TSG-RAN Meeting #11 ***RP-010090***
Palm Springs, CA, USA, 13 - 16 March 2001

Title: **Agreed CRs (Release '99) to TS 25.123**

Source: **TSG-RAN WG4**

Agenda item: **5.4.3**

Doc-1st-Level	Spec	CR	Subject	Cat	Status-2nd-Level	Version-Current	Version-New
RP-010090	25.123	35	Deletion of cell-selection requirements	F	agreed	3.4.0	3.5.0
RP-010090	25.123	37	Corrections in idle mode and corresponding test cases.	F	agreed	3.4.0	3.5.0
RP-010090	25.123	38	Section 8 changes	F	agreed	3.4.0	3.5.0
RP-010090	25.123	39	Section 9 Changes	F	agreed	3.4.0	3.5.0
RP-010090	25.123	40	Correction of the cell-reselection and handover requirements in connected mode.	F	agreed	3.4.0	3.5.0
RP-010090	25.123	41	Change and completion of the cell-reselection requirements in CELL-FACH state.	F	agreed	3.4.0	3.5.0
RP-010090	25.123	42	Change of the cell-reselection requirements.	F	agreed	3.4.0	3.5.0
RP-010090	25.123	43	Extension of reporting range for UTRAN UL measurements	F	agreed	3.4.0	3.5.0

3GPP TSG RAN WG4 Meeting #16 **R4-010039**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.123** **CR** **35** ⌘ 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:	⌘	Deletion of cell-selection requirements
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:	⌘	Deletion of unwanted and unfinished requirements.
Summary of change:	⌘	The requirements for cell-selection are deleted.
Consequences if not approved:	⌘	Inconsistency between specification 25.123 and 25.133, definition of unwanted requirements.

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.

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*).

NOTE: At the moment, only requirements for *Stored information cell selection* has been defined.

4.1.2Requirements

4.1.2.1Stored information cell selection delay

The stored information cell selection delay is defined as the time the UE needs for sending the preamble for RRC Connection Request for Location Registration to UTRAN after the power has been switched on with a valid USIM and PIN is disabled.

4.1.2.1.1 The cells in the neighbour list belong to different frequencies

Unless otherwise stated, the cell selection delay shall be equal or less than [X] seconds when the cells in the neighbour list belong to less than [3] frequencies.

4.1.2.1.2 No cell is present in the neighbour list

The cell selection delay shall be equal or less than [5] seconds.

NEXT CHANGED SECTION

A.4.1 Cell selection

NOTE: This section is included for consistency with numbering with section 4; no test covering requirements exist.

Two scenarios are considered:

Scenario 1: The cells in the neighbour list belong to different frequencies

Scenario 2: No cell is present in the neighbour list

For each of them a test is proposed.

NOTE: More scenarios will be added later

A.4.1.1 Scenario 1: the cells in the neighbour list belong to different frequencies

A.4.1.1.1 Test Purpose and Environment

This test is to verify the requirement reported in section 4.1.2.1.1.

This scenario implies the presence of 2 carriers and 6 cells as reported in Table A.4 1 and A.4 2.

The stored information of the last registered PLMN is utilised in this test. The stored information includes one of the UTRA RF CHANNEL NUMBERs used in the test. All the cells in the test are given in the measurement control information of each cell, which are on the RF carrier stored to the UE.

Table A.4 1: General test parameters for Cell Selection in multi carrier case

Parameter		Unit	Value	Comment
Initial condition	Stored RF channel		Channel2	
	Neighbour cells of Cell1		Cell2, Cell3,Cell4, Cell5, Cell6	
	Neighbour cells of Cell2		Cell1, Cell3,Cell4, Cell5, Cell6	
	Neighbour cells of Cell3		Cell1, Cell2,Cell4, Cell5, Cell6	
	Neighbour cells of Cell4		Cell1, Cell2,Cell3, Cell5, Cell6	

	Neighbour cells of Cell5		Cell1, Cell2,Cell3, Cell4, Cell6		
	Neighbour cells of Cell6		Cell1, Cell2,Cell3, Cell4, Cell5		
Final condition	Active cell		Cell1		

