		The following messages are sent and shall be
1	SS		received on cell C. Set the cell type of cell A to the "Non-Suitable
			cell".
			Set the cell type of cell B to the "Non-Suitable
			cell".
			Set the cell type of cell C to the "Serving cell". Set the cell type of cell D to the "Non-Suitable
			cell".
			(see note)
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
3a	UE	Registration on CS	by the UE. See TS 34.108
Ja		Trogistiation on oo	This is applied only for UE in UE operation
			mode A.
4	->	ATTACH REQUEST	Attach type = 'PS attach'
4a	<-	AUTHENTICATION AND	Mobile identity = IMSI
14		CIPHERING REQUEST	
4b	->	AUTHENTICATION AND	
4c	SS	CIPHERING RESPONSE	The SS starts integrity protection.
5	<-	ATTACH ACCEPT	Attach result = 'PS only attached'
			Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Routing area identity = RAI-3 Equivalent PLMNs = MCC2,MNC1
6	->	ATTACH COMPLETE	Equivalent i Livins – MCC2, Mino
			The following messages are sent and shall be
7	SS		received on cell B.
/	33		Set the cell type of cell B to the "Serving cell". Set the cell type of cell C to the "Non-Suitable
			cell".
			(see note)
8 8a	SS		Cell B is preferred by the UE. The following step is only performed for UE
- Oa			Operation Mode A.
8b	UE	Registration on CS	See TS34.108
		DOLITING ADEA LIDEATE	Parameter mobile identity is IMSI
9	->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature
			Routing area identity = RAI-3
10	<-	ROUTING AREA UPDATE	GMM cause = 'Location Area not allowed'
11	٦.	REJECT PAGING TYPE1	Mobile identity = P-TMSI-1
	<-	I AGING THE	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		Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Non-Suitable
			cell". (see note)
13a	UE		The UE performs cell selection.
14	UE		Cell A is preferred by the UE.
15	UE		No ATTACH REQUEST sent to SS
I	I	I	(SS waits 30 seconds)

Step	Direction UE SS	Message	Comments
16	SS		The following messages are sent and shall be received on cell C. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell D to the "Serving cell".
16a 17 17a	UE UE		(see note) The UE performs cell selection. Cell C is preferred by the UE. The following step is only performed for UE Operation Mode A.
17b	UE	Registration on CS	See TS34.108 Parameter mobile identity is IMSI
	UE		The UE initiates a PS attach either automatically or manually (see ICS).
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
20 21	-> UE	ATTACH COMPLETE	Routing area identity = RAI-6 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
24	->	ATTACH REQUEST	ICS). Attach type = 'PS attach' Mobile identity = P-TMSI-2 Routing area identity = RAI-3
24a	<-	AUTHENTICATION AND CIPHERING REQUEST	Nouting area identity – NAI-3
24b	->	AUTHENTICATION AND CIPHERING RESPONSE	
24c 25	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-6
26	->	ATTACH COMPLETE	,
27	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell D to the "Non-Suitable
28 28a			cell". (see note) Cell A is preferred by the UE. The following step is only performed for UE
28b	UE	Registration on CS	Operation Mode A. See TS34.108 Parameter mobile identity is IMSI
29	->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-3
30	<-	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned.P-TMSI and P-TMSI signature not included.Update result = 'RA updated'
31	UE		Routing area identity = RAI-1 The UE is switched off or power is removed
32	->	DETACH REQUEST	(see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Step	Direction	Message	Comments	
	UE SS			
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.	
NOTE:	The definit	itions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1		
	"Reference Radio Conditions for signalling test cases only".			

None.

12.4.1.4a.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, UE shall:

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step12, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step12 and 15, when in the same location area, UE shall

- not perform PS attach procedure.

At step18, when a new location area is entered, UE shall

- perform the PS attach procedure.

At step24, when the USIM is replaced, UE shall;

- perform the PS attach procedure.

At step29, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

12.4.1.4b Routing area updating / rejected / No Suitable Cells In Location Area

12.4.1.4b.1 Definition

12.4.1.4b.2 Conformance requirement

- 1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:
 - 1.1 store the LA or the PLMN identity in the 'forbidden location areas for roaming'.
 - 1.2 search for a suitable cell in a different location area on the same PLMN.
 - 1.3 not delete equivalent PLMNs list.

Reference

3GPP TS 24.008 clauses 4.7.5.1.

12.4.1.4b.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure with the cause 'No Suitable Cells In Location Area'.

To test that the UE deletes the list of forbidden LAs when power is switched off'.

12.4.1.4b.4 Method of test

Initial condition

System Simulator:

Four cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell D in MCC1/MNC1/LAC1/RAC2 (RAI-4),

All three cells are operating in network operation mode II.

The PLMN contains Cell C is equivalent to the PLMN that contains Cell D.

User Equipment:

The UE has valid IMSI.

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 routing area updating with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall perform PS attach procedure when the UE enters a suitable cell in a different location area on the same PLMN.

Step	Direction	Message	Comments
	UE SS		
	SS		The following message are sent and shall be
			received on cell D.
1	SS		Set the cell type of cell A to the "Suitable
			neighbour cell".
			Set the cell type of cell B to the "Suitable neighbour cell".
			Set the cell type of cell C to the "Suitable
			neighbour cell".
			Set the cell type of cell D to the "Serving cell".
			(see note)
2	UE		The UE is powered up or switched on and
			initiates an attach (see ICS). Cell D is preferred
		ATTA OLI DEGLIEGE	by the UE.
3	->	ATTACH REQUEST	Attach type = 'PS attach'
3a		AUTHENTICATION AND	Mobile identity = IMSI
Sa	<-	CIPHERING REQUEST	
3b	->	AUTHENTICATION AND	
		CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
4	<-	ATTACH ACCEPT	Attach result = 'PS only attached'
			Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Routing area identity = RAI-4
_		ATTACH COMPLETE	Equivalent PLMNs = MCC2,MNC1
<u>5</u>	-> SS	ATTACH COMPLETE	Set the cell type of cell A to the "Serving cell".
0	33		Set the cell type of cell B to the "Suitable
			neighbour cell".
			Set the cell type of cell C to the "Suitable
			neighbour cell".
			Set the cell type of cell D to the "Suitable
			neighbour cell".
			(see note)
			The SS configures power level of each Cell as follows.
			Cell A > Cell B = Cell C
			Cell A is preferred by the UE.
7	->	ROUTING AREA UPDATE	Update type = 'RA updating'
		REQUEST	P-TMSI-1 signature
			Routing area identity = RAI-4
8	<-	ROUTING AREA UPDATE	GMM cause = 'No Suitable Cells In Location
		REJECT	Area'
			The following message are sent and shall be
0		ATTACH REQUEST	received on cell B. Attach type = 'PS attach'
9	->	ATTACH REQUEST	Mobile identity = P-TMSI-1
10	<-	ATTACH ACCEPT	Attach result = 'PS only attached'
]		Mobile identity = P-TMSI-2
			P-TMSI-2 signature
			Routing area identity = RAI-3
11	->	ATTACH COMPLETE	
12	->	DETACH REQUEST	Message not sent if power is removed.
NOTE			Detach type = 'power switched off, PS detach'
NOTE:		ions for "Suitable neighbour cell" an ence Radio Conditions for signalling	d "Serving cell" are specified in TS34.108 clause

6.1 "Reference Radio Conditions for signalling test cases only".

Specific message contents

None.

12.4.1.4b.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, UE shall;

- initiate the routing area updating procedure.

At step9, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach procedure.

12.4.1.4c Routing area updating / rejected / PS services not allowed in this PLMN

12.4.1.4c.1 Definition

12.4.1.4c.2 Conformance requirement

If the network rejects a routing area updating procedure from the User Equipment with the cause 'PS service not allowed in this PLMN', the User Equipment shall:

- delete any RAI, P-TMSI, P-TMSI signature, and PS ciphering key sequence number stored.
- shall set the PS update status to GU3 ROAMING NOT ALLOWED.
- store the PLMN identity in the "forbidden PLMNs for PS service" list.

UE shall perform the following actions depending on the update type, UE operation mode and network operation mode.

- 1) UE is in UE operation mode C
 - UE shall perform a PLMN selection instead of a cell selection.
- 2) UE is in UE operation mode A, update type = periodic updating and Network is in network operation mode I UE shall set the timer T3212 to its initial value and restart it, if it is not already running.
- 3) UE is in UE operation mode A and Network is in network operation mode II.

UE shall be still IMSI attached for CS services in the network.

Reference

3GPP TS 24.008 clause 4.7.5.1.

12.4.1.4c.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 'PS services not allowed in this PLMN'.

12.4.1.4c.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 MCC2/MNC1/LAC1/RAC1 (RAI-2).

All three cells are operating in network operation mode II (in case of UE operation mode A).

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

User Equipment:

The UE has a valid P-TMSI-1, RAI-1.

The UE is in UE operation mode C.

Related ICS/IXIT statements

Support of PS service 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 rejects a routing area updating with the cause value 'PS services not allowed in this PLMN'. The SS checks that the UE performs PLMN selection.

Step	Direction UE SS	Message	Comments
1	UE UE		The following messages are sent and shall be received on cell A. The UE is set in UE operation mode C (see
2	SS		ICS). The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell".
3	UE		(see note) 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 Routing area identity = RAI-1
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c 5	SS <-	ATTACH ACCEPT	The SS starts integrity protection. No new mobile identity assigned.P-TMSI and
		ATTACITACCET	P-TMSI signature not included.
			Attach result = 'PS only attached' Routing area identity = RAI-1
			Equivalent PLMNs = MCC2,MNC1 The following messages are sent and shall be
6	SS		received on cell B. Set the cell type of cell A to the " Suitable neighbour cell ".
			Set the cell type of cell B to the "Serving cell". (see note)
7 8	UE ->	ROUTING AREA UPDATE REQUEST	Cell B is preferred by the UE. Update type = 'RA updating'
9	<-	ROUTING AREA UPDATE	Routing area identity = RAI-1 GMM cause = 'PS services not allowed in this
10	<-	REJECT PAGING TYPE1	PLMN' Mobile identity = P-TMSI-1 PAGING TYPE1 (used for NW-mode II).
11	UE		Paging order is for PS services. No response from the UE to the request. This
12	SS		is checked for 10 seconds. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell A to the "Serving cell".
13 14	UE UE		(see note) The UE performs PLMN selection. No ATTACH REQUEST sent to the SS
12	SS		(SS waits 30 seconds). Set the cell type of cell A to the "Non-Suitable cell".
47	_	ATTACH DECLECT	Set the cell type of cell C to the "Serving cell". (see note)
17	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
18	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature
19	->	ATTACH COMPLETE	Routing area identity = RAI-2
20	UE		The UE is switched off or power is removed (see ICS).

21	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE:	The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified		
	in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".		

None.

Test procedure2

Initial condition

System Simulator:

One cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) operating in network operation mode I.

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

The UE is in UE operation mode 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 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. The SS rejects a routing area updating with the cause value 'PS services not allowed in this PLMN'. The UE sets the timer T3212 to its initial value and restart it, if it is not already running.

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 = 'PS attach' Mobile identity = P-TMSI-1
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	Routing area identity = RAI-1
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
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	10012 = 0 111110100
6	->	ROUTING AREA UPDATE	Update type = 'Periodic updating'
		REQUEST	P-TMSI-2 signature
			Routing area identity = RAI-1
7	<-	ROUTING AREA UPDATE	GMM cause = 'PS services not allowed in this
	00	REJECT	PLMN'
8	SS		The SS verifies that the time between the
	_	DOLITING ADEA LIDDATE	attach and the periodic RA updating is T3312
9	->	ROUTING AREA UPDATE REQUEST	Update type = 'Periodic updating'
		REQUEST	P-TMSI-2 signature
10	_	ROUTING AREA UPDATE	Routing area identity = RAI-1 GMM cause = 'PS services not allowed in this
10	<-	REJECT	PLMN'
11	UE		The UE is switched off or power is removed
1.0		DETA OLI DEGLIEGE	(see ICS).
12	->	DETACH REQUEST	Message not sent if power is removed. Detach
NOTE			type = 'power switched off, PS detach'
NOTE:	,		
in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.4.1.4c.5 Test requirements

Test requirement for Test procedure1

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step11, after the routing area updating procedure is rejected with GMM cause = 'PS service not allowed in this PLMN', UE shall;

- not respond to the paging message for PS domain.

At step13, UE shall,

- initiate PLMN selection.

At step17, UE shall;

- initiate the PS attach procedure.

Test requirement for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step6, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step7, after the routing area updating procedure is rejected with GMM cause = 'PS service not allowed in this PLMN', UE shall;

- set the timer T3212 to its initial value and restart it.

At step8, UE shall,

- not initiate periodic routing area updating procedure.

At step9, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step10, after the routing area updating procedure is rejected with GMM cause = 'PS service not allowed in this PLMN', UE shall;

- set the timer T3212 to its initial value and restart it.

At step11, UE shall,

- not initiate periodic routing area updating procedure.

12.4.1.4d Routing area updating / rejected / Roaming not allowed in this location area

12.4.1.4d.1 Definition

12.4.1.4d.2 Conformance requirement

- 1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'roaming not allowed in this location area' the User Equipment:
 - 1.1 shall not perform PS attach when in the same location area.
 - 1.2 shall store the LA in the 'forbidden location areas for roaming'.
 - 1.3 may perform 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.

12.4.1.4d.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 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.

12.4.1.4d.4 Method of test

12.4.1.4d.4.1 Test procedure1

Initial condition

System Simulator:

Two cells, cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell B in MCC2/MNC1/LAC2/RAC1 (RAI-6). 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

The SS rejects a routing area updating with the cause value 'Roaming not allowed in this area'. A new attempt for a PS attach is not possible. Successful PS attach procedure is performed in another location area. The UE is moved back to the 1st location area. A routing area updating shall not be performed, as the LA is on the forbidden list.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
1	SS		received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell".
2	UE		(see note) The UE is powered up or switched on and
3	UE	Registration on CS	initiates an attach (see ICS). See TS34.108 Parameter mobile identity is IMSI
4	->	ATTACH REQUEST	SS allocates Mobile identity = TMSI-1. Attach type = ' PS attach ' Mobile identity =IMSI
4a	<-	AUTHENTICATION AND	TMSI status = no valid TMSI available
4b	->	CIPHERING REQUEST AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS		The SS starts integrity protection.
5	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature
6	->	ATTACH COMPLETE	Routing area identity = RAI-2
			The following messages are sent and shall be
7	SS		received on cell B. Set the cell type of cell A to the "Suitable neighbour cell".
8 9	UE ->	ROUTING AREA UPDATE	Set the cell type of cell B to the "Serving cell". (see note) Cell B is preferred by the UE. Update type = 'RA updating'
		REQUEST	P-TMSI-2 signature Routing area identity = RAI-2
10	<-	ROUTING AREA UPDATE 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 = TMSI-1 Paging order is for CS services.
16	UE		The UE shall not initiate an RRC connection. This is checked during 3 seconds.
17	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell".
18 19	UE UE	Registration on CS	(see note) Cell A is preferred by the UE. See TS 34.108 Location Update Procedure initiated from the UE.
20	UE		Parameter mobile identity is TMSI-1. The UE initiates an attach automatically (see
21	->	ATTACH REQUEST	ICS), by MMI or by AT command. Attach type = 'PS attach' Mobile identity = P-TMSI-2

Step	Direction	Message	Comments	
	UE SS			
22	<-	ATTACH ACCEPT	Attach result = 'PS only attached'	
			Mobile identity = P-TMSI-1	
			P-TMSI-1 signature	
23		ATTACH COMPLETE	Routing area identity = RAI-2	
24	-> <-	PAGING TYPE1	Mobile identity = TMSI-1	
24		TAGING TITE!	Paging order is for CS services.	
25	->	RRC CONNECTION REQUEST	aging order to tor occurrence.	
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	
00		DDG GONNEGTION DELEAGE	disconnection of the CS signalling link.	
30	->	RRC CONNECTION RELEASE		
31		COMPLETE PAGING TYPE1	Mobile identity = P-TMSI-1	
31	<-	PAGING TIPET	Paging order is for PS services.	
32	->	RRC CONNECTION REQUEST	aging order is for the services.	
33	< -	RRC CONNECTION SETUP		
34	->	RRC CONNECTION SETUP		
		COMPLETE		
35	->	SERVICE REQUEST	service type = "paging response"	
26		RRC CONNECTION RELEASE		
36 37	<- ->	RRC CONNECTION RELEASE		
31	->	COMPLETE		
		001111212	The following messages are sent and shall be	
			received on cell B.	
38	SS		Set the cell type of cell A to the "Suitable	
			neighbour cell".	
			Set the cell type of cell B to the "Serving cell".	
			(see note)	
39	UE		No ROUTING AREA UPDATE REQUEST sent	
			to SS	
40		DACING TYPE1	(SS waits 30 seconds).	
40	<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.	
41	UE		No response from the UE to the request. This	
"	OL.		is checked for 10 seconds.	
NOTE:	NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause			
	6.1 "Reference Radio Conditions for signalling test cases only".			

6.1 "Reference Radio Conditions for signalling test cases only".

12.4.1.4d.4.2 Test procedure2

Initial condition

System Simulator:

Two cells, cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell B in MCC2/MNC1/LAC2/RAC1 (RAI-6). Both cells are operating in network operation mode II.

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

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 'Roaming not allowed in this area'. The UE is switched off for 10 seconds and switched on again. The SS checks that a PS attach is possible on the cell on which the previous 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.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
1	SS		received on cell A. Set the cell type of cell A to the "Serving cell".
'	33		Set the cell type of cell B to the "Suitable
			neighbour cell".
2	UE		(see note) The UE is powered up or switched on and
		B : 4 / i = 00	initiates an attach (see ICS.
3	UE	Registration on CS	See TS34.108 Parameter mobile identity is IMSI
			SS allocates Mobile identity = TMSI-1.
4	->	ATTACH REQUEST	Attach type = ' PS attach ' Mobile identity =IMSI
			TMSI status = no valid TMSI available
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	
4b	->	AUTHENTICATION AND	
4c	SS	CIPHERING RESPONSE	The SS starts integrity protection.
5	<-	ATTACH ACCEPT	Attach result = 'PS only attached'
			Mobile identity = P-TMSI-2 P-TMSI-2 signature
			Routing area identity = RAI-2
6	->	ATTACH COMPLETE	The fellowing management and shall be
			The following messages are sent and shall be received on cell B.
7	SS		Set the cell type of cell A to the "Suitable
			neighbour cell". Set the cell type of cell B to the "Serving cell".
			(see note)
8 9	UE ->	ROUTING AREA UPDATE	Cell B is preferred by the UE. Update type = 'RA updating'
		REQUEST	P-TMSI-2 signature
10	<-	ROUTING AREA UPDATE	Routing area identity = RAI-2 GMM cause = 'Roaming not allowed in this
		REJECT	area'
11	UE		The UE initiates an attach by MMI or by AT command.
12	UE		No ATTACH REQUEST sent to SS
13	<-	PAGING TYPE1	(SS waits 30 seconds). Mobile identity = P-TMSI-2
15		TAGING TITE!	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 = TMSI-1
16	UE		Paging order is for CS services. The UE shall not initiate an RRC connection.
10			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
10			removed.
18	UE		The UE gets the USIM replaced, is powered up or switched on.
19	UE	Registration on CS	See TS 34.108
			Location Update Procedure initiated from the UE.
20	UE		The UE initiates an attach automatically (see
21	->	ATTACH REQUEST	ICS) by MMI or AT command. Attach type = ' PS attach '
			Mobile identity =IMSI
22a	<-	AUTHENTICATION AND	TMSI status = no valid TMSI available
		CIPHERING REQUEST	

Step	Direction	Message	Comments	
	UE SS			
22b	->	AUTHENTICATION AND CIPHERING RESPONSE		
22c	SS	OII FIERING REGI GIVOE	The SS starts integrity protection.	
22	<-	ATTACH ACCEPT	Attach result = 'PS only attached'	
	,		Mobile identity = P-TMSI-1	
			P-TMSI-1 signature	
			Routing area identity = RAI-6	
			Mobile identity = TMSI-1	
23	->	ATTACH COMPLETE		
24	<-	PAGING TYPE1	Mobile identity = TMSI-1	
0.5		DDO CONNECTION DECLIEST	Paging order is for CS services.	
25 26	->	RRC CONNECTION REQUEST RRC CONNECTION SETUP		
27	<- ->	RRC CONNECTION SETUP		
21	->	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	
32	->	RRC CONNECTION REQUEST		
33	- <i>></i> <-	RRC CONNECTION SETUP		
34	->	RRC CONNECTION SETUP		
		COMPLETE		
35	->	SERVICE REQUEST	service type = "paging response"	
36	<-	RRC CONNECTION RELEASE		
37	->	RRC CONNECTION RELEASE COMPLETE		
38	UE	CONFLETE	The UE is switched off or power is removed	
30	OL.		(see ICS).	
39	->	DETACH REQUEST	Message not sent if power is removed.	
			Detach type = 'power switched off, PS detach'	
NOTE:				
	6.1 "Reference Radio Conditions for signalling test cases only".			

None.

12.4.1.4d.5 Test requirements

Test requirements for Test procedure1

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step9, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the routing area update procedure with the information elements specified above Expected Sequence

At step12, when the SS rejects the routing area update procedure with GMM cause = 'Roaming not allowed in this area', UE shall:

- not initiate a PS attach procedure.

At step14, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

At step16, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step21, UE shall:

- initiate the PS attach procedure.

At step28, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step35, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step41, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

Test requirements for Test procedure2

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step9, UE shall:

- initiate the routing area update procedure with the information elements specified above Expected Sequence.

At step14, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

At step16, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step21, UE shall:

- initiate the PS attach procedure.

At step28, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step35, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

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.

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). The ATT-flag shall indicate that the MS should use IMSI attach/detach procedures.

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 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 GMM cause 'congestion' 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 GMM cause 'congestion' 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 GMM cause 'congestion' 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 GMM cause 'congestion' 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 GMM cause 'congestion' 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 GMM cause 'congestion' 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 12 minutes.

T3330; set to 15 seconds.

T3311; set to 15 seconds.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
1	UE		received on cell A. The UE is set in UE operation mode C (see
2	SS		ICS). The SS is set in network operation mode II.
20	UE	Registration on CS	Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
2a	OE	Registration on CS	See TS 34.108 This step is applied only for UE in UE operation mode A. Parameter mobile identity is TMSI.
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 Routing area identity = RAI-1
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	Routing area identity = RAP1
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS		The SS starts integrity protection.
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		Set the cell type of cell A to the "Suitable neighbour cell".
			Set the cell type of cell B to the "Serving cell".
7	SS		(see note) Cell B is preferred by the UE.
8	->	ROUTING AREA UPDATE	Update type = 'RA updating'
		REQUEST	P-TMSI-2 signature
9	<-	ROUTING AREA UPDATE REJECT	Routing area identity = RAI-1 GMM cause = 'Congestion'
10	SS		The SS verifies that the time between the
11	->	ROUTING AREA UPDATE REQUEST	routing area updating requests is 15 seconds Update type = 'RA updating'
			P-TMSI-2 signature Routing area identity = RAI-1
12	<-	ROUTING AREA UPDATE REJECT	GMM cause = 'Congestion'
13	SS		The SS verifies that the time between the routing area updating requests is 15 seconds
14	->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating'
			P-TMSI-2 signature Routing area identity = RAI-1
15	<-	ROUTING AREA UPDATE REJECT	GMM cause = 'Congestion'
16	SS		The SS verifies that the time between the
17	->	ROUTING AREA UPDATE REQUEST	routing area updating requests is 15 seconds Update type = 'RA updating' P-TMSI-2 signature
18	<-	ROUTING AREA UPDATE	Routing area identity = RAI-1 GMM cause = 'Congestion'
10		REJECT	Swim cause - Congestion

The SS verifies that the time between the routing area updating requests is 15 seconds Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 GMM cause = 'Congestion' The SS verifies that the UE does not attempt to attach for 10 minutes. The SS shall release the PS signalling connection. See TS 34.108 This step is applied only for UE in UE operation mode A. Parameter mobile identity is TMSI. P-TMSI-2 signature Routing area identity = RAI-1 Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 Update result = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4 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' An IMSI Detach must be performed for an UE in Operation Mode A either before or after the PS Detach	Step	Direction UE SS	Message	Comments
routing area updating requests is 15 seconds Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 GMM cause = 'Congestion' 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 SROUTING AREA UPDATE REQUEST 25 C-ROUTING AREA UPDATE REQUEST 26 SROUTING AREA UPDATE ACCEPT 27 UE 28 SROUTING AREA UPDATE 29 The UE is switched off or power is removed (see ICS). 29 The UE is DETACH REQUEST ROUTING AREA UPDATE COMPLETE 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' An IMSI Detach must be performed for an UE in Operation Mode A either before or after the PS Detach	19			The SS verifies that the time between the
P-TMSI-2 signature Routing area identity = RAI-1 GMM cause = 'Congestion' The SS verifies that the UE does not attempt to attach for 10 minutes. The SS shall release the PS signalling connection. See TS 34.108 This step is applied only for UE in UE operation mode A. Parameter mobile identity is TMSI. Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 Update type = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-1 Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4 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' An IMSI Detach must be performed for an UE in Operation Mode A either before or after the PS Detach				routing area updating requests is 15 seconds
21				
The SS verifies that the UE does not attempt to attach for 10 minutes. SS The SS shall release the PS signalling connection. See TS 34.108 This step is applied only for UE in UE operation mode A. Parameter mobile identity is TMSI. P-TMSI-2 signature ReQUEST P-TMSI-2 signature Routing area identity = RAI-1 Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4 P-TMSI-3 signature Routing area identity = RAI-4 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' An IMSI Detach must be performed for an UE in Operation Mode A either before or after the PS Detach	21	<-		
Connection. Connection.	22	SS	11.25201	The SS verifies that the UE does not attempt to attach for 10 minutes .
This step is applied only for UE in UE operation mode A. Parameter mobile identity is TMSI. 24 -> ROUTING AREA UPDATE REQUEST 25 ROUTING AREA UPDATE ACCEPT 26 -> ROUTING AREA UPDATE COMPLETE 27 UE 28 -> DETACH REQUEST This step is applied only for UE in UE operation mode A. Parameter mobile identity is TMSI. Update type = 'RA updating' P-TMSI-2 signature Routing area identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4 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' An IMSI Detach must be performed for an UE in Operation Mode A either before or after the PS Detach	23	SS		The SS shall release the PS signalling
24 -> ROUTING AREA UPDATE REQUEST 25 <- ROUTING AREA UPDATE ACCEPT 26 -> ROUTING AREA UPDATE COMPLETE 27 UE 28 -> DETACH REQUEST Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4 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' An IMSI Detach must be performed for an UE in Operation Mode A either before or after the PS Detach	23a	UE	Registration on CS	This step is applied only for UE in UE operation mode A.
Routing area identity = RAI-1 Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-1 Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4 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' An IMSI Detach must be performed for an UE in Operation Mode A either before or after the PS Detach	24	->		Update type = 'RA updating'
26 -> ROUTING AREA UPDATE COMPLETE The UE is switched off or power is removed (see ICS). DETACH REQUEST DETACH REQUEST DETACH REQUEST Message not sent if power is removed. Detach type = 'power switched off, PS detach' An IMSI Detach must be performed for an UE in Operation Mode A either before or after the PS Detach	25	<-		Routing area identity = RAI-1 Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature
The UE is switched off or power is removed (see ICS). DETACH REQUEST 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' An IMSI Detach must be performed for an UE in Operation Mode A either before or after the PS Detach	26	->		Treating area raction, and are
28 -> DETACH REQUEST Message not sent if power is removed. Detach type = 'power switched off, PS detach' An IMSI Detach must be performed for an UE in Operation Mode A either before or after the PS Detach	27	UE		
	28			Message not sent if power is removed. Detach type = 'power switched off, PS detach' An IMSI Detach must be performed for an UE in Operation Mode A either before or after the PS Detach
NOTE: The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".	NOTE:			

None.

