TSG-RAN Meeting #11 ***RP-010091***
Palm Springs, CA, USA, 13 - 16 March 2001

Title: **Agreed CRs (Release '99) to TS 25.133**

Source: **TSG-RAN WG4**

Agenda item: **5.4.3**

Doc-1st-Level	Spec	CR	Subject	Cat	Status-2nd-Level	Version-Current	Version-New
RP-010091	25.133	66	General idle mode requirements	F	agreed	3.4.0	3.5.0
RP-010091	25.133	67	Removal of Signalling Delay Requirements	F	agreed	3.4.0	3.5.0
RP-010091	25.133	68	FDD/GSM handover	F	agreed	3.4.0	3.5.0
RP-010091	25.133	69	Revised Correction of hard handover delay requirements	F	agreed	3.4.0	3.5.0
RP-010091	25.133	70	Cell-Reselection, Measurements of inter-frequency TDD cells	F	agreed	3.4.0	3.5.0
RP-010091	25.133	71	Correction of number of events that should be handled by the UE	F	agreed	3.4.0	3.5.0
RP-010091	25.133	72	Revised limitations to the usage of compressed mode patterns	F	agreed	3.4.0	3.5.0
RP-010091	25.133	73	Measurements on FDD and TDD in Cell-FACH state	F	agreed	3.4.0	3.5.0
RP-010091	25.133	74	Measurements on GSM in Cell-FACH state	F	agreed	3.4.0	3.5.0
RP-010091	25.133	75	Cell re-selection in Cell-FACH state	F	agreed	3.4.0	3.5.0
RP-010091	25.133	76	General Measurement Requirements in CELL_DCH State	F	agreed	3.4.0	3.5.0
RP-010091	25.133	77	GSM Measurements	F	agreed	3.4.0	3.5.0
RP-010091	25.133	78	Cell reselection performance	F	agreed	3.4.0	3.5.0
RP-010091	25.133	79	CPICH Ec/Io mapping	F	agreed	3.4.0	3.5.0
RP-010091	25.133	80	UTRAN transport channel BLER measurement	F	agreed	3.4.0	3.5.0
RP-010091	25.133	81	UTRAN physical channel BER measurement	F	agreed	3.4.0	3.5.0
RP-010091	25.133	82	Test case for FDD/TDD cell re-selection .	F	agreed	3.4.0	3.5.0
RP-010091	25.133	83	Requirements for event triggered reporting in fading conditions	F	agreed	3.4.0	3.5.0
RP-010091	25.133	84	Modification of soft handover requirements	F	agreed	3.4.0	3.5.0

RP-010091	25.133	85	Clarifications of TDD measurements and the use of compressed mode pattern for TDD measurements.	F	agreed	3.4.0	3.5.0
RP-010091	25.133	86	UE transmit TIming	F	agreed	3.4.0	3.5.0
RP-010091	25.133	87	Correction of the FDD/TDD handover requirement in connected mode.	F	agreed	3.4.0	3.5.0

3GPP TSG RAN WG4 Meeting #16 R4-010014

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.133** **CR** **66** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☒ Core Network ☐

Title:	⌘	General idle mode requirements
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 2001-01-17
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
- ***F*** *(essential 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.

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)*

Reason for change:	⌘	In section 4 there is assumptions on system info scheduling for the requirements to be valid. In the way the general requirements are written those assumptions are no longer needed The text regarding evaluation of cell re-selection criteria is unclear as well as the text on cell list sizes.
Summary of change:	⌘	Removal of system info scheduling assumptions in section 4. Clarification of evaluation of cell re-selection criteria in section 4.2.2.6. Correction on cell list sizes.
Consequences if not approved:	⌘	The cell re-selection procedure will be unclear.

Clauses affected:	⌘	4.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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4 Idle Mode Tasks

~~Cell selection delays are applicable when the repetition period of all relevant system information blocks is not more than 1280 ms.~~

~~Cell reselection delays are applicable when the repetition period of all relevant system information blocks is not more than 1280 ms and the length of DRX cycle is not longer than 640 ms.~~

4.1 Cell Selection

4.1.1 Introduction

After a UE has switched on and a PLMN has been selected, the Cell selection process takes place, as described in TS25.304. This process allows the UE to select a suitable cell where to camp on in order to access available services. In this process the UE can use stored information (*Stored information cell selection*) or not (*Initial cell selection*).

4.2 Cell Re-selection

4.2.1 Introduction

The cell reselection procedure allows the UE to select a more suitable cell and camp on it.

When the UE is in *Camped Normally* state on a FDD cell, UE shall attempt to detect, synchronise, and monitor intra-frequency, inter-frequency and inter-RAT cells indicated in the measurement control system information of the serving cell. UE measurement activity is also controlled by measurement rules defined in TS25.304, allowing the UE to limit its measurement activity if certain conditions are fulfilled.

4.2.2 Requirements

4.2.2.1 Measurement and evaluation of cell selection criteria S of serving cell

The UE shall measure the CPICH Ec/Io and CPICH RSCP level of the serving cell and evaluate the cell selection criterion S defined in TS25.304 for the serving cell at least every DRX cycle. The UE shall filter the CPICH Ec/Io and CPICH RSCP measurements of the serving cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureFDD}/2$ (see table 4.1).

If the UE has evaluated in N_{serv} consecutive DRX cycles that the serving cell does not fulfil the cell selection criterion S, the UE shall initiate the measurements of all neighbour cells indicated in the measurement control system information, regardless of the measurement rules currently limiting UE measurement activities.

If the UE has not found any new suitable cell based the on searches and measurements of the neighbour cells indicated in the measurement control system information for [TBD] s, the UE shall initiate cell selection procedures for the selected PLMN as defined in TS25.304.

4.2.2.2 Measurements of intra-frequency cells

The UE shall measure CPICH Ec/Io and CPICH RSCP at least every $T_{measureFDD}$ (see table 4.1) for intra-frequency cells that are detected and measured according to the measurement rules. $T_{measureFDD}$ is defined in Table ~~x.y~~4.1. The UE shall filter CPICH Ec/Io and CPICH RSCP measurements of each measured intra-frequency cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureFDD}/2$.

The filtering shall be such that the UE shall be capable of evaluating that an intra-frequency cell has become better than the serving cell within $T_{evaluateFDD}$ (see table 4.1), from the moment the intra-frequency cell became at least 3 dB better ranked than the current serving cell, provided that Treselection timer is set to zero and either CPICH Ec/Io or CPICH RSCP is used as measurement quantity for cell reselection.

If parameter Treselection has value different from zero, the UE shall evaluate an intra-frequency cell better than the serving cell during the Treselection time, before the UE shall reselect the new cell.

4.2.2.3 Measurements of inter-frequency FDD cells

The UE shall measure CPICH Ec/Io and CPICH RSCP at least every $(N_{carrier}-1) * T_{measureFDD}$ (see table 4.1) for inter-frequency cells that are detected and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for FDD cells. The UE shall filter CPICH Ec/Io and CPICH RSCP measurements of each measured inter-frequency cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureFDD}/2$.

If CPICH Ec/Io is used as measurement quantity for cell reselection, the filtering shall be such that the UE shall be capable of evaluating that an already detected inter-frequency cell has become better ranked than the serving cell within $(N_{carrier}-1) * T_{evaluateFDD}$ (see table 4.1) from the moment the inter-frequency cell became at least 3 dB better than the current serving cell provided that Treselection timer is set to zero. For non-detected inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better than the current serving cell provided that Treselection timer is set to zero.

If CPICH RSCP is used as measurement quantity for cell reselection, the filtering shall be such that the UE shall be capable of evaluating that an already detected inter-frequency cell has become better ranked than the serving cell within $(N_{carrier}-1) * T_{evaluateFDD}$ from the moment the inter-frequency cell became at least 5 dB better than the current serving cell provided that Treselection timer is set to zero. For non-detected inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 5 dB better than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has value different from zero, the UE shall evaluate an inter-frequency cell better than the serving cell during the Treselection time, before the UE shall reselect the new cell.

4.2.2.4 Measurements of inter-frequency TDD cells

TBD.

4.2.2.5 Measurements of inter-RAT GSM cells

The UE shall measure the signal level of each GSM neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in TS25.304, at least every $T_{measureGSM}$ (see table 4.1). The UE shall maintain a running average of 4 measurements for each cell. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

The UE shall attempt to verify the BSIC for each of the 4 best ranked GSM BCCH carriers (the best ranked according to the cell reselection criteria defined in TS25.304) at least every 30 seconds if GSM cells are measured according to the measurement rules. If a change of BSIC is detected for one GSM cell then that GSM BCCH carrier shall be treated as a new GSM neighbour cell.

If the UE detects a BSIC, which is not indicated in the measurement control system information, the UE shall not consider that GSM BCCH carrier in cell reselection. The UE also shall not consider the GSM BCCH carrier in cell reselection, if the UE can not demodulate the BSIC of that GSM BCCH carrier.

4.2.2.6 Evaluation of cell re-selection criteria

The UE shall evaluate the cell re-selection criteria defined in TS 25.304 for the cells, which have new measurement results available, at least every DRX cycle.

UE shall perform cell reselection immediately after the UE has found a higher ranked suitable cell, unless less than 1 second has elapsed from the moment the UE started camping on the current cell.~~Cell reselection shall take place immediately after the UE has found a better suitable cell unless the UE has made cell reselection within the last 1 second.~~

4.2.2.7 Maximum interruption in paging reception

UE shall perform the cell re-selection with minimum interruption in monitoring downlink channels for paging reception.

At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.

At inter-frequency and inter-RAT cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels for paging reception of the target inter-frequency cell. The interruption time must not exceed T_REP + 50 ms. T_REP is the longest repetition period for the system information required to be read by the UE to camp on the cell.

These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors.

Table 4.1 $T_{measureFDD}$, $T_{evaluateFDD}$ and $T_{measureGSM}$

DRX cycle length [s]	**N_{serv} [number of DRX cycles]**	**$T_{measureFDD}$ [s] (number of DRX cycles)**	**$T_{evaluateFDD}$ [s] (number of DRX cycles)**	**$T_{measureGSM}$ [s] (number of DRX cycles)**
0.08	4	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	2.56 (32 DRX cycles)
0.16	4	0.64 (4)	2.56 (16)	2.56 (16)
0.32	4	1.28 (4)	5.12 (16)	5.12 (16)
0.64	4	1.28 (2)	5.12 (8)	5.12 (8)
1.28	2	1.28 (1)	6.4 (5)	6.4 (5)
2.56	2	2.56 (1)	7.68 (3)	7.68 (3)
5.12	1	5.12 (1)	10.24 (2)	10.24 (2)

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s, according to [16].

4.2.2.8 Number of cells in ~~neighbouring~~ cell lists

For idle mode cell re-selection purposes, ~~T~~the UE shall be capable of monitoring

- ~~[~~32~~]~~ intra-frequency cells (including serving cell), ~~and~~
- 32 inter-frequency cells, including
  - FDD mode cells on maximum 2 additional carriers, and
  - TDD mode cells, and
- 32 inter RAT GSM cells, ~~-~~

as indicated in cell information lists sent in system information (BCCH).

3GPP TSG RAN WG4 Meeting #16 **R4-010025**

Vienna, Austria 19th - 23rd February 2001

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CHANGE REQUEST

⌘ **25.133** **CR** **67** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Removal of Signalling Delay Requirements
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
- ***F*** *(essential 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.

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)*

Reason for change:	⌘	This contribution proposes to remove the contents of section 7.2 and section 7.3. The reason is that the joint RAN2-RAN4 meeting decided that signalling delays should be handled by RAN2.
Summary of change:	⌘	Content of section 7.2 and 7.3 are removed.
Consequences if not approved:	⌘	Inconsistencies between 25.331 and 25.133.

Clauses affected:	⌘	7.2, 7.3
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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7.2 Signalling Response Delay

7.2.1 Introduction

For all messages requiring a RRC response to be sent to UTRAN as defined in [16], the UE shall send that response with a maximum signalling response delay specified in this subclause. This delay consists of several delay parts. The first part is a general processing delay in order to create the response. The second part is dependent on some specific actions the UE shall perform according to that particular message.

7.2.2 Requirements

The signalling response delay is defined as the time from when the UE has received the last complete TTI containing RRC message from UTRAN, until the UE successfully has performed actions according to the RRC message and the UE starts to transmit the first TTI of the RRC response message over the Uu interface. The signalling response delay excludes a delay uncertainty resulted when inserting the RRC response message to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

This signalling response delay shall not exceed the sum of the limit for the general processing delay and all applicable limits for action delays related to the specific RRC message.

General processing delay shall not exceed 100 ms..

Delay parts related to actions are listed in table 7.1 below.

Table 7.1: Signalling response delay

Delay part caused by a specific action	Maximum delay for this action [ms]
Establishment of new dedicated channel	140
Establishment of all radio bearer(s) in one RRC message	50
Re-configuration of all radio bearer(s) in one RRC message	50
Release of all radio bearer(s) in one RRC message	10

NOTE: For all actions not listed the requirement on delay is FFS.

7.3 Signalling Processing

7.3.1 Introduction

If several consecutive RRC messages are sent to the UE, the UE shall be able to process the messages in parallel with the receiving of the next messages. The UE shall also perform actions according to the RRC messages and if applicable send answers to the messages in parallel (for those messages where procedure interaction is allowed according to TS 25.331) with receiving new messages.

7.3.2 Requirements

The UE shall be able to respond to RRC messages sent to the UE at a rate of 10 messages per second according to the requirements specified in 7.2.2 in 90 % of the cases.

NEXT CHANGED SECTION

A.7.2 Signalling Response Delay

A.7.2.1 Test Purpose and Environment

This test shall verify that the UE sends a RRC response to the UTRAN within the delay limits specified in section 7.2.2 for all received messages that require a RCC response to be sent to the UTRAN.

For all the tests the TTI for the DCCH shall be set to 40 ms.

NOTE: There should be one test of reconfiguring TFS and TFCS without changing the physical layer. A similar test could then also be made where a new dedicated physical channel activation is included.

A.7.2.2 Test Requirements

Editors note: This requirement should be rewritten, with exact times for the procedures that will be tested.

This signalling response delay shall not exceed the sum of general processing delay and all action delays related to the specific RRC message.

General processing delay shall not exceed 100 ms..

Delay parts related to actions are listed in table A.7.2 below.