Table A.4 2: Cell selection multi carrier case

Parameter	Unit	Cell 1		Cell 2		Cell 3		Cell 4		Cell 5		Cell 6	
UTRA RF Channel Number		Channel 1		Channel 2		Channel 1		Channel 2		Channel 1		Channel 2	
Timeslot Number		0	8	0	8	0	8	0	8	0	8	0	8
PCCPCH_Ec/Ior	dB	-3		-3		-3		-3		-3		-3	
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	5	5	10	10	15	15	20	20	25	25
PICH_Ec/Ior	dB		-3		-3		-3		-3		-3		-3
OCNS	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	10	10	-0,5	-0,5	3	3	-3	-3	-3	-3	-3	-3
I_{oc}	dBm/3,84 MHz	-70											
PCCPCH RSCP	dBm	-63		-73,5		-70		-76		-76		-76	
Propagation Condition		AWGN											
Qmin	dBm	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]
UE_TXPWR_MAX_RACH	dBm	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]

Note: The values are only valid during the active part of SCH. Chip Energy of the other channels remains constant across the burst.

A.4.1.2.2 Test Requirements

The requirements reported in section 4.1.2.1.1 shall be verified in more than [X%] of the cases.

A.4.1.2 Scenario 2 : no cell is present in the neighbour list

A.4.1.2.1 Test Purpose and Environment

This test is to verify the requirement reported in section 4.1.2.1.2.

This scenario implies the presence of 1 carrier and 1 cell as reported in Table A.4 3.

The stored information of the last registered PLMN is utilised in this test. The stored information includes the UTRA RF CHANNEL NUMBER. The active cell in the test does not contain any neighbour cells in its measurement control information.

Table A.4 3: Cell selection single carrier single cell case

Parameter	Unit	Cell 1	
UTRA RF Channel Number		Channel 1	
Timeslot Number		0	8
PCCPCH_Ec/Ior	dB	-3	
SCH_Ec/Ior	dB	-9	-9
SCH_t_{offset}		0	0
PICH_Ec/Ior	dB		-3
OCNS_Ec/Ior	dB	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	0	0
I_{oc}	dBm/3,84 MHz	-70	-70
PCCPCH RSCP	dBm	-73	

~~Propagation Condition~~		~~AWGN~~	~~AWGN~~
~~*Qmin*~~	~~dBm~~	~~[ ]~~	~~[ ]~~
~~*UE_TXPWR_MAX_RACH*~~	~~dBm~~	~~[ ]~~	~~[ ]~~

~~Note: The values are only valid during the active part of SCH. Chip Energy of the other channels remains constant across the burst.~~

~~A.4.1.2.2 Test Requirements~~

~~The requirements reported in section 4.1.2.1.2 shall be verified in more than [X %] of the cases.~~

3GPP TSG RAN WG4 Meeting #16 **R4-010045**

Vienna, Austria 19th - 23rd February 2001

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CHANGE REQUEST

⌘ **25.123** **CR** **36** ⌘ 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:	⌘	NodeB Synchronisation Measurements performance requirements
Source:	⌘	RAN WG4
Work item code:	⌘	RANimp-Nbsync
Date:	⌘	23-26 Jan2001
Category:	⌘	**B**
Release:	⌘	REL-4

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:	⌘	Missing ranges/mappings and accuracy requirements for TDD NodeB Synchronisation Burst Timing and SIR.
Summary of change:	⌘	
Consequences if not approved:	⌘	Unfinished/incomplete requirements

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

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9.2.1.10 Node B Synchronisation

Cell syncronisation burst timing is the time of start (defined by the first detected path in time) of the cell sync burst of a neighbouring cell. Type 1 is used for the initial phase of Node B synchronization. Type 2 is used for the steady-state phase of Node B synchronization. Both have different range.

The reference point for the cell sync burst timing measurement shall be the Rx antenna connector.

9.2.1.10.1 Cell Synchronisation burst timing Type1 and Type 2

Table 9.32

Parameter	**Unit**	**Accuracy [chip]**	**Conditions**
Cell Synchronisation burst timing	chip	[+/-0,5 for both type 1 and type 2]	

9.2.1.10.2 Range/mapping Type 1

The reporting range for Cell Synchronisation burst timing type 1 is from -131072 to +131072 chips with 1/4 chip resolution.
In table 9.33 the mapping of measured quantity is defined for burst type 1.