12.4.1.5.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall:

- perform the routing area updating procedure.

UE shall perform the following actions depending on the conditions described below.

Case 1) At step11, 14, 17 and 20, 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) At step22 a routing area updating procedure is rejected from SS with the attempt counter five

At step22, UE shall:

- not initiate a routing area updating procedure.

Case3) At step24, the T3302 expires

UE shall:

initiate the 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 and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode C
UE operation mode A
Switch off on button
Yes/No
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.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
1	UE		received on cell A. The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported,
2	SS		goto step 18. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell".
3	UE		(see note) The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred
4	->	ATTACH REQUEST	by the UE. Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c 5	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached'
	7-	ATTACITACCEFT	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	->	ATTACH COMPLETE	
7	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell".
8 9	SS ->	ROUTING AREA UPDATE REQUEST	Set the cell type of cell B to the "Serving cell". (see note) Cell B is preferred by the UE. Update type = 'RA updating' P-TMSI-2 signature
10	SS		Routing area identity = RAI-1 No response to the ROUTING AREA UPDATE REQUEST message is given by the SS
11	SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Serving cell".
12	SS		(see note) Cell C is preferred by the UE.
13	->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
14	<-	ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature
15	->	ROUTING AREA UPDATE COMPLETE	Routing area identity = RAI-5
16	UE	COM LETE	The UE is switched off or power is removed
17	->	DETACH REQUEST	(see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach'
18 19	SS UE		The SS is set in network operation mode II. The UE is set in UE operation mode A (see ICS). Set the cell type of cell C to the "Non-Suitable cell". The test is repeated from step 2 to step 17.

NOTE: The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".

Specific message contents

None.

12.4.1.6.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, UE shall:

- initiate the routing area update procedure.

At step13, 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 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.

Step	Direction	Message	Comments
	UE SS		The following research and shall be
	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.
			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable
			cell".
			Set the cell type of cell C to the "Non-Suitable
			cell".
	UE		(see note)
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
40		AUTHENTICATION AND	Routing area identity = RAI-1
4a	<-	CIPHERING REQUEST	
4b	->	AUTHENTICATION AND	
		CIPHERING RESPONSE	
4c	SS		The SS starts integrity protection.
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
6	SS		received on cell B.
0	33		Set the cell type of cell A to the "Suitable neighbour cell".
			Set the cell type of cell B to the "Serving cell".
			(see note)
7	SS		Cell B is preferred by the UE.
8	->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature
		REGOLOT	Routing area identity = RAI-1
9	SS		No response to the ROUTING AREA UPDATE
			REQUEST message is given by the SS
			The following messages are sent and shall be
10	SS		received on cell C. Set the cell type of cell B to the "Suitable
'0			neighbour cell".
			Set the cell type of cell C to the "Serving cell".
	00		(see note)
11 12a	SS	CELL UPDATE	Cell C is preferred by the UE. Cell update cause = 'cell reselection'
128	->	GLLL OF DATE	Ceii upuate cause = Ceii leselection
12b	<-	CELL UPDATE CONFIRM	
13	<-	ROUTING AREA UPDATE	Update result = 'RA updated'
		ACCEPT	Mobile identity = P-TMSI-2
			P-TMSI-3 signature Routing area identity = RAI-4
14	->	ROUTING AREA UPDATE	. to a sing a roa roating – roat r
		COMPLETE	
15	UE		The UE is switched off or power is removed
16	->	DETACH REQUEST	(see ICS). Message not sent if power is removed.
10	->	DETACTIVE QUEST	Detach type = 'power switched off, PS detach'
NOTE:	The definit	ions for "Non-Suitable cell", "Suitabl	e neighbour cell" and "Serving cell" are specified
			ditions for signalling test cases only".

3GPP

None.

12.4.1.7.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall:

- initiate routing area update procedure.

At step12a, 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 COMMAND 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 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
	00		ICS).
2	SS		The SS is set in network operation mode II.
			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable
			cell".
			(see note)
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
4a	<-	AUTHENTICATION AND	
1h	_	CIPHERING REQUEST	
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS	OII FIERING REGI GIVOE	The SS starts integrity protection.
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
_	00		received on cell B.
7	SS		Set the cell type of cell A to the "Suitable neighbour cell".
			Set the cell type of cell B to the "Serving cell".
			(see note)
8	SS		Cell B is preferred by the UE.
9	->	ROUTING AREA UPDATE	Update type = 'RA updating'
		REQUEST	P-TMSI-1 signature
			Routing area identity = RAI-1
10	<-	P-TMSI REALLOCATION	Mobile identity = P-TMSI-1
		COMMAND	P-TMSI-1 signature
4.4			Routing area identity = RAI-1
11	UE		The UE ignores the P-TMSI reallocation command.
12	<-	ROUTING AREA UPDATE	Update result = 'RA updated'
'-		ACCEPT	Mobile identity = P-TMSI-2
			P-TMSI-2 signature
			Routing area identity = RAI-4
13	->	ROUTING AREA UPDATE	
		COMPLETE	
14	UE		The UE is switched off or power is removed
		DETACH DECLIES	(see ICS).
15	->	DETACH REQUEST	Message not sent if power is removed.
NOTE	The Jeff 19	ione for IINIon Cuitable and III IIC ii 11	Detach type = 'power switched off, PS detach'
NOTE:			e neighbour cell" and "Serving cell" are specified
in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.4.1.8.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, UE shall:

- initiate the routing area updating procedure.

At step11, when a P-TMSI REALLOCATION COMMAND 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 UPDATE 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 UPDATE REQUEST message. The SS accepts the P-TMSI signature and returns ROUTING AREA UPDATE ACCEPT message without any P-TMSI and with a new TMSI. The UE acknowledge the new TMSI by sending ROUTING AREA UPDATE 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.

Step	Direction	Message	Comments
	UE SS		
1	SS		Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Suitable
			neighbour cell".
			(see note)
1a	UE		The UE is set in UE operation mode A (see
2	UE		ICS). The UE is powered up or switched on and
	OL OL		initiates an attach (see ICS).
2a	SS		SS checks that the IE "Establishment cause" in
			the received RRC CONNECTION REQUEST
			message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach'
			Mobile identity =IMSI
			TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND	
		CIPHERING REQUEST	
3b	->	AUTHENTICATION AND	
20	SS	CIPHERING RESPONSE	The CC starte integrity protection
3c 4	- -	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached'
4		ATTACITACCEFT	Mobile identity = P-TMSI-2
			P-TMSI-2 signature
			Routing area identity = RAI-1
5	->	ATTACH COMPLETE	Trouming aroundstandy in a min
5a	SS		The SS releases the RRC connection.
			The following messages are sent and shall be
			received on cell B.
6	SS		Set the cell type of cell A to the "Suitable
			neighbour cell".
			Set the cell type of cell B to the "Serving cell".
60	SS		(see note)
6a	33		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
			message is set to "Registration".
I	l		message is set to inegistration.

Step	Direction UE SS	Message	Comments
7	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1
7a 8	SS <-	ROUTING AREA UPDATE ACCEPT	TMSI status = no valid TMSI available The SS starts integrity protection. 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 UPDATE COMPLETE	Paging cause = "Terminating interactive call".
9a	SS	OOM LETE	The SS releases the RRC connection and waits 5s to allow the UE to read system information.
10	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. Paging cause = "Terminating interactive call".
10a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
10b		Void	The sage is set to Terminating interactive cair.
10c 11	->	Void SERVICE REQUEST	service type = "paging response"
11aa 11a	SS SS		The SS starts integrity protection. The SS releases the RRC connection and waits 5s to allow the UE to read system information.
11b 12	<-	Void PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services. Paging cause = "Terminating conversational call"
13	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating conversational call".
14 15		Void Void	
16 17 18	-> SS	PAGING RESPONSE Void	Mobile identity = IMSI The SS releases the RRC connection.
			The following messages are sent and shall be received on cell A.
19	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
19a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
20	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-1 signature Routing area identity = RAI-4
20a 21	SS <-	ROUTING AREA UPDATE ACCEPT	TMSI status = no valid TMSI available The SS starts integrity protection. Update result = 'Combined RA/LA updated' No P-TMSI P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
22	->	ROUTING AREA UPDATE COMPLETE	Trouting area lucritity = IVAI*1

Step	Direction UE SS	Message	Comments
23	UE 33 <-	PAGING TYPE1	Mobile identity = P-TMSI-1
23	\	I AGING I II LI	Paging order is for PS services.
			Paging cause = "Terminating interactive call".
23a	SS		SS checks that the IE "Establishment cause" in
			the received RRC CONNECTION REQUEST
			message is set to "Terminating interactive call".
23b		Void	
23c	_	Void	acrides turns "naging recorded"
24	->	SERVICE REQUEST	service type = "paging response"
24aa	SS		The SS starts integrity protection.
24a	SS		The SS releases the RRC connection and
			waits 5s to allow the UE to read system
0.41-		\/-:-I	information.
24b 25	<-	Void PAGING TYPE1	Mobile identity = TMSI-1
25	\	I AGING TITET	Paging order is for CS services.
			Paging cause = "Terminating conversational
			call"
26	SS		SS checks that the IE "Establishment cause" in
			the received RRC CONNECTION REQUEST
			message is set to "Terminating conversational call".
27		Void	caii .
28		Void	
29	->	PAGING RESPONSE	Mobile identity = TMSI-1
30	SS		The SS releases the RRC connection.
31 32		Void	The LIE is equitabled off on proving in property of
32	UE		The UE is switched off or power is removed (see ICS).
32a	SS		SS checks that the IE "Establishment cause" in
0_0			any received RRC CONNECTION REQUEST
			message is set to "Detach".
33	->	DETACH REQUEST	Message not sent if power is removed.
			Detach type = 'power switched off, combined PS / IMSI detach'
34	SS		If the power was not removed, the SS releases
			the RRC connection.
NOTE:			d "Serving cell" are specified in TS34.108 clause
	6.1 "Reference Radio Conditions for signalling test cases only".		

None.

12.4.2.1.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step7, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence.

At step9, UE shall:

- acknowledge the new P-TMSI by sending the ROUTING AREA UPDATE COMPLETE message.

At step11, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step16, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step20, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence.

At step22, UE shall:

- acknowledge the new TMSI by sending the ROUTING AREA UPDATE COMPLETE message.

At step24, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step29, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

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:

One cell, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) is 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 during the ongoing circuit-switched transaction.

Step	Direction UE SS	Message	Comments
1			Set the cell type of cell A to the "Serving cell". (see note)
1a	UE		The UE is set in UE operation mode A (see ICS).
2 2a	UE SS		The UE is powered up or switched on and initiates an attach (see ICS). SS checks that the IE "Establishment cause" in
3	->	ATTACH REQUEST	the received RRC CONNECTION REQUEST message is set to "Registration". Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	TMSI status = no valid TMSI available
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature
5 5a	-> SS	ATTACH COMPLETE	Routing area identity = RAI-1 The SS releases the RRC connection.
6 7	UE	Void	A CS call is initiated.
8 8a	<-	Void UTRAN MOBILITY INFORMATION	The SS conveys updated CN system information for the PS domain to the UE in connected mode, including a new routing area code.
8b	->	UTRAN MOBILITY INFORMATION CONFIRM	
9	->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9a 10	SS <-	ROUTING AREA UPDATE ACCEPT	TMSI status = no valid TMSI available The SS starts integrity protection. Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI
11	->	ROUTING AREA UPDATE COMPLETE	Routing area identity = RAI-4
11a	SS		The SS releases the PS signalling connection, but keeps the RRC connection.
12	<-	PAGING TYPE2	Mobile identity = P-TMSI-1 Paging order is for PS services.
13	->	SERVICE REQUEST	service type = "paging response"
13a 13b 14 14a	SS SS SS ->	ROUTING AREA UPDATE REQUEST	The SS starts integrity protection. The SS releases the CS call. The SS initiates the RRC connection release. Update type = "combined RA/LA updating", P-TMSI-1 signature, Routing area identity = RAI-4,
14b 14c	SS <-	ROUTING AREA UPDATE ACCEPT	TMSI status = no valid TMSI available The SS starts integrity protection. Update result = "combined RA/LA updated", No P-TMSI, P-TMSI-3 signature,
15	UE		Routing area identity = RAI-4 The UE is switched off or power is removed (see ICS).

15a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST
			message is set to "Detach".
16	->	DETACH REQUEST	Message not sent if power is removed.
			Detach type = 'power switched off, combined
			PS / IMSI detach'
17	SS		If the power was not removed, the SS releases
			the RRC connection.
NOTE:	The definit	ions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause	
	6.1 "Reference Radio Conditions for signalling test cases only".		

UTRAN MOBILITY INFORMATION (step 8a)

The contents of the UTRAN MOBILITY INFORMATION message in this test case is identical to the default message in TS 34.108, with the following exceptions.

Information Element	Value/remark
New U-RNTI	Not Present
New C-RNTI	Not Present
UE Timers and constants in connected mode	Not Present
CN information info	
- PLMN identity	Not Present
- CN common GSM-MAP NAS system information	Not Present
- CN domain related information	
- CN domain identity	CS domain
- CN domain specific GSM-MAP NAS system info	
- T3212	30
- ATT	1
- CN domain specific DRX cycle length coefficient	7
- CN domain related information	
- CN domain identity	PS domain
- CN domain specific GSM-MAP NAS system info	
- RAC	RAC-2
- NMO	0 (Network Mode of Operation I)
- CN domain specific DRX cycle length coefficient	7

12.4.2.2.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step9, when the UE has received the new RAI from the SS in the UTRAN MOBILITY INFORMATION message, the UE shall:

- initiate the normal routing area updating procedure.

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 4.7.5.2.

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 IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No
UE operation mode A
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.

Step	Direction	Message	Comments
1	UE SS		Set the cell type of cell A to the "Serving cell".
·			Set the cell type of cell B to the "Non-Suitable cell". (see note)
1a	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
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	TI 00 1 1 1 1 1 1 1 1 1 1
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->	ATTACH COMPLETE	
6	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell".
7	->	ROUTING AREA UPDATE REQUEST	(see note) Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1
8	<-	ROUTING AREA UPDATE ACCEPT	TMSI status = no valid TMSI available 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 UPDATE COMPLETE	OWN Cause - INOI UNKNOWN IN THEIR
10	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10a	->	RRC CONNECTION REQUEST RRC CONNECTION SETUP	
10b 10c	<- ->	RRC CONNECTION SETUP COMPLETE	
11	->	SERVICE REQUEST	service type = "paging response"
11a 11b	<- ->	RRC CONNECTION RELEASE 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'
NOTE:	The definit in TS34.10	ions for "Non-Suitable cell", "Suitabl 08 clause 6.1 "Reference Radio Con	e neighbour cell" and "Serving cell" are specified ditions for signalling test cases only".

3GPP

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. T3212 is set to 6 minutes.

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. This procedure is repeated until the routing area updating attempt counter is equal to five. 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. It is further verified that the UE after a successful IMSI attach procedure can perform CS services.

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		
1	SS		The following messages are sent and shall be received on cell A Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".
1a	UE		(see note) 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' or 'PS attach while IMSI attached' Mobile identity =IMSI TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
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	

Step	Direction UE SS	Message	Comments
6	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell".
7	->	ROUTING AREA UPDATE REQUEST	(see note) Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1
8	<-	ROUTING AREA UPDATE ACCEPT	TMSI status = no valid TMSI available 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 UPDATE	Choseny
10		COMPLETE	The routing area updating attempt counter =1.
11	->	ROUTING AREA UPDATE REQUEST	The combined routing area updating procedure is reinitialised at the expiry of T3311 Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature
12	<-	ROUTING AREA UPDATE ACCEPT	Routing area identity = RAI-4 TMSI status = no valid TMSI available Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily
13	->	ROUTING AREA UPDATE	chosen)
14		COMPLETE	The routing area updating attempt counter =2.
15	->	ROUTING AREA UPDATE REQUEST	The combined routing area updating procedure is reinitialised at the expiry of T3311 Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature
16	<-	ROUTING AREA UPDATE ACCEPT	Routing area identity = RAI-4 TMSI status = no valid TMSI available Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily
17	->	ROUTING AREA UPDATE	chosen)
18		COMPLETE	The routing area updating attempt counter =3.
19	->	ROUTING AREA UPDATE REQUEST	The combined routing area updating procedure is reinitialised at the expiry of T3311 Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available

Step	Direction UE SS	Message	Comments
20	<-	ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
21	->	ROUTING AREA UPDATE	Chosen)
22			The routing area updating attempt counter =4. The combined routing area updating procedure is reinitialised at the expiry of T3311
23	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-4
24	<-	ROUTING AREA UPDATE ACCEPT	TMSI status = no valid TMSI available Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
25	->	ROUTING AREA UPDATE	Chosen
26		CONFEETE	The routing area updating attempt counter =5. The combined routing area updating procedure is reinitialised at the expiry of T3311
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' Stop the sequence.
			The following messages are sent and shall be received on cell B
29	UE		The UE is set in UE operation mode A and automatic MM IMSI attach procedure is indicated (see ICS).
30	UE		The UE is powered up or switched on and initiates an attach (see ICS).
31	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'PS attach while IMSI attached' Mobile identity = IMSI TMSI status = no valid TMSI available
31a	<-	AUTHENTICATION AND CIPHERING REQUEST	Timer status = 110 valid Timer dvalidatio
31b	->	AUTHENTICATION AND CIPHERING RESPONSE	
31c 32	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
33	->	ATTACH COMPLETE	The following massesses are sent and shall be
34	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
35	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available

Step	Direction UE SS	Message	Comments
36	<-	ROUTING AREA UPDATE 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)
37	->	ROUTING AREA UPDATE COMPLETE	chosen)
38		DOUTING AREA LIDRATE	The routing area updating attempt counter =1. The combined routing area updating procedure is reinitialised at the expiry of T3311
39	->	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
40	<-	ROUTING AREA UPDATE 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)
41	->	ROUTING AREA UPDATE	onoscii)
42		00	The routing area updating attempt counter =2. The combined routing area updating procedure is reinitialised at the expiry of T3311
43	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1
44	<-	ROUTING AREA UPDATE ACCEPT	TMSI status = no valid TMSI available 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)
45	->	ROUTING AREA UPDATE	5.1655.17
46		OOM LETE	The routing area updating attempt counter =3. The combined routing area updating procedure is reinitialised at the expiry of T3311
47	->	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
48	<-	ROUTING AREA UPDATE 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)
49	->	ROUTING AREA UPDATE COMPLETE	,
50			The routing area updating attempt counter =4. The combined routing area updating procedure is reinitialised at the expiry of T3311

Step	Direction	Message	Comments
	UE SS		
51 52	-> <-	ROUTING AREA UPDATE REQUEST ROUTING AREA UPDATE	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Update result = 'RA updated'
32		ACCEPT	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)
53	->	ROUTING AREA UPDATE COMPLETE	,
54			The routing area updating attempt counter =5.
55	UE	Registration on CS	Optional step. See TS 34.108
			This is applied only for UE in UE operation
			mode A.
			Parameter mobile identity is TMSI-1. Steps 56 - 62 are only performed if the UE has performed the Registration Procedure in step 55.
56	<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
57	->	RRC CONNECTION REQUEST	
58	<-	RRC CONNECTION SETUP	
59	->	RRC CONNECTION SETUP COMPLETE	
60	->	PAGING RESPONSE	Mobile identity = TMSI-1
61	<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
62	->	RRC CONNECTION RELEASE COMPLETE	
63	UE		The UE is switched off or power is removed (see ICS).
64	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE:			e neighbour cell" and "Serving cell" are specified
	in TS34.10	08 clause 6.1 "Reference Radio Con	ditions for signalling test cases only".

None.

12.4.2.3.5 Test requirements

Test requirements for Test Procedure1

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step7, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area updating procedure.

At step9, UE shall:

- acknowledge the new P-TMSI by sending the ROUTING AREA UPDATE COMPLETE message.

At step11, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step13, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

Test requirements for Test Procedure2

At step3 and 31, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step6 and 35, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area updating procedure.

At step11, 15, 19 and 23, UE shall:

- re-initiate the combined routing area updating procedure.

At step39, 43, 47 and 51, UE shall:

- re-initiate the combined routing area updating procedure.

At step55, UE shall:

- perform MM location updating procedure.

At step60, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

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, except when the PLMN identity is equal to the HPLMN.
 - 1.2 delete the stored RAI, PS-CKSN, P-TMSI, P-TMSI signature, TMSI CKSN and LAI.
 - 1.3 store the PLMN in the 'forbidden PLMN list', except when the PLMN identity is equal to the HPLMN.
- 2) An MS that receives a ROUTING AREA UPDATE REJECT message stops timer T3330, enters state MM IDLE and for all causes except #12, #14 and #15 deletes the list of "equivalent PLMNs".

Reference

3GPP TS 24.008 clause 4.7.5.2.

3GPP TS 23.122 clause 3.1.

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:

Five cells (not simultaneously activated), cell A in MCC1/MNC2/LAC1/RAC1 (RAI-8), cell B in MCC1/MNC2/LAC1/RAC2 (RAI-10), cell C in MCC1/MNC2/LAC2/RAC1 (RAI-9) and cell D in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell E in MCC1/MNC3/LAC1/RAC1 (RAI-11).

The PLMN containing Cell E is equivalent to the PLMN that contains Cell A. All five cells are operating in network operation mode I

The HPLMN is different from MCC1/MNC2.

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
PS attach attempted automatically by outstanding request 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.

Step	Direction UE SS	Message	Comments
-	SS		The following messages are sent and shall be
1	SS		received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".
			Set the cell type of cell C to the "Non-Suitable cell".
			Set the cell type of cell D to the "Non-Suitable cell".
			Set the cell type of cell E to the "Non-Suitable cell".
2	UE		(see note) The UE is powered up or switched on and initiates an attach (see ICS.
2a	SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached'
4	ζ-	ATTACITACCEFT	Mobile identity = P-TMSI-2
			P-TMSI-2 signature Routing area identity = RAI-8
			Mobile identity = TMSI-1
5	->	ATTACH COMPLETE	Equivalent PLMN: MCC = 1, MNC=3
5a	ss	ATTACIT COM LETE	The SS releases the RRC connection.
			The following messages are sent and shall be received on cell B and cell E.
7	SS		Set the cell type of cell A to the "Suitable
			neighbour cell".
			Set the cell type of cell B to the "Serving cell". Set the cell type of cell E to the "Suitable
			neighbour cell".
8	UE		(see note) Cell B is preferred by the UE.
8a	SS		The SS verifies that the IE "Establishment
			cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
9	->	ROUTING AREA UPDATE	Update type = 'Combined RA/LA updating'
		REQUEST	P-TMSI-2 signature Routing area identity = RAI-8
4.0		DOUTING AREA LIRE ATE	TMSI status = valid TMSI available
10	<-	ROUTING AREA UPDATE REJECT	GMM cause = 'PLMN not allowed'
10a	SS		The SS releases the RRC connection.
11	UE		The UE initiates an attach by MMI or AT command.
12	UE		No ATTACH REQUEST sent to SS
12a	SS		(SS waits 30 seconds). The SS deactivates cell E.
124			Set the cell type of cell E to the "Non-Suitable cell".
13	<-	PAGING TYPE1	Mobile identity = P-TMSI-2
14	UE		Paging order is for PS services. No response from the UE to the request. This
''			is checked for 10 seconds.