Table A.7.2: Signalling response delay

Delay part caused by a specific action	Maximum delay for this action [ms]
Establishment of new dedicated channel	140
Establishment of all radio bearer(s) in one RRC message	50
Re-configuration of all radio bearer(s) in one RRC message	50
Release of all radio bearer(s) in one RRC message	10

NOTE: For all actions not listed the requirement on delay is FFS.

A.7.3 Signalling Processing

A.7.3.1 Test Purpose and Environment

This test shall verify that the UE is capable of processing a sequence of received RRC messages within specified delay limits in a certain percentage of the cases.

For all the tests the TTI for the transport channel carrying DCCH shall be 40 ms.

Messages shall be sent to the UE at a rate of 10 messages per second.

The rest of the parameters are TBD.

A.7.3.2 Test Requirements

The UE shall be able to respond to all received RRC messages within the delay limits specified in section 7.2.2 in a certain percentage of all cases as defined in 7.3.2.

3GPP TSG RAN WG4 Meeting #16 R4-010172

Vienna, Austria 19th - 23rd February 2001

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CHANGE REQUEST

⌘ 25.133 CR 68 ⌘ rev - ⌘ Current version: 3.4.0 ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☒ Core Network ☐

Title:	⌘	FDD/GSM handover
Source:	⌘	RAN WG4
Work item code:	⌘	**Date:** ⌘ 2001-01-26
Category:	⌘	F **Release:** ⌘ R99

Use one of the following categories:
- ***F*** *(essential 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.

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)*

Reason for change:	⌘	In section 5.4.1 it is not clear if blind handover from UMTS to GSM is supported and what requirements that are valid for that case.
Summary of change:	⌘	Clarify that receiving a HANDOVER FROM UTRAN COMMAND (indicating GSM), with which refers to a cell not synchronised to, shall not be considered as an error. Adding handover delay and interruption times for that case. Aligning the naming of the handover command message with the change of name made in the RRC-specification.
Consequences if not approved:	⌘	It will be unclear if blind handover from UMTS to GSM is supported.

Clauses affected:	⌘	5.4
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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5.4 FDD/GSM Handover

5.4.1 Introduction

The purpose of inter-RAT~~system~~ handover from UTRAN FDD to GSM is to transfer a connection between the UE and UTRAN FDD to GSM. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN~~INTER SYSTEM HANDOVER~~ COMMAND). The procedure is described in TS25.331 section 8.3.7.

Compressed mode according to the UE Capability may be used to be able to make measurements on GSM.

~~NOTE: Support of Blind Handover should be stated.~~

5.4.2 Requirements

The requirements in this section shall apply to UE supporting FDD and GSM.

5.4.2.1 ~~Inter-system h~~Handover delay

~~When the UE receives a RRC INTER SYSTEM HANDOVER COMMAND it shall be ready to transmit (as specified in GSM 05.10) on the new channel within 120 ms from the last TTI containing the RRC command, unless the access is delayed to an indicated starting time, in which case it shall be ready to transmit on the new channel at the designated starting time, or within the time interval defined above, whichever is the later.~~

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND with the activation time "now" or earlier than the value in Table 5-x from the end of the last TTI containing the RRC command, the UE shall be ready to transmit (as specified in GSM 05.10) on the channel of the new RAT within the value in Table 5-x from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than the value in Table 5-x from the end of the last TTI containing the RRC command, the UE shall be ready to transmit (as specified in GSM 05.10) on the channel of the new RAT at the designated activation time.

The UE shall process the RRC procedures for the RRC HANDOVER FROM UTRAN COMMAND within 50 ms. If the activation time is used, it corresponds to the CFN of the UTRAN channel.

Table 5-x: FDD/GSM handover –handover delay

UE synchronisation status	handover delay [ms]
The UE has synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received	90
The UE has not synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received	190

5.4.2.2 Interruption time

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old channel and the time the UE is ready to transmit on the new channel, shall be less than the value in Table 5-y ~~40 ms~~. The requirement in Table 5-y for the case, that UE is not synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received, is valid when the signal quality of the GSM cell is good enough for successful synchronisation with one attempt.

Table 5-y: FDD/GSM handover - interruption time

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received	40
The UE has not synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received	140

3GPP TSG RAN WG4 Meeting #16 **R4-010173**

Vienna, Austria 19th - 23rd February 2001

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CHANGE REQUEST

⌘ **25.133** **CR** **69** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☒ Core Network ☐

Title:	⌘	Revised Correction of hard handover delay requirements
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 25 Jan, 2000
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
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Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

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REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	The current figure of hard handover interruption time is not realistic, neither does it consider whether the UE has any timing information to the target cell(s) or not. In addition, WG1 have introduced new requirements on the L1 synchronisation procedure. This contribution proposes changes in order to correct for these inconsistencies.
Summary of change:	⌘	The specification is aligned with 25.214 and 25.331. Figures are corrected.
Consequences if not approved:	⌘	Misalignment between 25.331, 25.214 and 25.133.

Clauses affected:	⌘	5.2
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications ⌘
Other comments:	⌘	

5.2 FDD/FDD Hard Handover

5.2.1 Introduction

~~The purpose of FDD/FDD hard handover is to change the frequency of the connection between UE and UTRAN or to change cell if the network does not support macrodiversity.~~

The hard handover procedure is initiated from UTRAN with a RRC message that implies a hard handover, see [TS25.331 section 8.3.5]. ~~(PHYSICAL CHANNEL RECONFIGURATION, RADIO BEARER SETUP, RADIO BEARER RECONFIGURATION, RADIO BEARER RELEASE, or TRANSPORT CHANNEL RECONFIGURATION).~~

~~The hard handover procedure may cause the UE to change its frequency. Compressed mode according to the UE Capability may be used to be able to make any measurements on other frequencies.~~

5.2.2 Requirements

5.2.2.1 Hard handover delay

Procedure delay for all procedures, that can command a hard handover, are specified in [TS25.331 section 11.5.2].

When the UE receives a RRC message implying hard handover with the activation time "now" or earlier than than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH at the designated activation time.

where:

$D_{handover}$ equals the RRC procedure delay defined in TS25.331 Section 13.5.2 plus the interruption time stated in section 5.2.2.2.

~~When the UE receives a RRC message that implies a hard handover, the UE shall start transmission of the new uplink DPCCH within [X ms] from the end of the last TTI containing the RRC command.~~

~~However, if the command includes an indicated activation time, the UE shall start transmission of the new uplink DPCCH l at the designated starting time, or within the time interval defined above, whichever is the later.~~

5.2.2.2 Interruption time

The interruption time, i.e. the time between the last TTI containing a transport block on the old DPD~~T~~CH and the time the UE starts transmission of the new uplink DPCCH, is depending on whether the target cell is known for the UE or not.

The interuption time shall be less than T_{IU}+40+20*KC+100*OC ms, where

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

KC is the number of known target cells in the message, and

OC is the number of target cells that are not known in the message.

Note: The figure 40 ms is the time required for measuring the downlink DPCCH channel as stated in TS 25.214 section 4.3.1.2.

The definition of a known cell is specified in section 5.1.2.2.

shall be less than the value in table 5.2. This requirement does not include a delay due to SFN decoding of the new cell when this is needed.

Table 5.2: FDD/FDD hard handover - interruption time

Number of new cells present in the handover command message	Interruption time [ms]	
	Cells in monitored cells list and reported to UTRAN	Cells outside monitored cells list
1	[20]	[4000]

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CHANGE REQUEST

⌘ **25.133** **CR** **70** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM [ ] ME/UE [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	Cell-Reselection, Measurements of inter-frequency TDD cells
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 23-26 Jan2001
Category:	⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
- ***F*** *(essential 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.

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)*

Reason for change:	⌘	Inclusion of missing explanation
Summary of change:	⌘	
Consequences if not approved:	⌘	Empty/unfinished section

Clauses affected:	⌘			
Other specs affected:	⌘	[ ] Other core specifications [ ] Test specifications [ ] O&M Specifications	⌘	
Other comments:	⌘			

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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

4.2.2.4 Measurements of inter-frequency TDD cells

The UE shall measure the PCCPCH RSCP of each TDD neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in TS25.304, at least every $T_{measureTDD}$ (see table 4.1 TS25.133). The UE shall filter PCCPCH RSCP measurements of each measured inter-frequency cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureTDD}/2$.
The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that an already detected inter-frequency cell has become better ranked than the serving cell within $N_{carrierTDD} * T_{evaluateTDD}$ from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero. For non-detected inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.
If Treselection timer has a value different from zero, the UE shall evaluate an inter-frequency cell better ranked than the serving cell during the Treselection time, before the UE shall reselect the new cell.
The ranking of the cells shall be made according to the cell reselection critera specified in TS25.304. The use of mapping functions is indicated in the broadcast.

4.2.2.5 Measurements of inter-RAT GSM cells

The UE shall measure the signal level of each GSM neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in TS25.304, at least every $T_{measureGSM}$ (see table 4.1). The UE shall maintain a running average of 4 measurements for each cell. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period. The UE shall attempt to verify the BSIC for each of the 4 best ranked GSM BCCH carriers (the best ranked according to the cell reselection criteria defined in TS25.304) at least every 30 seconds if GSM cells are measured according to the measurement rules. If a change of BSIC is detected for one GSM cell then that GSM BCCH carrier shall be treated as a new GSM neighbour cell.

If the UE detects a BSIC, which is not indicated in the measurement control system information, the UE shall not consider that GSM BCCH carrier in cell reselection. The UE also shall not consider the GSM BCCH carrier in cell reselection, if the UE can not demodulate the BSIC of that GSM BCCH carrier.

4.2.2.6 Evaluation of cell re-selection criteria

The UE shall evaluate the cell re-selection criteria defined in TS 25.304 for the cells, which have new measurement results available, at least every DRX cycle.
Cell reselection shall take place immediately after the UE has found a better suitable cell unless the UE has made cell reselection within the last 1 second.

4.2.2.7 Maximum interruption in paging reception

UE shall perform the cell re-selection with minimum interruption in monitoring downlink channels for paging reception.
At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.
At inter-frequency and inter-RAT cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels for paging reception of the target inter-frequency cell. The interruption time must not exceed T_REP + 50 ms. T_REP is the longest repetition period for the system information required to be read by the UE to camp on the cell.
These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors.

Table 4.1 $T_{measureFDD}$, $T_{evaluateFDD}$, $T_{measureTDD}$, $T_{evaluateTDD}$, and $T_{measureGSM}$

DRX cycle	N_{serv} [number of	$T_{measureFDD}$ [s] (number of	$T_{evaluateFDD}$ [s] (number of	$T_{measureTDD}$ [s] (number of	$T_{evaluateTDD}$ [s] (number of	$T_{measureGSM}$ [s] (number of

length [s]	DRX cycles]	DRX cycles)	DRX cycles)	DRX cycles)	DRX cycles)	DRX cycles)
0.08	4	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	2.56 (32 DRX cycles)
0.16	4	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	2.56 (16)
0.32	4	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	5.12 (16)
0.64	4	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	5.12 (8)
1.28	2	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	6.4 (5)
2.56	2	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	7.68 (3)
5.12	1	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	10.24 (2)

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s, according to [16].

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CHANGE REQUEST

⌘ **25.133** **CR** **71** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Correction of number of events that should be handled by the UE
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 22-26 Jan, 2001
Category:	⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
- ***F*** *(essential 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.

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)*

Reason for change:	⌘	Limitation of number of events that should be handled by the UE
Summary of change:	⌘	Requirements are added on the number of events that an UE shall be able to handle in parallel.
Consequences if not approved:	⌘	UE design will have to design for all possibilities that are possible to signal in 25.331, this will lead to unreasonable complexity.

Clauses affected:	⌘	8.3
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

8.3 Capabilities for Support of Event Triggering and Reporting Criteria

8.3.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria.

The UE can be requested to make measurements under different measurement identity numbers. With each identity number there may be associated multiple number of events. The purpose of this section is to set some limits on the number of different reporting criteria the UE may be requested to track in parallel.

8.3.2 Requirements

In this section reporting criteria can be either event triggered reporting criteria or periodic reporting criteria.

The UE shall be able to ~~track~~ support in parallel per category up to E_{cat} reporting criteria according to Table 8.x. For the measurement categories: Intra-frequency, Inter frequency, Inter frequency (virtual active set), and Inter-RAT the UE need not support more than 18 reporting criteria in total. For the measurement categories Traffic volume and Quality measurements the UE need not support more than 16 reporting criteria in total.~~Beyond the individual limits per measurement category, the UE need not track more than [TBD] reporting criteria in total.~~

Table 8-x Requirements for reporting criteria per measurement category

Measurement category	E_{cat}	Note
Intra-frequency	8	Applicable for periodic reporting or FDD events (1A-1F).
Inter-frequency	6	Applicable for periodic reporting or Event 2A-2F
Inter-frequency, virtual active set	4	Applicable for periodic reporting or Event 1A-1C
Inter-~~system~~ RAT	4	Only applicable for UE with this capability
UE internal measurements	8	
Traffic volume measurements	2 + (2 per Transport Channel)	
Quality measurements	2 per Transport Channel	
~~LCS~~ UP measurements	2	Only applicable for UE with this capability.
~~Additional measurements~~		

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CHANGE REQUEST

⌘ **TS25.133 CR 72** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Revised limitations to the usage of compressed mode patterns
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 25-01-2001
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
- ***F*** *(essential 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.

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)*

Reason for change:	⌘	The flexible parameter configuration of compressed mode pattern makes it difficult to define good general requirements for inter-frequency measurements.
Summary of change:	⌘	The following compressed mode limitations are proposed: If the UE utilises compressed mode for inter-frequency and/or inter-RAT measurements, in order for the requirements in the following subsections to apply the UTRAN must provide • transmission gap pattern sequences with TGPL1 > 1 and ensure that the activation of several transmission gap pattern sequences in parallel does not result in every frame being compressed, and • the patterns within a transmission gap pattern sequence are identical (i.e., TGPL1 = TGPL2). Compressed mode pattern sequency is changed to transmission gap pattern sequence as in TS25.215.
Consequences if not approved:	⌘	Without the proposed limitations it is going to be rather hard to finalise general measurement requirements particularly for inter-frequency cells. The general requirements may also become significantly more complex.