Table 9.33

Reported value	Measured quantity value	Unit
Burst_TIME__TYPE1_0000000	-131072 ≤ burst timing Type 2< -131071.75	chip
Burst_TIME__TYPE1_0000001	-131071.75 ≤ burst timing Type 2< -131071.5	chip
Burst_TIME__TYPE1_0000002	-131071.5 ≤ burst timing Type 2< -131071.25	chip
…	…	…
Burst_TIME__TYPE1_1048473	-131071.25 ≤ burst timing Type 2< 131071.5	chip
Burst_TIME__TYPE1_1048574	-131071.5 ≤ burst timing Type 2< 131071.75	chip
Burst_TIME__TYPE1_1048575	-131071.75 ≤ burst timing Type 2< 131072	chip

9.2.1.10.3 Range/mapping Type 2

The reporting range for Cell Synchronisation burst timing type 2 is from –16 to +16 chips with 1/8 chip resolution. In table 9.34 the mapping of measured quantity is defined for burst type 2.

Table 9.34

Reported value	Measured quantity value	Unit
Burst_TIME__TYPE2_0000	-16 ≤ burst timing Type 2< -15.875	chip
Burst_TIME__TYPE2_0001	-15.875 ≤ burst timing Type 2< -15.750	chip
Burst_TIME__TYPE2_0002	-15.750 ≤ burst timing Type 2< -15.625	chip
…	…	…
Burst_TIME__TYPE2_0253	15.625 ≤ burst timing Type 2< 15.750	chip
Burst_TIME__TYPE2_0254	15.750 ≤ burst timing Type 2< 15.875	chip
Burst_TIME__TYPE2_0255	15.875 ≤ burst timing Type 2< 16	chip

9.2.1.10.4 Cell Synchronisation burst SIR Type1 and Type2

Signal to Interference Ratio for the cell sync burst, defined according to TS25.225.

The reference point for the cell syncronisation burst SIR shall be the Rx antenna connector.

Table 9.35

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	
Cell Synchronisation burst SIR	dB	±3 dB for both type 1 and 2	[ ]	

9.2.1.10.5 Range/Mapping for Type1 and Type 2

The reporting range for *SIR* is from 0 ... 60 dB with a resolution of 2dB.

In table 9.36 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.36

Reported value	Measured quantity value	Unit
UE_SIR_00	SIR< 0	dB
UE_SIR_01	0 ≤ SIR< 2	dB
UE_SIR_02	2 ≤ SIR< 4	dB
…	…	…
UE_SIR_29	56≤ SIR< 58	dB
UE_SIR_30	58 ≤ SIR< 60	dB
UE_SIR_31	60 ≤ SIR	dB

3GPP TSG RAN WG4 Meeting #16 **R4-010295**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.123** **CR** **37** ⌘ 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:	⌘	Corrections in idle mode and corresponding test cases.
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.

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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:	⌘	Deletion of contradictory statement; clarification of test cases, adaptation of test cases to requirements
Summary of change:	⌘	
Consequences if not approved:	⌘	Contradictory statements, misinterpretation of test cases

Clauses affected:	⌘	4 and A4
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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4 Idle Mode

~~Cell selection and cell reselection delays are applicable when the repetition period of all relevant system information blocks is not more than 1 280 ms and the length of DRX cycle is not longer than 640 ms.~~

NEXT CHANGED SECTION

A.4.2 Cell Re-Selection

For each of the re-selection scenarios in section 4.2 a test is proposed.

For TDD/TDD re-selection t~~T~~wo scenarios are considered:

Scenario 1: Single carrier case

Scenario 2: Multi carrier case

~~For each of them a test is proposed.~~

~~NOTE: More scenarios will be added later.~~

A.4.2.1 Scenario 1: TDD/TDD cell re-selection s~~S~~ingle carrier case

A.4.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the cell re-selection delay in the single carrier case reported in section 4.2.2.~~2.1~~.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.4-14 and A.4-~~2~~5. Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4-14: General test parameters for Cell Re-selection single carrier multi-cell case

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
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	~~T1 need to be defined so that cell re-selection reaction time is taken into account.~~
T2		s	15	~~T2 need to be defined so that cell re-selection reaction time is taken into account.~~