Step	Direction UE SS	Message	Comments
15	SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell".
16 17	UE UE		(see note) Cell C is preferred by the UE. The UE initiates an attach by MMI or by AT
18	UE		command. No ATTACH REQUEST sent to SS (SS write 20 accords)
19	<-	PAGING TYPE1	(SS waits 30 seconds). 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.
21	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell C to the "Non-Suitable cell".
22 23	UE UE		(see note) Cell A is preferred by the UE. The UE initiates an attach by MMI or by AT
24	UE		command. No ATTACH REQUEST sent to SS
25	<-	PAGING TYPE1	(SS waits 30 seconds). Mobile identity = P-TMSI-2
26	UE		Paging order is for PS services. No response from the UE to the request. This is checked for 10 seconds.
27	SS		The following messages are sent and shall be received on cell D. Set the cell type of cell A to the "Non-Suitable cell".
28	UE		Set the cell type of cell D to the "Serving cell". (see note) Cell D is preferred by the UE. Step 28a and 29 are only performed by an UE which will not initiate a PS attach automatically
28a conditio	UE	Registration on CS	(see ICS) See TS 34.108 Location Update Procedure initiated from the
nal 29 conditio nal	UE		UE. The UE initiates an attach by MMI or by AT command.
29a	SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
30	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI
30a 31	SS <-	ATTACH ACCEPT	TMSI status = no valid TMSI available The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature
32	-> c	ATTACH COMPLETE	Routing area identity = RAI-2 Mobile identity = IMSI The LIE is quitabled off or power is removed.
33 34	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, combined PS / IMSI detach'
NOTE:			g cell" and "Suitable neighbour cell" are specified ditions for signalling test cases only".

None.

12.4.2.4.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step9, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence.

At step 10, the UE shall delete the equivalent PLMN list (MCC=1, MNC=3).

At step 12, the UE shall not initiate a PS attach procedure to cell E.

At step 18 and 24, UE shall:

- not initiate a PS attach procedure.

At step14, 20 and 26, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step20, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step30, UE shall:

- perform the PS attach procedure.

12.4.2.5a Combined routing area updating / rejected / roaming not allowed in this location area

12.4.2.5a.1 Definition

12.4.2.5a.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:
 - 1.1 shall not perform combined PS attach when in the same location area.
 - 1.2 shall store the LA in the 'forbidden location areas for roaming'.
 - 1.3 shall perform a routing area update when entering in a new location area if the LAI or the PLMN identity is not contained in any of the lists "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" or "forbidden PLMNs" and the current update status is different from "IDLE NO IMSI".
- 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.

3GPP TS 23.122 clause 4.5.2.

12.4.2.5a.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.

12.4.2.5a.4 Method of test

12.4.2.5a.4.1 Test procedure1

Initial condition

System Simulator:

Two cells, cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell B in MCC2/MNC1/LAC2/RAC1 (RAI-6). 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 routing area updating procedure is performed in another location area. The UE is moved back to the 1st location area. A combined routing area updating shall not be performed, as the LA is on the forbidden list.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
1	SS		received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell".
2	UE		(see note) The UE is powered up or switched on and
2a	SS		initiates an attach (see ICS. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION
3	->	ATTACH REQUEST	REQUEST message is set to "Registration". Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND	TWO Status – No valid TWO available
3b	->	CIPHERING REQUEST AUTHENTICATION AND	
3c	SS	CIPHERING RESPONSE	The SS starts integrity protection.
4	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2
5	->	ATTACH COMPLETE	Mobile identity = TMSI-1
5a	SS		The SS releases the RRC connection.
7	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-suitable cell".
8 8a	UE SS		Set the cell type of cell B to the "Serving cell". (see note) Cell B is preferred by the UE. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION
9	->	ROUTING AREA UPDATE REQUEST	REQUEST message is set to "Registration". Update type = 'Combined RA/LA updating' P-TMSI-2 signature
10	<-	ROUTING AREA UPDATE REJECT	Routing area identity = RAI-2 GMM cause = 'Roaming not allowed in this area'
10a 11	SS	Void	The SS releases the RRC connection.
12 13	<-	Void PAGING TYPE1	Mobile identity = P-TMSI-2
14	UE		Paging order is for PS services. No response from the UE to the request. This is checked for 10 seconds.
15	<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
16	UE		The UE shall not initiate an RRC connection. This is checked during 3 seconds.
17	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell".
18 18a	UE	Void	(see note) Cell A is preferred by the UE.
19 19a	SS	Void	The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".

Step	Direction UE SS	Message	Comments
20	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-2
20a 21	SS <-	ROUTING AREA UPDATE ACCEPT	The SS starts integrity protection. Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2 Mobile identity = TMSI-1
22	->	ROUTING AREA UPDATE COMPLETE	Wobile Identity – Two T
22a 23	SS <-	PAGING TYPE1	The SS releases the RRC connection. Mobile identity = TMSI-1 Paging order is for CS services. Paging cause = "Terminating conversational call"
24	SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating conversational call".
25 26		Void Void	
27 27a 28 29	-> SS SS	PAGING RESPONSE Void	Mobile identity = TMSI-1 The SS starts integrity protection. The SS releases the RRC connection
30	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. Paging cause = "Terminating background call"
30a	SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating background call".
30b 30c		Void Void	
31	->	SERVICE REQUEST	service type = "paging response"
31o 31a 31b	SS SS	Void	The SS starts integrity protection. The SS releases the RRC connection.
32	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell".
33	UE		(see note) No ROUTING AREA UPDATE REQUEST sent to SS
34	<-	PAGING TYPE1	(SS waits 30 seconds). Mobile identity = P-TMSI-2
35	UE		Paging order is for PS services. No response from the UE to the request. This is checked for 10 seconds.
NOTE:	NOTE: is checked for 10 seconds. The definitions for "Suitable neighbour cell", "Non-suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".		

12.4.2.5a.4.2 Test procedure2

Initial condition

System Simulator:

 $Two \ cells, cell \ A \ in \ MCC2/MNC1/LAC1/RAC1 \ (RAI-2), cell \ B \ in \ MCC2/MNC1/LAC2/RAC1 \ (RAI-6).$ Both 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
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.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
1	SS		received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell".
2	UE		(see note) The UE is powered up or switched on and
2a	SS		initiates an attach (see ICS. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2
5 5a	-> SS	ATTACH COMPLETE	Mobile identity = TMSI-1 The SS releases the RRC connection.
Ja	30		The following messages are sent and shall be
7	SS		received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell".
8 8a	UE SS		(see note) Cell B is preferred by the UE. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION
9	->	ROUTING AREA UPDATE REQUEST	REQUEST message is set to "Registration". Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-2
10	<-	ROUTING AREA UPDATE REJECT	GMM cause = 'Roaming not allowed in this area'
10a	SS		The SS releases the RRC connection.
11 12		Void Void	
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 = TMSI-1 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.
18a	UE	Registration on CS	See TS 34.108 This step is applied only for non-auto attach UE. Location Update Procedure initiated from the
			UE.

Step	Direction UE SS	Message	Comments	
19	UE		The UE initiates an attach automatically (see	
19a	SS		ICS) by MMI or AT command. The SS verifies that the IE "Establishment	
20	->	ATTACH REQUEST	cause" in the received RRC CONNECTION REQUEST message is set to "Registration". Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI	
20a	<-	AUTHENTICATION AND	TMSI status = no valid TMSI available	
20b	->	CIPHERING REQUEST AUTHENTICATION AND CIPHERING RESPONSE		
20c 21	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-6	
22	->	ATTACH COMPLETE	Mobile identity = TMSI-1	
22a 23	SS <-	PAGING TYPE1	The SS releases the RRC connection. Mobile identity = TMSI-1 Paging order is for CS services. Paging cause = "Terminating conversational	
24	SS	Void	call" The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating conversational call".	
25 26		Void Void	conversational call.	
27 27a 28 29	-> SS SS	PAGING RESPONSE Void	Mobile identity = TMSI-1 The SS starts integrity protection. The SS releases the RRC connection.	
30	<-	PAGING TYPE1	Mobile identity = P-TMSI-1	
30a	SS		Paging cause = "Terminating background call" The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating background call".	
30b		Void		
30c 31	->	Void SERVICE REQUEST	service type = "paging response"	
310	SS		The SS starts integrity protection.	
31a 31b	SS	Void	The SS releases the RRC connection.	
32	UE	Volu	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'	
NOTE:	NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

None.

12.4.2.5a.5 Test requirements

Test requirements for Test procedure1

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step9, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence

At step12, when the SS rejects the combined routing area update procedure with GMM cause = 'Roaming not allowed in this area', UE shall:

- not initiate a PS attach procedure.

At step14, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

At step16, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step20, UE shall:

- initiate the combined RA/LA updating procedure.

At step27, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step31, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step35, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

Test requirements for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step9, UE shall:

- initiate the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence.

At step14, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

At step16, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step20, UE shall:

- initiate the combined PS attach procedure.

At step27, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step31, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

12.4.2.5b Combined routing area updating / rejected / No Suitable Cells In Location Area.

12.4.2.5b.1 Definition

12.4.2.5b.2 Conformance requirement

- 1) If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:
 - 1.1 store the LA or the PLMN identity in the 'forbidden location areas for roaming'.
 - 1.2 search for a suitable cell in a different location area on the same PLMN.
- 2) An MS that receives a ROUTING AREA UPDATE REJECT message stops timer T3330, enters state MM IDLE and for all causes except #12, #14 and #15 deletes the list of "equivalent PLMNs".

Reference

3GPP TS 24.008 clauses 4.7.5.2.4

12.4.2.5b.3 Test purpose

To test the behaviour of the UE if the network rejects a combined routing area updating procedure of the UE with the cause 'No Suitable Cells In Location Area'.

To test that the UE deletes the list of forbidden LAs when power is switched off'.

12.4.2.5b.4 Method of test

Initial condition

System Simulator:

Five cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell D in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell E in MCC1/MNC2/LAC1/RAC1 (RAI-5).

All five cells are operating in network operation mode II.

The PLMN contains Cell A, B and D is equivalent to the PLMN that contains Cell E.

User Equipment:

The UE has valid IMSI.

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 'No Suitable Cells In Location Area'. The SS checks that the UE shall perform PS attach procedure when the UE enters a suitable cell in a different location area on the same PLMN.

Step	Direction	Message	Comments
	UE SS		
	SS		The following message are sent and shall be
1	SS		received on cell D. Set the cell type of cell A to the "Suitable
'			neighbour cell".
			Set the cell type of cell B to the "Suitable
			neighbour cell".
			Set the cell type of cell C to the "Suitable
			neighbour cell". Set the cell type of cell D to the "Serving cell".
			Set the cell type of cell E to the "Non-Suitable
			cell".
			(see note)
2	UE		The UE is powered up or switched on and
			initiates an attach (see ICS). Cell D is preferred
3	->	ATTACH REQUEST	by the UE. Attach type = 'Combined PS / IMSI attach'
		ATTACTIKEQUEST	Mobile identity = IMSI
			TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND	
01		CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS	OII TIERING REGI GINGE	The SS starts integrity protection.
4	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached'
			Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Routing area identity = RAI-4 Mobile identity = IMSI
			Equivalent PLMN: MCC = 1, MNC=2
5	->	ATTACH COMPLETE	, , ,
6	SS		Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Suitable
			neighbour cell". Set the cell type of cell C to the "Suitable
			neighbour cell".
			Set the cell type of cell D to the "Non-Suitable
			cell".
			(see note) The SS configures power level of each Cell as
			follows.
			Cell A > Cell B = Cell C
			Cell A is preferred by the UE.
7	->	ROUTING AREA UPDATE	Update type = 'Combined RA/LA updating'
		REQUEST	P-TMSI-1 signature Routing area identity = RAI-4
8	<-	ROUTING AREA UPDATE	GMM cause = 'No Suitable Cells In Location
	,	REJECT	Area'
			The following message are sent and shall be
		ATTACH DECLIECT	received on cell B.
9	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1
10	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached'
	,		Mobile identity = P-TMSI-2
			P-TMSI-2 signature
			Routing area identity = RAI-3
11		ATTACH COMPLETE	Equivalent PLMN: MCC = 1, MNC=2
11	->	ATTACH COMPLETE	

12	SS		Set the cell type of cell D to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell".	
			Set the cell type of cell E to the "Suitable neighbour cell".	
			(note) The SS deactivates Cell B and activates Cell D and Cell E	
			The SS configures power level of each Cell as follows.	
			Cell D > Cell E	
13			Cell D is preferred by the UE.	
14	->	ROUTING AREA UPDATE	Update type = 'Combined RA/LA updating'	
		REQUEST	P-TMSI-1 signature	
			Routing area identity = RAI-4	
15	<-	ROUTING AREA UPDATE REJECT	GMM cause = 'No Suitable Cells In Location Area'	
16		TRESEST.	The following message are sent and shall be received on cell E.	
17	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attached' Mobile identity = IMSI	
18	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-3 P-TMSI-3 signature	
			Routing area identity = RAI-5	
			Equivalent PLMN: MCC=1. MNC=2	
19	->	DETACH REQUEST	Message not sent if power is removed.	
19	->	DETACTIVEQUEST	Detach type = 'power switched off, PS detach'	
NOTE:	The defini	tions for "Suitable neighbour sell" "		
NOTE.				
	in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

None.

12.4.2.5b.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the Combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- - initiate the combined routing area update procedure.

At step 8, the UE shall maintain the equivalent PLMN list (MCC=1, MNC=2).

At step9, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- - perform the PS attach procedure.

At step 15, the UE shall maintain the equivalent PLMN list (MCC=1, MNC=2).

At step 17, when the UE enters a suitable cell in a different but equivalent PLMN (MCC=1, MNC=2), UE shall:

- perform the PS attach procedure.

12.4.2.5c Combined routing area updating / rejected / Location area not allowed

12.4.2.5c.1 Definition

12.4.2.5c.2 Conformance requirement

If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'Location area not allowed', the User Equipment shall:

- delete any RAI, P-TMSI, P-TMSI signature, and PS ciphering key sequence number stored.
- set the PS update status to GU3 ROAMING NOT ALLOWED.
- delete any TMSI, LAI and ciphering key sequence number.
- store the LAI in the list of "forbidden location areas for regional provision of service"
- not delete the list of "equivalent PLMNs".
- perform a cell selection.

Reference

3GPP TS 24.008 clauses 4.7.5.2.4

12.4.2.5c.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 'PS services not allowed in this PLMN'.

12.4.2.5c.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6).

All three cells are operating in network operation mode I (in case of UE operation mode A).

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

User Equipment:

The UE has a valid IMSI.

The UE is in UE operation mode 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 SS rejects a combined routing area updating with the cause value 'Location area not allowed'. The SS checks that the UE performs combined PS attach when the UE enters a equivalent PLMN.

Step	Direction UE SS	Message	Comments
	02 00		The following messages are sent and shall be
1	UE		received on cell A. The UE is set in UE operation mode A (see
2	SS		ICS). The SS is set in network operation mode II.
			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable
			cell".
			Set the cell type of cell C to the "Non-Suitable cell".
3	UE		(see note) 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
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS		The SS starts integrity protection.
5	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2
			P-TMSI-2 signature
			Routing area identity = RAI-2 Mobile identity = TMSI-1
5	->	ATTACH COMPLETE	Equivalent PLMNs = MCC2,MNC1
3		ATTACITOOWILLIL	The following messages are sent and shall be
6	SS		received on cell B. Set the cell type of cell A to the "Suitable
			neighbour cell".
			Set the cell type of cell B to the "Serving cell". (see note)
7 8	UE ->	ROUTING AREA UPDATE	Cell B is preferred by the UE. Update type = 'Combined RA/LA updating'
		REQUEST	P-TMSI-2 signature
9	<-	ROUTING AREA UPDATE	Routing area identity = RAI-2 GMM cause = Location area not allowed '
10	UE	REJECT	The UE initiates an attach by MMI or by AT
			command.
12	UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	SS		Set the cell type of cell A to the "Non-Suitable cell".
			Set the cell type of cell B to the " Non-Suitable
			cell". Set the cell type of cell C to the "Serving cell".
14	UE		(see note) The UE performs cell selection.
'4	OE.		The following messages are sent and shall be
15	->	ATTACH REQUEST	received on cell C. Attach type = 'Combined PS / IMSI attach'
		·	Mobile identity =IMSI
16	<-	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined PS / IMSI attached'
			Mobile identity = P-TMSI-1 P-TMSI-2 signature
			Routing area identity = RAI-6
17	->	ATTACH COMPLETE	Mobile identity = TMSI-2

18	UE		The UE is switched off or power is removed	
19	->	DETACH REQUEST	(see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach'	
NOTE:		initions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified .108 clause 6.1 "Reference Radio Conditions for signalling test cases only".		

Specific message contents

None.

12.4.2.5c.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the Combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall:

- initiate the combined routing area update procedure.

At step 12, the UE shall:

- not initiate combined PS attach procure.

At step 14, the UE shall:

- perform combined PS attach procedure with Mobile identity = IMSI and Attach result = 'Combined PS / IMSI attached' to the equivalent cell.

12.4.2.5d Combined routing area updating / rejected / PS services not allowed in this PLMN

12.4.2.5d.1 Definition

12.4.2.5d.2 Conformance requirement

If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'PS Services not allowed in this PLMN', the User Equipment shall:

- delete any RAI, P-TMSI, P-TMSI signature, and PS ciphering key sequence number stored.
- set the PS update status to GU3 ROAMING NOT ALLOWED.
- store the PLMN identity in the "forbidden PLMNs for GPRS service" list.
- not delete the list of "equivalent PLMNs".

Reference

3GPP TS 24.008 clauses 4.7.5.2.4

12.4.2.5d.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 'PS services not allowed in this PLMN'.

12.4.2.5d.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC2/LAC1/RAC1 (RAI-8), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6).

All three cells are operating in network operation mode I (in case of UE operation mode A).

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

User Equipment:

The UE has a valid IMSI.

The UE is in UE operation mode 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 SS rejects a combined routing area updating with the cause value 'PS service not allowed in this PLMN'. The SS checks that the UE performs combined PS attach when the UE enters a equivalent PLMN.

Step	Direction UE SS	Message	Comments
	02 00		The following messages are sent and shall be
1	UE		received on cell A. The UE is set in UE operation mode A (see ICS).
2	SS		The SS is set in network operation mode II.
			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable
			cell". Set the cell type of cell C to the "Non-Suitable
			cell". (see note)
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
4a	<-	AUTHENTICATION AND	TMSI status = no valid TMSI available
		CIPHERING REQUEST	
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c 5	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached'
		ATTAOTTAOOLIT	Mobile identity = P-TMSI-2
			P-TMSI-2 signature Routing area identity = RAI-1
			Mobile identity = TMSI-1 Equivalent PLMNs = MCC2,MNC1
5	->	ATTACH COMPLETE	·
			The following messages are sent and shall be received on cell B.
6	SS		Set the cell type of cell A to the "Suitable neighbour cell".
			Set the cell type of cell B to the "Serving cell". (see note)
7	UE		Cell B is preferred by the UE.
8	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature
9	<-	ROUTING AREA UPDATE	Routing area identity = RAI-8 GMM cause ='PS service not allowed in this
		REJECT	PLMN'
10	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	SS		Set the cell type of cell A to the "Non-Suitable cell".
			Set the cell type of cell B to the " Non-Suitable
			cell". Set the cell type of cell C to the "Serving cell".
			(see note) The following messages are sent and shall be
14	->	ATTACH REQUEST	received on cell C. Attach type = 'Combined PS / IMSI attach'
'-			Mobile identity =IMSI
15	<-	ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined PS / IMSI attached'
			Mobile identity = P-TMSI-1 P-TMSI-2 signature
			Routing area identity = RAI-6 Mobile identity = TMSI-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'
NOTE:	The definit	tions for "Non-Suitable ce	ell", "Suitable neighbour cell" and "Serving cell" are specified
	in TS34.10	08 clause 6.1 "Reference	Radio Conditions for signalling test cases only".

Specific message contents

None.

12.4.2.5d.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the Combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall:

- initiate the combined routing area update procedure.

At step 12, the UE shall:

- not initiate combined PS attach procure.

At step 14, the UE shall:

- perform combined PS attach procedure with Mobile identity = IMSI and Attach result = 'Combined PS / IMSI attached' to the equivalent cell.

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 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 (cell is changed).

12.4.2.6.4 Method of test

12.4.2.6.4.1 Test procedure1

Initial condition

An access class x (0-15) is arbitrarily chosen. The USIM is programmed with this access class x. Communication with User Equipments using access class x is initially indicated to be barred on Cell B.

System Simulator:

Two cells (not simultaneously activated), 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. Both cells are operating in network operation mode I.

User Equipment:

The UE has 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

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.

Step	Direction	Message	Comments
	UE SS		
	SS		The following messages are sent and shall be received on cell A.
1	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".
2	UE		(see note) 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
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
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
6	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell".
7 8	UE UE		Set the cell type of cell B to the "Serving cell". (see note) Cell B is preferred by the UE. No ROUTING AREA UPDATE REQUEST sent to SS, as access class x is barred (SS waits 30 seconds).
9	SS		The access class x is not barred anymore.
10	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
11	<-	ROUTING AREA UPDATE 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
12	->	ROUTING AREA UPDATE 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, combined PS/IMSI detach'
NOTE:			d "Serving cell" are specified in TS34.108 clause
6.1 "Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.4.2.6.4.2 Test procedure2

Initial condition

An access class x (0-15) is arbitrarily chosen. The USIM is programmed with this access class x. Communication with User Equipments using access class x is indicated to be barred on cell B.

System Simulator:

Three cells (not simultaneously activated), 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.

Step	Direction	Message	Comments
	UE SS		The following groups and the first state of the fir
1	SS SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable
			cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
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
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	TWO Status – No valid TWO available
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS	OII FIERING REGI GIVOE	The SS starts integrity protection.
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
6	SS		received on cell B. Set the cell type of cell A to the " Suitable
0	33		neighbour cell ".
			Set the cell type of cell B to the "Serving cell".
7	UE		(see note) Cell B is preferred by the UE.
8	UE		No ROUTING AREA UPDATE 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.
9	SS		Set the cell type of cell B to the "Suitable
			neighbour cell ". Set the cell type of cell C to the "Serving cell".
			(see note)
10 11	UE ->	ROUTING AREA UPDATE	Cell C is preferred by the UE. Update type = 'Combined RA/LA updating'
''		REQUEST	P-TMSI-2 signature
			Routing area identity = RAI-1
12	<-	ROUTING AREA UPDATE	TMSI status = no valid TMSI available Update result = 'Combined RA/LA updated'
12		ACCEPT	Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Mobile identity = TMSI-1 Routing area identity = RAI-4
13	->	ROUTING AREA UPDATE COMPLETE	Trouming arounds into a round
14	UE		The UE is switched off or power is removed
15	-~	DETACH REQUEST	(see ICS). Message not sent if power is removed.
10	->	DETACHREQUEST	Detach type = 'power switched off, combined
			PS/IMSI detach'
NOTE:			d "Serving cell" are specified in TS34.108 clause
6.1 "Reference Radio Conditions for signalling test cases only".			

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Specific message contents

None.

12.4.2.6.5 Test requirements

Test requirements for Test procedure1

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step8, when the access class x is barred, UE shall:

- not perform the combined routing area updating procedure.

At step10, when the access class x is not barred, UE shall:

- perform the combined routing area updating procedure.

Test requirements for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step8, when the access class x is barred UE shall:

- not perform the combined routing area updating procedure.

At step11, when the serving cell is changed, UE shall:

- perform the combined routing area updating procedure.

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 UE shall 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 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 (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 may perform a Location Update procedure.

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.

Step	Direction	Message	Comments
	UE SS		
1	SS SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable
2	UE		cell". (see note) 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
3a 3b	<-	AUTHENTICATION AND CIPHERING REQUEST AUTHENTICATION AND	
30	->	CIPHERING RESPONSE	
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. 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	Mobile identity = IMSI
6	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable
7	UE		cell". Set the cell type of cell B to the "Serving cell". (see note) Cell B is preferred by the UE.
8	->	ROUTING AREA UPDATE	K = 1. Update type = 'Combined RA/LA updating'
		REQUEST	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
9 10	SS SS		No response is given from the SS. The SS verifies that the time between the RA
11	->	ROUTING AREA UPDATE REQUEST	update requests is T3330seconds 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
12 13	SS SS		No response is given from the SS. The SS verifies that the time between the RA
14	->	ROUTING AREA UPDATE REQUEST	update requests is T3330seconds 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
15 16	SS SS		No response is given from the SS. The SS verifies that the time between the RA update requests is T3330seconds

Step	Direction UE SS	Message	Comments	
17	->	ROUTING AREA UPDATE 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	
4.0			Retransmission counter = 3	
18 19	SS SS		No response is given from the SS. The SS verifies that the time between the RA	
19	33		update requests is T3330seconds	
20	->	ROUTING AREA UPDATING	Update type = 'Combined RA/LA updating'	
20		REQUEST	P-TMSI-2 signature	
			Routing area identity = RAI-1	
			TMSI status = no valid TMSI available	
			Routing area updating attempt counter = k	
			Retransmission counter = 4	
21	SS		No response is given from the SS.	
22	SS		The SS verifies that the time between the RA	
00	00		update requests is T3311 + T3330 seconds.	
23	SS		Step $8 - 22$ is repeated four times with $k = 2$, $k = 4$ and $k = 5$	
23a	UE	Registration on CS	= 3, k = 4 and k = 5 The UE may perform a normal location	
optiona	OL	Tregistration on co	updating procedure.	
I I			See TS 34.108	
24	SS		The SS verifies that the time between the RA	
			update requests is T3302 + T3330 seconds	
25	->	ROUTING AREA UPDATE	Update type =	
		REQUEST	- 'combined RA/LA updating with IMSI	
			attach'	
			(If Step23a is performed)	
			- 'combined RA/LA updating' (If Step23a is not performed)	
			P-TMSI-2 signature	
			Routing area identity = RAI-1	
			TMSI status = no valid TMSI available	
26	<-	ROUTING AREA UPDATE	Update result = 'Combined RA/LA updated'	
		ACCEPT	Mobile identity = P-TMSI-1	
			P-TMSI-1 signature	
			Mobile identity = IMSI	
0.7		DOLITING ADEA LIBBATE	Routing area identity = RAI-4	
27	->	ROUTING AREA UPDATE COMPLETE		
28	UE	CONFLETE	The UE is switched off or power is removed	
20	OL.		(see ICS).	
29	->	DETACH REQUEST	Message not sent if power is removed.	
			Detach type = 'power switched off, combined	
			PS/IMSI detach'	
NOTE:			ving cell" are specified in TS34.108 clause 6.1	
	"Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.4.2.7.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

initiate the combined routing area updating procedure with information elements specified in the above Expected Sequence.