Clauses affected:	⌘	8.1.2.1		
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications	⌘	34.121
Other comments:	⌘			

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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

8.1.1 Requirements

8.1.2.1 UE Measurement Capability

The UE shall be able to support and process up to

32 intra frequency FDD cells, and

32 inter frequency FDD cells, distributed on up to 2 additional FDD carriers.

Depending on UE capability, the UE shall also in addition be able to support and process 32 TDD cells, distributed on up to 3 TDD carriers.

Depending on UE capability, the UE shall also in addition be able to support and process at least 32 GSM cells distributed on up to 32 GSM carriers.

If the UE utilises compressed mode for inter-frequency and/or inter-RAT measurements, in order for the requirements in the following subsections to apply the UTRAN must provide

- transmission gap pattern sequences with TGPL1 > 1 and ensure that the activation of several transmission gap pattern sequences in parallel does not result in every frame being compressed, and
- the patterns within a transmission gap pattern sequence are identical (i.e., TGPL1 = TGPL2).

Performance requirements for different types of transmission gap pattern sequences~~compressed mode patterns~~ and different number of cells is defined in the following sections.

The requirements in section 9 are applicable for a UE performing measurements according to this section.

3GPP TSG RAN WG4 Meeting #16 **R4-010469**

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CR-Form-v3

CHANGE REQUEST

⌘ **25.133 CR 73** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Measurements on FDD and TDD in Cell-FACH state
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 2000-02-15
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
- ***F*** *(essential 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.

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)*

Reason for change:	⌘	The requirements for measurements in Cell-Fach state are missing
Summary of change:	⌘	Include similar requirements for measurements in Cell-Fach state as in dedicated mode
Consequences if not approved:	⌘	When UTRAN receives measurements from a UE in Cell-Fach state it is not defined how they are measured.

Clauses affected:	⌘	8.4.2.1, 8.4.2.2, 8.4.2.3, 8.4.2.4
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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.

8.4 Measurements in CELL_FACH State

8.4.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL_FACH state. The requirements are split in FDD intra frequency, FDD inter frequency, TDD and GSM measurements. The measurements are defined in TS 25.215, the measurement model is defined in TS 25.302 and measurement accuracies are specified in section 9. Control of measurement reporting is specified in TS 25.331 and parallel measurements are specified in section 8.2. Measurement occasions in Cell_Fach state are described in TS 25.331. ~~Compressed mode is specified in TS 25.215.~~

8.4.2 Requirements

8.4.2.1 UE Measurement Capability

The UE shall be able to monitor up to

32 intra frequency FDD cells and

32 inter frequency cells, including

- FDD mode cells distributed on up to 2 additional FDD carriers and
- Depending on UE Capability, TDD mode cells, distributed on up to 3 TDD carriers.

Depending on UE capability, the UE shall also in addition be able to monitor at least 32 GSM cells distributed on up to 32 GSM carriers.

The requirements in section 9 on CPICH Ec/Io and RSCP measurements are applicable for a UE performing measurements according to this section. For inter-frequency FDD, TDD and GSM cell re-selection, measurement occasions as specified in 25.331 are used to find and measure on other cells.

M_REP is the Measurement Occasion cycle length in number of frames and N_{TTI} is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE.

It is defined below how the measurements on different systems and modes are performed given the time allocated to that system. The time during the measurement occasions that is allocated to each of the different modes and systems shall be equally shared by the modes which the UE has capability for and that are in the monitored set signalled by the network.

For this three parameters are defined:

N_{FDD} is 0 or 1. If there are inter-frequency FDD cells in the neighbour list N_{FDD}=1, otherwise N_{FDD}=0.

N_{TDD} is 0 or 1. If the UE is capable of TDD and there are TDD cells in the neighbour list N_{TDD}=1 otherwise N_{TDD} =0.

N_{GSM} is 0 or 1. If the UE is capable of GSM and there are GSM cells in the neighbour list, N_{GSM}=1, otherwise N_{GSM} =0.

The measurement time T_{meas} is then defined as

$$T_{meas} = \left[\left(N_{FDD} + N_{TDD} + N_{GSM}\right) \cdot \text{M\_REP} \cdot 10\right] \text{ ms}$$

The UE is required to measure periodically once every time period T_{meas} on each of the modes and systems, FDD interfrequency cells, TDD interfrequency cells and GSM carriers for which the corresponding parameter N_{FDD}, N_{TDD} and N_{GSM} is set to 1.

8.4.2.2 FDD intra frequency measurements

During the CELL_FACH state the UE shall continuously measure detected intra frequency cells and search for new intra frequency cells in the monitoring set. If a measurement occasion is activated, intra frequency measurements can be performed between the measurement occasions.

8.4.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{identify,intra} = Max\left\{800, Ceil\left\{\frac{T_{basic\ identify\ FDD,intra}}{(M\_REP - N_{TTI})\cdot 10}\right\}\cdot M\_REP\cdot 10\right\} \text{ ms}$$

where

$T_{basic\_identify\_FDD,intra}$ is specified in section 8.1.2.2.2,

N_{TTI} and M_REP is specified in section 8.4.2.1.

and when CPICH Ec/Io > -20 dB, SCH_Ec/Io > -20 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected

8.4.2.2.2 UE CPICH measurement capability

In the CELL_FACH state the measurement period for intra frequency measurements is 200 ms. When no measurement occasion sequence is activated, the UE shall be capable of performing CPICH measurements for 8 detected intra-frequency cells and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When one measurement occasion sequence is activated, the UE shall be capable of performing CPICH measurements for the $Y_{measurement\ intra}$ strongest cells , where $Y_{measurement\ intra}$ is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2.

$$Y_{measurement\ intra} = Floor\left\{X_{basic\ measurement\ FDD}\cdot MIN\left[\frac{M\_REP - N_{TTI}}{M\_REP}, \frac{T_{Measurement\_Period\ Intra} - 10\cdot N_{TTI}}{10\cdot M\_REP}\right]\right\} \text{ cells}$$

where

$X_{basic\ measurement\ FDD}$ is specified in section 8.1.2.2.2,

$T_{Measurement\_Period\ Intra}$ is specified in section 8.1.2.2.2,

M_REP and N_{TTI} is specified in section 8.4.2.1.

8.4.2.2.3 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.4.2.2.4 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

In Cell_FACH event triggered reporting can only be set for Traffic Volume measurements defined in 25.331.

8.4.2.3 FDD inter frequency measurements

In the Cell_FACH state when a measurement occasion sequence is provided by the network the UE shall continuously measure detected inter frequency cells and search for new inter frequency cells indicated in the measurement control information.

8.4.2.3.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set

$$T_{\text{identify, inter}} = Max\left\{5000, Ceil\left\{\frac{T_{\text{basic identify FDD inter}}}{T_{\text{Inter FACH}}}\right\} \cdot T_{\text{meas}} \cdot N_{Freq,FDD}\right\} \text{ ms}$$

where

$T_{basic\_identify\_FDD,inter}$ is specified in 8.1.2.3.2.

$N_{Freq,FDD}$ Number of FDD frequencies in the Inter-frequency cell info list

T_{Meas} and M_REP: is specified in 8.4.2.1.

$T_{Inter\ FACH}$ $=(N_{TTI}*10 - 2*0.5)$ ms

and when CPICH Ec/Io > -20 dB, SCH_Ec/Io > -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected

8.4.2.3.2 Measurement period

When measurement occasions are scheduled for FDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.2 with measurement period given by

$$T_{\text{measurement inter}} = Max\left\{T_{\text{Measurement\_Period Inter}}, 2 \cdot T_{\text{meas}}, Ceil\left\{\frac{T_{\text{basic measurement FDD inter}}}{T_{\text{Inter FACH}}}\right\} \cdot T_{\text{meas}} \cdot N_{Freq,FDD}\right\} \text{ ms}$$

where

$T_{basic\_measurement\_FDD,inter}$ is specified in section 8.1.2.3.2.

$T_{Measurement\_Period\ Inter}$ is specified in section 8.1.2.3.2.

T_{Meas} is specified in section 8.4.2.1.

$N_{Freq,FDD}$ and $T_{Inter\ FACH}$ are specified in section 8.4.2.3.1

If the UE does not need measurement occasions to perform inter-frequency measurements, the measurement period for inter frequency measurements is 480 ms.

8.4.2.3.3 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.4.2.3.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports (Traffic Volume Measurement) shall meet the requirements in section 9.

8.4.2.4 TDD measurements

The requirements in this section apply only to UE supporting both TDD and FDD mode.

In the CELL_DCH state when a measurement occasion sequence is provided by the network the UE shall continuously measure detected inter frequency TDD cells and search for new TDD cells indicated in the measurement control information.

The UE shall be capable of measuring the requested measurement quantity of at least 32 cells on a maximum of 3 frequencies, different from the frequency currently used by the UE.

8.4.2.4.1 Identification of a new cell

The UE shall be able to identify a new detectable TDD cell belonging to the monitored set within

$$T_{\text{identify, TDD}} = Max\left\{5000, Ceil\left\{\frac{T_{\text{basic identify TDD inter}}}{T_{\text{Inter FACH}}}\right\} \cdot T_{\text{meas}} \cdot N_{Freq,TDD}\right\} \text{ ms}$$

$T_{basic\_identify\_TDD,inter}$ is specified in 8.1.2.4.2.

$N_{Freq,TDD}$ Number of TDD frequencies in the Inter-frequency cell info list

T_{Meas} is specified in section 8.4.2.1.

$T_{Inter\ FACH}$ is specified in section 8.4.2.3.1

8.4.2.4.2 Measurement period

When measurement occasion as priviously described are scheduled for TDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1 and 9.1.2 with measurement period given by

$$T_{\text{measurement TDD}} = Max\left\{T_{\text{Measurement\_Period TDD inter}}, 2 \cdot T_{\text{meas}}, Ceil\left\{\frac{T_{\text{basic measurement TDD inter}}}{T_{\text{Inter FACH}}}\right\} \cdot T_{\text{meas}} \cdot N_{Freq,TDD}\right\}$$

where

$T_{basic\_measurement\_TDD\ inter}$ is specified in section 8.1.2.4.2.

$T_{Measurement\_Period\ TDD\ inter}$ is specified in section 8.1.2.4.2.

T_{Meas} is specified in section 8.4.2.1.

$T_{Inter\ FACH}$ is specified in section 8.4.2.3.1

$N_{Freq,TDD}$ is specified in section 8.4.2.4.1

If the UE does not need measurement occasions to perform inter-frequency measurements, the measurement period for inter frequency measurements is 480 ms.

3GPP TSG RAN WG4 Meeting #16 **R4-010467**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.133** **CR** **74** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network ☐

Title:	⌘	Measurements on GSM in Cell-FACH state
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 2000-02-23
Category:	⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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.

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)*

Reason for change:	⌘	The requirements for measurements in Cell-Fach state are missing
Summary of change:	⌘	Include similar requirements for measurements in Cell-Fach state as in dedicated mode
Consequences if not approved:	⌘	When UTRAN receives measurements from a UE in Cell-Fach state it is not defined how they are measured.

Clauses affected:	⌘	8.4.2.5
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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.

8.4.2.5 GSM measurements

The requirements in this section apply only to UE supporting FDD and GSM.

In Cell_FACH state when measurement occasions are provided by the UTRAN the UE shall continously measure GSM cells and search for new GSM cells given in the monitored set.

The reporting of measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. However, to support cell reselection the UE shall always perform BSIC verification in Cell FACH state.

If BSIC verified is requested for a GSM cell the UE shall only report measurement quantities for that GSM cell with a BSIC "verified" according to section 8.4.2.5.2. If BSIC verification is not required for the reporting of a GSM cell the UE shall report measurement quantities for that GSM cell irrespectively if the BSIC has been verified or not verified according to section 8.4.2.5.2.

In section 8.4.2.1 the split of measurements between different modes and systems is defined. Every second measurement occasion scheduled for GSM measurements, as given by 8.4.2.1 shall be allocated for GSM initial BSIC identification.

The remaining measurements occasions scheduled for GSM measurements shall be used as follows. 3 occasions out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4 shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement occasions between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

If the UE does not need measurement occasions to perform GSM measurements, the requirements in GSM 05.08 shall apply.

8.4.2.5.1 GSM carrier RSSI

A UE supporting GSM measurements using measurement occasions shall meet the minimum number of GSM carrier RSSI measurements specified in Table 8.a. This measurement shall be based on measurement occasions allocated for GSM carrier RSSI measurements as described in 8.4.2.5. In the Cell_FACH state the measurement period for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in GSM 05.08, when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Table 8.a

Length of measurement occasion (frames)	Number of GSM carrier RSSI samples in each measurement occasion, $N_{GSM\ carrier\ RSSI}$
1	16
2	32
4	64
8	128

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

8.4.2.5.2 BSIC verification

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

Initial BSIC identification

Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the

relative timing between the FDD and GSM cell. The UE shall trigger the initial BSIC identification within 50% of the available measurement occasions used for GSM measurements as specified in 8.4.2.1. The requirements for Initial BSIC identification can be found in 8.4.2.5.2.1.

BSIC re-confirmation

Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available measurement occasions used for GSM as specified in 8.4.2.1. The requirements for BSIC re-confirmation can be found in 8.4.2.5.2.2.

The BSIC of a GSM cell is considered to be "verified" if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) and from that moment the BSIC shall be re-confirmed at least once every 6 times $T_{re\text{-}confirm\_GSM}$ seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified".

$T_{re\text{-}confirm\_GSM}$ indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure according to section 8.4.2.5.2.2.

The UE shall be able to decode a BSIC within a measurement occasion when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the measurement occasion is within the limits specified in table 8.b.

Table 8.b: The measurement occasion length and maximum time difference for BSIC verification

Measurement occasion length [frames]	**Maximum time difference** [µs]
1	± 4100
2	± 9100
4	± 19100
8	± 39100

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in GSM 05.05.

8.4.2.5.2.1 Initial BSIC identification

This measurement shall be based on the measurement occasions allocated for Initial BSIC identification as described in 8.4.2.5.

The UE shall continuously attempt to decode the BSIC of SCH on the BCCH carrier of the 6 strongest BCCH carriers of the GSM cells indicated in the Inter-RAT cell info list. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BCCH carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value after layer 3 filtering.