Table A.4-25: Cell re-selection single carrier multi-cell case

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset		[0]		[0]		[0]		[0]		[0]		[0]	
Qhyst Treselection SQintrasearch	~~DBm~~ s dB	[0] 0[ ] [ ]not sent		[0] 0[ ] [ ]not sent		[0] 0[ ] [ ]not sent		[0] 0[ ] [ ]not sent		[0] 0[ ] [ ]not sent		[0] 0[ ] [ ]not sent	
		Cell 4				Cell 5				Cell 6			
Timeslot		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset		0[ ]		0[ ]		0[ ]		0[ ]		0[ ]		0[ ]	
Qhyst Treselection SQintrasearch	~~dBm~~ s dB	0[ ] 0[ ] [ ] not sent		0[ ] 0[ ] [ ]not sent		0[ ] 0[ ] [ ]not sent		0[ ] 0[ ] [ ]not sent		0[ ] 0[ ] [ ]not sent		0[ ] 0[ ] [ ]not sent	
I_{oc}	dBm/3,84 MHz	-70											
Propagation Condition		AWGN											

A.4.2.1.2 Test Requirements

~~The requirements reported in section 4.2.2.2.1 shall be verified in more than [X %] of the cases.~~

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.

A.4.2.2 Scenario 2: TDD/TDD cell re-selection ~~M~~multi carrier case

A.4.2.2.1 Test Purpose and Environment

This test is to verify the requirement for the cell re-selection delay in the multi carrier case reported in section 4.2.2.~~2.2.~~
This scenario implies the presence of 2 carriers and 6 cells as given in Table A.4-~~3~~6 and A.4-~~4~~7~~.~~ Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4-~~3~~6: General test parameters for Cell Re-selection in Multi carrier case

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
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	~~T1 need to be defined so that cell re-selection reaction time is taken into account.~~
T2		s	15	~~T2 need to be defined so that cell re-selection reaction time is taken into account.~~

Table A.4-47: Cell re-selection multi carrier multi cell case

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	3	0	3	0	0	3	0	3	-3	-3	-3	-3
PCCPCH RSCP	dBm	-70	-73			-73	-70			-76	-76		
Qoffset		0[ ]		0[ ]		0[ ]		0[ ]		0[ ]		0[ ]	
Qhyst Treselection SQintrasearch	~~dBm~~ s dB	0[ ] 0[ ] [ ]not sent		0[ ] 0[ ] [ ] not sent		0[ ] 0[ ] [ ]not sent		0[ ] 0[ ] [ ]not sent		0[ ] 0[ ] [ ]not sent		0[ ] 0[ ] [ ]not sent	
		Cell 4				Cell 5				Cell 6			
Timeslot		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
PCCPCH RSCP	dBm	-76	-76			-76	-76			-76	-76		
Qoffset		0[ ]		0[ ]		0[ ]		0[ ]		0[ ]		0[ ]	
Qhyst Treselection SQintrasearch	~~dBm~~ s dB	0[ ] 0[ ] [ ]not sent		0[ ] 0[ ] [ ]not sent		0[ ] 0[ ] [ ]not sent		0[ ] 0[ ] [ ]not sent		0[ ] 0[ ] [ ]not sent		0[ ] 0[ ] [ ]not sent	
I_{oc}	dBm/3,84 MHz	-70											
Propagation Condition		AWGN											

~~Note: P-CCPCH_RSCP is the quality measure for cell selection and re-selection.~~

A.4.2.2.2 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.

~~The UE shall select cell 2 within a cell re-selection delay specified in 4.2.2.2.2.~~

A.4.3.1 Scenario 3: TDD/FDD cell re-selection

A.4.3.1.1 Test Purpose and Environment

This test is to verify the requirement for the TDD/FDD cell re-selection delay reported in section 4.2.2.
This scenario implies the presence of 1 TDD and 1 FDD cell as given in Table A.4-5 and A.4-6.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.
For this test environment 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 TDD cell 1 is better ranked as the FDD cell 2 during T1, and the FDD cell 2 is better ranked (indicating a cell re-selection according to section 4.2.2.4) than the TDD cell 1 during T2.