UE shall 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

At step11, 14, 17 and 20, 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 Retransmission counter five

At step 22, UE shall:

- not repeat the combined routing area updating procedure.

Case 3) A timer T3311 timeout has occurred and the Routing area attempt counter is less than five,

At step23, UE shall:

- 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 Retransmission counter five.

At step24, UE shall:

- not initiate a routing area updating procedure.

Case5) The timer T3302 expires

At step25, UE shall:

- initiate the 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.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
1	SS		received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell".
2	UE		Set the cell type of cell C to the "Suitable neighbour cell". (see note) The UE is powered up or switched on and
3		ATTACH DECLICA	initiates an attach (see ICS.
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. 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	
6	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell".
7 8	UE ->	ROUTING AREA UPDATE REQUEST	Set the cell type of cell B to the "Serving cell". (see note) Cell B is preferred by the UE. Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1
9	SS		TMSI status = no valid TMSI available No response id given from the SS.
10	SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Serving cell".
11	UE		(see note) The RF level of cell B is lowered, and the RF level of cell C is increased, until cell C is
12	->	ROUTING AREA UPDATE REQUEST	preferred by the UE. Update type = 'Combined RA/LA updating' P-TMSI-2 signature
13	<-	ROUTING AREA UPDATE ACCEPT	Routing area identity = RAI-1 TMSI status = no valid TMSI available Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI
14	->	ROUTING AREA UPDATE COMPLETE	Routing area identity = RAI-5
15	UE	OOIVII EE IE	The UE is switched off or power is removed
16	->	DETACH REQUEST	(see ICS). Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'
NOTE:		ions for "Suitable neighbour cell" an ence Radio Conditions for signalling	d "Serving cell" are specified in TS34.108 clause test cases only".

Specific message contents

None.

12.4.2.8.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the routing area update procedure.

At step12, 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.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
			received on cell A.
1	SS		Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Suitable neighbour cell".
			Set the cell type of cell C to the "Suitable
			neighbour cell".
2	UE		(see note) The UE is powered up or switched on and
_	OL.		initiates an attach (see ICS.
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach'
			Mobile identity =IMSI TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND	TWO Status = 110 Vallu TWO available
		CIPHERING REQUEST	
3b	->	AUTHENTICATION AND	
3c	SS	CIPHERING RESPONSE	The SS starts integrity protection.
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		Set the cell type of cell A to the "Suitable
			neighbour cell".
			Set the cell type of cell B to the "Serving cell".
7	UE		(see note) Cell B is preferred by the UE.
8	->	ROUTING AREA UPDATE	Update type = 'Combined RA/LA updating'
		REQUEST	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
10	SS		received on cell C. Set the cell type of cell B to the "Suitable
10	33		neighbour cell".
			Set the cell type of cell C to the "Serving cell".
44			(see note)
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	Hadata saadt 10aahii 150440
13	<-	ROUTING AREA UPDATE	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1
		TAGGET T	P-TMSI-1 signature
			Mobile identity = IMSI
14	_~	ROUTING AREA UPDATE	Routing area identity = RAI-4
17	->	COMPLETE	
15	UE		The UE is switched off or power is removed
16	->	DETACH REQUEST	(see ICS). Message not sent if power is removed.
10	-,	DETACHREQUEST	Detach type = 'power switched off, combined
			PS/IMSI detach'
NOTE:			d "Serving cell" are specified in TS34.108 clause
6.1 "Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.4.2.9.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate routing area update procedure.

At step12a, 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

- 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			
1	SS SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell".	
2	UE		(see note) 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	
3a	<-	AUTHENTICATION AND CIPHERING REQUEST		
3b	->	AUTHENTICATION AND CIPHERING RESPONSE		
3c	SS		The SS starts integrity protection.	
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		
6	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell".	
7 8	UE ->	ROUTING AREA UPDATE REQUEST	(see note) Cell B is preferred by the UE. Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1	
9	SS		TMSI status = no valid TMSI available The SS ignores the ROUTING AREA UPDATE REQUEST message and initiates a detach procedure.	
10	<-	DETACH REQUEST	Detach type = 're-attach not required'	
11	->	DETACH ACCEPT		
NOTE:	NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

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 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.

Step	Direction	Message	Comments
	UE SS		
	SS		The following messages are sent and shall be
1	SS		received on cell A. Set the cell type of cell A to the "Serving cell".
'	00		Set the cell type of cell B to the "Suitable
			neighbour cell".
			(see note)
2	UE		The UE is powered up or switched on and
2		ATTACH BEOLIEST	initiates an attach (see ICS.
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI
			TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND	
		CIPHERING REQUEST	
3b	->	AUTHENTICATION AND	
	00	CIPHERING RESPONSE	
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached'
4	ζ-	ATTACITACCEFT	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		Set the cell type of cell A to the "Suitable
	00		neighbour cell".
			Set the cell type of cell B to the "Serving cell".
			(see note)
7	UE	DOLITING ADEA LIDEATE	Cell B is preferred by the UE.
8	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature
		NEQUEST	Routing area identity = RAI-1
			TMSI status = no valid TMSI available
9	SS		The SS ignores the ROUTING AREA UPDATE
			REQUEST message and initiates a detach
40		DETACH DECHEOT	procedure.
10 11	<- UE	DETACH REQUEST	Detach type = 'IMSI detach' The UE ignores the DETACH REQUEST
''	J OL		message and continue the routing area
			updating procedure.
12	<-	ROUTING AREA UPDATE	Update result = 'Combined RA/LA updated'
		ACCEPT	Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Mobile identity = IMSI Routing area identity = RAI-4
13	->	ROUTING AREA UPDATE	Trouting area identity – ITAI-4
		COMPLETE	
14	UE		The UE is switched off or power is removed
4-		DETACH DECUEST	(see ICS).
15	->	DETACH REQUEST	Message not sent if power is removed.
			Detach type = 'power switched off, combined PS/IMSI detach'
NOTE:	The definit	ı tions for "Suitable neighbour cell" an	d "Serving cell" are specified in TS34.108 clause
6.1 "Reference Radio Conditions for signalling test cases only"			

6.1 "Reference Radio Conditions for signalling test cases only".

Specific message contents

None.

12.4.2.10.5 Test requirements

Test requirements for Test procedure1

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate routing area update procedure.

At step11, when the 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.

Test requirements for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate routing area update procedure.

At step11, the UE receives a DETACH REQUEST message with cause 'IMSI detach' from SS while waiting for a ROUTING AREA UPDATE ACCEPT message, UE shall:

- ignore the detach request procedure.
- 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 clauses 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 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.

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).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
3	->	ATTACH REQUEST	message is set to "Registration". Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	Trouting area identity = 10 ti
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
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	
5a	SS		The SS releases the RRC connection.
5b	SS		SS checks that the IE "Establishment cause" in
			the received RRC CONNECTION REQUEST
6	_	ROUTING AREA UPDATE	message is set to "Registration". Update type = 'Periodic updating'
0	->	REQUEST	P-TMSI-2 signature
		REGOLOT	Routing area identity = RAI-1
7	SS		The SS verifies that the time between the
			attach and the periodic RA updating is T3312
7a	SS		The SS starts integrity protection.
8	<-	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned.
		ACCEPT	P-TMSI not included. Update result = 'RA updated'
			P-TMSI-3 signature
			Routing area identity = RAI-1
8a	SS		The SS releases the RRC connection.
9	UE		The UE is switched off or power is removed
9a	SS		(see ICS). SS checks that the IE "Establishment cause" in
3d	33		any received RRC CONNECTION REQUEST
10	->	DETACH REQUEST	message is set to "Detach". Message not sent if power is removed.
10a	SS		Detach type = 'power switched off, PS detach' If the power was not removed, the SS releases
100	- 55		the RRC connection.
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

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step6, when the timer T3312 is expired, UE shall:

- initiate the routing area updating procedure with Update type = 'Periodic updating'.

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 clauses 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 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.

Step	Direction	Message	Comments
	UE SS		
2	UE ->	ATTACH REQUEST	The UE is powered up or switched on and initiates an attach (see ICS). Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1
			Routing area identity = RAI-1
2a	<-	AUTHENTICATION AND CIPHERING REQUEST	
2b	->	AUTHENTICATION AND CIPHERING RESPONSE	
2c	SS		The SS starts integrity protection.
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 UPDATE REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available or IE not present.
6	SS		The SS verifies that the time between the attach request and the periodic RA updating is T3312
7	<-	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI and TMSI not included. Update result = 'RAupdated' P-TMSI-3 signature
8	UE		Routing area identity = RAI-1 The UE is switched off or power is removed
9	->	DETACH REQUEST	(see ICS). 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

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step5, when the timer T3312 is expired, UE shall:

- initiate the routing area updating procedure with Update type = 'Periodic updating'.

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 indicating 'combined RA/LA updating with IMSI attach'.

Reference

3GPP TS 24.008 clauses 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 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 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.

Step	Direction UE SS	Message	Comments
	SS		The following messages are sent and shall be
	00		received on cell A.
1	SS		Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Non-Suitable
			cell".
2	SS		(see note) The UE is set in UE operation mode A (see
_	00		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 Routing area identity = RAI-1
4a	<-	AUTHENTICATION AND	Trouting area identity = IVAI-1
		CIPHERING REQUEST	
4b	->	AUTHENTICATION AND	
_	00	CIPHERING RESPONSE	TI 00 1 1 1 1 1 1
4c 5	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached'
3	ζ-	ATTACITACCEFT	Mobile identity = P-TMSI-2
			P-TMSI-2 signature
			Routing area identity = RAI-1
			T3312 = 6 minutes
6 7	-> SS	ATTACH COMPLETE	After 5 minutes, the signal strength is lowered
/	55		After 5 minutes, the signal strength is lowered until the UE has lost contact with the SS.
			Set the cell type of cell A to the "non-suitable
			cell".(see note)
8	SS		Wait 2 minutes.
			The following messages are sent and shall be received on cell B.
9	SS		Set the cell type of cell B to the "Serving cell".
	00		(see note)
10	UE		Cell B is preferred by the UE.
11	UE		The UE immediately starts a combined RA
12	_	DOLITING AREA LIREATE	updating procedure
12	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach'
		TREGOLOT	P-TMSI-2 signature
			Routing area identity = RAI-1
			TMSI status = valid TMSI available or IE is
12	_		omitted.
13	<-	ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-3
		THOUSE I	P-TMSI-3 signature
			Mobile identity = TMSI-2
			Routing area identity = RAI-4
14	->	ROUTING AREA UPDATE	
15	UE	COMPLETE	The UE is switched off or power is removed
'5	OL.		(see ICS).
16	->	DETACH REQUEST	Message not sent if power is removed.
			Detach type = 'power switched off, combined
NOTE	The Jeff 1	iono for IIO vitable a simble sure a 100	PS / IMSI detach'
NOTE:	NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".		
6.1 Reference Radio Conditions for signaturing test cases only.			

Specific message contents

None.

12.4.3.3.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step12, 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 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 clauses 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 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 is performed immediately (no periodic location update procedure is performed as T3212=infinity).

T3312; set to 6 minutes.

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
2a		AUTHENTICATION AND	Routing area identity = RAI-1
Za	<-	CIPHERING REQUEST	
2b	->	AUTHENTICATION AND	
		CIPHERING RESPONSE	
2c	SS		The SS starts integrity protection.
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 13	SS	(void)	After E minutes, the signal strangth is lowered
13	33		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 UPDATE	Update type = 'Periodic updating'
		REQUEST	P-TMSI-2 signature
			Routing area identity = RAI-1
17	<-	ROUTING AREA UPDATE	No new mobile identity assigned.
		ACCEPT	P-TMSI not included.
			Update result = 'RAupdated'
			P-TMSI-3 signature Routing area identity = RAI-1
18	UE		The UE is switched off or power is removed
'			(see ICS).
19	->	DETACH REQUEST	Message not sent if power is removed.
			Detach type = 'power switched off, PS detach'

Specific message contents

RRC System information block type 1

Information element	Comment Value
T3212 (Periodical Location updating)	Infinity

12.4.3.4.5 Test requirements

At step2, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step16, 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".

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.

Step	Direction UE SS	Message	Comments
1	UE		The UE is set in UE operation mode A (see
			ICS). If UE operation mode A not supported set
2	UE		the UE in operation mode C. The UE is powered up or switched on and
			initiates an attach (see ICS).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
			message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'PS attach'
3a	<-	AUTHENTICATION AND	Mobile identity = IMSI
- Ou	`	CIPHERING REQUEST	
3b	->	AUTHENTICATION AND	
3c	SS	CIPHERING RESPONSE	The SS starts integrity protection.
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	COIVII LETE	The UE is switched off or power is removed
	00		(see ICS).
8a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST
			message is set to "Detach".
9	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
9a	SS		If the power was not removed, the SS releases the RRC connection.
10	UE		Ensure the power is removed from the UE for
44			at least 10 seconds
11	UE		The UE is powered up or switched on and initiates an attach (see ICS).
11a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
12	->	ATTACH REQUEST	message is set to "Registration". Attach type = 'PS attach'
12	->	ATTACTIVE QUEST	Mobile identity = P-TMSI-2
40		ALITHENITION TION AND	Routing area identity = RAI-1
12a	<-	AUTHENTICATION AND CIPHERING REQUEST	
12b	->	AUTHENTICATION AND CIPHERING RESPONSE	
12c	SS	S. FIELKING KEGI GINGE	The SS starts integrity protection.
13	<-	ATTACH ACCEPT	No new mobile identity assigned.
			P-TMSI not included. Attach result = 'PS only attached'
			P-TMSI-3 signature
13a	SS		Routing area identity = RAI-1 The SS releases the RRC connection and
100			waits 5s to allow the UE to read system
4.4		PAGING TYPE1	information.
14	<-	FAGING LIPET	Mobile identity = P-TMSI-2 Paging order is for PS services.
			Paging cause = "Terminating interactive call".
15	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
			message is set to "Terminating interactive call".
16		Void	1

17 18	->	Void SERVICE REQUEST	service type = "paging response"
18a 19 20	SS SS	Void	The SS starts integrity protection. The SS releases the RRC connection.
21	UE	Void	The UE is switched off or power is removed
21a	SS		(see ICS). SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".
22	->	DETACH REQUEST	Message not sent if power is removed.
23	SS		Detach type = 'power switched off, PS detach' If the power was not removed, the SS releases the RRC connection.

Specific message contents

None.

12.5.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, when the UE receives P-TMSI REALLOCATION COMMAND message from SS, UE shall:

- acknowledge the new P-TMSI by sending P-TMSI REALLOCATION COMPLETE message.

At step12, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step18, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

12.6 PS authentication

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.

The SIB1 IE "CN domain specific NAS system information", for the CS Domain, is set to value "00 00" (to prevent repeated CS domain registration and/or IMSI Detach by UEs in operation mode A) in both cells.

User Equipment:

The UE has a valid IMSI.

The UE has been registered in the CS domain.

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.

Step	Direction UE SS	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".
2	UE		(see note) The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported,
3	UE		goto step 17. The UE is powered up or switched on and initiates an attack (see ICS)
3a	SS		initiates an attach (see ICS). SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
4	->	ATTACH REQUEST	message is set to "Registration". Attach type = 'PS attach'
5	<-	AUTHENTICATION AND CIPHERING REQUEST	Mobile identity = IMSI Request authentication. Set PS-CKSN-1
6	->	AUTHENTICATION AND CIPHERING RESPONSE	RES
7	SS	OII TIENING NEGI GNOE	The SS checks the RES value and starts
8	<-	ATTACH ACCEPT	integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature
9 9a	-> SS	ATTACH COMPLETE	Routing area identity = RAI-1 The SS releases the RRC connection.
10	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell".
10a	SS		(see note) SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
11	->	ROUTING AREA UPDATE REQUEST	message is set to "Registration". Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
12	SS		PS-CKSN-1 The value of PS-CKSN is checked. Integrity
13	<-	ROUTING AREA UPDATE ACCEPT	protection is started. Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature
14	->	ROUTING AREA UPDATE COMPLETE	Routing area identity = RAI-4
15	UE	JOHN LETE	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'
16a	SS		The SS releases the RRC connection.
17	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
18	UE		The UE is set in UE operation mode A (see ICS) and the test is repeated from step 3 to step 16a.
NOTE:	NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".		

3GPP

None.

12.6.1.1.5 Test requirements

At steps 3a and 10a the UE shall transmit an RRC CONNECTION REQUEST message with the IE "Establishment cause" set to "Registration".

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, 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.

At step11, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- perform routing area updating procedure.

12.6.1.2 Authentication rejected by the network

12.6.1.2.1 Definition

12.6.1.2.2 Conformance requirement

Upon receipt of an AUTHENTICATION AND CIPHERING REJECT message, the UE shall set the PS update status to GU3 ROAMING NOT ALLOWED and shall delete the P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number stored.

The USIM shall be considered as invalid until switching off or the USIM is removed.

If the AUTHENTICATION AND CIPHERING REJECT message is received, the UE shall abort any GMM procedure, shall stop the timers T3310 and T3330 (if running) and shall enter state GMM-DEREGISTERED.

Reference

3GPP TS 24.008 clauses 4.7.7.5.

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

The test sequence is repeated for K = 1, 2.

A complete PS attach procedure is performed. The SS rejects the following authentication and ciphering procedure. The UE is paged with its former P-TMSI and shall not respond.

The Cell is changed into a new Routing Area.

The SS checks that the UE does not perform normal routing area updating.

The SS then checks that the UE does not perform a PS detach.

The SS checks that the UE does not perform a PS Attach procedure.

Expected Sequence

The test sequence is repeated for k = 1, 2

For k = 1, the UE is set in UE operation mode C. If MS operation mode C not supported then k = 2.

For k = 2 the UE is set in UE operation mode A.

Step	Direction UE SS	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".
2	UE		(see note) The UE is powered up or switched on and initiates an attach (see ICS).
2a	UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation
2b	SS		mode A. SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
3	->	ATTACH REQUEST	message is set to "Registration". Attach type = 'PS attach' Mobile identity = IMSI
4		Void	
5 6	<-	Void AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Set PS-CKSN-1
7	->	AUTHENTICATION AND	RES
8	<-	CIPHERING RESPONSE AUTHENTICATION AND CIPHERING REJECT	
8a	SS	OII TIERING RESECT	The SS releases the RRC connection and waits 5s to allow the UE to read system
9	<-	PAGING TYPE1	information. Mobile identity = IMSI
10	UE		Paging order is for PS services. No response from the UE to the request. This is checked for 10 seconds.
11	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell".
12 13	UE UE		(see note) Cell B is preferred by the MS. No ROUTING AREA UPDATE REQUEST sent to the SS
14	UE		(SS waits 30 seconds). If possible (see ICS) the UE initiates an attach by MMI or by AT command.
15	UE		No ATTACH REQUEST sent to the SS
16 17	UE SS		(SS waits 30 seconds). The UE is switched off (see ICS). No DETACH REQUEST sent to the SS (SS waits 30 seconds).
18			The UE is powered up or switched on and initiates an attach (see ICS). Step 19 is only performed for k =2
19	UE	Registration on CS	Parameter mobile identity is IMSI. See TS 34.108
19a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
20	->	ATTACH REQUEST	message is set to "Registration". Attach type = 'PS only attached' Mobile identity = IMSI
20a	<-	AUTHENTICATION AND CIPHERING REQUEST	
20b	->	AUTHENTICATION AND	
20c	SS	CIPHERING RESPONSE	The SS starts integrity protection.

21	<-	ATTACH ACCEPT	Attach result = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4	
22	->	ATTACH COMPLETE		
22a	SS		The SS releases the RRC connection.	
23	UE		The UE is switched off or power is removed.	
23a	SS		(see ICS) SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".	
24	->	DETACH REQUEST	Message not sent if power is removed.	
24a	SS		If the power was not removed, the SS releases the RRC connection.	
25	UE		If k=1 then the test is repeated for k=2.	
NOTE:	NOTE: The definitions for "Non-Suitable celll" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

None.

12.6.1.2.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step9, when the UE receives the AUTHENTICATION AND CIPHERING REJECT message, UE shall:

- not respond paging message for PS domain.

At step13, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- not perform normal routing area updating.

At step17, when the UE is switched off, UE shall:

- not perform PS detach procedure.

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.

Step	Direction UE SS	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable
2	UE		cell". (see note) The UE is set in UE operation mode C (see ICS). If UE operation mode C is not supported, goto step 25.
3 4	UE		The following messages are sent and shall be
5	UE		received on cell A. 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	<-	AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Including PS-CSKN-1
11	->	AUTHENTICATION AND CIPHERING RESPONSE	RES
12 13	SS <-	IDENTITY REQUEST	The SS checks the RES value. Identity type = IMSI
14 15	->	IDENTITY RESPONSE	Mobile identity = IMSI
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	
18	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell".
19	->	ROUTING AREA UPDATE REQUEST	Set the cell type of cell B to the "Serving cell". (see note) Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
20	SS		PS-CKSN-1 The value of PS-CKSN is checked
21	<-	ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
22	->	ROUTING AREA UPDATE 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.
NOTE:		tions for "Non-Suitable cell" and "Ser	rving cell" are specified in TS34.108 clause 6.1

"Reference Radio Conditions for signalling test cases only".

None.

12.6.1.3.1.5 Test requirements

At step6, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information element specified in the above Expected Sequence.

At step9, when the UE receives the AUTHENTICATION AND CIPHERING REQUEST with Invalid Message Authentication Code, UE shall:

- send the AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS

At step10, when the UE receives the second AUTHENTICATION AND CIPHERING REQUEST message (containing a valid MAC) from SS, UE shall:

- send the AUTHENTICATION AND CIPHERING RESPONSE message to SS.

At step13, when the UE receives the IDENTITY REQUEST message with Identity type = IMSI from SS, UE shall:

- send the IDENTITY RESPONSE message with Mobile identity = IMSI 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		Set the cell type of cell A to the "Serving cell".
1	33		Set the cell type of cell B to the "Non-Suitable
			cell".
			(see note)
2	UE		The UE is set in UE operation mode C (see
_	OL.		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
Ü	0.2		initiates an attach (see ICS).
4	->	ATTACH REQUEST	Attach type = 'PS attach'
-			Mobility identity = IMSI
5	<-	AUTHENTICATION AND	Request authentication.
-		CIPHERING REQUEST	SQN is out of range.
6	SS	·	The SS starts the timer T3360
7	->	AUTHENTICATION AND	GMM cause = 'Synch failure'
		CIPHERING FAILURE	AUTS parameter
8	SS		set new authentication vectors. (re-
			synchronisation)
9	<-	AUTHENTICATION AND	Request authentication.
		CIPHERING REQUEST	Including PS-CKSN-1
10	->	AUTHENTICATION AND	RES
		CIPHERING RESPONSE	
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
4.4	00		received on cell B.
14	SS		Set the cell type of cell A to the "Non-Suitable
			cell".
			Set the cell type of cell B to the "Serving cell".
15		ROUTING AREA UPDATE	(see note) Update type = 'RA updating'
10	->	REQUEST	P-TMSI-2 signature
		INLOULUI	Routing area identity = RAI-1
			PS-CKSN-1
16	SS		The value of PS-CKSN is checked
17	<-	ROUTING AREA UPDATE	Update result = 'RA updated'
17		ACCEPT	Mobile identity = P-TMSI-1
		7.002.1	P-TMSI-1 signature
		1	TI TIMOT I SIGNATAR

Step	Direction	Message	Comments
	UE SS		
18	->	ROUTING AREA UPDATE 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.
NOTE:	The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause6.1		
	"Reference Radio Conditions for signalling test cases only".		

None.

12.6.1.3.2.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information element specified in the above Expected Sequence.

At step7, when the UE receives the AUTHENTICATION AND CIPHERING REQUEST message(SQN is out of range.), UE shall:

- send the AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'synch failure' to the SS

At step10, when the UE receives the second AUTHENTICATION AND CIPHERING REQUEST message from SS, UE shall:

- send the AUTHENTICATION AND CIPHERING RESPONSE message to SS.

At step15, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- perform routing area updating procedure.

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.

The UE may deem that the network has failed the authentication check after any combination of three consecutive authentication failures, regardless whether 'MAC failure', 'invalid SQN', or 'GSM authentication unacceptable' was diagnosed. The authentication failures shall be considered as consecutive only, if the authentication challenges causing the second and third authentication failure are received by the UE, while the timer T3318 or T3320 started after the previous authentication failure is running.