When the UE attempts to decode the BSIC of one GSM BCCH carrier with unknown BSIC, the UE shall use all available measurements occasions allocated for GSM initial BSIC identification according section 8.4.2.5 to attempt to decode the BSIC from that GSM BCCH carrier.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall immediately continue BSIC identification with the next GSM BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within $T_{identify,\ GSM}$ ms, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 6 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

$T_{identify\_GSM}$ is given for the combinations of T_{meas} and N_{TTI} that are given in Table 8.c. The values given in table 8.c represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier.

Table 8.c: The worst-case time for identification of one previously not identified GSM cell

	N_TTI=1 frame	N_TTI=2 frames	N_TTI=4 frames	N_TTI=8 frames
T_meas (ms)]	**$T_{identify,GSM}$ [ms]**	**$T_{identify, GSM}$ [ms]**	**$T_{identify, GSM}$ [ms]**	**$T_{identify, GSM}$ [ms]**
20	1040	-	-	-
40	1600	800	-	-
60	2880	-	-	-
80	2880	1280	640	-
120	5280	2640	-	-
160	7680	2880	1280	640
240	29760	5280	1920	-
320	14080	6400	2560	1280
480	34560	12480	3840	1920
640	34560	12800	5120	2560
960		24960	5760	2840
1280		20480	10240	5120
1920			15360	5680
2560				10240
3840				15360

8.4.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of 6 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each measurement occasion allocated for GSM BSIC reconfirmation as described in 8.4.2.5, the UE shall attempt to decode the BSIC falling within the measurement occasion duration according to table 8.b. When the UE has to select one out of several possible GSM cells to reconfirm within the possible allocation of measurement occasions, according to 8.4.2.5, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see section 8.4.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 6 strongest GSM cells in the monitored list.

$T_{re\text{-}confirm\_GSM}$ is given for the combinations of T_{meas} and N_{TTI} that are given in Table 8.d. The values given in table 8.d represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier.

Table 8.d: The worst-case time for reconfirmation of one previously identified GSM cell

	N_TTI=1 frame	N_TTI=2 frames	N_TTI=4 frames	N_TTI=8 frames
T_meas (ms)]	$T_{re\text{-}confirm,GSM}$ [ms]	$T_{re\text{-}confirm,GSM}$ [ms]	$T_{re\text{-}confirm,GSM}$ [ms]	$T_{re\text{-}confirm,GSM}$ [ms]
20	800	-	-	-
40	1360	640	-	-
60	2640	-	-	-
80	2880	1280	640	-
120	5040	2400	-	-
160	6400	2880	1280	640
240	17280	4800	1920	-
320	10880	6400	2560	1280
480	22080	9600	2880	1920
640	26880	12800	5120	2560
960		17280	5760	2840
1280		20480	10240	5120
1920			15360	5680
2560				10240
3840				15360

3GPP TSG RAN WG4 Meeting #16 R4-010468

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ 25.133 CR 75 ⌘ rev - ⌘ Current version: 3.4.0 ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Cell re-selection in Cell-FACH state
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 2001-02-15
Category:	⌘	F ***Release:*** ⌘ R99

Use one of the following categories:
- ***F*** *(essential 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.

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)*

Reason for change:	⌘	To complete the requirements for cell reselection in 25.133
Summary of change:	⌘	The requirements define how a UE shall measure for preparing for cell reselection in Cell-FACH mode.
Consequences if not approved:	⌘	It will not be defined how a UE shall behave in Cell-FACH mode.

Clauses affected:	⌘	5.5
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

5.5 Cell Re-selection in Cell_FACH

5.5.1 Introduction

When a Cell Re-selection process is triggered according to 25.331, the UE shall evaluate the cell re-selection criteria specified in TS 25.304, based on radio measurements, and if a better cell is found that cell is selected.

5.5.2 Requirements

~~Cell reselection delays are applicable when the repetition period of all relevant system information blocks is not more than 1280 ms.~~

The Cell reselection delays specified below are applicable when the RRC parameter $T_{reselection}$ is set to 0. Otherwise the Cell reselection delay is increased $T_{reselection}$ s.

~~NOTE: For Inter-frequency cell re-selection in CELL_FACH state, the cell re-selection delay is dependent on the amount of Measurement Occasions that is provided by the network.~~

The measurements CPICH Ec/Io and CPICH RSCP shall be used for cell reselection in Cell-FACH state to another FDD cell, P-CCPCH RSCP shall be used for re-selection to a TDD cell and GSM carrier RSSI shall be used for cell re-selection to a GSM cell. The accuracies of the measurements used for a cell-reselection in an AWGN environment shall comply with the requirements in chapter 9.

5.5.2.1 Cell re-selection delay

The cell re-selection delay is defined as the time between the occurence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the RRC CELL UPDATE message to the UTRAN.

5.5.2.1.1 Intra frequency cell reselection ~~All cells in the neighbour list belong to the same frequency~~

The cell re-selection delay in Cell_FACH state to a cell on same frequency shall be less than

$$T_{reselection,\,intra} = T_{identify,\,intra} + T_{SI} \text{ ms}$$

where

$T_{identify\_intra}$ = Specified in 8.4.2.2.1.

T_{SI} = The maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell.

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

~~The cell re-selection delay in CELL_FACH state shall be less than [x] seconds when all cells in the neighbour list belong to the same frequency~~

5.5.2.1.2 Inter-frequency cell reselection~~The cells in the neighbour list belong to different frequencies~~

The cell re-selection delay in Cell_FACH state to a FDD cell on a different frequency shall be less than

$$T_{reselection,\ inter} = T_{identify,\,inter} + T_{SI} \text{ ms}$$

.where

$T_{identify, ,inter}$ Specified in 8.4.2.3.1.

T_{SI} = The maximum repetition frequency of all relevant system information blocks that needs to be received by the UE to camp on a cell.

This requirement assumes radio conditions to be sufficient, so that reading of system information can be done without errors.

~~NOTE: This requirement should be reconsidered based on RAN2 decisions.~~

~~The cell re-selection delay in CELL_FACH state shall be less than [x] seconds when the cells in the neighbour list belong to less than [3] frequencies.~~

5.5.2.1.2 FDD-TDD cell reselection

The cell re-selection delay in Cell_FACH state in FDD to a TDD cell shall be less than

$$T_{reselection, TDD} = T_{identify, TDD} + T_{SI} \text{ ms}$$

where

$T_{identify, TDD}$ Specified in 8.4.2.4.1.

T_{SI} = The maximum repetition frequency of all relevant system information blocks that needs to be received by the UE to camp o a cell.

This requirement assumes radio conditions to be sufficient, so that reading of system information can be done without errors.

~~5.5.2.1.2~~5.5.2.1.3 UTRAN-GSM Cell Reselection

The cell re-selection delay in Cell_FACH state to a GSM cell shall be less than

$$T_{reselection, GSM} = T_{identify, GSM} + T_{measurement, GSM} + T_{SI} \text{ ms}$$

where

$T_{identify, GSM}$ is specified in 8.4.2.5.2.1

$$T_{measurement, GSM} = 8 \cdot \frac{N_{carriers}}{N_{GSM\ carrier\ RSSI}} \cdot T_{meas}$$ where

$N_{carriers}$ is the number of GSM carriers in the Inter-RAT cell info list

$N_{GSM\ carrier\ RSSI}$ is specified in 8.4.2.5.1, table 8.a

T_{SI} = The maximum repetition frequency of all relevant system information blocks that needs to be received by the UE to camp on a cell.

3GPP TSG RAN WG4 Meeting #16 **R4-010453**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **TS25.133 CR 76** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	General Measurement Requirements in CELL_DCH State
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 22-02-2001
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:	*Use one of the following releases:*	
F *(essential correction)*	*2*	*(GSM Phase 2)*
A *(corresponds to a correction in an earlier release)*	*R96*	*(Release 1996)*
B *(Addition of feature),*	*R97*	*(Release 1997)*
C *(Functional modification of feature)*	*R98*	*(Release 1998)*
D *(Editorial modification)*	*R99*	*(Release 1999)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.	*REL-4*	*(Release 4)*
	REL-5	*(Release 5)*

Reason for change: ⌘ Modifications are made in order to avoid misinterpretation of the requirements.

Summary of change: ⌘

- SCH and CPICH side conditions are included into the general measurement requirements of intra- and inter-frequency measurements in Section 8.
- $T_{basic\ identify\ FDD,\ intra}$ is defined to be 800 ms.
- Square brackets are removed from $T_{Measurement\ Period\ Intra}$
- Assumptions for frequency swicthing time and HW settling time are incorporated into equations.
- General measurement requirement for detected cells is included as already used in one test case.
- $T_{basic\ identify\ FDD,inter}$ is defined to be 800 ms.
- $T_{basic\ measurement\ FDD\ inter}$ is defined to be 50 ms.
- SCH side conditions are removed from the CPICH measurement accuracy requirements in Section 9 since they are not included into Section 8 and in Section 9 there are no measurement accuracy requirements for SCH.
- The requirement of compressed mode gap for FDD measurements is clarified.
- Modification of inter-frequency CPICH Ec/Io measurement accuracy, which was endorsed in R4-010307, is included into this CR since it is related to the same sections.

Consequences if not approved: ⌘ RRM performance requirements are not finalised and therefore it would be very difficult to make proper network planning since different terminals would be allowed to behave differently.

Clauses affected: ⌘ 8.1.2.2.1, 8.1.2.2.2, 8.1.2.2.5, 8.1.2.3.1, 8.1.2.3.2, 8.1.2.3.4, 9.1.1.1.1, 9.1.1.1.2, 9.1.1.2.1, 9.1.2.1.1, 9.1.2.1.2 and 9.1.2.2.1

Other specs affected:	⌘	[ ] Other core specifications [X] Test specifications [ ] O&M Specifications	⌘	
Other comments:	⌘			

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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.

8 UE Measurements Procedures

8.1 General Measurement Requirements in CELL_DCH State

8.1.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL_DCH state. The requirements are split in FDD intra frequency, FDD inter frequency, TDD and GSM measurements. These measurements may be used by the UTRAN, e.g. for handover decisions. The measurements are defined in TS 25.215, the measurement model is defined in TS 25.302 and measurement accuracies are specified in section 9. Control of measurement reporting is specified in TS 25.331 and parallel measurements are specified in section 8.2. Compressed mode is specified in TS 25.215.

8.1.2 Requirements

8.1.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency FDD cells (including active set), and
- 32 inter frequency cells, including
  - FDD mode cells distributed on up to 2 additional FDD carriers and
  - Depending on UE Capability, TDD mode cells, distributed on up to 3 TDD carriers.

~~The UE shall be able to support and process up to~~

~~32 intra frequency FDD cells, and~~

~~32 inter frequency FDD cells, distributed on up to 2 additional FDD carriers.~~

~~Depending on UE capability, the UE shall also in addition be able to support and process 32 TDD cells, distributed on up to 3 TDD carriers.~~

Depending on UE capability, the UE shall also in addition be able to support and process at least 32 GSM cells distributed on up to 32 GSM carriers.

Performance requirements for different types of compressed mode patterns and different number of cells is defined in the following sections.

The requirements in section 9 are applicable for a UE performing measurements according to this section.

The received CPICH E_c/I_o is defined as

$$\left(\frac{CPICH\_E_c}{I_o}\right)_{in\ dB} = \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} - \left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB}$$

and the received SCH E_c/I_o is defined as

$$\left(\frac{SCH\_E_c}{I_o}\right)_{in\ dB} = \left(\frac{SCH\_E_c}{I_{or}}\right)_{in\ dB} - \left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB}$$

8.1.2.2 FDD intra frequency measurements

During the CELL_DCH state the UE shall continuously measure detected intra frequency cells and search for new intra frequency cells in the monitoring set. In case the network requests the UE to report unlisted cells, the UE shall also search for intra frequency cells outside the monitored set. If compressed mode pattern sequences are activated, intra frequency measurements can be performed between the transmission gaps simultaneously for data reception from the active set cell/s.

8.1.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{identify\ intra} = Max\left\{800, T_{basic\ identify\ FDD,\ intra} \cdot \frac{T_{Measurement\ Period,\ Intra}}{T_{Intra}}\right\} ms$$

when CPICH Ec/Io > -20 dB, SCH_Ec/Io > -20 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

8.1.2.2.2 UE CPICH measurement capability

In the CELL_DCH state the measurement period for intra frequency measurements is 200 ms. When no transmission gap pattern sequence is activated, the UE shall be capable of performing CPICH measurements for 8 detected intra-frequency cells and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When one or more transmission gap pattern sequences are activated, the UE shall be capable of performing CPICH measurements for at least~~the~~ $Y_{measurement\ intra}$ ~~strongest~~ cells , where $Y_{measurement\ intra}$ is defined in the following equation~~:~~. The detectable cells, that were not measured during that measurement period, shall be measured in the following measurement periods. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2.

$$Y_{measurement\ intra} = Floor\left\{X_{basic\ measurement\ FDD} \cdot \frac{T_{Intra}}{T_{Measurement\ Period,\ Intra}}\right\} cells$$

$X_{basic\ measurement\ FDD}$ = 8 (cells)

$T_{Measurement\_Period\ Intra}$ = 200 ms. The measurement period for Intra frequency CPICH measurements.

T_{Intra} : This is the minimum time that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing.

$T_{basic\_identify\_FDD,\ intra}$ = 800~~TBD~~ ms. This is the time period used in the intra frequency equation where the maximum allowed time for the UE to identify a new FDD cell is defined.

~~Note: It is still under consideration how to incorporate a time needed for adjusting asynchronous timing between intra and inter frequency measurement periods and UE HW settling time into the equations.~~

8.1.2.2.3 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.2.4 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.2.3 Event Triggered Reporting.

8.1.2.2.5 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

Editors Note: The test cases in section A.8 will need revisions to reflect the general requirements.

The event triggered measurement reporting delay, measured without L3 filtering, shall be less than ~~the above defined~~ $T_{identify\ intra}$ defined in Section 8.1.2.2.1.

If a cell, which the UE has detected and measured ~~without L3 filtering~~ at least once over the measurement period, becomes undetectable for a period < 5 seconds and then the cell becomes detectable again and triggers an event, the measurement reporting delay shall be less than ~~[~~$T_{Measurement\_Period\ Intra}$ ~~]~~ ms provided the timing to that cell has not changed more than +/-32 chips and L3 filtering has not been used. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period $T_{identify\ intra}$ and then enters the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement\ Period\ Intra}$ when the L3 filter has not been used.