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

Table A.4-5: General test parameters for the TDD/FDD cell re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	TDD cell
	Neighbour cells		Cell2	FDD 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	During T1 cell 1 better ranked than cell 2
T2		s	15	During T2 cell 2 better ranked than cell 1

Table A.4-6: TDD/FDD cell re-selection

Parameter	Unit	Cell 1				Cell 2	
Timeslot Number		0		8		n.a	n.a.
		T1	**T2**	**T 1**	**T 2**	**T 1**	**T 2**
UTRA RF Channel Number		Channel 1				Channel 2	
CPICH_Ec/Ior	dB	n.a.		n.a.		-10	-10
PCCPCH_Ec/Ior	dB	-3	-3			-12	-12
SCH_Ec/Ior	dB	-9	-9	-9	-9	-12	-12
SCH_t_{offset}		0	0	0	0	n.a.	n.a.
PICH_Ec/Ior				-3	-3	-15	-15
OCNS	dB	-4,28	-4,28	-4,28	-4,28	-0,941	-0,941
$\hat{I}_{or}/I_{oc}$	dB	3	-2	3	-2	-2	3
I_{oc}	dBm/3.84 MHz	-70					
CPICH_RSCP	dBm	n.a.		n.a.		-82	-77
PCCPCH_RSCP	dBm	-70	-75			n.a.	n.a.
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 TDD/FDD re-selection process, it is not intended to give reasonable values for a TDD/FDD cell re-selection.

A.4.3.1.2 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 preambles on the PRACH for sending 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: $T_{evaluateFDD} + T_{SI}$, where:

$T_{evaluateFDD}$ See Table 4.1 in section 4.2.2.

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.

A.4.43 Inter-RATUTRAN to GSM cCell rRe-Selection

A.4.43.1 Scenario 1

A.4.43.1.1 Test Purpose and Environment

This test is to verify the requirement for the UTRAN to GSM cell re-selection delay reported in section 4.3.2.1. This scenario implies the presence of 1 UTRAN serving cell, and 1 GSM cell to be re-selected. Test parameters are given in Table, A.4.78, A.4.89, A.4-910.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

For this test environment 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 TDD cell 1 is better ranked as the GSM cell 2 during T1 and the GSM cell 2 is better ranked than the TDD cell 1 during T2.
Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4-7~~6~~: General test parameters for UTRAN to GSM Cell Re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	TDD cell
	Neighbour cell		Cell2	GSM cell
Final condition	Active cell		Cell2	
DRX cycle length		s	1,28	UTRAN cell
BCCH repetition period (GSM cell)		s	1,87	In GSM the system information is scheduled according to an 8 x (51 x 8) cycle (i.e. a system information message is transmitted every 235 ms). The cell selection parameters in system info 3 and 4 are transmitted at least every second. (GSM 05.02)
T1		s	15	~~T1 need to be defined so that cell re-selection reaction time is taken into account.~~
T2		s	15	~~T2 need to be defined so that cell re-selection reaction time is taken into account.~~

Table A.4-87: Cell re-selection UTRAN to GSM cell case (cell 1)

Parameter	Unit	Cell 1 (UTRA)			
Timeslot Number		0		8	
		T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0
PICH_Ec/Ior	dB			-3	-3
OCNS_Ec/Ior	dB	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	39	-27	39	-27
I_{oc}	dBm/3,84 MHz	–70		–70	
PCCPCH RSCP	dBm	-7064	-7566		
Propagation Condition		AWGN		AWGN	
Treselection	s	0[ ]			
$Ssearch_{RAT}$	dB	not sent[ ]			

Table A.4-98: Cell re-selection UTRAN to GSM cell case (cell 2)

Parameter	Unit	Cell 2 (GSM)	
		T1	T2
Absolute RF Channel Number		ARFCN 1	
RXLEV	dBm	-8070	-7060
RXLEV_ACCESS_MIN	dBm	[-100]	
MS_TXPWR_MAX_CCH	dBm	[30]	

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

A.4.43.1.2 Test Requirements

The requirements reported in section 4.3.2.1 shall be verified in more than [X %] of the cases.

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 LOCATION UPDATING REQUEST message to perform a Location update.

The cell re-selection delay shall be less than [8] s.

NOTE:

The UE shall keep a running average of 4 measurements, thus gives 4*1280ms ($T_{measureGSM,}$ Table 4.1), means 5.12 seconds can elapse from the beginning of time period T2 before the UE has finished the measurements to evaluate that the GSM cell fulfils the re-selection criteria.