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 sends AUTHENTICATION AND CIPHERING FAILURE message to the SS indicating authentication failure.

The SS repeats a third 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.

Step	Direction	Message	Comments
	UE SS		
1	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note) The following messages are sent and shall be
2	UE		received on cell A. 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'
7a	<-	AUTHENTICATION AND CIPHERING REQUEST	Request for authentication. Invalid Message Authentication Code (MAC).
7b	->	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		Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
			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
17	SS		command. SS verifies that the UE does not attempt to access the network for 30s.
NOTE:			ving cell" are specified in TS34.108 clause 6.1
	"Reference	e Radio Conditions for signalling test	cases only".

Specific message contents

None.

12.6.1.3.3.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step5, when the UE receives the AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC), UE shall:

- send the AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS.

At step7, when the 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.

At step7b, when the UE receives the third 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.

At step8, after the UE sends third AUTHENTICATION AND CIPHERING FAILURE message to the SS, the UE shall:

- not attempt to access the network, until the system information data is refreshed.

At step11, when the activated cell is changed from cell A to cell B, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step13, when the 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.

At step17, when the 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.

The SIB1 IE "CN domain specific NAS system information", for the CS Domain, is set to value "00 00" (to prevent repeated CS domain registration and/or IMSI Detach by UEs in operation mode A).

User Equipment:

The UE has a valid IMSI.

The UE has been registered in the CS domain.

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

Step	Direction	Message	Comments
	UE SS		
1	SS		The UE is set to attach to PS services only (see ICS). If that is not supported by the UE, goto step 14.
2	UE		The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4		Void	
5	<-	AUTHENTICATION AND CIPHERING REQUEST	
5a	->	AUTHENTICATION AND CIPHERING RESPONSE	
5b	SS		The SS starts ciphering and integrity protection.
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
11a	<-	ATTACH ACCEPT	Attach result = 'PS only attached'
			Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Routing area identity = RAI-1
11b	->	ATTACH COMPLETE	
11c	SS		The SS releases the RRC connection.
12	UE		The UE is switched off or power is removed (see ICS).
12a	SS		SS checks that the IE "Establishment cause" in
			any received RRC CONNECTION REQUEST
			message is set to "Detach" (message not
			received if power is removed).
13	->	DETACH REQUEST	Message not sent if power is removed.
			Detach type = 'power switched off, PS detach'
13a	SS		The SS releases the RRC connection.
14	UE		The UE is set to attach to both PS and non-PS
			services (see ICS) and the test is repeated
			from step 2 to step 13ab.

Specific message contents

None.

12.7.1.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 12a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step7, when the SS requests an IMSI with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMSI.

At step9, when the SS requests an IMEI with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMEI.

At step11, when the 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 attack proceedure at a witch of

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

An attach is performed.

T3314; set to 60 seconds

Step	Direction	Message	Comments	
_	UE SS	1		
			The following messages are sent and shall be received on cell A.	
1	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".	
2	UE		(see note) 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.	
2a	SS		The UE is powered up or switched on and initiates an attach (see ICS). SS checks that the IE "Establishment cause" in	
Za	33		the received RRC CONNECTION REQUEST message is set to "Registration".	
3	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI	
3a	<-	AUTHENTICATION AND CIPHERING REQUEST		
3b	->	AUTHENTICATION AND CIPHERING RESPONSE		
3c	SS		The SS starts integrity protection.	
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	13314 = 00 Seconds	
5a	SŚ	ATTACH COMILECTE	The SS releases the RRC connection.	
6	UE		The UE is switched off or power is removed (see ICS).	
6a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST	
1			message is set to "Detach".	
7	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'	
7a	SS		If the power was not removed, the SS releases the RRC connection.	
NOTE:	The defini	tions for "Non-Suitable cell" and "Se	rving cell" are specified in TS34.108 clause 6.1	
	"Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.8.5 Test requirements

At step4, when the 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.

The SIB1 IE "CN domain specific NAS system information", for the CS Domain, is set to value "00 00" (to prevent repeated CS domain registration and/or IMSI Detach by UEs in operation mode A).

User Equipment:

The UE has a valid IMSI

The UE has been registered in the CS domain.

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.

Step	Direction	Message	Comments
-	UE SS	_	
1	UE		The UE is set to attach to PS services only (see ICS). If that is not supported by the UE, goto step 12.
2	UE		The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS	OII FIERMO NEOF ONCE	The SS starts ciphering and integrity protection.
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	
5a	SS		The SS releases the RRC connection.
6	UE		The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
6a	SS		The IE "Establishment cause" in the received RRC CONNECTION REQUEST message is not checked.
7 8	-> <-	SERVICE REQUEST AUTHENTICATION AND CIPHERING REQUEST	Service type = "signalling",
9	->	AUTHENTICATION AND CIPHERING RESPONSE	
9a	SS	O. HEIGHTO RESI ONGE	The SS starts integrity protection and releases the RRC connection.
10	UE		The UE is switched off or power is removed (see ICS).
10a	SS		The SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST is set to "Detach" (not received if power is removed).
11	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
11a	SS		The SS releases the RRC connection.
12	UE		The UE is set to attach to both PS and non-PS
			services (see ICS) and the test is repeated
1			from step 2 to step 11ab.

Specific message contents

None.

12.9.1.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 10a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step7, 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.

The SIB1 IE "CN domain specific NAS system information", for the CS Domain, is set to value "00 00" (to prevent repeated CS domain registration and/or IMSI Detach by UEs in operation mode A).

User Equipment:

The UE has a valid IMSI

The UE has been registered in the CS domain.

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.

Step	Direction	Message	Comments
_	UE SS	_	
1	UE		The UE is set to attach to PS services only (see ICS). If that is not supported by the UE, goto step 12.
2	UE		The UE is powered up or switched in and initiates an attach (see ICS).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3с	SS		The SS starts ciphering and integrity protection.
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	Trouming arounds running
5a	SS		The SS releases the RRC connection.
6	<-	PAGING TYPE1	Mobile identity = P-TMSI-1
			Paging order is for PS services.
60	SS		Paging cause = "Terminating interactive call" SS checks that the IE "Establishment cause" in
6a	33		the received RRC CONNECTION REQUEST
			message is set to "Terminating interactive call".
7	->	SERVICE REQUEST	Service type = "Paging response"
8	<-	AUTHENTICATION AND	a suppose of a sup
		CIPHERING REQUEST	
9	->	AUTHENTICATION AND	
	00	CIPHERING RESPONSE	
9a	SS		SS starts integrity protection and releases the RRC connection.
10	UE		The UE is switched off or power is removed
			(see ICS).
10a	SS		SS checks that the IE "Establishment cause" in
			any received RRC CONNECTION REQUEST
			message is set to "Detach" (message not sent if power is removed).
11	->	DETACH REQUEST	Message not sent if power is removed.
	_		Detach type = 'power switched off, PS detach'
11a	SS		The SS releases the RRC connection.
12	UE		The UE is set to attach to both PS and non-PS
			services (see ICS) and the test is repeated
			from step 2 to step 11ab.

Specific message contents

None.

12.9.2.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Terminating interactive Call".

At step 10a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, 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

12.9.3.1 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, 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.

Step	Direction UE SS	Message	Comments
	02 00		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 Routing area identity = RAI-1
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	Routing area identity = IVAI-1
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS		The SS starts ciphering and integrity protection.
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		Void	,
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	<- !!F	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 13	UE	Void	The UE is switched off.
14	UE		The UE is powered up or switched on and
15	->	ATTACH REQUEST	initiates an attach (see ICS). Cell A is preferred by the UE. Attach type = 'PS attach'
			Mobile identity = IMSI
15a	<-	AUTHENTICATION AND CIPHERING REQUEST	
15b	->	AUTHENTICATION AND CIPHERING RESPONSE	
15c	SS	ATTACHLACOEDT	The SS starts ciphering and integrity protection.
16	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
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	UE		USIM is inserted.

Step	Direction	Message	Comments
	UE SS		
25	UE		The UE initiates a PS attach, by MMI or by AT command.
26	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
26a	<-	AUTHENTICATION AND CIPHERING REQUEST	,
26b	->	AUTHENTICATION AND CIPHERING RESPONSE	
26c	SS		The SS starts ciphering and integrity protection.
27	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1
			P-TMSI-1 signature
		ATTA OLL COMPLETE	Routing area identity = RAI-1
28 29	-> UE	ATTACH COMPLETE	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"
31	<-	AUTHENTICATION AND CIPHERING REQUEST	,, ,
32	->	AUTHENTICATION AND CIPHERING RESPONSE	
33	SS		The SS initiate a security mode control procedure.
34	SS		After the security mode control procedure is completed, the SS releases RRC connection.
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, PS detach'

None.

12.9.3.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step11, when the UE receives the SERVICE REJECT message with cause "Illegal MS" UE shall:

- not attempt to access the network.

At step15, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step22, when the UE receives the SERVICE REJECT message with cause "Illegal MS" UE shall:

- not attempt to access the network.

At step26, when the USIM is replaced, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step30, UE shall:

- initiate the service request procedure.

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 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.

Step	Direction UE SS	Message	Comments
	02 00		The following message are sent and shall be
1	UE		received on cell A. 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
4	->	ATTACH REQUEST	by the UE. Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	recurring area recruit, ratio
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c 5	SS <-	ATTACH ACCEPT	The SS starts ciphering and integrity protection. No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6		Void	·
7	UE		The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8 9	-> <-	SERVICE REQUEST SERVICE REJECT	Service type = "signalling" Reject cause = "PS services not allowed"
10	UE	SERVICE RESECT	The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT
11	SS		command. The SS verifies that the UE does not attempt to access the network.
12	UE	Va:d	(SS wait 30seconds) The UE is switched off.
13	UE	Void	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
15a	<-	AUTHENTICATION AND CIPHERING REQUEST	,
15b	->	AUTHENTICATION AND CIPHERING RESPONSE	
15c 16	SS <-	ATTACH ACCEPT	The SS starts ciphering and integrity protection. 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 20	-> <-	SERVICE REQUEST SERVICE REJECT	Service type = "signalling" 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.
23 24	UE UE		(SS wait 30seconds) USIM is removed. USIM is inserted.

Step	Direction	Message	Comments
	UE SS		
25	UE		The UE initiates a PS attach, by MMI or by AT command.
26	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
26a	<-	AUTHENTICATION AND CIPHERING REQUEST	,
26b	->	AUTHENTICATION AND CIPHERING RESPONSE	
26c	SS		The SS starts ciphering and integrity protection.
27	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature
28		ATTACH COMPLETE	Routing area identity = RAI-3
29	-> UF	ATTACH COMPLETE	The UE initiates an upper-layer signalling, e.g.,
29	UE		Active PDP Context request, by MMI or by AT command.
30	->	SERVICE REQUEST	Service type = "signalling"
31	<-	AUTHENTICATION AND CIPHERING REQUEST	,, ,
32	->	AUTHENTICATION AND CIPHERING RESPONSE	
33	SS		The SS initiate a security mode control procedure.
34	SS		After the security mode control procedure is completed, the SS releases RRC connection.
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, PS detach'

12.9.4.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step11, when the UE receives the SERVICE REJECT message with cause "PS services not allowed" UE shall:

- not attempt to access the network.

At step15, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step22, when the UE receives the SERVICE REJECT message with cause "PS services not allowed" UE shall:

- not attempt to access the network.

At step26, when the USIM is replaced, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step30, UE shall:

- initiate the service request procedure.

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 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).

Step	Direction	Message	Comments
	UE SS		
1	UE		The following message are sent and shall be received on cell A. 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 Routing area identity = RAI-1
4a	<-	AUTHENTICATION AND	Nouting area identity = NAI-1
4b	->	CIPHERING REQUEST AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS	CII TIERING RESI GNOE	The SS starts ciphering and integrity protection.
5	<-	ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1
6		Void	Attach result = 'PS only attached'
7	UE	Void	The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8 9	-> <-	SERVICE REQUEST SERVICE REJECT	Service type = "signalling" Reject cause = "MS identity cannot be derived
10	UE		by the network" The UE automatically initiates the PS attach
11	->	ATTACH REQUEST	procedure. Attach type = 'PS attach'
11a	<-	AUTHENTICATION AND	Mobile identity = IMSI
11b	->	CIPHERING REQUEST AUTHENTICATION AND	
11c	SS	CIPHERING RESPONSE	The SS starts ciphering and integrity protection.
12	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2
13	->	ATTACH COMPLETE	P-TMSI-2 signature
14	UE		The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
15 16	-> <-	SERVICE REQUEST AUTHENTICATION AND CIPHERING REQUEST	Service type = "signalling"
17	->	AUTHENTICATION AND CIPHERING RESPONSE	
18	SS	OII FILINING NEOFONSE	The SS initiate a security mode control
19	SS		Procedure. After the security mode control procedure is
20	UE		completed, the SS releases RRC connection. The UE is switched off or power is removed
21	->	DETACH REQUEST	(see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.5.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step11, when the UE receives the SERVICE REJECT message with cause "MS identity cannot be derived by the network" 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 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.

Step	Direction UE SS	Message	Comments
1	UE		The following message are sent and shall be received on cell A. The UE is set in UE operation mode C (see
2	SS		ICS). The SS is set in network operation mode II.
			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
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 Routing area identity = RAI-1
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	reaming area racinary ratio
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS		The SS starts ciphering and integrity protection.
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		Void	
7	UE		The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8 9	-> <-	SERVICE REQUEST SERVICE REJECT	Service type = "signalling" Reject cause = "PLMN not allowed"
10	ÛE	OLIVIOL ILLULOT	The UE stores the LAI or the PLMN identity in
11	UE		the "forbidden PLMN list". The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT
12	SS		command. The SS verifies that the UE does not attempt to access the network.
13 14	<- UE	PAGING TYPE1	(SS wait 30second) Paging order is for PS service No response from the UE to the request. This is checked for 10 seconds.
15	SS		The following messages shall be sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell".
16	UE		Set the cell type of cell B to the "Serving cell". (see note) Cell B 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
18a	<-	AUTHENTICATION A CIPHERING REQUEST	AND
18b	->		AND
18c 19	SS <-	ATTACH ACCEPT	The SS starts ciphering and integrity protection. Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2
20 21	-> UE	ATTACH COMPLETE	Attach result = 'PS only attached' The UE is switched off or power is removed (see ICS).

22	->	DETACH REQUEST	
NOTE:	The defi	nitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1	
	"Reference Radio Conditions for signalling test cases only".		

None.

12.9.6.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step12, when the UE receives the SERVICE REJECT message with cause "PLMN not allowed", UE shall:

- not perform a PS attach procedure in the same PLMN.

At step13, when the UE receives the paging message for PS domain UE shall:

- not respond to the paging message for PS domain.

At step18, UE shall:

- perform PS attach procedure.

12.9.7a Service Request / rejected / No PDP context activated

12.9.7a.1 Definition

12.9.7a.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

12.9.7a.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".

12.9.7a.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 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.

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	
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	
4b	->	AUTHENTICATION AND	
		CIPHERING RESPONSE	
4c	SS		The SS starts ciphering and integrity protection.
5	<-	ATTACH ACCEPT	
6	->	ATTACH COMPLETE	T
7	UE		The UE initiates a PS call, by MMI or by AT command.
8	->	SERVICE REQUEST	Service type = "signalling"
9	<-	AUTHENTICATION AND	Service type = Signaling
		CIPHERING REQUEST	
10	->	AUTHENTICATION AND	
		CIPHERING RESPONSE	
11	SS		The SS initiates a security mode control
12	UE		procedure. After a PS call is established, the UE suspends
12	OL.		transmission of the user data.
13	SS		The SS initiates a Radio Bearer release
			procedure.
14	UE		The UE resumes the transmission of the user
4.5		OFFINIOE REQUIEST	data.
15 16	-> <-	SERVICE REQUEST SERVICE REJECT	Service type = "data" Reject cause = "No PDP context activated"
17	UE	SERVICE REJECT	The UE shall deactivate locally all active PDP
''			contexts.
18	UE		The UE initiates a PS call, by MMI or by AT
			command.
19	->	SERVICE REQUEST	Service type = "signalling"
20	<-	AUTHENTICATION AND	
21	->	CIPHERING REQUEST AUTHENTICATION AND	
		CIPHERING RESPONSE	
21	SS		SS initiates a security procedure by sending
			SECURITY MODE COMMAND message.
22	UE		The UE is switched off or power is removed
22	lie-		(see ICS).
23	UE		The UE initiates Detach request, by MMI or by AT command.
24	->	DETACH REQUEST	Message not sent if power is removed.
			Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.7a.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure.

When the UE receives a SERVICE REJECT message with the cause "No PDP context activated", UE shall:

- deactivate all active PDP context.

At step15, UE shall:

- initiates a Service request procedure by sending a SERVICE REJECT message with Service type = "data".

12.9.7b Service Request / rejected / No Suitable Cells In Location Area

12.9.7b.1 Definition

12.9.7b.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "No Suitable Cells In Location Area", the UE shall:

- 1) set the GPRS update status to GU3 ROAMING NOT ALLOWED.
- 2) store the LAI or the PLMN identity in the list of 'forbidden location areas for roaming'.
- 3) search for a suitable cell in a different location area on the same PLMN.

Reference

TS 24.008 clauses 4.7.13.4

12.9.7b.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "No Suitable Cells In Location Area".

12.9.7b.4 Method of test

Initial condition

System Simulator:

Three cells, cell A in 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.

User Equipment:

The UE has 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 Service request with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall perform PS attach procedure when the UE enters a suitable cell in a different location area on the same PLMN.

Expected Sequence

Step	Direction	Message	Comments
	UE SS		
	SS		Set the cell type of cell A to the "Serving cell".
			Set the cell type of cell B to the "Suitable
			neighbour cell".
			Set the cell type of cell C to the "Suitable
			neighbour cell". (see note)
			The SS configures power level of each Cell as
			follows.
			Cell A > Cell B = Cell C
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). Cell A is preferred
			by the UE.
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach'
			Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND	TIVISI Status = 110 valid TIVISI available
Ja	\- <u>-</u>	CIPHERING REQUEST	
3b	->	AUTHENTICATION AND	
	-	CIPHERING RESPONSE	
3c	SS		The SS starts ciphering and integrity protection.
4	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached'
			Mobile identity = P-TMSI-1
			P-TMSI-1 signature
			Mobile identity = TMSI-1
5	->	ATTACH COMPLETE	Routing area identity = RAI-1
6	SS	ATTACIT COMIT LETE	The SS initiates the RRC connection release.
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 Suitable Cells In Location
			Area"
			The following message are sent and shall be
40	_	ATTACLIBEOLIEST	received on cell B.
10	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1
10a	<-	AUTHENTICATION AND	WIDDIE IDENTITY = F-11VISI-1
100		CIPHERING REQUEST	
10b	->	AUTHENTICATION AND	
		CIPHERING RESPONSE	
10c	SS		The SS starts ciphering and integrity protection.
11	<-	ATTACH ACCEPT	Mobile identity = P-TMSI-2
			P-TMSI-2 signature
			Routing area identity = RAI-2
10	_	ATTACH COMPLETE	Attach result = 'PS only attached'
12 13	-> UE	ATTACH COMPLETE	The UE is switched off or power is removed
13	UE		(see ICS).
14	->	DETACH REQUEST	(300 100).
NOTE:		ions for "Suitable neighbour cell" and	d "Serving cell" are specified in TS34.108 clause
	6.1 "Refer	ence Radio Conditions for signalling	test cases only".
			-

Specific message contents

None.

12.9.7b.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step10, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach procedure.

12.9.7c Service Request / rejected / Roaming not allowed in this location area

12.9.7c.1 Definition

12.9.7c.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "Roaming not allowed in this location area", the UE shall:

- 1) set the PS update status to GU3 ROAMING NOT ALLOWED
- 2) store the LAI in the list of "forbidden location areas for roaming".
- 3) perform a PLMN selection.

Reference

TS 24.008 clauses 4.7.13.4

12.9.7c.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "Roaming area not allowed in this location area".

12.9.7c.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 MCC2/MNC1/LAC1/RAC1 (RAI-2)

All three cells are operating in network operation mode I.

User Equipment:

The UE has a valid P-TMSI-1 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 SS rejects a Service request with the cause value 'Roaming not allowed in this location area'. The SS checks that the UE shall not perform PS attach procedure when the UE enters a different location area.

Expected Sequence

Step	Direction UE SS	Message	Comments				
	SS		The following messages are sent and shall be received on cell A.				
1	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell".				
2	UE		(see note) The UE is set in UE operation mode A (see				
3	UE		ICS). The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred				
4	->	ATTACH REQUEST	by the UE. Attach type = 'Combined PS / IMSI attach' or "PS Attach while IMSI attached" Mobile identity = P-TMSI-1 Routing area identity = RAI-1				
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	Nouting area identity – IVAI-1				
4b	->	AUTHENTICATION AND CIPHERING RESPONSE					
4c 5	SS <-	ATTACH ACCEPT	The SS starts ciphering and integrity protection. No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-1				
6 7	SS UE		The SS initiates the RRC connection release. The UE initiates a PS call, by MMI or by AT command.				
8 9	-> <-	SERVICE REQUEST SERVICE REJECT	Service type = "signalling" Reject cause = "roaming not allowed in this location area"				
10 11	UE SS		The UE performs PLMN selection. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell".				
12	UE		(see note) No ATTACH REQUEST sent to the SS				
13	SS		(SS waits 30 seconds). Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)				
14	->	ATTACH REQUEST	The following messages are sent and shall be received on cell C. Attach type = 'Combined PS / IMSI attach' or "PS Attach while IMSI attached" Mobile identity = P-TMSI-1				
14a	<-	AUTHENTICATION AND CIPHERING REQUEST	Routing area identity = RAI-1				
14b	->	AUTHENTICATION AND CIPHERING RESPONSE					
14c 15	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Pouting area identity = RAL 2				
16 17	-> UE	ATTACH COMPLETE	Routing area identity = RAI-2 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, combined PS / IMSI detach'		
NOTE:		definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.9.7c.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step12, when the UE enters a same location area, UE shall:

- not initiate the combined PS attach procedure.

At step12, when the UE enters a different location area, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

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 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		Comments
	UE S	5	
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			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 Routing area identity = RAI-1
5a	<-	AUTHENTICATION AND CIPHERING REQUEST	
5b	->	AUTHENTICATION AND CIPHERING RESPONSE	
5c	SS		The SS starts ciphering and integrity protection.
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	
11a	SS		The SS initiates a security mode control procedure.
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

At step2, when the UE access class x is barred, UE shall:

- not perform Service Request procedure.

At step5, when the UE access class x is barred, UE shall:

- initiate the PS attach procedure.

At step9, UE shall:

- perform 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 clause 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 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 UE SS	Message	Comments				
			The following message are sent and shall be				
1	UE		received on cell A. The UE is set in UE operation mode C (see				
	00		ICS).				
2	SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell".				
			Set the cell type of cell B to the "Suitable				
			neighbour cell". (see note)				
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				
			Routing area identity = RAI-1				
4a	<-	AUTHENTICATION AND CIPHERING REQUEST					
4b	->	AUTHENTICATION AND					
4c	SS	CIPHERING RESPONSE	The SS starts ciphering and integrity protection.				
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	Void	The UE initiates an upper-layer signalling, e.g.,				
	-		Active PDP Context request, by MMI or by AT				
7	->	SERVICE REQUEST	command. 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. Set the cell type of cell A to the "Suitable"				
			neighbour cell".				
			Set the cell type of cell B to the "Serving cell". (see note)				
			The following message are sent and shall be				
10	->	ROUTING AREA UPDATE	received on cell B. Update type = 'RA updating'				
		REQUEST	P-TMSI-2 signature				
11	<-	ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1				
			P-TMSI-1 signature				
12	->	ROUTING AREA UPDATE	Routing area identity = RAI-4				
		COMPLETE	The LIE initiates on unusual law				
13	UE		The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT				
1.4		SERVICE REQUEST	command.				
14 15	-> <-	AUTHENTICATION AND	Service type = "signalling"				
16	-~	CIPHERING REQUEST AUTHENTICATION AND					
	->	CIPHERING RESPONSE					
17	SS		The SS initiate a security mode control procedure.				
18	SS		After the security mode control procedure is				
19	UE		completed, the SS releases RRC connection. The UE is switched off or power is removed				
		DETAOU DECUEST	(see ICS).				
20	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'				

NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".

Specific message contents

None.

12.9.9.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step7, UE shall:

- perform the service request procedure.

At step10, when the routing area update procedure is initiated before the security mode control procedure is completed, UE shall;

- abort a Service request procedure
- perform the routing area updating procedure.

At step14, 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 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	_	
1	UE		The following message are sent and shall be received on cell A. The UE is set in UE operation mode C (see
2	SS		ICS). 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
4	->	ATTACH REQUEST	by the UE. Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-	AUTHENTICATION AND CIPHERING REQUEST	
4b	->	AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS		The SS starts ciphering and integrity protection.
5	<-	ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1
6	UE		Attach result = 'PS only attached' The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
7 8	-> UE	SERVICE REQUEST	Service type = "signalling" The UE is powered off and initiates a PS detach (with power off) by MMI or by AT
9	->	DETACH REQUEST	command. Detach type = 'power switched off, PS detach'

Specific message contents

None.

12.9.10.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step7, UE shall:

- perform the service request procedure

At step9, when the UE is switched off during the Service Request procedure, UE shall;

- abort the Service request procedure.
 - 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

Abnormal cases in the MS

The following abnormal cases can be identified:

- Procedure collision

If the MS receives a DETACH REQUEST message from the network in state GMM-SERVICE-REQUEST-INITIATED, the GPRS detach procedure shall be progressed and the Service request procedure shall be aborted. If the cause IE, in the DETACH REQUEST message, indicated a "reattach request", the GPRS attach procedure shall be performed.