8.1.2.3 FDD inter frequency measurements

In the CELL_DCH state when a transmission gap pattern sequence with the "FDD measurements" purpose ~~and gap lengths of 5, 7, 10 or 14 slots~~ is provided by the network the UE shall continuously measure detected inter frequency cells and search for new inter frequency cells indicated in the measurement control information.

In order for the requirements in the following subsections to apply the UTRAN must provide a transmission gap pattern sequence with measurement purpose FDD measurement using the following combinations for TGL1, TGL2 and TGD:

TGL1 [slots]	**TGL2** [slots]	**TGD** [slots]
7	-	undefined
14	-	undefined
10	-	undefined
7	7	15…269
14	14	15…269
10	5	15…269

8.1.2.3.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{identify\ inter} = Max\left\{5000, T_{basic\ identify\ FDD,inter} \cdot \frac{T_{Measurement\ Period,\ Inter}}{T_{Inter}} \cdot N_{Freq}\right\} ms$$

when CPICH Ec/Io > -20 dB, SCH Ec/Io > -17 dB and SCH Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

8.1.2.3.2 Measurement period

When transmission gaps are scheduled for FDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1 and 9.1.2 with measurement period given by

~~$$T_{measurement\ inter} = Max\left\{480, T_{basic\ measurement\ FDD\ inter} \cdot \frac{T_{Measurement\ Period,\ Inter}}{T_{Inter}} \cdot N_{Freq}\right\} ms$$~~

$$T_{measurement\ inter} = Max\left\{T_{Measurement\_Period\ Inter}, T_{basic\ measurement\ FDD\ inter} \cdot \frac{T_{Measurement\_Period\ Inter}}{T_{Inter}} \cdot N_{Freq}\right\} ms$$

If the UE does not need compressed mode to perform inter-frequency measurements, the measurement period for inter frequency measurements is 480 ms.

$T_{Measurement\_Period\ Inter}$ = 480 ms. The period used for calculating the measurement period $T_{measurement\_inter}$ for inter frequency CPICH measurements.

T_{Inter}: This is the minimum time as full slots that is available for inter frequency measurements , during the period $T_{Measurement\_Period\ inter}$ with an arbitrarily chosen timing. The minimum time is calculated by using the actual idle length within the transmission gap as given in the table 11 of Annex B in TS 25.212 and by assuming 2*0.5 ms for implementation margin.

$T_{basic\_identify\_FDD,inter}$ = 800~~TBD~~ ms. This is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new FDD cell is defined.

$T_{basic\_measurement\_FDD\ inter}$ = 50~~TBD~~ ms. This is the time period used in the equation for defining the measurement period for inter frequency CPICH measurements.

N_{Freq}: Number of FDD frequencies indicated in the inter frequency measurement control information.

~~Note: It is still under consideration how to incorporate a time needed for adjusting asynchronous timing between intra and inter frequency measurement periods and UE HW settling time into the equations.~~

8.1.2.3.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.3.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than ~~the above defined~~ $T_{identify\ inter}$ defined in Section 8.1.2.3.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period $T_{identify\_inter}$ and then enters the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement\_Period\ Inter}$ provided the timing to that cell has not changed more than +/-32 chips while transmission gap has not been available and the L3 filter has not been used.

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NEXT MODIFIED SECTIONS

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9 Measurements Performance Requirements

One of the key services provided by the physical layer is the measurement of various quantities which are used to trigger or perform a multitude of functions. Both the UE and the UTRAN are required to perform a variety of measurements. The physical layer measurement model and a complete list of measurements is specified in TS25.302 "Services Provided by Physical Layer". The physical layer measurements for FDD are described and defined in TS25.215 “Physical layer - Measurements (FDD)”. In this clause for each measurement the relevant requirements on the measurement period, reporting range, granularity and performance in terms of accuracy are specified.

The accuracy requirements in this clause are applicable for AWGN radio propagation conditions.

9.1 Measurement Performance for UE

The requirements in this clause are applicable for a UE:

- in state CELL_DCH and state CELL_FACH.
- performing measurements according to section 8.
- that is synchronised to the cell that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is refered to as point B in the measurement model described in TS25.302.

The accuracy requirements in this clause are valid for the reported measurement result after layer 1 filtering. The accuracy requirements are verified from the measurement report at point D in the measurement model having the layer 3 filtering disabled.

Note: The synchronisation channel side condition for the requirements in this section to apply needs to be further clarified.

Note: It needs to be clarified how the accuracy requirements shall be handled when the UE is measuring on cells using IPDL.

Note: Currently the measurement periods for UE measurements in CELL_FACH state are missing. This needs to be clarified when the requirements in section 8.3 Measurements in CELL_FACH State are completed.

Note: The measurement period for the measurement Observed time difference to GSM cell needs to be clarified when the requirements for that measurement is completed in section 8.

9.1.1 CPICH RSCP

Note: This measurement is for handover evaluation, DL open loop power control, UL open loop power control and for the calculation of pathloss.

9.1.1.1 Intra frequency measurements accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.1.

9.1.1.1.1 Absolute accuracy requirement

The accuracy requirements in table 9-1 are valid under the following conditions:

- CPICH_RSCP1 ≥ -114 dBm.

- $\left|\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} \leq 20dB$

- ~~$\left|\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB} - \left(\frac{SCH\_E_c}{I_{or}}\right)_{in\ dB} \leq XdB$~~

Table 9-1: CPICH_RSCP Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_RSCP	dBm	± 6	± 9	-94...-70
	dBm	± 8	± 11	-94...-50

9.1.1.1.2 Relative accuracy requirement

The relative accuracy of CPICH RSCP is defined as the CPICH RSCP measured from one cell compared to the CPICH RSCP measured from another cell on the same frequency

The accuracy requirements in table 9-2 are valid under the following conditions:

- *CPICH_RSCP1,2* ≥ -114 dBm.

- $\left|CPICH\_RSCP1\right|_{in\ dB} - CPICH\_RSCP2\left|_{in\ dB}\right| \leq 20dB$

- $\left|\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} \leq 20dB$

- ~~$\left|\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB} - \left(\frac{SCH\_E_c}{I_{or}}\right)_{in\ dB} \leq XdB$~~

Table 9-2: CPICH_RSCP Intra frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_RSCP	dBm	± 3	± 3	-94...-50

9.1.1.2 Inter frequency measurement accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2.

9.1.1.2.1 Relative accuracy requirement

The relative accuracy of CPICH RSCP in inter frequency case is defined as the CPICH RSCP measured from one cell compared to the CPICH RSCP measured from another cell on a different frequency.

The accuracy requirements in table 9-3 are valid under the following conditions:

- *CPICH_RSCP1,2* ≥ -114 dBm.

- $\left|CPICH\_RSCP1\right|_{in\ dB} - CPICH\_RSCP2\left|_{in\ dB}\right| \leq 20dB$

- | *Channel 1_Io -Channel 2_Io*| ≤ 20 dB.
- $\left.\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} \leq 20dB$
- ~~$\left.\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB} - \left(\frac{SCH\_E_c}{I_{or}}\right)_{in\ dB} \leq XdB$~~

Table 9-3: CPICH_RSCP Inter frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_RSCP	dBm	± 6	± 6	-94...-50

9.1.1.3 CPICH RSCP measurement report mapping

The reporting range is for *CPICH RSCP* is from 115 ...-25 dBm.

In table 9-4 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9-4

Reported value	Measured quantity value	Unit
CPICH_RSCP_LEV _00	CPICH RSCP <-115	dBm
CPICH_RSCP_LEV _01	-115 ≤ CPICH RSCP < -114	dBm
CPICH_RSCP_LEV _02	-114 ≤ CPICH RSCP < -113	dBm
…	…	…
CPICH_RSCP_LEV _89	-27 ≤ CPICH RSCP < -26	dBm
CPICH_RSCP_LEV _90	-26 ≤ CPICH RSCP < -25	dBm
CPICH_RSCP_LEV _91	-25 ≤ CPICH RSCP	dBm

9.1.2 CPICH Ec/Io

Note: This measurement is for Cell selection/re-selection and for handover evaluation.

9.1.2.1 Intra frequency measurements accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.1.

9.1.2.1.1 Absolute accuracy requirement

The accuracy requirements in table 9-5 are valid under the following conditions:

- *CPICH_RSCP1* ≥ -114 dBm.
- $\left.\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} \leq 20dB$
- ~~$\left.\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB} - \left(\frac{SCH\_E_c}{I_{or}}\right)_{in\ dB} \leq XdB$~~

Table 9-5: CPICH_Ec/Io Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	dB	± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-94...-50

9.1.2.1.2 Relative accuracy requirement

The relative accuracy of CPICH Ec/Io is defined as the CPICH Ec/Io measured from one cell compared to the CPICH Ec/Io measured from another cell on the same frequency.

The accuracy requirements in table 9-6 are valid under the following conditions:

- *CPICH_RSCP1,2* ≥ -114 dBm.
- $\left| CPICH\_RSCP1 \right|_{in\ dB} - CPICH\_RSCP2 \left|_{in\ dB} \right| \le 20dB$
- $\left(\frac{I_o}{\hat{I}_{or}} \right)_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}} \right)_{in\ dB} \le 20dB$
- ~~$\left(\frac{I_o}{\hat{I}_{or}} \right)_{in\ dB} - \left(\frac{SCH\_E_c}{I_{or}} \right)_{in\ dB} \le XdB$~~

Table 9-6: CPICH_Ec/Io Intra frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	dB	± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-94...-50

9.1.2.2 Inter frequency measurement accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2.

9.1.2.2.1 Absolute accuracy requirement

The accuracy requirements in table 9-x are valid under the following conditions:

- *CPICH_RSCP1* ≥ -114 dBm.
- $\left(\frac{I_o}{\hat{I}_{or}} \right)_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}} \right)_{in\ dB} \le 20dB$

Table 9-x: CPICH_Ec/Io Inter frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	dB	± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-94...-50

9.1.2.2.21 Relative accuracy requirement

The relative accuracy of CPICH Ec/Io in the inter frequency case is defined as the CPICH Ec/Io measured from one cell compared to the CPICH Ec/Io measured from another cell on a different frequency

The accuracy requirements in table 9-7 are valid under the following conditions:

- *CPICH_RSCP1,2* ≥ -114 dBm.
- $\left|CPICH\_RSCP1\right|_{in\ dB} - CPICH\_RSCP2\left|_{in\ dB}\right| \le 20dB$
- | *Channel 1_Io -Channel 2_Io*| ≤ 20 dB.
- $\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} \le 20dB$
- ~~$\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{SCH\_E_c}{I_{or}}\right)_{in\ dB} \le XdB$~~

Table 9-7: CPICH_Ec/Io Inter frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	dB	± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16~~± 6~~	± 3~~6~~	-94...-50

3GPP TSG RAN WG4 Meeting #16 **R4-010456**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.133** **CR** **77** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	GSM Measurements
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 2001-02-21
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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.

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)

Reason for change:	⌘	It is unclear for which compressed mode patterns the GSM measurement requirements are valid. Also the initial BSIC identification procedure is only defined for a set of reference compressed mode patterns and a general requirement is missing. It is also unclear what is meant by the term “strongest” GSM cell used in the initial BSIC identification procedure.
Summary of change:	⌘	Compressed mode parameter limitations are defined for GSM measurements. The GSM carrier RSSI sampling capability is revised according to R4-000660. Describe in detail how the initial BSIC identification procedure shall be performed in a similar way as for the BSIC re-confirmation procedure. Clarification that the term “strongest” GSM cell refers to the BCCH carrier having the highest measured GSM carrier RSSI value after layer 3 filtering.
Consequences if not approved:	⌘	If other compressed mode patterns than the reference patterns used in the Initial BSIC identification procedure section is used the performance will not be defined. The GSM BSIC verification procedure will be unclear which may effect handover performance from UTRAN to GSM.

Clauses affected:	⌘	8.1.2.5
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

8.1.2.5 GSM measurements

The requirements in this section apply only to UE supporting FDD and GSM.

In CELL_DCH state when a transmission gap pattern sequence is provided by the UTRAN the UE shall continously measure GSM cells and search for new GSM cells given in the monitored set.

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified.

If BSIC verified is requested for a GSM cell the UE shall only report measurement quantities for that GSM cell with a BSIC "verified" according to section 8.1.2.5.2~~9.2.5.2~~. If BSIC verification is not required for a GSM cell the UE shall report measurement quantities for that GSM cell irrespectively if the BSIC has been verified or not verified according to section 8.1.2.5.2~~9.2.5.2.~~

If the UE does not need compressed mode to perform GSM measurements, the requirements in GSM 05.08 shall apply.

8.1.2.5.1 GSM carrier RSSI

A UE supporting GSM measurements using compressed mode shall meet the minimum number of GSM RSSI carrier measurements specified in Table 8.1. This measurement shall be based on a transmission gap pattern sequence with purpose "GSM carrier RSSI measurements".

In order for the requirements in this subsection to apply the UTRAN must provide a transmission gap pattern sequence with measurement purpose GSM carrier RSSI measurements using the following combinations for TGL1, TGL2 and TGD:

TGL1 [slots]	**TGL2** [slots]	**TGD** [slots]
3	-	undefined
4	-	undefined
5	-	undefined
7	-	undefined
10	-	undefined
14	-	undefined
3	3	15…269
4	4	15…269
5	5	15…269
7	7	15…269
10	10	15…269
14	14	15…269

In the CELL_DCH state the measurement period for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in GSM 05.08, when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Table 8.1

TGL	**Number of GSM carrier RSSI samples in each gap.**
3	1
4	2
5	3
7~~,10,14~~	~~5~~6
10	10
14	15

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

8.1.2.5.2 BSIC verification

In order for the requirements in the following subsections to apply the UTRAN must provide a transmission gap pattern sequence with measurement purpose GSM Initial BSIC identification or with measurement purpose GSM BSIC re-confimation, using the following combinations for TGL1, TGL2 and TGD:

TGL1 [slots]	**TGL2** [slots]	**TGD** [slots]
5	-	undefined
7	-	undefined
10	-	undefined
14	-	undefined
5	5	15…269
7	7	15…269
10	10	15…269
14	14	15…269

The procedure for BSIC verification~~UE measurements~~ on a GSM cell ~~with BSIC verified requested~~ can be divided into the following two tasks:

Initial BSIC identification

Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the FDD and GSM cell. The UE shall trigger the initial BSIC identification within the available transmission gap pattern sequence with purpose “GSM Initial BSIC identification”. The requirements for Initial BSIC identification can be found in 8.1.2.5.2.1.

BSIC re-confirmation

Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available transmission gap pattern sequence with purpose “GSM BSIC re-confirmation”. The requirements for BSIC re-confirmation can be found in 8.1.2.5.2.2.

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The BSIC of a GSM cell is considered to be “verified” if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) and from that moment the BSIC shall be re-confirmed at least once every $T_{re\text{-}confirm\_abort}$ seconds. Otherwise the BSIC of the GSM cell is considered as “non-verified”.

The parameters $N_{identify\_abort}$ and $T_{re\text{-}confirm\_abort}$ are defined by higher layers and are signalled to the UE together with the transmission gap pattern sequence. $N_{identify\_abort}$ indicates the maximum number of patterns that the UE shall use to attempt to decode the unknown BSIC of the GSM cell in the initial BSIC identification procedure. $T_{re\text{-}confirm\_abort}$ indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure.

The UE shall be able to decode a BSIC within a transmission gap when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the effective transmission gap is within the limits specified in table 8.2.

The effective transmission gap is calculated by assuming both UL and DL compressed mode and applying the worst-case values for UL/DL timing offset and pilot field length of last DL gap slot.

Table 8.2: The gap length and maximum time difference for BSIC verification

Gap length [slots]	Maximum time difference [µs]
5	± 500
7	± 1200
~~8~~	~~± 1500~~
10	± 2200
14	± 3500

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in GSM 05.05.

8.1.2.5.2.1 Initial BSIC identification

This measurement shall be based on a transmission gap pattern sequence with the purpose "GSM Initial BSIC identification"

For GSM cells that are requested with BSIC verified the UE shall attempt to decode the BSIC of the SCH on the BCCH carrier of ~~at least~~ the 8~~[6]~~ strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give priority for BSIC decoding~~synchronisation~~ attempts in decreasing signal strength order to BCCH carriers~~GSM cells~~ with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value after layer 3 filtering.

When the UE attempts to decode the BSIC of one GSM BCCH carrier with unknown BSIC, the UE shall use all available transmission gaps, within the transmission gap pattern sequence with the purpose "GSM Initial BSIC identification", to attempt to decode the BSIC from that GSM BCCH carrier.

~~The UE shall be able to perform initial BSIC identification on one new GSM cell, with unknown BSIC, within $N_{identify\_abort}$ patterns of the transmission gap pattern sequence. $N_{identify\_abort}$ values are given for a set of reference patterns in Table 8.2. The number of patterns needed to identify N new GSM cells is N times $N_{identify\_abort}$. $T_{identify\_abort}$ as given in table 8.2 gives information about the time in seconds corresponding to $N_{identify\_abort}$ patterns.~~

~~Table 8.3: The worst-case time for identification of one previously not identified GSM cell~~

	~~TGL1 [slots]~~	~~TGL2 [slots]~~	~~TGD [slots]~~	~~TGPL1 [frames]~~	~~TGPL2 [frames]~~	~~$T_{identify\ abort}$ [s]~~	~~$N_{identify\_abort}$ [patterns]~~
~~Pattern 1~~	~~7~~	~~0~~	~~0~~	~~3~~	~~0~~	~~1.53~~	~~51~~
~~Pattern 2~~	~~7~~	~~0~~	~~0~~	~~8~~	~~0~~	~~5.20~~	~~65~~
~~Pattern 3~~	~~7~~	~~7~~	~~47~~	~~8~~	~~0~~	~~2.00~~	~~25~~
~~Pattern 4~~	~~7~~	~~7~~	~~38~~	~~12~~	~~0~~	~~2.88~~	~~24~~
~~Pattern 5~~	~~14~~	~~0~~	~~0~~	~~8~~	~~0~~	~~1.76~~	~~22~~
~~Pattern 6~~	~~14~~	~~0~~	~~0~~	~~24~~	~~0~~	~~5.04~~	~~21~~
~~Pattern 7~~	~~14~~	~~14~~	~~45~~	~~12~~	~~0~~	~~1.44~~	~~12~~
~~Pattern 8~~	~~10~~	~~0~~	~~0~~	~~12~~	~~0~~	~~2.76~~	~~23~~
~~Pattern 9~~	~~10~~	~~10~~	~~75~~	~~12~~	~~0~~	~~1.56~~	~~13~~
~~Pattern 10~~	~~8~~	~~0~~	~~0~~	~~8~~	~~0~~	~~2.80~~	~~35~~
~~Pattern 11~~	~~8~~	~~0~~	~~0~~	~~4~~	~~0~~	~~1.52~~	~~38~~

If the BSIC of the~~a~~ GSM BCCH carrier~~cell~~ has been successfully decoded~~identified~~ the UE shall immediately continue BSIC identification with the next GSM BCCH carrier~~cell~~, in signal strength order, ~~for at least the [6] strongest GSM cells~~ with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded~~identified~~ the BSIC of the GSM BCCH carrier within $N_{identify\_abort}$ successive patterns, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier~~cell~~. The UE shall continue to try to perform BSIC identification of~~n~~ the next GSM BCCH carrier~~cell~~ in signal strength order. The GSM BCCH carrier~~cell~~ for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 8~~[6]~~ strongest GSM BCCH carriers~~cells with unknown BSIC~~ in the monitored set with unknown BSIC.

$N_{identify\_abort}$ values are given for a set of reference patterns in Table 8.3. $T_{identify\_abort}$ is the elapsed time during $N_{identify\_abort}$ transmission gap patterns (informative). The figures given in table 8.3 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier.

Table 8.3: The worst-case time for identification of one previously not identified GSM cell

	TGL1 [slots]	TGL2 [slots]	TGD [slots]	TGPL1 [frames]	TGPL2 [frames]	$T_{identify\ abort}$ [s]	$N_{identify\_abort}$ [patterns]
Pattern 1	7	-	undefined	3	TGPL1	1.53	51
Pattern 2	7	-	undefined	8	TGPL1	5.20	65
Pattern 3	7	7	47	8	TGPL1	2.00	25
Pattern 4	7	7	38	12	TGPL1	2.88	24
Pattern 5	14	-	undefined	8	TGPL1	1.76	22
Pattern 6	14	-	undefined	24	TGPL1	5.04	21
Pattern 7	14	14	45	12	TGPL1	1.44	12
Pattern 8	10	-	undefined	12	TGPL1	2.76	23
Pattern 9	10	10	75	12	TGPL1	1.56	13

8.1.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of ~~at least~~ 8~~[6]~~ identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each transmission gap of a transmission gap pattern sequence with the measurement purpose "GSM BSIC re-confimation", the UE shall attempt to decode the BSIC falling within the effective gap duration. If more than one BSIC can be decoded within the same gap, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts or if the UE has not been able to re-confirm the BSIC for a GSM cell within $T_{re\text{-}confirm\_abort}$ seconds, the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see section 8.1.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 8~~[6]~~ strongest GSM cells in the monitored list.

$N_{re\text{-}confirm\_abort}$ is the number of transmission gap patterns executed during $T_{re\text{-}confirm\_abort}$ (informative).

Table 8.4: The worst-case time for BSIC re-confirmation of one GSM cell

	TGL1 [slots]	TGL2 [slots]	TGD [slots]	TGPL1 [frames]	TGPL2 [frames]	$T_{re\text{-}confirm\_abort}$ [s]	$N_{re\text{-}confirm\_abort}$ [patterns]
Pattern 1	7	~~0~~	undefined ~~0~~	3	TGPL1~~0~~	1.29	43
Pattern 2	7	~~0~~	undefined ~~0~~	8	TGPL1~~0~~	4.96	62
Pattern 3	7	~~0~~	undefined ~~0~~	15	TGPL1~~0~~	7.95	53
Pattern 4	7	7	69	23	TGPL1~~0~~	9.89	43
Pattern 5	7	7	69	8	TGPL1~~0~~	2.64	33
Pattern 6	14	~~0~~	undefined ~~0~~	8	TGPL1~~0~~	1.52	19
Pattern 7	14	14	60	8	TGPL1~~0~~	0.80	10
Pattern 8	10	~~0~~	undefined ~~0~~	8	TGPL1~~0~~	1.76	22
Pattern 9	10	~~0~~	undefined ~~0~~	24	TGPL1~~0~~	4.80	20
~~Pattern 10~~	~~8~~	~~0~~	~~0~~	~~8~~	~~0~~	~~2.56~~	~~32~~
~~Pattern 11~~	~~8~~	~~0~~	~~0~~	~~23~~	~~0~~	~~7.82~~	~~34~~
Pattern 10~~2~~	7	7	47	8	TGPL1~~0~~	1.76	22
Pattern 11~~3~~	7	7	38	12	TGPL1~~0~~	2.64	22
Pattern 12~~4~~	14	~~0~~	undefined ~~0~~	24	TGPL1~~0~~	4.80	20
Pattern 13~~5~~	14	14	45	12	TGPL1~~0~~	1.20	10
Pattern 14~~6~~	10	~~0~~	undefined ~~0~~	12	TGPL1~~0~~	2.52	21
Pattern 15~~7~~	10	10	75	12	TGPL1~~0~~	1.32	11
~~Pattern 18~~	~~8~~	~~0~~	~~0~~	~~4~~	~~0~~	~~1.28~~	~~32~~

~~Note: This table will be removed after inclusion in TR 25.922.~~

3GPP TSG RAN WG4 Meeting #16 **R4-010455**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **TS25.133 CR 78** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Cell reselection performance
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 23-02-2001
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
- ***F*** *(essential 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.

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)*

Reason for change:	⌘	Cell reselection criteria in TS25.304 cause additional inaccuracy into cell reselection.
Summary of change:	⌘	Clarification is included into Section 4.2.2.
Consequences if not approved:	⌘	Performance requirements are not valid for the cell reselection criteria defined in TS25.304.

Clauses affected:	⌘	4.2.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☒ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

4 Idle Mode Tasks

Cell selection delays are applicable when the repetition period of all relevant system information blocks is not more than 1280 ms.

Cell reselection delays are applicable when the repetition period of all relevant system information blocks is not more than 1280 ms and the length of DRX cycle is not longer than 640 ms.

4.1 Cell Selection

4.1.1 Introduction

After a UE has switched on and a PLMN has been selected, the Cell selection process takes place, as described in TS25.304. This process allows the UE to select a suitable cell where to camp on in order to access available services. In this process the UE can use stored information (*Stored information cell selection*) or not (*Initial cell selection*).

4.2 Cell Re-selection

4.2.1 Introduction

The cell reselection procedure allows the UE to select a more suitable cell and camp on it.

When the UE is in *Camped Normally* state on a FDD cell, UE shall attempt to detect, synchronise, and monitor intra-frequency, inter-frequency and inter-RAT cells indicated in the measurement control system information of the serving cell. UE measurement activity is also controlled by measurement rules defined in TS25.304, allowing the UE to limit its measurement activity if certain conditions are fulfilled.

4.2.2 Requirements

The cell reselection requirements in the following sections are valid when the mapping function defined is TS25.304 is not used. The cell reselection requirements do not include any inaccuracy caused by the quantization of the measurement quantity defined in the cell reselection criteria in TS25.304.

4.2.2.1 Measurement and evaluation of cell selection criteria S of serving cell

The UE shall measure the CPICH Ec/Io and CPICH RSCP level of the serving cell and evaluate the cell selection criterion S defined in TS25.304 for the serving cell at least every DRX cycle. The UE shall filter the CPICH Ec/Io and CPICH RSCP measurements of the serving cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureFDD}/2$ (see table 4.1).

If the UE has evaluated in N_{serv} consecutive DRX cycles that the serving cell does not fulfil the cell selection criterion S, the UE shall initiate the measurements of all neighbour cells indicated in the measurement control system information, regardless of the measurement rules currently limiting UE measurement activities.

If the UE has not found any new suitable cell based the on searches and measurements of the neighbour cells indicated in the measurement control system information for [TBD] s, the UE shall initiate cell selection procedures for the selected PLMN as defined in TS25.304.

3GPP TSG RAN WG4 Meeting #16 R4-010331

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.133** **CR** **79** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	CPICH Ec/Io mapping
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 2001-02-15
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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.

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)

Reason for change:	⌘	The numbering of the mapping for the CPICH Ec/Io measurement is wrong.
Summary of change:	⌘	Correct the numbering of the mapping of CPICH Ec/Io measurement.
Consequences if not approved:	⌘	The numbering of the mapping for the CPICH Ec/Io measurement will be wrong.

Clauses affected:	⌘	9.1.2.3
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

9.1.2.3 CPICH Ec/Io measurement report mapping

The reporting range is for *CPICH Ec/Io* is from -24 ...0 dB.

In table 9-8 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9-8

Reported value	Measured quantity value	Unit
CPICH_Ec/No _00	CPICH Ec/Io < -24	dB
CPICH_Ec/No _01	-24 ≤ CPICH Ec/Io < -23.5	dB
CPICH_Ec/No _02	-23.5 ≤ CPICH Ec/Io < -23	dB
…	…	…
CPICH_Ec/No _47~~8~~	-1 ≤ CPICH Ec/Io < -0.5	dB
CPICH_Ec/No _48~~9~~	-0.5 ≤ CPICH Ec/Io < 0	dB
CPICH_Ec/No _49~~50~~	0 ≤ CPICH Ec/Io	dB

3GPP TSG RAN WG4 Meeting #16 **R4-010255**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **TS25.133 CR 80** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network ☐

Title:	⌘	UTRAN transport channel BLER measurement
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 19 Feb 2001
Category:	⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
F *(essential 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.