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 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 does not respond to the SERVICE REQUEST for data. Instead it sends a DETACH REQUEST message to the UE, with the Detach type IE set to value "re-attach required".
- c) After the UE receives the DETACH REQUEST message, the repeats the attach procedure.
- d) The UE is switched off or power is removed. If the UE is switched off it sends a DETACH REQUEST.

Expected Sequence

Step	Direction UE SS	Message	Comments				
	02 00		The following message are sent and shall be				
1	UE		received on cell A. 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 Routing area identity = RAI-1				
4a	<-	AUTHENTICATION AND					
4b	->	CIPHERING REQUEST AUTHENTICATION AND					
40	cc	CIPHERING RESPONSE	The SS starte eighering and integrity protection				
4c 5	SS <-	ATTACH ACCEPT	The SS starts ciphering and integrity protection. No new mobile identity assigned.				
			P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1				
			Attach result = 'PS only attached'				
6 7a	UE	Void	The UE initiates an upper-layer signalling, e.g.,				
/ a	OL		Active PDP Context request, by MMI or by AT				
7b	->	SERVICE REQUEST	command. Service type ="signalling"				
		OLIVIOL REGOLOT					
7c	SS		The SS starts ciphering and integrity protection.				
7d	SS		The SS initiates a Radio Bearer release procedure.				
7e	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 = "data"				
9	SS		The SS does not respond to SERVICE				
10	<-	DETACH REQUEST	REQUEST message. Detach type = "re-attach required"				
10a	->	DETACH ACCEPT					
11	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1				
			Routing area identity = RAI-1				
11a	<-	AUTHENTICATION AND CIPHERING REQUEST					
11b	->	AUTHENTICATION AND CIPHERING RESPONSE					
11c	SS	CIFTIERING RESPONSE	The SS starts ciphering and integrity protection.				
12	<-	ATTACH ACCEPT	Mobile identity = P-TMSI-2 P-TMSI-2 signature				
			Routing area identity = RAI-1				
13	->	ATTACH COMPLETE	Attach result = 'PS only attached'				
14	UE	THE STATE OF THE S	The UE is switched off or power is removed				
15	->	DETACH REQUEST	(see ICS). Message not sent if power is removed.				
	,		Detach type = 'power switched off, PS detach'				

Specific message contents

None.

12.9.11.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step11, when the UE receives a DETACH REQUEST message from the network before the Service request procedure completes, UE shall;

- repeat the attach procedure.
- retry the Service request procedure

At step 19 if the UE is switched off, UE shall:

- perform the PS detach procedure.

12.9.12 Service Request / RAB re-establishment / UE initiated / Single PDP context

12.9.12.1 Definition

12.9.12.2 Conformance requirement

The following procedures shall be performed in the MS when radio coverage is lost:

- For a PDP context using background or interactive traffic class, the PDP context is preserved even if RRC reestablishment procedures have failed.
- For a PDP context using streaming or conversational traffic class, the PDP context is preserved, but the maximum bit rate is downgraded to 0 kbit/s (for both uplink and downlink) when the RRC re-establishment procedure has failed. After coverage is regained the MS should re-activate the PDP context and re-establish the RAB (refer to section "Re-establishment of RABs").

The procedure for re-establishment of RABs allows the SGSN to re-establish RABs for active PDP contexts that don't have an associated RAB.

The MS initiates the re-establishment of RABs by using the Service Request (Service Type = Data) message.

The criteria to invoke the Service request procedure are when;

b) the MS, either in PMM-IDLE or PMM-CONNECTED mode, has pending user data to be sent and no radio access bearer is established for the corresponding PDP context. The procedure is initiated by an indication from the lower layers (see 3GPP TS 24.007). In this case, the service type shall be set to "data".

After completion of a Service request procedure, the pending service is resumed and uses then the connection established by the procedure. If the service type is indicating "data", then the radio access bearers for all activated PDP contexts are re-established by the network, except for those activated PDP contexts having maximum bit rate value set to 0 kbit/s for both uplink and downlink. The re-establishment of radio access bearers for those PDP contexts is specified in subclause 6.1.3.3.

Reference

TS 23.060 clause 9.2.3.9, 9.2.5.2

TS 24.008 clause 4.7.13

12.9.12.3 Test purpose

To verify that the UE initiates a Service request procedure due to uplink data transmission with one preserved PDP context with traffic class "Background".

To verify that the radio access bearer can be re-established for the preserved PDP context, initiated by the UE.

12.9.12.4 Method of test

12.9.12.5 Test requirements

12.9.13 Service Request / RAB re-establishment / UE initiated / multiple PDP contexts

12.9.13.1 Definition

12.9.13.2 Conformance requirement

The following procedures shall be performed in the MS when radio coverage is lost:

- For a PDP context using background or interactive traffic class, the PDP context is preserved even if RRC reestablishment procedures have failed.
- For a PDP context using streaming or conversational traffic class, the PDP context is preserved, but the maximum bit rate is downgraded to 0 kbit/s (for both uplink and downlink) when the RRC re-establishment procedure has failed. After coverage is regained the MS should re-activate the PDP context and re-establish the RAB (refer to section "Re-establishment of RABs").

The procedure for re-establishment of RABs allows the SGSN to re-establish RABs for active PDP contexts that don't have an associated RAB.

The MS initiates the re-establishment of RABs by using the Service Request (Service Type = Data) message.

The criteria to invoke the Service request procedure are when;

b) the MS, either in PMM-IDLE or PMM-CONNECTED mode, has pending user data to be sent and no radio access bearer is established for the corresponding PDP context. The procedure is initiated by an indication from the lower layers (see 3GPP TS 24.007). In this case, the service type shall be set to "data".

After completion of a Service request procedure, the pending service is resumed and uses then the connection established by the procedure. If the service type is indicating "data", then the radio access bearers for all activated PDP contexts are re-established by the network, except for those activated PDP contexts having maximum bit rate value set to 0 kbit/s for both uplink and downlink. The re-establishment of radio access bearers for those PDP contexts is specified in subclause 6.1.3.3.

Reference

TS 23.060 clause 9.2.3.9, 9.2.5.2

TS 24.008 clause 4.7.13

12.9.13.3 Test purpose

To verify that the UE initiates a Service request procedure due to uplink data transmission with two PDP contexts with different traffic classes are activated.

To verify that the radio access bearers can be re-established with a single radio bearer establishment procedure for the preserved PDP contexts, when initiated by the UE.

12.9.13.4 Method of test

12.9.13.5 Test requirements

12.9.14 Service Request / RAB re-establishment / Network initiated / single PDP context

12.9.14.1 Definition

12.9.14.2 Conformance requirement

The following procedures shall be performed in the MS when radio coverage is lost:

- For a PDP context using background or interactive traffic class, the PDP context is preserved even if RRC reestablishment procedures have failed.
- For a PDP context using streaming or conversational traffic class, the PDP context is preserved, but the maximum bit rate is downgraded to 0 kbit/s (for both uplink and downlink) when the RRC re-establishment procedure has failed. After coverage is regained the MS should re-activate the PDP context and re-establish the RAB (refer to section "Re-establishment of RABs").

The procedure for re-establishment of RABs allows the SGSN to re-establish RABs for active PDP contexts that don't have an associated RAB.

When RABs for an MS that has no RRC connection needs to be re-established, the CN must first page the MS.

The criteria to invoke the Service request procedure are when;

c) the MS receives a paging request for PS domain from the network in PMM-IDLE mode. In this case, the service type shall be set to "paging response".

After completion of a Service request procedure, the pending service is resumed and uses then the connection established by the procedure. If the service type is indicating "data", then the radio access bearers for all activated PDP contexts are re-established by the network, except for those activated PDP contexts having maximum bit rate value set to 0 kbit/s for both uplink and downlink. The re-establishment of radio access bearers for those PDP contexts is specified in subclause 6.1.3.3.

Reference

TS 23.060 clause 9.2.3.9, 9.2.5.2

TS 24.008 clause 4.7.13

12.9.14.3 Test purpose

To verify that the radio access bearers can be re-established for the preserved PDP context with traffic class "Background", when initiated from the network.

12.9.14.4 Method of test

12.9.14.5 Test requirements

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3GPP TSG-T WG1 SIG Meeting #27 San Antonio, TX, USA, Feb 10th-14th, 2003 *Tdoc* **#***T1-030102*

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Conformance requirement is corrected and completed.

release is made followed by RAB re-establishment of both RABs.

class" after normal RRC connection release.

contexts

12.9.13 Service Request / RAB re-establishment / UE initiated / multiple PDP

The test purpose is clarified to state that it includes RAB re-establishment of mutliple preserved PDP contexts of type "background class" and "interactive

Method of test added and test requirement added. A normal RRC connection

12.9.14 Service Request / RAB re-establishment / Network initiated / single PDP context

The test purpose is clarified to state that it includes RAB re-establishment of preserved PDP contexts after *normal RRC connection release*.

Conformance requirement is corrected and completed.

Method of test added and test requirement added. A normal RRC connection release is made followed by RAB re-establishment.

Consequences if not approved:

置 The details of the test cases would remain unspecified.

Clauses affected:	38 12.9.12, 12.9.13, 12.9.14
Other specs affected:	Y N X Other core specifications
Other comments:	# Affects REL-5, REL-4 and R99.

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked \(\mathcal{H} \) contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

12.9.12 Service Request / RAB re-establishment / UE initiated / Single PDP context

12.9.12.1 Definition

12.9.12.2 Conformance requirement

The following procedures shall be performed in the MS when radio coverage is lost:

- For a PDP context using background or interactive traffic class, the PDP context is preserved even if RRC reestablishment procedures have failed.
- For a PDP context using streaming or conversational traffic class, the PDP context is preserved, but the maximum bit rate is downgraded to 0 kbit/s (for both uplink and downlink) when the RRC re-establishment procedure has failed. After coverage is regained and if the MS did not deactivate the PDP Context locally the MS should start MS-initiated PDP Context Modification procedure or the PDP Context Deactivation procedure. The MS shall use the PDP Context Modification procedure to re-activate the PDP context and re-establish the RAB the MS should re-activate the PDP context and re-establish the RAB (refer to section "Re-establishment of RABs").

The following procedures shall be performed in the MS when the RRC layer indicate to higher layer that a RAB has been released and the RAB release was not initiated due to a PDP Context Deactivation Procedure:

- For a PDP context using background or interactive traffic class, the PDP context is be preserved with no modifications.
- For a PDP context using streaming or conversational traffic class, the PDP context is preserved, but the maximum bit rate is downgraded to 0 kbit/s (for both uplink and downlink).

At this point or at a later stage, the MS may start a PDP Context Deactivation procedure or PDP Context

Modification procedure. The MS shall use the PDP Context Modification procedure to re-activate the PDP context and re-establish the RAB.

The procedure for re-establishment of RABs allows the SGSN to re-establish RABs for active PDP contexts that don't have an associated RAB.

The MS initiates the re-establishment of RABs by using the Service Request (Service Type = Data) message.

The criteria to invoke the Service request procedure are when;

b) the MS, either in PMM-IDLE or PMM-CONNECTED mode, has pending user data to be sent and no radio access bearer is established for the corresponding PDP context. The procedure is initiated by an indication from the lower layers (see 3GPP TS 24.007). In this case, the service type shall be set to "data".

After completion of a Service request procedure, the pending service is resumed and uses then the connection established by the procedure. If the service type is indicating "data", then the radio access bearers for all activated PDP contexts are re-established by the network, except for those activated PDP contexts having maximum bit rate value set to 0 kbit/s for both uplink and downlink. The re-establishment of radio access bearers for those PDP contexts is specified in subclause 6.1.3.3 of 3GPP TS 24.008.

Reference

TS 23.060 clause 9.2.3.4-59, 9.2.5.2

TS 24.008 clause 4.7.13

12.9.12.3 Test purpose

To verify that the UE initiates a Service request procedure due to uplink data transmission with one preserved PDP context with traffic class "Background class" after normal RRC connection release as well as when radio coverage is lost.

To verify that the radio access bearer can be re-established for the preserved PDP context, initiated by the UE.

12.9.12.4 Method of test

Initial condition

System Simulator:

One 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

Support of PS service Yes/No

Test procedure

- a) A PDP context with traffic class "Background class" is activated including the radio access bearer.
- b) The SS releases the RRC connection, but keeps the PDP context.
- c) Due to transmission of uplink data, the UE initiates an RRC connection establishment and sends a SERVICE REOUEST.
- d) The SS responds with a SERVICE ACCEPT message and establishes the RAB for the active PDP context using a Radio bearer establishment procedure and the same QoS as previously, without the need for PDP context modification.
- e) The SS configured the cell as a non-suitable "Off" cell for 4 minutes, making the UE to release the RAB and enter idle mode due to that radio coverage is lost.
- f) The SS configures the cell as a serving cell.
- g) Due to transmission of uplink data, the UE initiates an RRC connection establishment and sends a SERVICE REQUEST.
- h) The SS responds with a SERVICE ACCEPT message and establishes the RAB for the active PDP context using a Radio bearer establishment procedure and the same QoS as previously, without the need for PDP context modification.

Expected Sequence

Step	Direction	<u>Message</u>	<u>Comments</u>					
	UE SS							
<u>1</u> 2	<u>UE</u> →		Initiate a PDP context activation					
<u>2</u>	<u>→</u>	ACTIVATE PDP CONTEXT	Activate a PDP context with traffic class					
	00	REQUEST	"Background class"					
<u>3</u>	<u>SS</u>		The SS starts ciphering and integrity protection					
<u>4</u>	<u></u>	ACTIVATE PDP CONTEXT	and establishes the radio access bearer. Accept the PDP context					
=		ACCEPT	Accept the 1 D1 context					
5	SS	<u>/10021 1</u>	The SS releases the RRC connection					
<u>5</u> <u>6</u>	SS UE		The UE initiates transmission of uplink data, by					
			MMI or by AT command.					
<u>7</u>	<u>SS</u>		The SS verifies that the IE "Establishment					
			cause" in the received RRC CONNECTION					
			REQUEST message is set to "Originating					
0		SERVICE REQUEST	Background Call".					
<u>8</u>	<u>→</u>	SERVICE REQUEST	Service type = "data"					
9	SS		The SS starts ciphering and integrity					
			protection.					
			<u> </u>					
<u>10</u>	SS		The SS establishes the radio access bearer for					
			the active PDP context, using the same QoS					
			that was used at activation.					
<u>11</u>	<u>SS</u>		The SS configures the cell as a non-suitable					
			"Off" cell and waits for 4 minutes, making the					
10	CC		UE to release the RAB and enter idle mode. The SS configures the cell as a serving cell.					
<u>12</u> 13	<u>SS</u> UE		The UE initiates transmission of uplink data, by					
10	<u>oc</u>		MMI or by AT command.					
<u>14</u>	SS		The SS verifies that the IE "Establishment					
			cause" in the received RRC CONNECTION					
			REQUEST message is set to "Originating					
	_		Background Call".					
<u>15</u>	<u>→</u>	SERVICE REQUEST	Service type = "data"					
40	00		The CC starts sink original and integrity:					
<u>16</u>	<u>SS</u>		The SS starts ciphering and integrity protection.					
			protection.					
17	SS		The SS establishes the radio access bearer for					
1			the active PDP context, using the same QoS					
			that was used at activation.					

Specific message contents

None.

12.9.12.5 Test requirements

After steps 7 and 14, UE shall:

- transmit a SERVICE REQUEST message with service type "data"

12.9.13 Service Request / RAB re-establishment / UE initiated / multiple PDP contexts

12.9.13.1 Definition

12.9.13.2 Conformance requirement

The following procedures shall be performed in the MS when radio coverage is lost:

- For a PDP context using background or interactive traffic class, the PDP context is preserved even if RRC reestablishment procedures have failed.
- For a PDP context using streaming or conversational traffic class, the PDP context is preserved, but the maximum bit rate is downgraded to 0 kbit/s (for both uplink and downlink) when the RRC re establishment procedure has failed. After coverage is regained the MS should re activate the PDP context and re establish the RAB (refer to section "Re establishment of RABs").

The following procedures shall be performed in the MS when the RRC layer indicate to higher layer that a RAB has been released and the RAB release was not initiated due to a PDP Context Deactivation Procedure:

- For a PDP context using background or interactive traffic class, the PDP context is be preserved with no modifications.
- For a PDP context using streaming or conversational traffic class, the PDP context is preserved, but the maximum bit rate is downgraded to 0 kbit/s (for both uplink and downlink).

At this point or at a later stage, the MS may start a PDP Context Deactivation procedure or PDP Context

Modification procedure. The MS shall use the PDP Context Modification procedure to re-activate the PDP context and re-establish the RAB.

The procedure for re-establishment of RABs allows the SGSN to re-establish RABs for active PDP contexts that don't have an associated RAB.

The MS initiates the re-establishment of RABs by using the Service Request (Service Type = Data) message.

The criteria to invoke the Service request procedure are when;

b) the MS, either in PMM-IDLE or PMM-CONNECTED mode, has pending user data to be sent and no radio access bearer is established for the corresponding PDP context. The procedure is initiated by an indication from the lower layers (see 3GPP TS 24.007). In this case, the service type shall be set to "data".

After completion of a Service request procedure, the pending service is resumed and uses then the connection established by the procedure. If the service type is indicating "data", then the radio access bearers for all activated PDP contexts are re-established by the network, except for those activated PDP contexts having maximum bit rate value set to 0 kbit/s for both uplink and downlink. The re-establishment of radio access bearers for those PDP contexts is specified in subclause 6.1.3.3 of 3GPP TS 24.008.

Reference

TS 23.060 clause 9.2.3.4-59, 9.2.5.2

TS 24.008 clause 4.7.13

12.9.13.3 Test purpose

To verify that the UE initiates a Service request procedure due to uplink data transmission with two PDP contexts with different traffic classes are activated, when one is of traffic class "background class" and the other is of traffic class "interactive class", after normal RRC connection release.

To verify that the radio access bearers can be re-established with a single radio bearer establishment procedure for the preserved PDP contexts, when initiated by the UE.

12.9.13.4 Method of test

Initial condition

System Simulator:

One 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

Support of PS service Yes/No

Secondary PDP context activation procedure Yes/no

Test procedure

- a) Two PDP contexts with different Traffic Classes are activated including the radio access bearers.
- b) The SS releases the RRC connection, but keeps the two PDP contexts.
- c) Due to transmission of uplink data, the UE initiates an RRC connection establishment and sends a SERVICE REQUEST.
- d) The SS responds with a SERVICE ACCEPT message and establishes the RABs for the two active PDP contexts using a single Radio bearer establishment procedure and the same QoS as previously, without the need for PDP context modification.

Expected Sequence

Step	Direction	<u>Message</u>	Comments					
	UE SS							
<u>1</u> <u>2</u>	<u>UE</u> →		Initiate a PDP context activation					
2	<u></u>	ACTIVATE PDP CONTEXT	Activate a PDP context with traffic class					
<u>3</u>	SS	REQUEST	"Background class" The SS starts ciphering and integrity protection					
2	<u>33</u>		and establishes the radio access bearer.					
<u>4</u>	<u>←</u>	ACTIVATE PDP CONTEXT	Accept the PDP context					
_	<u> </u>	ACCEPT						
<u>5</u> <u>6</u>	<u>UE</u> →		Initiate a secondary PDP context activation					
<u>6</u>	<u>→</u>	ACTIVATE SECONDARY PDP	Request a Secondary PDP context activation					
_	00	CONTEXT REQUEST	with traffic class "Interactive class"					
<u>7</u> <u>8</u>	<u>ss</u> <u>←</u>	ACTIVATE SECONDARY DDD	The SS establishes the radio access bearer.					
<u>o</u>		ACTIVATE SECONDARY PDP CONTEXT ACCEPT	Accept the Secondary PDP context activation					
9	SS	OCIVIEXT ACCEL 1	The SS releases the RRC connection.					
<u>9</u> 10	<u>SS</u> UE		The UE initiates transmission of uplink data, by					
			MMI or by AT command.					
<u>11</u>	<u>ss</u>		The SS verifies that the IE "Establishment					
			cause" in the received RRC CONNECTION					
			REQUEST message is set to "Originating Interactive Call", which is the most demanding					
			traffic class among the active PDP contexts.					
<u>12</u>	<u> </u>	SERVICE REQUEST	Service type = "data"					
	<u></u> -		33					
<u>13</u>	<u>ss</u>		The SS starts ciphering and integrity					
			protection.					
4.4	66		The CC establishes the radio assess heaven					
<u>14</u>	<u>SS</u>		The SS establishes the radio access bearers					
<u></u>	33		simultaneously for the two active PDP contexts, using the same QoS that was used activation.					

Specific message contents

None.

12.9.13.5

Test requirements

After step 11, UE shall:

- transmit a SERVICE REQUEST message with service type "data"

12.9.14 Service Request / RAB re-establishment / Network initiated / single PDP context

12.9.14.1 Definition

12.9.14.2 Conformance requirement

The following procedures shall be performed in the MS when radio coverage is lost:

- For a PDP context using background or interactive traffic class, the PDP context is preserved even if RRC reestablishment procedures have failed.
- For a PDP context using streaming or conversational traffic class, the PDP context is preserved, but the maximum bit rate is downgraded to 0 kbit/s (for both uplink and downlink) when the RRC re-establishment procedure has failed. After coverage is regained the MS should re activate the PDP context and re establish the RAB (refer to section "Re establishment of RABs").

The following procedures shall be performed in the MS when the RRC layer indicate to higher layer that a RAB has been released and the RAB release was not initiated due to a PDP Context Deactivation Procedure:

- For a PDP context using background or interactive traffic class, the PDP context is be preserved with no modifications.
- For a PDP context using streaming or conversational traffic class, the PDP context is preserved, but the maximum bit rate is downgraded to 0 kbit/s (for both uplink and downlink).

At this point or at a later stage, the MS may start a PDP Context Deactivation procedure or PDP Context

Modification procedure. The MS shall use the PDP Context Modification procedure to re-activate the PDP context and re-establish the RAB.

The procedure for re-establishment of RABs allows the SGSN to re-establish RABs for active PDP contexts that don't have an associated RAB.

When RABs for an MS that has no RRC connection needs to be re-established, the CN must first page the MS.

The criteria to invoke the Service request procedure are when;

c) the MS receives a paging request for PS domain from the network in PMM-IDLE mode. In this case, the service type shall be set to "paging response".

After completion of a Service request procedure, the pending service is resumed and uses then the connection established by the procedure. If the service type is indicating "data", then the radio access bearers for all activated PDP contexts are re-established by the network, except for those activated PDP contexts having maximum bit rate value set to 0 kbit/s for both uplink and downlink. The re-establishment of radio access bearers for those PDP contexts is specified in subclause 6.1.3.3 of 3GPP TS 24.008.

Reference

TS 23.060 clause 9.2.3.4-59, 9.2.5.2

TS 24.008 clause 4.7.13

12.9.14.3 Test purpose

To verify that the radio access bearers can be re-established for the preserved PDP context with traffic class "Background class", when initiated from the network, after normal RRC connection release.

12.9.14.4 Method of test

System Simulator:

One 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

Support of PS service Yes/No

Test procedure

- a) A PDP context with traffic class "Background class" is activated including the radio access bearer.
- b) The SS releases the RRC connection, but keeps the PDP context.
- c) The SS initiates paging of the UE.
- d) As response to the paging, the UE initiates an RRC connection establishment and sends a SERVICE REQUEST.
- e) The SS responds with a SERVICE ACCEPT message and establishes the RAB for the active PDP context using the same QoS as previously, without the need for PDP context modification.

Expected Sequence

Step	Direction	Message	<u>Comments</u>					
	UE SS							
1 2	UE →	ACTIVATE PDP CONTEXT REQUEST	Initiate a PDP context activation Activate a PDP context with traffic class "Background class"					
<u>3</u>	<u>SS</u>		The SS starts ciphering and integrity protection and establishes the radio access bearer.					
<u>4</u>	<u></u>	ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context					
<u>5</u> <u>6</u>	<u>SS</u> <u>SS</u>		The SS releases the RRC connection. The SS waits for 5 s to ensure the UE is in					
<u>7</u>	<u><</u>	PAGING TYPE 1	Service. The SS initiates paging of the UE using the paging cause "Terminating Background Call""					
<u>8</u>	<u>ss</u>		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to the same value as the paging cause.					
<u>9</u>	<u></u>	SERVICE REQUEST	Service type = "Paging response"					
<u>10</u>	<u>ss</u>		The SS starts ciphering and integrity protection.					
<u>11</u>	<u>SS</u>		The SS establishes the radio access bearer for the active PDP context, using the same QoS that was used at activation.					

Specific message contents

None.

12.9.14.5 Test requirements

After step 8, UE shall:

- transmit a SERVICE REQUEST with service type "Paging response"

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How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked \$\mathbb{X}\$ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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

3GPP TS 24.008 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 SS 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				
1a	SS		SS checks that the IE "Establishment				
			cause" in the received RRC CONNECTION				
			REQUEST message is set to either Originating Conversational Call, Originating				
			Streaming Call, Originating Interactive Call,				
			Originating Background Call or Originating				
			High Priority Signalling				
1b	→	SERVICE REQUEST					
1c	SS		The SS starts ciphering and integrity				
2	\rightarrow	ACTIVATE PDP CONTEXT	protection. Activate a PDP context				
_	,	REQUEST	Notivate a 1 Di Context				
2a	SS		The SS establishes the RAB.				
3	←	ACTIVATE PDP CONTEXT	Accept the PDP context activation				
		ACCEPT	5				
4	\rightarrow	MODIFY PDP CONTEXT	Request modification of the PDP context				
		REQUEST (UE TO NETWORK DIRECTION)					
5	←	MODIFY PDP CONTEXT	Request modification of the PDP context				
		REQUEST (NETWORK TO UE	with the same TI				
		DIRECTION)					
6	UE		UE identifies collision, terminates internally				
			the UE initiated PDP context modification procedure				
7	\rightarrow	MODIFY PDP CONTEXT	Accept SS initiated PDP context				
	•	ACCEPT (UE TO NETWORK	modification				
		DIRECTION)					

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.