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)

Reason for change:	⌘	Inconsistency between specifications
Summary of change:	⌘	Transport channel BLER measurement has been removed from TS25.215 already in TSG RAN #8 (see 25215CR066 in RP-000270 and R1-000797. This CR aligns TS25.215 and TS25.133 in this respect and removes Transport channel BLER measurement also from TS25.133
Consequences if not approved:	⌘	Discrepancy between specifications

Clauses affected:	⌘	9.2.6
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

9.2.6 ~~Transport channel BLER~~ (void)

~~The measurement period shall be equal to the [TTI] of the transport channel.~~

~~9.2.6.1 Accuracy requirement~~

~~**Table 9-44**~~

~~Parameter~~	~~Unit~~	~~Accuracy~~	~~Conditions~~ ~~Range~~
~~BLER~~	~~-~~		

~~9.2.6.2 Transport channel BLER measurement report mapping~~

~~The *Transport channel BLER* reporting range is from 0 to 1.~~

~~In table 9-45 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.~~

~~**Table 9-45**~~

~~Reported value~~	~~Measured quantity value~~	~~Unit~~
~~BLER_LOG_00~~	~~Transport channel BLER = 0~~	~~-~~
~~BLER_LOG_01~~	~~$-\infty <$ Log10(Transport channel BLER) < -4.03~~	~~-~~
~~BLER_LOG_02~~	~~$-4.03 \leq$ Log10(Transport channel BLER) < -3.965~~	~~-~~
~~BLER_LOG_03~~	~~$-3.965 \leq$ Log10(Transport channel BLER) < -3.9~~	~~-~~
~~…~~	~~…~~	~~…~~
~~BLER_LOG_61~~	~~$-0.195 \leq$ Log10(Transport channel BLER) < -0.13~~	~~-~~
~~BLER_LOG_62~~	~~$-0.13 \leq$ Log10(Transport channel BLER) < -0.065~~	~~-~~
~~BLER_LOG_63~~	~~$-0.065 \leq$ Log10(Transport channel BLER) ≤ 0~~	~~-~~

9.2.7 Physical channel BER

The measurement period shall be equal to the TTI of the transport channel, to which the Physical channel BER is associated via the IE QE-Selector, see TS 25.433 section 9.2.2.58 QE-Selector. Each reported Physical channel BER measurement shall be an estimate of the BER averaged over one measurement period only.

9.2.7.1 Accuracy requirement

The average of consecutive Physical channel BER measurements is required to fulfil the accuracy stated in table 9-46 if the total number of erroneous bits during these measurements is at least 500 and the absolute BER value for each of the measurements is within the range given in table 9-46.

Table 9-46

Parameter	Unit	Accuracy [% of absolute BER value]	Conditions Range
PhyBER	-	+/- 10	for absolute BER value ≤ 30%

9.2.7.2 Physical channel BER measurement report mapping

The *Physical channel BER* reporting range is from 0 to 1.

3GPP TSG RAN WG4 Meeting #16 **R4-010256**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **TS25.133 CR 81** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network ☐

Title:	⌘	UTRAN physical channel BER measurement
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 19 Feb 2001
Category:	⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
- ***F*** *(essential 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.

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)*

Reason for change:	⌘	Inconsistency between specifications.
Summary of change:	⌘	Explicit reference has been removed from 25.133
Consequences if not approved:	⌘	Inconsistency between specifications.

Clauses affected:	⌘	9.2.7
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

9.2.6 Transport channel BLER

The measurement period shall be equal to the [TTI] of the transport channel.

9.2.6.1 Accuracy requirement

Table 9-44

Parameter	Unit	Accuracy	Conditions
			Range
BLER	-		

9.2.6.2 Transport channel BLER measurement report mapping

The *Transport channel BLER* reporting range is from 0 to 1.

In table 9-45 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9-45

Reported value	Measured quantity value	Unit
BLER_LOG _00	Transport channel BLER = 0	-
BLER_LOG _01	$-\infty <$ Log10(Transport channel BLER) < -4.03	-
BLER_LOG _02	-4.03 ≤ Log10(Transport channel BLER) < -3.965	-
BLER_LOG _03	-3.965 ≤ Log10(Transport channel BLER) < -3.9	-
…	…	…
BLER_LOG _61	-0.195 ≤ Log10(Transport channel BLER) < -0.13	-
BLER_LOG _62	-0.13 ≤ Log10(Transport channel BLER) < -0.065	-
BLER_LOG _63	-0.065 ≤ Log10(Transport channel BLER) ≤ 0	-

9.2.7 Physical channel BER

The measurement period shall be equal to the TTI of the transport channel, to which the Physical channel BER is associated via the IE QE-Selector, see TS 25.433 ~~section 9.2.2.58 QE-Selector~~. Each reported Physical channel BER measurement shall be an estimate of the BER averaged over one measurement period only.

9.2.7.1 Accuracy requirement

The average of consecutive Physical channel BER measurements is required to fulfil the accuracy stated in table 9-46 if the total number of erroneous bits during these measurements is at least 500 and the absolute BER value for each of the measurements is within the range given in table 9-46.

Table 9-46

Parameter	Unit	Accuracy [% of absolute BER value]	Conditions
			Range
PhyBER	-	+/- 10	for absolute BER value ≤ 30%

9.2.7.2 Physical channel BER measurement report mapping

The *Physical channel BER* reporting range is from 0 to 1.

3GPP TSG RAN WG4 Meeting #16 **R4-010298**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.133** **CR** **82** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM [ ] ME/UE [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	Test case for FDD/TDD cell re-selection .
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 23-26 Jan2001
Category:	⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
- ***F*** *(essential correction)*
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- ***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.

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)*

Reason for change:	⌘	Introduction of missing test case.
Summary of change:	⌘	Adding a new subsection A.4.x
Consequences if not approved:	⌘	Requirement without corresponding test-case.

Clauses affected:	⌘	
Other specs affected:	⌘	[ ] Other core specifications ⌘
		[ ] Test specifications
		[ ] O&M Specifications
Other comments:	⌘	

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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.

A.4.x.1 FDD/TDD cell re-selection

A.4.x.1.1 Test Purpose and Environment

This test is to verify the requirement for the FDD/TDD cell re-selection delay reported in section 4.2.2.
This scenario implies the presence of 1 FDD and 1 TDD cell as given in Table A.4-x and A.4-y.

The ranking of the cells shall be made according to the cell reselection critera specified in TS25.304.
For this test environement the ranking/mapping function indicated in the broadcast of cell 1 shall be in such a way as to enable the UE to evaluate that the FDD cell 1 is better ranked as the TDD cell 2 during T1 and the TDD cell 2 is better ranked than the FDD cell 1, indicating a cell re-selection according to section 4.2.2.4 during T2.

Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4-x: General test parameters for the FDD/TDD cell re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	FDD cell
	Neighbour cells		Cell2	TDD cell
Final condition	Active cell		Cell2	
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
DRX cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	15	Cell 1 better ranked than cell 2
T2		s	15	Cell2 better ranked than cell 1

Table Table A.4-y: FDD/TDD cell re-selection

Parameter	Unit	Cell 1		Cell 2			
Timeslot Number		n.a	n.a.	0		8	
		T 1	**T 2**	**T1**	**T2**	**T 1**	**T 2**
UTRA RF Channel Number		Channel 1		Channel 2			
CPICH_Ec/Ior	dB	-10	-10	n.a.		n.a.	
PCCPCH_Ec/Ior	dB	-12	-12	-3	-3		
SCH_Ec/Ior	dB	-12	-12	-9	-9	-9	-9
SCH_t_{offset}		n.a.	n.a.	0	0	0	0
PICH_Ec/Ior		-15	-15			-3	-3
OCNS	dB	-0,941	-0,941	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	3	-2	-2	3	-2	3
I_{oc}	dBm/3.84 MHz	-70					
CPICH_RSCP	dBm	-77	-82	n.a.		n.a.	
PCCPCH_RSCP	dBm	n.a.	n.a.	-75	-70		
Cell_reselection_and quality_measure		*CPICH_RSCP*					

Treselection	s	0		0
Propagation Condition		AWGN		AWGN

NOTE:
The purpose of this test case is to evaluate the delay of the FDD/TDD re-selection process, it is not intended to give reasonable values for a FDD/TDD cell re-selection.

A.4.x.1.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.
The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateTDD}$ + T_{SI}, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1 in section 4.2.2.7.

T_{SI} Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

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CHANGE REQUEST

⌘ **25.133** **CR** **83** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Requirements for event triggered reporting in fading conditions
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 2001-02-15
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

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2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	There is currently no requirement text in section A.8.1.4 Correct reporting of neighbours in fading propagation condition.
Summary of change:	⌘	The CR proposes requirement text for section A.8.1.4 Correct reporting of neighbours in fading propagation condition.
Consequences if not approved:	⌘	There will not be a test case that verifies that the UE performs sufficient layer 1 filtering of the measurements which are the base for the event evaluation

Clauses affected:	⌘	A.8.1.4
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

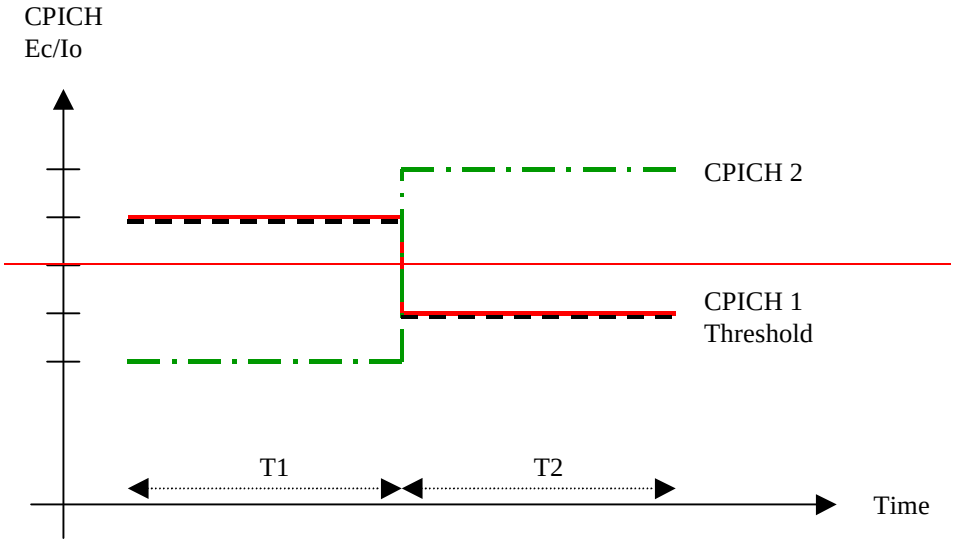
A.8.1.4 Correct reporting of neighbours in fading propagation condition

A.8.1.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs sufficient layer 1 filtering of the measurements, see section 9.1, which are the base for the event evaluation. The test is performed in fading propagation conditions. This test will partly verify the requirements in section 8.1.2.

The test parameters are given in Table A.8-7 and A.8-8.In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and Event 1B shall be used. The test consists of two successive time periods, each with a time duration of T1 and T2 respectively.

The TTI of the uplink DCCH shall be 20ms.



~~Figure A.8-1: Illustration of the test case~~

Table A.8-7: General test parameters for correct reporting of neighbours in fading propagation condition

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cell		Cell 1	
Reporting range	dB	0	Applicable for event 1A and 1B
Hysteresis	dB	0	
W		1	Applicable for event 1A and 1B
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	ms	120	
Filter coefficient		0	
Monitored cell list size		24	Signalled before time T1.
T1	s	~~{~~200~~}~~	
T2	s	~~{~~2010~~}~~	

Table A.8-8: Cell specific test parameters for correct reporting of neighbours in fading propagation condition

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
CPICH_Ec/Ior	dB	-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12	
SCH_Ec/Ior	dB	-12		-12	
PICH_Ec/Ior	dB	-15		-15	
DPCH_Ec/Ior	dB	-17		N/A	
OCNS		-1.049~~386~~		-0.941~~1.286~~	
$\hat{I}_{or}/I_{oc}$	dB	7.29~~3.06~~	3.29~~7.77~~	3.29~~0.06~~	7.29~~10.77~~
I_{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/Io	dB	-12~~3~~	-16~~5~~	-16	-12
Propagation Condition	Case 5 as specified in Annex B of TS25.101				

A.8.1.4.2 Test Requirements

The number of received event 1A reports during time period T1 shall be less than 60.

During the first 1 s of time period T2 no event reports shall be counted.

The number of received event 1B reports counted from 1s after the beginning of time period T2 until the end of time period T2 shall be less than 60.

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CHANGE REQUEST

⌘ **25.133** **CR** **84** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Modification of soft handover requirements
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 19-23 Feb 2001
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
- ***F*** *(essential 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.

Use one of the following releases:

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R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	This contribution proposes modification of the soft handover requirements, to make sure that the data flow is not interrupted when an ACTIVE SET UPDATE is commanded.
Summary of change:	⌘	Brackets are removed, one sentence regarding interruption time is added.
Consequences if not approved:	⌘	Requirements on soft handover are incomplete.

Clauses affected:	⌘	5.1
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

5.1 FDD/FDD Soft Handover

5.1.1 Introduction

Soft handover is a function in which the UE is connected to several UTRAN access points at the same time. Addition and/or release of radio links are controlled by the ACTIVE SET UPDATE procedure.

The soft handover function includes a measurement phase, a decision algorithm in UTRAN and the ACTIVE SET UPDATE procedure.

5.1.2 Requirements

5.1.2.1 Active set dimension

The UE shall be capable of supporting at least ~~[~~6~~]~~ radio links in the active set.

5.1.2.2 Active set update delay

The active set update delay is defined as the time from when the UE has received the ACTIVE SET UPDATE message from UTRAN, or at the time stated through the activation time when to perform the active set update, to the time when the UE successfully uses the set of radio links stated in that message for power control.

The active set update delay is depending on the number of known cells referred to in the ACTIVE SET UPDATE message. A cell is known if either:

- the UE has had radio links connected to the cell in the previous (old) active set, or
- the cell has been ~~reported~~ measured by the UE ~~in a measurement report~~ during the last ~~[~~5~~]~~ seconds.

and the phase reference is the primary CPICH.

The active set update delay shall be less than ~~[~~50~~]~~+~~[~~10~~]~~*KC+~~[~~100~~]~~*OC ms, where

KC is the number of known cells in the active set update message.

OC is the number of cells that are not known in the active set update message.

If the UE have radio links in the active set that it can not use for data detection (due to low signal level), the UE shall at least every ~~[~~150~~]~~ ms search for the radio link ~~and start to use it as soon as it is found.~~.

~~Editor's note: The wording of the last sentence might need reformulation.~~

5.1.2.3 Interruption Time

The UE shall not interrupt the data flow when adding, changing or removing radio links to the active set.