Steps 2, 4 and 7. TI flag (bit 8) in the TI IE is set to 0 (transaction initiated by the UE).

Steps 3 and 5. TI flag (bit 8) in the TI IE is set to 1.

Steps 2, 3, 4, 5 and 7. The value of the TIO (bits 5-7) in the TI IE is the same in these test steps.

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.

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CHANGE REQUEST							
æ	34.123-1 CR 453 #rev - #	Current version: 5.2.0 **					
For <u>HELP</u> or	n using this form, see bottom of this page or look at the	pop-up text over the 策 symbols.					
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Proposed chang	re affects: UICC apps器 ME Radio Ac	ccess Network Core Network					
Title:	★ Maintenance of low priority test case 11.1.2 PDP or	context activation requested by the					
	network, successful and unsuccessful						
Source:	NEC Australia						
Work item code:	¥ TEI	Date: 第 10/02/2003					
Category:	## F Use one of the following categories: F (correction) A (corresponds to a correction in an earlier release, B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Release: # Rel-5 Use one of the following releases: 2 (GSM Phase 2)) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)					
Reason for change: **Conformance requirement not in line with T1Sig agreed policy							
Summary of change: # Text in Conformance requirement sub-clause replaced with a copy of conformance requirement from core spec.							
Consequences in not approved:	Unclear conformance requirement						
Clauses affected	I:						
Other specs affected:	Y N						
Other comments	### Affects R99, Rel-4 and Rel-5						

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- downloaded from the 3GPP server under $\underline{\text{ftp://ftp.3gpp.org/specs/}}$ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

<Start of modified section>

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

In order to request a PDP context activation, the network sends a REQUEST PDP CONTEXT ACTIVATION message to the UE and starts timer T3385. The message contains an offered PDP address. If available, the APN shall be included in the REQUEST PDP CONTEXT ACTIVATION message.

Upon receipt of a REQUEST PDP CONTEXT ACTIVATION message, the UE shall than either initiate the PDP context activation procedure as described in 3GPP TS 24.008 clause 6.1.3.1.1, or shall reject the activation request by sending a REQUEST PDP CONTEXT ACTIVATION REJECT message as described in 3GPP TS 24.008 clause 6.1.3.1.4. The value of the reject cause IE of the REQUEST PDP CONTEXT ACTIVATION REJECT message shall indicate the reason for rejection, e.g. "insufficient resources to activate another context".

The ACTIVATE PDP CONTEXT REQUEST message sent by the UE in order to initiate the PDP context activation procedure shall contain the PDP address, PDP Type and APN requested by the network in the REQUEST PDP CONTEXT ACTIVATION message.

Upon receipt of the ACTIVATE PDP CONTEXT REQUEST message, the network shall stop timer T3385.

The same procedures then apply as described for UE initiated PDP context activation (3GPP TS 24.008, clause 6.1.3.1.1.

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.

2) Unsuccessful PDP context activation requested by the network

Upon receipt of the REQUEST PDP CONTEXT ACTIVATION message, the UE may reject the network requested PDP context activation by sending the REQUEST PDP CONTEXT ACTIVATION REJECT message to the network. The message contains the same TI as included in the REQUEST PDP CONTEXT ACTIVATION and an additional cause code that typically indicates one of the following causes:

• 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.

The network shall stop timer T3385 and enter state PDP-INACTIVE.

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.
- 43) 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

3GPP TS 24.008 clauses 6.1.3.1.2, 6.1.3.1.4 and 8.3.2.f).

3GPP TS 27.060 clause 7.3.3.

11.1.2.3 Test purpose

To test the behaviour of the UE upon receipt of a PDP 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 supported yes/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 from the UE, an ACTIVATE PDP CONTEXT ACCEPT message is returned by the SS. This is repeated until the maximum number of contexts supported by the UE is activated.

If the UE cannot support seven PDP contexts then one greater than the maximum supported by the UE should be requested.

In response to this activation request the UE shall return a REQUEST PDP CONTEXT ACTIVATION REJECT message with cause set to 'insufficient resources', 'activation rejected, unspecified' or 'protocol errors' using cause values #26, #31, #40 or #95-111.

REQUEST PDP CONTEXT ACTIVATION message is then sent by the SS using 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	\rightarrow	ACTIVATE PDP CONTEXT REQUEST	UE replies with a Request PDP context activation				
<u>2a</u>	<u>SS</u>		The SS establishes the Radio Access Bearer.				
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 7 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', 'activation rejected, unspecified' or 'protocol errors' using cause values #26, #31, #40 or #95-111.				
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				
<u>9a</u>	<u>SS</u>		The SS releases the Radio Access Bearer.				
<u>9b</u>	<u>SS</u>		The SS establishes the Radio Access Bearer.				
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	→	ACTIVATION REJECT	Reject the PDP context activation request with cause 'insufficient resources' or 'feature not supported', 'activation rejected, unspecified' or 'protocol errors' using cause values #26, #31, #40 or #95-111.			

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.

<End of modified section>

3GPP TSG- T1 Meeting #18 San Antonio, US, 10th – 14th February 2003

3GPP TSG- T1 SIG Meeting #27 San Antonio, US, 10th – 14th February 2003 Tdoc #T1S030106

Tdoc **#** *T1S030102*

CHANGE REQUEST									
*	3 <mark>4.123-</mark> 1	CR 454	жrev	- # (Current vers	5.2.0	 #		
For HELP on u	using this fo	orm, see bottom of	this page or	look at the	pop-up text	over the ₩ syı	mbols.		
	Ū	,	, 3		, , ,	•			
Proposed change affects: UICC apps# ME X Radio Access Network Core Network									
Title: #	CR to TS originate	34.123-1 [REL-5 d]; Correction	o package	3 test case	16.1.2 SMS m	obile		
Source: #	Ericsson								
Work item code: ₩	TEI				Date: ૠ	15/01/2003			
Category: अ	F (co A (co B (ac C (ful D (ec Detailed ex	f the following categorection) responds to a correldition of feature), nctional modification (planations of the about 13GPP TR 21.900).	ection in an ear	lier release)	2	REL-5 the following relation (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5) (Release 6)			
Reason for change:									
Summary of change: Test steps 47a and 57b is removed as the checking of the establishment of be "Originating Low Priority Signalling" is not valid as the RRC connection established due to the setting up of the data or speech call in steps 46 and respectively.						n was			
Consequences if not approved:	ж <mark>Good</mark>	d UE will fail.							
Clauses affected:	光 16.1	1.2							
Other specs affected:	¥ X	Other core spec Test specification	ons	¥					
Other comments:	₩ Affe	cts R99, Rel-4 an	d Rel-5 test c	ases.					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked \(\mathcal{H} \) contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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 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.

Maximum number of retransmissions of an unacknowledged CP-DATA message.

Test procedure

- a) The UE shall be set up to send an SM to the SS. The UE establishes successfully an RRC connection.
- b) The SS performs authentication and after that, the SS starts integrity protection.
- 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 s 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 s after the last CP-DATA retransmission the UE initiates channel release. The 5 s 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 s 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 s after the last CP-DATA retransmission the SS initiates channel release. The 15 s 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 s the SS initiates channel release.

Expected sequence

Step	Direction	Message	Comments			
Otop	UE SS	incoouge	- Comments			
1	UE		The UE is set up to send an SM			
2	SS		The SS verifies that the IE "Establishment cause" in the			
			received RRC CONNECTION REQUEST message is set			
			to "Originating Low Priority Signalling".			
3	<	Void				
4	>	Void				
5	>	CM SERVICE REQUEST	CM service type set to "short message transfer"			
6 7	< >	AUTHENTICATION REQUEST AUTHENTICATION RESPONSE				
8	SS	AUTHENTICATION RESPONSE	The SS starts integrity protection			
9		Void	The 30 starts integrity protection			
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 s for CP-ACK			
14	>	CP-ACK				
15	SS		The SS releases the RRC connection.			
16	UE		The UE is set up to send an SM			
17	SS		The SS verifies that the IE "Establishment cause" in the			
			received RRC CONNECTION REQUEST message is set to "Originating Low Priority Signalling".			
18		Void	to Originating Low Friority Signating .			
19		Void				
20		Void				
21		(void)				
22	>	CM SERVICE REQUEST	CM service type set to "short message transfer"			
23	<	AUTHENTICATION REQUEST				
24	>	AUTHENTICATION RESPONSE				
25	<	SECURITY MODE COMMAND				
26 27	>	SECURITY MODE COMPLETE CP-DATA	Contains DD DATA DDDLL/CMC CUDMIT TDDLL			
28	> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU) SS configured not to send CP-ACK			
29	>	CP-DATA	Retransmitted CP-DATA message within twice TC1M			
25		OF BATTA	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.			
30a	SS		The SS releases the RRC connection			
31		(void)	T. U.F.:			
32	l UE		The UE is set up to send an SM			

Step	Direction UE SS	Message	Comments					
33	SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Originating Low Priority Signalling".					
34 35 36		(void) (void)						
37	>	(void) CM SERVICE REQUEST	CM service type set to "short message transfer"					
38	<	AUTHENTICATION REQUEST	Silving type set to short message transier					
39	>	AUTHENTICATION RESPONSE						
40	SS		The SS starts integrity protection					
41		(void)	Ocateire DD DATA DDDII (OMO CUDMIT TDDII)					
42 43	> <	CP-DATA CP-ERROR	Contains RP-DATA RPDU (SMS SUBMIT TPDU) Sent within TC1M containing "Network Failure" cause.					
44	SS	OF -ERROR	The SS releases the RRC connection.					
45		(void)						
46	SS		A data or speech call is established on a DTCH and the					
47			state U10 of call control is entered.					
47 472	UE SS		The UE is set up to send an SM The SS verifies that the IE "Establishment cause" in the					
47 a	33		received RRC CONNECTION REQUEST message is set					
			to "Originating Low Priority Signalling".					
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 52	< <	CP-ACK CP-DATA	Sent within TC1M after step 50 Contains RP-ACK RPDU					
53	SS	CI -DATA	Waits max 25 s for CP-ACK					
54	>	CP-ACK						
55	SS		The SS releases the RRC connection.					
56	00	(void)	A L C DTOLL ALL					
57	SS		A data or speech call is established on a DTCH and the state U10 of call control is entered.					
57a	UE		The UE is set up to send an SM					
57b	SS		The SS verifies that the IE "Establishment cause" in the					
			received RRC CONNECTION REQUEST message is set					
50		CM CEDVICE DECLIECT	to "Originating Low Priority Signalling".					
58 59	> <	CM SERVICE REQUEST CM SERVICE ACCEPT	CM service type set to "short message transfer"					
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					
63	UE		step 60 Depending on the maximum number of CR DATA					
03	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	SS		The SS releases the RRC connection. The RRC					
			connection is released after a duration of TC1m + 15 s after the last CP-DATA retransmission.					
65		(void)	and the last of -DATA retialistilission.					
66-78		(void)						
79	UE		The UE is set up to send an SM					
80	SS		The SS verifies that the IE "Establishment cause" in the					
			received RRC CONNECTION REQUEST message is set to "Originating Low Priority Signalling".					
81		(void)	Conginating Low Filterity Orginaling .					
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					
0.4		(void)	"Service Option temporarily out of order"					
84 85	SS	(void)	The SS releases the RRC connection. 5 s after CM					
			SERVICE REJ					
86		(void)						
NOTE:			ciently 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-UD (140 octets max)	as applicable maximum number of characters (text of message) as defined by the manufacturer (see ICS/IXIT)
	defined by the manufacturer (see ICS/IXIT)

16.1.2.5 Test requirements

After step 10 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 50 UE shall send a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 62 UE shall repeat CP-DATA retransmissions as many times as the decided maximum number.

After step 85 UE shall not send any CP-DATA.

3GPP TSG-T1 Meeting #18 San Antonio, US, 10th – 14^h February, 2003

3GPP TSG-T1Sig Meeting #27 San Antonio, US, 10th – 14^h February, 2003 Tdoc **#** T1-030114

Tdoc # T1S030228

CHANGE REQUEST									
*	<mark>34.123-</mark>	1 CR 461	жrev	# C	urrent versi	on: 5.2.0	¥		
For <u>HELP</u> on	using this f	orm, see bottom o	f this page or le	ook at the p	op-up text	over the Ж syr	mbols.		
Proposed change	e affects:	UICC apps#	ME X	Radio Acce	ess Network	k Core Ne	etwork		
Г 									
Title:	# Update (Packag	of Conformance re le 3)	equirement and	Expected	sequence i	n test case 11	.1.1.2.1		
Source:	₩ NEC Au	stralia							
Work item code:	ℋ TEΙ				Date: ₩	13/02/2003			
Category: # F Use one of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900. Release: # Rel-5 Use one of the following releases: Use one of the following releases: R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-6 (Release 5) Rel-6 (Release 6)									
Reason for chang	Reason for change: **Conformance requirement sub-clause was not copied from the core spec, but inherited from GSM conformance test spec.								
Summary of char	nge: Ж <mark>С</mark> о	pied text for Confo	ormance requir	ements sub	-clause from	m the core spe	ec.		
Consequences if not approved:	₩ Co	nformance require	ement will not c	onform to th	ne policy ag	greed in T1Sig			
Clauses affected:	·	1.1.2.1.2							
Other specs affected:	¥ 7	Other core spe Test specificati O&M Specifica	ons tions						
Other comments:	:	ects R99, Rel-4 ar	nd Rel-5						

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

<Start of modified section>

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. The message contains the selected NSAPI, PDP type, requested QoS and, if the UE requests a static address, the PDP address. The UE shall ensure that the selected NSAPI is not currently being used by another Session Management entity in the UE.

Upon receipt of an ACTIVATE PDP CONTEXT REQUEST message, the network selects a radio priority level based on the QoS negotiated and may reply with an ACTIVATE PDP CONTEXT ACCEPT message. Upon receipt of the message ACTIVATE PDP CONTEXT ACCEPT the UE shall stop timer T3380, shall enter the state PDP-ACTIVE. If the offered QoS parameters received from the network differ from the QoS requested by the UE, the UE shall either accept the negotiated QoS or initiate the PDP context deactivation procedure.

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 UMTS, both the network and the UE shall store the LLC SAPI and the radio priority in the PDP context.

Reference

3GPP TS 24.008 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
1a	SS		The SS verifies that the IE "Establishment
			cause" in the received RRC CONNECTION
			REQUEST message is set to "Originating
			Background Call".
2	\rightarrow	ACTIVATE PDP CONTEXT	Request a PDP context activation
	00	REQUEST	T. 00
2a	SS		The SS starts ciphering and integrity
OI-	00		protection.
2b	SS		The SS establishes the Radio Access Bearer.
3	←	ACTIVATE PDP CONTEXT	Accept a PDP context activation
3	`	ACCEPT	Accept a FDF context activation
		ACCLIT	
4	←	MODIFY PDP CONTEXT	Send a modify request to UE for the
		REQUEST (NETWORK TO UE	activated context
		DIRECTION)	
5	\rightarrow	MODIFY POP CONTEXT	Accept the modification request from
		ACCEPT (UE TO NETWORK	network to show context is activated
		DIRECTION)	

Specific message contents

ACTIVATE PDP CONTEXT REQUEST (step 2)

Information Element	Value/remark
Requested NSAPI	
Requested LLC SAPI	
Requested QoS	
- Maximum bitrate for uplink	
- Maximum bitrate for downlink	
Requested PDP address	
Access Point Name	Not checked
Protocol configuration options	Not checked

ACTIVATE PDP CONTEXT ACCEPT (step 3)

Information Element	Value/remark
Negotiated NSAPI	
Negotiated LLC SAPI	
Negotiated QoS	
- Maximum b <u>i</u> trate for uplink	Set to a lower value than received as the corresponding field in the ACTIVATE PDP CONTEXT REQUEST message received from the UE
- Maximum bitrate for downlink	Set to a lower value than received as the corresponding field in the ACTIVATE PDP CONTEXT REQUEST message received from the UE
Radio Priority	
PDP address	
Protocol configuration options	Not present
Packet flow identifier	

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.

<End of modified section>

3GPP TSG-T1 Meeting #18 San Antonio, US 11th – 13^h February 2003 3GPP TSG-T1Sig Meeting #27

Tdoc # T1-030115

Tdoc # T1S030229

San Antonio, US 11" – 13" February 2003												
			(CHANGE	REQ	UE	ST					CR-Form-v7
×	34	.123-1	CR	462	жrev	-	\mathfrak{H}	Current v	ersic	on: 5 ,	2.0	¥
For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the												
Proposed chang	e af	fects:	UICC a	pps#	ME X	Rad	lio Ad	ccess Net	work	<u> </u>	ore Ne	etwork
Title:		Update o (Package		rmance requi	rement ar	nd Exp	pecte	ed sequer	nce in	test ca	ase 11	.1.1.2.2
Source:	¥	Ericsson,	NEC A	Australia								
Work item code:	æ	TEI						Date	: #	13/02/	2003	
Category:	C	Jse <u>one</u> of F (cor A (cor B (add C (fun D (edi	rection) respond dition of actional in torial material	owing categories It says to a correction feature), modification of the podification) and the above TR 21.900.	on in an ea feature)		elease	Release Use one 2 e) R96 R97 R98 R99 Rel-4	<u>e</u> of th (! (! (! (! 4 (! 5 (!	Rel-5 ne follow GSM Pl Release Release Release Release Release Release Release Release	hase 2) e 1996) e 1997) e 1998) e 1999) e 4)	eases:
Reason for chan	ge:	to ind Confo Ericss	icate wormance son cha	hich RRC pro e requirement	cedures a should b	are to e dire	be tr	iggered b ppy from c	y the core s	SS. spec.		oe added

sequence.

Message contents need to be clarified.

Some clarifications are needed regarding the setting of "Minimum QoS", "Requested QoS" and "Negotiated QoS".

- Summary of change: # 1. Copied text for Conformance requirement sub-clause from the core spec.
 - 2. Added comments about RRC signalling and lower layer procedures.
 - 3. The "Minimum QoS" is set to Background traffic class and a certain SDU error ratio. The "Requested QoS" is set to the same as the "Minimum QoS".

The "Negotiated QoS" in the ACTIVATE PDP CONTEXT ACCEPT message is set to the same as the "Requested QoS" except for the SDU error ratio which is set to a value that corresponds to a higher error ratio than in the "Requested QoS" (and "Minimum QoS"), which would cause the UE to reject based on that QoS is not accepted.

In the PDP CONTEXT DEACTIVATION REQUEST message, the cause should be "QoS not accepted".

not approved:	Necessary information is missing from the test case.
Clauses affected:	策 11.1.1.2.2.1, 11.1.1.2.2.2 and 11.1.1.2.2.4.
Other specs affected:	Y N X Other core specifications Test specifications O&M Specifications
Other comments:	# Affects R99, Rel-4 and Rel-5

Expected sequence in the test case will not be clear.

How to create CRs using this form:

Consequences if

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked \$\mathbb{X}\$ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

<Start of modified section>

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, 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. The UE shall ensure that the selected NSAPI is not currently being used by another Session Management entity in the UE.

Upon receipt of an ACTIVATE PDP CONTEXT REQUEST message, the network selects a radio priority level based on the QoS negotiated and may reply with an ACTIVATE PDP CONTEXT ACCEPT message. Upon receipt of the message ACTIVATE PDP CONTEXT ACCEPT the UE shall stop timer T3380, shall enter the state PDP-ACTIVE. If the offered QoS parameters received from the network differ from the QoS requested by the UE, the UE shall either accept the negotiated QoS or initiate the PDP context deactivation procedure.

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

3GPP TS 24.008 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 as follows. The requested QoS is set to Traffic class of "Background class" and a certain value of the SDU error ratio. The minimum QoS is set to Traffic class of "Background class" and an SDU error ratio of 1*10⁻⁴, which should correspond to a value higher than or equal to the corresponding value in the requested QoS. A PDP 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 <u>SDU error ratio</u> <u>higher than the corresponding value in the minimum QoS, which corresponds to</u> 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		
<u>1a</u>	<u>SS</u>		The SS verifies that the IE "Establishment		
			cause" in the received RRC CONNECTION		
			REQUEST message is set to "Originating		
			Background Call".		
<u>1b</u>	<u>SS</u>		The SS starts ciphering and integrity		
_			protection.		
2	\rightarrow	ACTIVATE PDP CONTEXT	Request a PDP context activation.		
_		REQUEST	<u>Traffic class = "Background class"</u>		
<u>2a</u> 3	<u>SS</u> ←		The SS establishes the RAB.		
3	←	ACTIVATE PDP CONTEXT	Accept the PDP context activation.		
		ACCEPT	Traffic class = "Background class"		
			SDU error ratio is set to a higher ratio than		
			in the ACTIVATE PDP CONTEXT		
4	\rightarrow	DEACTIVATE PDP CONTEXT	REQUEST message in step 2.		
4	7	REQUEST	Deactivate the PDP context.		
5	←	DEACTIVATE PDP CONTEXT	Cause = "Qos not accepted" (0x25)		
3	`	ACCEPT	Accept the PDP context deactivation		
<u>6</u>	SS	ACCET I	The SS releases the RAB.		

Specific message contents

ACTIVATE PDP CONTEXT REQUEST (step 2)

Information Element	Value/remark
Requested NSAPI	
Requested LLC SAPI	
Requested QoS	
- Traffic class	Background class
- <u>SDU error ratio</u>	Any of the following values:
	1*10 ⁻⁶ , 1*10 ⁻⁴
Requested PDP address	
Access Point Name	Not checked
Protocol configuration options	Not checked

ACTIVATE PDP CONTEXT ACCEPT (step 3)

Information Element	<u>Value/remark</u>
Negotiated LLC SAPI	
Negotiated QoS	
- Traffic class	Background class
SDU error ratio	<u>1*10⁻³</u>
Radio Priority	
PDP address	
Protocol configuration options	Not present
Packet flow identifier	Not present

DECTIVATE PDP CONTEXT REQUEST (step 4)

	Information Element	<u>Value/remark</u>
SM cause		"Qos not accepted" (0x25)

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.

<End of modified section>

Tdoc #T1S-030151

Tdoc # T1-030236

3GPP TSG- T1 SIG Meeting #27 San Antonio, Texas, Feb 10th -13th 2003

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Reason for change: # As per 3GPP spec 24.008, clause 4.7.4.1.1

"If the MS is to be switched off, the MS shall try for a period of 5 seconds to send the DETACH REQUEST message. If the MS is able to send the DETACH REQUEST message during this time the MS may be switched off."

Clauses 4.7.4.1.2 and 4.7.4.1.3

"In UMTS, if the detach has been sent due to switching off, then the network shall release the resources in the lower layers for this MS (see 3GPP TS 25.331)."

In the case of UE initiated Detach due to power off, as soon as the UE has sent DETACH REQUEST over the air it is permitted to switch off and so there can be no further requirements on the UE. The network could attempt to release the RRC Connection in the normal manner by sending an RRC Connection Release but the UE is not required to respond as it is switched off.

Summary of change:

12.2.1.3

Steps 15a in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off."

12.2.1.7

Step 11a in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off ."

12.2.2.1

Steps 16a, 34a and 42 in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off ."

12.4.2.1

Step 34 in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off ."

12.4.2.2

Step 17 in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off ."

12.4.3.1

Step 10a in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off."

12.5

Steps 9a and 23 in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off ."

12.6.1.2

Step 24a in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off ."

12.8

Step 7a in comments added "If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off ."

¥

Consequences if not approved:

器 Good UE will fail the test

Clauses affected: # 12.2.1.3, 12.2.1.7,12.2.2.1, 12.4.2.1, 12.4.2.2, 12.4.3.1, 12.5, 12.6.1.2 and 12.8

Other specs affected:

Other comments:

X Other core specificationsX Test specificationsX O&M Specifications

Affects R99, REL-4 and REL-5 test cases.

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked \(\mathcal{H} \) contain pop-up help information about the field that they are closest to.

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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 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 UE SS	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".
2	UE		(see note) The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported,
3	UE		goto step 17. The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred
3a	SS		by the UE. SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
4	->	ATTACH REQUEST	message is set to "Registration". Attach type = 'PS attach' Mobile identity = P-TMSI-1
5 5a	<- SS	ATTACH REJECT	Routing area identity = RAI-1 GMM cause = 'PS services not allowed' The SS releases the RRC connection.
6	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell".
7 8	UE UE		(see note) Cell B is preferred by the UE. No ATTACH REQUEST sent to the SS
9	UE		(SS waits 30 seconds). 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
10a	SS		or switched on and initiates an attach (see ICS). SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
11	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
11a	<-	AUTHENTICATION AND	, and the same of
11b	->	CIPHERING REQUEST AUTHENTICATION AND CIPHERING RESPONSE	
11c 12	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
13 14	-> UE	ATTACH COMPLETE	The UE is switched off or power is removed
15	->	DETACH REQUEST	(see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach'
15a	SS		The SS releases the RRC connection. If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off.
16			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)

17	UE	The UE is set in UE operation mode A(see ICS)	
		and the test is repeated from step 3 to step 15.	
NOTE:	TE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1		
	"Reference Radio Conditions for signalling test cases only".		

Specific message contents

None.

12.2.1.3.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step8, UE shall:

- not perform a PS attach procedure.

At step11, after the UE is switched on or a USIM is replaced, UE shall:

- perform the PS attach procedure.

12.2.1.7 PS attach / abnormal cases / change of routing area

12.2.1.7.1 Definition

12.2.1.7.2 Conformance requirement

When a change of 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:

One cell with MCC1/MNC1/LAC1/RAC1 (RAI-1)

The cell is operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1 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 receive a new routing area code. The UE shall re-initiate a PS attach procedure in the new routing area.

Expected Sequence

The following messages are sent and shall be received on cell A. The UE is set in UE operation mode C (see ICS). SS UE The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". (see note) The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration". Attach type = "PS attach" Mobile identity = P-TMSI-1 Routing area identity = RAI-1 No response to the ATTACH REQUEST message is given by the SS. Void UTRAN MOBILITY INFORMATION The SS conveys updated CN system information for the PS domain to the UE in connected mode, including a new routing area code. The UE automatically re-initiates the attach. Attach type = "PS attach" Mobile identity = P-TMSI-1 Routing area identity = RAI-1 Routing area identity = RAI-1 Routing area identity = RAI-1 The UE automatically re-initiates the attach. Attach type = "PS attach" Mobile identity = P-TMSI-1 Routing area identity = RAI-1 The UE automatically re-initiates the attach. Attach type = "PS attach" Mobile identity = P-TMSI-1 Routing area identity = RAI-1 The UE systicted off or power is removed (see ICS). Message not sent if power is removed. Detach type = "power switched off, PS detach" The SS releases the RRC connection If no RRC CONNECTION RELEASE COMPLETE	Step	Direction	Message	Comments
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(see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach' The SS releases the RRC connection. If no RRC CONNECTION RELEASE COMPLETE				
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The SS releases the RRC connection. <u>If no RRC CONNECTION RELEASE COMPLETE</u>	11	->	DETACH REQUEST	Message not sent if power is removed.
RRC CONNECTION RELEASE COMPLETE	110			
	ı ıa			
message have been received within 1 second				
then the SS shall consider the UE as switched				then the SS shall consider the UE as switched
	NOTE:	The deficie	iono for "Non Cuitchle cell" cest "Ce	

The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".

Specific message contents

UTRAN MOBILITY INFORMATION (step 6a)

The contents of the UTRAN MOBILITY INFORMATION message in this test case is identical to the default message in TS 34.108, with the following exceptions.

Information Element	Value/remark
New U-RNTI	Not Present
New C-RNTI	Not Present
UE Timers and constants in connected mode	Not Present
CN information info	
- PLMN identity	Not Present
 CN common GSM-MAP NAS system information 	Not Present
 CN domain related information 	
- CN domain identity	CS domain
 CN domain specific GSM-MAP NAS system info 	
- T3212	30
- ATT	1
 CN domain specific DRX cycle length coefficient 	7
 CN domain related information 	
- CN domain identity	PS domain
 CN domain specific GSM-MAP NAS system info 	
- RAC	RAC-2
- NMO	1 (Network Mode of Operation II)
 CN domain specific DRX cycle length coefficient 	7

12.2.1.7.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected sequence.

At step8, as the UE has received a new RAI in the UTRAN MOBILITY INFORMATION message before the ATTACH ACCEPT message or the ATTACH REJECT message is received by the UE, the UE shall:

- abort the PS attach procedure and re-initiate the PS attach procedure immediately with new information elements.

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
Switch off on button
Yes/No
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. 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 UE SS	Message	Comments
1	UE		The UE is set in UE operation mode A (see
2	UE		ICS). The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
3	->	ATTACH REQUEST	message is set to "Registration". Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	TWO Status - no valid Two dvalidate
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity =IMSI
			Routing area identity = RAI-1
5 5a	-> SS	ATTACH COMPLETE	The SS releases the RRC connection and waits
6	<-	PAGING TYPE1	5s to allow the UE to read system information. Mobile identity = IMSI
			Paging order is for CS services. Paging cause = "Terminating conversational call"
7	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating conversational call".
8		Void	
9 10 11	-> SS	Void PAGING RESPONSE	Mobile identity = IMSI The SS releases the RRC connection and waits 5s to allow the UE to read system information.
12 13	<-	Void PAGING TYPE1	Mobile identity = P-TMSI-1 Paging for PS services
13a	SS		Paging cause = "Terminating interactive call" SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
13b		Void	
13c 14	->	Void SERVICE REQUEST	service type = "paging response"
14aa	SS	DERVICE REGUEST	The SS starts integrity protection.
14a 14b	SS	Void	The SS releases the RRC connection.
140		void	
15	UE		The UE is switched off or power is removed (see ICS).
15a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST
16	^	DETACH REQUEST	message is set to "Detach". Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
16a	SS		If the power was not removed, the SS releases
			the RRC connection If no RRC CONNECTION RELEASE COMPLETE
			message have been received within 1 second then the SS shall consider the UE as switched off.
		L	OII .

Step	Direction UE SS	Message	Comments
17	UE		The UE is powered up or switched on and
17a	SS		initiates an attach (see ICS). SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
18	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 TMSI status = no valid TMSI available Routing area identity = RAI-1
18a	<-	AUTHENTICATION AND CIPHERING REQUEST	Nouting area identity = NAI-1
18b	->	AUTHENTICATION AND CIPHERING RESPONSE	
18c 19	SS	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached'
19	<-	ATTACH ACCEPT	Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1
20		ATTACH COMPLETE	Routing area identity = RAI-1
20 21 21b	->	ATTACH COMPLETE Void Void	
21c	SS	1010	The SS releases the RRC connection and waits
22	<-	PAGING TYPE 1	5s to allow the UE to read system information. Mobile identity = TMSI-1
			Paging order is for CS services. Paging cause = "Terminating conversational call"
23	SS		SS checks that the IE "Establishment cause" in
			the received RRC CONNECTION REQUEST message is set to "Terminating conversational call".
24		Void	
25 26	->	Void PAGING RESPONSE	Mobile identity = TMSI-1
27	SS		The SS releases the RRC connection and waits
28		Void	5s to allow the UE to read system information.
29	<-	PAGING TYPE1	Mobile identity = P-TMSI-2
			Paging for PS services Paging cause = "Terminating interactive call"
29a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
29b		Void	Thessage is set to Terminating interactive cair.
29c 30	->	Void SERVICE REQUEST	service type = "paging response"
30aa	-> SS	SERVICE REQUEST	The SS starts integrity protection.
30a	SS	Void	The SS releases the RRC connection and waits 5s to allow the UE to read system information.
30b 31	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging for PS services
32	UE		Paging cause = "Terminating interactive call" 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
33a	SS		(see ICS). SS checks that the IE "Establishment cause" in
34	->	DETACH REQUEST	any received RRC CONNECTION REQUEST message is set to "Detach". Message not sent if power is removed.
			Detach type = 'power switched off, combined PS / IMSI detach'

Step	Direction	Message	Comments
	UE SS		
34a	SS		If the power was not removed, the SS releases the RRC connection If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off .
35	UE		The UE is powered up or switched on and
	02		initiates an attach (see ICS).
35a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
36	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-2 Routing area identity = RAI-1 TMSI status = valid TMSI available
36a	<-	AUTHENTICATION AND CIPHERING REQUEST	
36b	->	AUTHENTICATION AND CIPHERING RESPONSE	
36c	SS		The SS starts integrity protection.
37	<-	ATTACH ACCEPT	No new mobile identity assigned. TMSI and P-TMSI not included. Attach result = 'Combined PS / IMSI attached' P-TMSI-3 signature
37a	SS		Routing area identity = RAI-1 The SS releases the RRC connection and waits 5s to allow the UE to read system information.
38	<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging for PS services
38a	SS		Paging cause = "Terminating interactive call" SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
38b 38c		Void Void	
39	->	SERVICE REQUEST	service type = "paging response"
39aa	SS		The SS starts integrity protection.
39a	SS		The SS releases the RRC connection.
39b		Void	The LIE is switched att.
40	UE		The UE is switched off or power is removed (see ICS).
40a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST
41	->	DETACH REQUEST	message is set to "Detach". Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
42	SS		If the power was not removed, the SS releases
			the RRC connection If no RRC CONNECTION RELEASE COMPLETE
			message have been received within 1 second
			then the SS shall consider the UE as switched
			<u>off .</u>

Specific message contents

None.

12.2.2.1.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

Case 1) SS accept the combined PS attach procedure (signalled by an IMSI) and allocates a P-TMSI.

At step5, UE shall

- send the ATTACH COMPLETE message.

At step10, when the UE receives the paging message for CS domain with Mobile identity = IMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step14, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

Case 2) SS accepts the combined PS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI and TMSI.

At step20, UE shall:

- send the ATTACH COMPLETE message.

At step26, when the UE receives the paging message for CS domain with Mobile identity = TMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step30, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

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.

At step39, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

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 UPDATE 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 UPDATE REQUEST message. The SS accepts the P-TMSI signature and returns ROUTING AREA UPDATE ACCEPT message without any P-TMSI and with a new TMSI. The UE acknowledge the new TMSI by sending ROUTING AREA UPDATE 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	SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
1a	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).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
4	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1

Step	Direction UE SS	Message	Comments
5 5a	-> SS	ATTACH COMPLETE	The SS releases the BBC connection
эа	33		The SS releases the RRC connection. The following messages are sent and shall be
6	SS		received on cell B. Set the cell type of cell A to the "Suitable neighbour cell".
6a	SS		Set the cell type of cell B to the "Serving cell". (see note) SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
7	->	ROUTING AREA UPDATE REQUEST	message is set to "Registration". Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
7a 8	SS <-	ROUTING AREA UPDATE ACCEPT	The SS starts integrity protection. Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4 Paging cause = "Terminating interactive call".
9	->	ROUTING AREA UPDATE	aging cause – Terminating interactive cair.
9a	SS	COMPLETE	The SS releases the RRC connection and waits
10	<-	PAGING TYPE1	5s to allow the UE to read system information. Mobile identity = P-TMSI-1 Paging order is for PS services.
10a	SS		Paging cause = "Terminating interactive call". SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST massage is set to "Terminating interactive call".
10b 10c 11	->	Void Void SERVICE REQUEST	message is set to "Terminating interactive call". service type = "paging response"
11aa 11a	SS SS		The SS starts integrity protection. The SS releases the RRC connection and waits 5s to allow the UE to read system information.
11b 12	<-	Void PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services. Paging cause = "Terminating conversational
13	SS		call" SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating conversational call".
14 15		Void Void	
16 17 18	-> SS	PAGING RESPONSE Void	Mobile identity = IMSI The SS releases the RRC connection.
19	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell".
19a	SS		(see note) SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
20	->	ROUTING AREA UPDATE REQUEST	message is set to "Registration". Update type = 'Combined RA/LA updating' P-TMSI-1 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available

Step	Direction	Message	Comments	
	UE SS		The OO starts into write most start	
20a 21	SS <-	ROUTING AREA UPDATE ACCEPT	The SS starts integrity protection. Update result = 'Combined RA/LA updated' No P-TMSI	
			P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1	
22	->	ROUTING AREA UPDATE	Trouming arounds many in a mining around a min	
23	<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. Paging cause = "Terminating interactive call".	
23a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".	
23b		Void		
23c 24	->	Void SERVICE REQUEST	service type = "paging response"	
24aa 24a	SS SS		The SS starts integrity protection. The SS releases the RRC connection and waits 5s to allow the UE to read system information.	
24b		Void	35 to allow the OL to read system information.	
25	<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.	
26	SS		Paging cause = "Terminating conversational call" SS checks that the IE "Establishment cause" in	
			the received RRC CONNECTION REQUEST message is set to "Terminating conversational call".	
27		Void		
28		Void	Mahila idantitu. TMCI 4	
29 30	-> SS	PAGING RESPONSE	Mobile identity = TMSI-1 The SS releases the RRC connection.	
31	33	Void	The 33 releases the KKC connection.	
32	UE	Void	The UE is switched off or power is removed (see ICS).	
32a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST	
33	->	DETACH REQUEST	message is set to "Detach". Message not sent if power is removed.	
			Detach type = 'power switched off, combined PS / IMSI detach'	
34	SS		If the power was not removed, the SS releases the RRC connection If no RRC	
			CONNECTION RELEASE COMPLETE message have been received within 1 second	
			then the SS shall consider the UE as switched off.	
NOTE:	The definit	l ions for "Suitable peigbbour cell" and		
NOTE.	NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.4.2.1.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step7, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence.

At step9, UE shall:

- acknowledge the new P-TMSI by sending the ROUTING AREA UPDATE COMPLETE message.

At step11, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step16, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step20, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence.

At step22, UE shall:

- acknowledge the new TMSI by sending the ROUTING AREA UPDATE COMPLETE message.

At step24, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step29, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

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:

One cell, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) is 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 during the ongoing circuit-switched transaction.

Expected Sequence

Step	Direction UE SS	Message	Comments
1	02 00		Set the cell type of cell A to the "Serving cell".
1a	UE		(see note) The UE is set in UE operation mode A (see ICS).
2	UE		The UE is powered up or switched on and
2a	SS		initiates an attach (see ICS). SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
3	->	ATTACH REQUEST	message is set to "Registration". Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	TWO States - No valid Two dvalidate
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature
5	->	ATTACH COMPLETE	Routing area identity = RAI-1
5a 6	SS UE		The SS releases the RRC connection. A CS call is initiated.
7 8 8a	<-	Void Void UTRAN MOBILITY INFORMATION	The SS conveys updated CN system information for the PS domain to the UE in connected mode, including a new routing area code.
8b	->	UTRAN MOBILITY INFORMATION CONFIRM	code.
9	->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9a 10	SS <-	ROUTING AREA UPDATE ACCEPT	TMSI status = no valid TMSI available The SS starts integrity protection. Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI
11	->	ROUTING AREA UPDATE	Routing area identity = RAI-4
11a	SS	COMPLETE	The SS releases the PS signalling connection,
12	<-	PAGING TYPE2	but keeps the RRC connection. Mobile identity = P-TMSI-1 Paging order is for PS services.
13	->	SERVICE REQUEST	service type = "paging response"
13a 13b 14 14a	SS SS SS ->	ROUTING AREA UPDATE REQUEST	The SS starts integrity protection. The SS releases the CS call. The SS initiates the RRC connection release. Update type = "combined RA/LA updating", P-TMSI-1 signature,
14b 14c	SS <-	ROUTING AREA UPDATE ACCEPT	Routing area identity = RAI-4, TMSI status = no valid TMSI available The SS starts integrity protection. Update result = "combined RA/LA updated", No P-TMSI, P-TMSI-3 signature,
15	UE		Routing area identity = RAI-4 The UE is switched off or power is removed (see ICS).

15a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".	
16	->	DETACH REQUEST	Message not sent if power is removed.	
			Detach type = 'power switched off, combined	
			PS / IMSI detach'	
17	SS		If the power was not removed, the SS releases	
			the RRC connection If no RRC	
			CONNECTION RELEASE COMPLETE	
			message have been received within 1 second	
			then the SS shall consider the UE as switched	
			<u>off .</u>	
NOTE:	The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause			
	6.1 "Refere	"Reference Radio Conditions for signalling test cases only".		

Specific message contents

UTRAN MOBILITY INFORMATION (step 8a)

The contents of the UTRAN MOBILITY INFORMATION message in this test case is identical to the default message in TS 34.108, with the following exceptions.

Information Element	Value/remark
New U-RNTI	Not Present
New C-RNTI	Not Present
UE Timers and constants in connected mode	Not Present
CN information info	
- PLMN identity	Not Present
- CN common GSM-MAP NAS system information	Not Present
- CN domain related information	
- CN domain identity	CS domain
 CN domain specific GSM-MAP NAS system info 	
- T3212	30
- ATT	1
 CN domain specific DRX cycle length coefficient 	7
- CN domain related information	
- CN domain identity	PS domain
 CN domain specific GSM-MAP NAS system info 	
- RAC	RAC-2
- NMO	0 (Network Mode of Operation I)
 CN domain specific DRX cycle length coefficient 	7

12.4.2.2.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step9, when the UE has received the new RAI from the SS in the UTRAN MOBILITY INFORMATION message, the UE shall:

- initiate the normal routing area updating procedure.

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 clauses 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 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).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS		The SS starts integrity protection.
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	10012 = 0 111110100
5a	ss	7.1.7.61.7.631.11.2.12	The SS releases the RRC connection.
5b	SS		SS checks that the IE "Establishment cause" in
			the received RRC CONNECTION REQUEST
			message is set to "Registration".
6	->	ROUTING AREA UPDATE	Update type = 'Periodic updating'
		REQUEST	P-TMSI-2 signature
7	SS		Routing area identity = RAI-1 The SS verifies that the time between the
'	33		attach and the periodic RA updating is T3312
7a	SS		The SS starts integrity protection.
8	<-	ROUTING AREA UPDATE	No new mobile identity assigned.
		ACCEPT	P-TMSI not included.
			Update result = 'RA updated'
			P-TMSI-3 signature
0-	66		Routing area identity = RAI-1
8a 9	SS UE		The SS releases the RRC connection. The UE is switched off or power is removed
9	OL.		(see ICS).
9a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST
			message is set to "Detach".
10	->	DETACH REQUEST	Message not sent if power is removed.
100	99		Detach type = 'power switched off, PS detach'
10a	SS		If the power was not removed, the SS releases the RRC connection If no RRC
			CONNECTION RELEASE COMPLETE
			message have been received within 1 second
			then the SS shall consider the UE as switched
			off .
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

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step6, when the timer T3312 is expired, UE shall:

- initiate the routing area updating procedure with Update type = 'Periodic updating'.

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 UE SS	Message	Comments
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).
2a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
3	->	ATTACH REQUEST	message is set to "Registration". Attach type = 'PS attach' Mobile identity = IMSI
3a	<-	AUTHENTICATION AND CIPHERING REQUEST	,
3b	->	AUTHENTICATION AND CIPHERING RESPONSE	
3c 4	SS <-	ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5 6	-> <-	ATTACH COMPLETE P-TMSI REALLOCATION COMMAND	Mobile identity = P-TMSI-2 P-TMSI-2 signature
7	->	P-TMSI REALLOCATION	Routing area identity = RAI-1
8	UE	COMPLETE	The UE is switched off or power is removed
8a	SS		(see ICS). SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST
9	->	DETACH REQUEST	message is set to "Detach". Message not sent if power is removed. Detach type = 'power switched off, PS detach'
9a	SS		If the power was not removed, the SS releases the RRC connection If no RRC CONNECTION RELEASE COMPLETE message have been received within 1 second then the SS shall consider the UE as switched off .
10	UE		Ensure the power is removed from the UE for at least 10 seconds
11	UE		The UE is powered up or switched on and initiates an attach (see ICS).
11a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
12	->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 Routing area identity = RAI-1
12a	<-	AUTHENTICATION AND CIPHERING REQUEST	Routing area identity = KAI-1
12b	->	AUTHENTICATION AND CIPHERING RESPONSE	
12c 13	SS <-	ATTACH ACCEPT	The SS starts integrity protection. No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-3 signature Routing area identity = RAI-1
13a	SS		The SS releases the RRC connection and waits
14	<-	PAGING TYPE1	5s to allow the UE to read system information. Mobile identity = P-TMSI-2 Paging order is for PS services. Paging cause = "Terminating interactive call".

15	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
16 17		Void Void	
18	->	SERVICE REQUEST	service type = "paging response"
18a	SS		The SS starts integrity protection.
19 20	SS	Void	The SS releases the RRC connection.
21	UE		The UE is switched off or power is removed (see ICS).
21a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".
22	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
23	SS		If the power was not removed, the SS releases the RRC connection. <u>If no RRC</u> CONNECTION RELEASE COMPLETE
			message have been received within 1 second then the SS shall consider the UE as switched off.

Specific message contents

None.

12.5.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, when the UE receives P-TMSI REALLOCATION COMMAND message from SS, UE shall:

- acknowledge the new P-TMSI by sending P-TMSI REALLOCATION COMPLETE message.

At step12, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step18, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

12.6.1.2 Authentication rejected by the network

12.6.1.2.1 Definition

12.6.1.2.2 Conformance requirement

Upon receipt of an AUTHENTICATION AND CIPHERING REJECT message, the UE shall set the PS update status to GU3 ROAMING NOT ALLOWED and shall delete the P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number stored.

The USIM shall be considered as invalid until switching off or the USIM is removed.

If the AUTHENTICATION AND CIPHERING REJECT message is received, the UE shall abort any GMM procedure, shall stop the timers T3310 and T3330 (if running) and shall enter state GMM-DEREGISTERED.

Reference

3GPP TS 24.008 clauses 4.7.7.5.

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

The test sequence is repeated for K = 1, 2.

A complete PS attach procedure is performed. The SS rejects the following authentication and ciphering procedure. The UE is paged with its former P-TMSI and shall not respond.

The Cell is changed into a new Routing Area.

The SS checks that the UE does not perform normal routing area updating.

The SS then checks that the UE does not perform a PS detach.

The SS checks that the UE does not perform a PS Attach procedure.

Expected Sequence

The test sequence is repeated for k = 1, 2

For k = 1, the UE is set in UE operation mode C. If MS operation mode C not supported then k = 2.

For k = 2 the UE is set in UE operation mode A.

Step	Direction UE SS	Message	Comments
1	SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".
2	UE		(see note) The UE is powered up or switched on and initiates an attach (see ICS).
2a	UE	Registration on CS	See TS 34.108 This is applied only for UE in UE operation
2b	SS		mode A. SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST
3	->	ATTACH REQUEST	message is set to "Registration". Attach type = 'PS attach' Mobile identity = IMSI
4 5		Void Void	
6	<-	AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Set PS-CKSN-1
7	->	AUTHENTICATION AND CIPHERING RESPONSE	RES
8	<-	AUTHENTICATION AND CIPHERING REJECT	
8a	SS		The SS releases the RRC connection and waits 5s to allow the UE to read system information.
9	<-	PAGING TYPE1	Mobile identity = IMSI Paging order is for PS services.
10	UE		No response from the UE to the request. This is checked for 10 seconds.
11	SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell".
12 13	UE UE		Set the cell type of cell B to the "Serving cell". (see note) Cell B is preferred by the MS. No ROUTING AREA UPDATE REQUEST sent to the SS
14	UE		(SS waits 30 seconds). If possible (see ICS) 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 17	UE SS		The UE is switched off (see ICS). No DETACH REQUEST sent to the SS
18			(SS waits 30 seconds). The UE is powered up or switched on and initiates an attach (see ICS). Step 19 is only performed for k =2
19	UE	Registration on CS	Parameter mobile identity is IMSI. See TS 34.108
19a	SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
20	->	ATTACH REQUEST	Attach type = 'PS only attached' Mobile identity = IMSI
20a	<-	AUTHENTICATION AND CIPHERING REQUEST	
20b	->	AUTHENTICATION AND CIPHERING RESPONSE	
20c	SS	3. 3	The SS starts integrity protection.

21	<-	ATTACH ACCEPT	Attach result = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4	
22	->	ATTACH COMPLETE		
22a	SS		The SS releases the RRC connection.	
23	UE		The UE is switched off or power is removed.	
23a	SS		(see ICS) SS checks that the IE "Establishment cause" in	
			any received RRC CONNECTION REQUEST	
		DETACH DECLIEST	message is set to "Detach".	
24	->	DETACH REQUEST	Message not sent if power is removed.	
24a	SS		If the power was not removed, the SS releases	
			the RRC connection If no RRC	
			CONNECTION RELEASE COMPLETE	
			message have been received within 1 second	
			then the SS shall consider the UE as switched	
			off .	
25	UE		If k=1 then the test is repeated for k=2.	
NOTE:	OTE: The definitions for "Non-Suitable celll" and "Serving cell" are specified in TS34.108 clause 6.1			
	"Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

12.6.1.2.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step9, when the UE receives the AUTHENTICATION AND CIPHERING REJECT message, UE shall:

- not respond paging message for PS domain.

At step13, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- not perform normal routing area updating.

At step17, when the UE is switched off, UE shall:

- not perform PS detach procedure.

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	Direct	ion	Message	Comments
		SS		
				The following messages are sent and shall be
	00			received on cell A.
1	SS			Set the cell type of cell A to the "Serving cell".
				Set the cell type of cell B to the "Non-Suitable cell".
				(see note)
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).
2a	SS			SS checks that the IE "Establishment cause" in
				the received RRC CONNECTION REQUEST
			ATTACH DECLIEST	message is set to "Registration".
3	->	•	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
3a	<-		AUTHENTICATION AND	
Ja			CIPHERING REQUEST	
3b	->		AUTHENTICATION AND	
			CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
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	T3314 = 60 seconds
5a	SS		ATTACIT COMIT LETE	The SS releases the RRC connection.
6	UE			The UE is switched off or power is removed
				(see ICS).
6a	SS			SS checks that the IE "Establishment cause" in
				any received RRC CONNECTION REQUEST
				message is set to "Detach".
7	->	•	DETACH REQUEST	Message not sent if power is removed.
	66			Detach type = 'power switched off, PS detach'
7a	SS			If the power was not removed, the SS releases
				the RRC connection If no RRC CONNECTION RELEASE COMPLETE
				message have been received within 1 second
				then the SS shall consider the UE as switched
				off.
NOTE:				
	"Peterphes Pedia Conditions for signalling test opens only."			

"Reference Radio Conditions for signalling test cases only".

Specific message contents

None.

12.8.5 Test requirements

At step4, when the UE receives the ATTACH ACCEPT or the ROUTING AREA UPDATE ACCEPT messages, UE shall:

store the received READY timer value.