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CHANGE REQUEST

⌘ **25.133** **CR** **85** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☒ Core Network ☐

Title:	⌘	Clarifications of TDD measurements and the use of compressed mode pattern for TDD measurements.
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 19-23 Feb, 2001
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
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- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

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R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	Unfinished requirements for TDD measurements; Clarification on the use of compressed mode patterns for TDD measurements; definition of side conditions
Summary of change:	⌘	Deletion of TBD/unfinished requirements for the purpose TDD measurement, introduction of side conditions. Changes on the compressed mode patterns for the purpose of TDD measurements were made after the table in TS25.215 was deleted, this changes should be stated in the same way in TS25.133 as for the GSM and FDD inter-frequency measurements
Consequences if not approved:	⌘	Unfinished requirements. Unclear which compressed mode pattern are required and mandatory for the purpose TDD inter-frequency measurements.

Clauses affected:	⌘	8.1.2.4
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

8.1.2.4 TDD measurements

The requirements in this section apply only to UE supporting both TDD and FDD mode.
In the CELL_DCH ~~state when a transmission gap pattern sequence with the "TDD measurements" purpose and gap length of 11 or a dual gap pattern with gap length of 14 and 7 slots is provided by the network~~ the UE shall continuously measure detected inter frequency TDD cells and search for new inter frequency cells indicated in the measurement control information.

In order for the requirements in the following subsections to apply the UTRAN must provide a transmission gap pattern sequence with measurement purpose TDD measurement using the following combinations for TGL1, TGL2 and TGD:

TGL1 [slots]	TGL2 [slots]	TGD [slots]
10	-	undefined
10	10	15…269
14	7	15…269

~~The UE shall be capable of measuring the requested measurement quantity of at least 32 cells on a maximum of 3 frequencies.~~

8.1.2.4.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

~~$$T_{identify\ TDD\ inter} = Max\left\{[5]s, T_{basic\ identify\ TDD\ inter} \cdot \frac{T_{Measurement\ Period\ TDD\ inter}}{T_{TDD\ inter}} \cdot N_{Freq}\right\}$$~~

$$T_{identify\ TDD\ inter} = Max\left\{ 5000, T_{basic\ identify\ TDD\ inter} \cdot \frac{T_{Measurement\ Period\ TDD\ inter}}{T_{TDD\ inter}} \cdot N_{Freq}\right\} ms$$

when P-CCPCH Ec/Io ≥ -8 dB, SCH_Ec/Io ≥ -13 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and the sum of all secondary synchronisation codes, where the secondary synchronisation codes are also equally divided. When L3 filtering is used an additional delay can be expected.

where the received P-CCPCH E_c/I_o is defined as

$$\left(\frac{P-CCPCH\_E_c}{I_o}\right)_{in\ dB} = \left(\frac{P-CCPCH\_E_c}{I_{or}}\right)_{in\ dB} - \left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB}$$

and the received SCH E_c/I_o is defined as

$$\left(\frac{SCH\_E_c}{I_o}\right)_{in\ dB} = \left(\frac{SCH\_E_c}{I_{or}}\right)_{in\ dB} - \left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB}$$

8.1.2.4.2 Measurement period

When transmission gaps as pr~~e~~eviously described are scheduled for TDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.11 and 9.z.y with measurement period given by

~~$$T_{measurement\ TDD\ inter} = MAX\left\{[480]ms, T_{basic\ measurement\ TDD\ inter} \cdot \frac{T_{Measurement\ Period\ TDD\ inter}}{T_{TDD\ inter}} \cdot N_{Freq}\right\}$$~~

$$T_{measurement\ inter} = Max\left\{T_{Measurement\_Period\ TDD\ Inter}, T_{basic\ measurement\ TDD\ inter} \cdot \frac{T_{Measurement\_Period\ TDD\ Inter}}{T_{TDD\ Inter}} \cdot N_{Freq}\right\} ms$$

$T_{Measurement\_Period\ TDD\ inter}$ = [~~[~~480~~]~~] ms. The period used for calculating the measurement period $T_{measurement\_TDD\ inter}$ for inter frequency RSCP measurements.

$T_{TDD\ inter}$: This is the minimum time that is available for inter frequency measurements , during the period $T_{Measurement\_Period\ TDD\ inter}$ with an arbitrarily chosen timing. The minimum time is calculated by using the actual idle length within the transmission gap as given in the table 11 of Annex B in TS 25.212~~.~~ and by assuming 2*500 µs for implementation margin.

$T_{basic\_identify\_TDD,inter}$ = [800]~~TBD~~ ms. This is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new TDD cell is defined.

$T_{basic\_measurement\_TDD\ inter}$ = 200~~TBD~~ ms. This is the time period used in the equation for defining the measurement period for inter frequency RSCP measurements.

N_{Freq}~~:~~ Number of TDD frequencies indicated in the inter frequency measurement control information.

8.1.2.4.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.4.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

~~Editors note: The measurement accuracy in combination with event triggered reporting is an open issue and the above sentence shall be revised when this is settled.~~

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report~~from when a report is triggered at the physical layer according to the event,~~ until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH~~.~~. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

~~The measurement reporting delay shall be less then [5] seconds.~~

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify\ inter}$ defined in Section 8.1.2.4.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period $T_{identify\_TDD\ inter}$ and then enters the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement\_Period\ TDD\ Inter}$ when the L3 filter has not been used.

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CHANGE REQUEST

⌘ 25.133 CR 86 ⌘ rev - ⌘ Current version: 3.4.0 ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☒ Core Network ☐

Title:	⌘	UE transmit TIming
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 2001-02-19
Category:	⌘	F ***Release:*** ⌘ R99

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R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	To clarify the test procedures for transmit timing adjustment.
Summary of change:	⌘	1st change is adding sentence to clarify when the cell, which stop sending transmission, is deleted from the active set. 2nd change is adding sentence that UE keep transmit timing when adding a new cell.
Consequences if not approved:	⌘	It is ambiguous when UE start changing transmit timing.

Clauses affected:	⌘	A.7.1.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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.

A.6.2.2.3 Correct behaviour at Time-out

The UE shall stop transmit preambles when reaching the maximum number of preambles allowed in a cycle. The UE shall then repeat the ramping procedure until the maximum number of preamble ramping cycles are reached. No ACK/NACK shall be sent by UTRAN during this test.

The UE shall transmit 2 preambles cycles, consisting of 12 preambles in each preamble cycle.

A.6.2.2.4 Correct behaviour when reaching maximum transmit power

The UE shall not exceed the maximum allowed UL TX power configured by the UTRAN. No ACK/NACK shall be sent by UTRAN during this test.

The absolute power of any preambles belonging to the first or second preamble cycle shall not exceed 0 dBm +/-[] dB (or +/- [] dB in extreme conditions).

A.7 Timing and Signalling Characteristics

A.7.1 UE Transmit Timing

A.7.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are within the specified limits. This test will verify the requirements in section 7.1.2.

For this test two cells on the same frequency are used. Table A.7-1 defines the transmitted signal strengths, the relative timing and the propagation condition used for the two cells.

Table A.7-1: Test parameters for UE Transmit Timing requirement

Parameter	Unit	level
DPCH_Ec/ Ior, Cell 1 and Cell 2	dB	-17
CPICH_Ec/ Ior, Cell 1 and Cell 2	dB	-10
PCCPH_Ec/ Ior, Cell 1 and Cell 2	dB	-12
SCH_Ec/ Ior, Cell 1 and Cell 2	dB	-12
PICH_Ec/ Ior, Cell 1 and Cell 2	dB	-15
OCNS_Ec/ Ior, Cell 1 and Cell 2	dB	-1.05
$\hat{I}_{or,}$ Cell 1	dBm/3.84 MHz	-96
$\hat{I}_{or,}$ Cell 2	dBm/3.84 MHz	-99
Information data rate	kbps	12.2
Relative delay of path received from cell 2 with respect to cell 1	μs	+/-2
Propagation condition	AWGN	

A.7.1.2 Test Requirements

For parameters specified in Table A.7-1, the UE initial transmit timing accuracy, the maximum amount of timing change in one adjustment, the minimum and the maximum adjustment rate shall be within the limits defined in section 7.1.2.

The relevant soft handover parameters shall be set such that the UE enters soft handover with cell 1 and cell 2 when both cells are sending a signal. The following sequence of events shall be used to verify that the requirements are met.

a) After a connection is set up with cell 1, the test system shall verify that the UE transmit timing offset is within T_0 +/- 1.5 chips with respect to the first significant received path of the downlink DPCCH/DPDCH of cell 1. T_0 is defined in [2].

b) Test system introduces cell 2 into the test system at delay +2 µs from cell 1.

c) Test system verifies that cell 2 is added to the active set.

d) Test system shall verify that the UE transmit timing offset is still within T_0 +/- 1.5 chips with respect to the first significant received path of the downlink DPCCH/DPDCH of cell 1.

e) Test system switches Tx timing of cell 2 to a delay of -2 µs with respect to cell 1.

f) Test system verifies cell 2 remains in the active set.

g) Test system shall verify that the UE transmit timing offset is still within T_0 +/- 1.5 chips with respect to the first significant received path of the downlink DPCCH/DPDCH of cell 1.

h) Test system stops sending cell 1 signals.

i) Test system verifies that the UE does not start to adjust its Tx timing to cell 2 before it receives an active set update message notifying the UE that cell 1 shall beis deleted from the active set.

ji) Test system verifies that UE transmit timing adjustment starts with an adjustment step size and an adjustment rate according to the requirements in section 7.1.2 until the UE transmit timing offset is within T_0 +/- 1.5 chips with respect to the first significant received path of the downlink DPCCH/DPDCH of cell 2.

kj) Test system shall verify that the UE transmit timing offset stays within T_0 +/- 1.5 chips with respect to the first significant received path of the downlink DPCCH/DPDCH of cell 2.

lk) Test system starts sending cell 1 signal again with its original timing.

ml) Test system verifies that cell 1 is added to the active set.

n) Testhe system verifiesy that the UE transmit timing is still within T_0 +/- 1.5chips with respect to the first significant path of the downlink DPCCH/DPDCH of cell 2.

om) Test system stops sending cell 2 signals.

p) Test system verifies that the UE does not start to adjust its Tx timing to cell 1 before it receives an active set update message notifying the UE that cell 2 shall beis deleted from the active set.

qn) Test system verifies that UE transmit timing adjustment starts with an adjustment step size and an adjustment rate according to the requirements in section 7.1.2 until the UE transmit timing offset is within T_0 +/- 1.5 chips with respect to the first significant received path of the downlink DPCCH/DPDCH of cell 1.

ro) Test system shall verify that the UE transmit timing offset stays within T_0 +/- 1.5 chips with respect to the first significant received path of the downlink DPCCH/DPDCH of cell 1.

k)

A.7.2 Signalling Response Delay

A.7.2.1 Test Purpose and Environment

This test shall verify that the UE sends a RRC response to the UTRAN within the delay limits specified in section 7.2.2 for all received messages that require a RCC response to be sent to the UTRAN.

For all the tests the TTI for the DCCH shall be set to 40 ms.

NOTE: There should be one test of reconfiguring TFS and TFCS without changing the physical layer. A similar test could then also be made where a new dedicated physical channel activation is included.

A.7.2.2 Test Requirements

Editors note: This requirement should be rewritten, with exact times for the procedures that will be tested.

This signalling response delay shall not exceed the sum of general processing delay and all action delays related to the specific RRC message.

General processing delay shall not exceed 100 ms..

Delay parts related to actions are listed in table A.7.2 below

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Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.133** **CR** **87** ⌘ rev **-** ⌘ Current version: **3.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☒ Core Network ☐

Title:	⌘	Correction of the FDD/TDD handover requirement in connected mode.
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 23-26 Jan2001
Category:	⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
- ***F*** *(essential 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.

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)*

Reason for change:	⌘	The FDD/TDD HO requirement should be described in a similar way as the FDD/FDD HO requirement. The requirements are currently not defined.
Summary of change:	⌘	
Consequences if not approved:	⌘	Inconsistency between specification 25.123 and 25.133, unfinished requirements.

Clauses affected:	⌘			
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

5.3 FDD/TDD Handover

5.3.1 Introduction

The purpose of FDD/TDD hard handover is to change the mode between FDD and TDD. The handover procedure is initiated from UTRAN with a RRC message that implies a hard handover ~~(PHYSICAL CHANNEL RECONFIGURATION, RADIO BEARER SETUP, RADIO BEARER RECONFIGURATION, RADIO BEARER RELEASE, or TRANSPORT CHANNEL RECONFIGURATION)~~, refer to TS25.331.
Compressed mode according to the UE Capability may be used to be able to make any measurements on the other mode.

5.3.2 Requirements

These requirements shall apply only to FDD/TDD UE.

5.3.2.1 Hard handover delay

Procedure delay for all procedures, that can command a hard handover, are specified in [TS25.331 section 11.5].
When the UE receives a RRC message implying hard handover with the activation time "now" or earlier than than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.
If the access is delayed to an indicated activation time later than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH at the designated activation time.
where:
$D_{handover}$ equals the RRC procedure delay defined in TS25.331 Section 13.5.2 plus the interruption time stated in section 5.3.2.2 plus the time required for any kind of baseband or RF reconfiguration due to the change of the UTRAN mode.

~~When the UE receives a RRC message that implies a hard handover, the UE shall start transmission of the new uplink DPCCH within [X ms] from the end of the last TTI containing the RRC command.~~
~~However, if the command includes an indicated activation time, the UE shall start transmission of the new uplink DPCCH at the designated starting time, or within the time interval defined above, whichever is the later.~~

5.3.2.2 Interruption time

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPD~~T~~CH and the time the UE starts transmission of the new uplink DP~~C~~CH ~~.~~, The interruption time shall be less than the value in table 5-3. ~~These requirement do not include a delay due to SFN decoding of the new cell when this is needed.~~ There is different requirement on the interruption time depending on if the cell is known or not.
The definition of known cell is specified in section 5.1.2.2.

Table 5-3: FDD/TDD interruption time

~~Number of new~~ cell~~s~~ present in the handover command message	Interruption time [ms]	
	~~Cells in monitored~~Known cell~~s list and reported to UTRAN~~	Unknown~~Cells outside monitored~~ cell~~s list~~
1	[100]	[350]

The interruption time includes the time that can elapse till the apperance of the channel required for the synchronisation, which can be up to one frame (10ms). And the the time that can elapse till the apperance of the slot in which the new uplink DPCH shall be transmitted , which can be up to one frame (10ms).
The requirement in Table 5-3 for the unknown cell shall apply if the signal quality of the unknown cell is good enough for successful synchronisation with one attempt.
NOTE:
One synchronisation attempt can consist of coherent averaging using several frames.