The cell selection parameters in the BCCH of the GSM cell in system info 3 and 4 are transmitted at least every second.

3GPP TSG RAN WG4 Meeting #16 **R4-010362**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.123** **CR** **38** ⌘ 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:	⌘	Section 8 changes
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 19. February 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:	⌘	Adding of missing requirements for UE measurements procedures. Replacements of TBDs.
Summary of change:	⌘	Inclusion of UE measurement capability and capabilities for support of event triggering and reporting criteria, alignments with TS 25.133, replacements of TBDs. Inclusion of Side Conditions for synchronization to a new cell in new section 8.1.2.X. Inclusion and improvements of GSM measurement capability requirements. Inclusion of new section 8.3 'Requirements for capabilities for Support of Event triggering and reporting'.
Consequences if not approved:	⌘	Inconsistency to other TS, definition of unwanted requirements, essential requirements would be missing

Clauses affected:	⌘	8
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	Based on endorsed CR by RAN4#15 R4-010178 Additional references are R4-010217 for section 8.3 of TS 25.133 and R4-010030 for section 8.1.2.X of TS 25.133

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

7.2 Cell synchronization accuracy

7.2.1 Definition

Cell synchronization accuracy is defined as the maximum deviation in frame start times between any pair of cells that have overlapping coverage areas.

7.2.2 Minimum requirements

The cell synchronization accuracy shall be better than or equal to 3μs.

8 UE Measurements Procedures

8.1 Measurements 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 TDD intra frequency, TDD inter frequency, FDD and GSM measurements. These measurements may be used by the UTRAN, e.g. for handover decisions. The measurements are defined in TS 25.225, 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. For the description of the idle intervals see TS 25.225, Annex A.

8.1.2 Requirements

8.1.2.1 UE Measurement Capability

The UE shall be able to support and process up to

32 intra frequency TDD cells, and

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

Depending on UE capability, the UE shall also in addition be able to support and process 32 FDD cells, distributed on up to 3 FDD 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 measurements and different number of cells are defined in the following sections.

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

8.1.2.X TDD Synchronisation to new cells

Time for synchronisation to new cell is defined as the time from when the cell appears until the time when the cell is reported in a RRC message to the network. The time needed to synchronise depends on the level of the received signal and is different for inter and intra frequency cells.

These time limits are used in the requirements for the measurements in paragraph 8.1.2 as well as preconditions in paragraph 9.

The requirements given for by $T_{basic\ identify\ TDD,\ intra}$ and by $T_{basic\ identify\ TDD,\ inter}$ are valid under the following side conditions:

$$\left(\frac{P-CCPCH\_E_c}{I_o}\right)_{in\ dB} \geq -8dB$$

$$\left(\frac{SCH\_E_c}{I_o}\right)_{in\ dB} \geq -13dB$$

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.~~1~~2 TDD 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. Intra frequency measurements can be performed (simultaneously to data reception from the active cell) in all time slots not allocated to transmission nor the time used for inter frequency measurements.

8.1.2.~~1~~2.1 Identification of a new cell

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

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

~~$$T_{identify\ intra} = Max\left\{[480] ms, T_{basic\ identify\ TDD,\ intra} \cdot \frac{T_{Measurement\ Period,\ Intra}}{T_{Intra}}\right\}$$~~

8.1.2.~~1~~2.2 UE P-CCPCH measurement capability

In the CELL_DCH state the measurement period for intra frequency measurements is ~~[~~200~~]~~ ms. When no inter frequency measurement is scheduled, the UE shall be capable of performing P-CCPCH measurements for ~~[~~6~~]~~ 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. The measurement accuracy for all measured cells shall be as specified in the section 9.

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

whereby function Floor(x) takes the integer part of x

$X_{\text{basic measurement TDD}}$ = ~~{~~6~~}~~

$T_{\text{Measurement\_Period, Intra}}$ = ~~{~~200~~}~~ ms. The measurement period for Intra frequency P-CCPCH measurements.

T_{Intra} : This is the minimum time that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing. It is assumed for the requirement that the slot allocation allows measurement windows to be of minimum duration necessary to perform the measurements.

$T_{\text{basic\_identify\_TDD, intra}}$ = ~~TBD~~ 800 ms. This is the time period used in the intra frequency equation where the maximum allowed time for the UE to identify a new TDD cell is defined (side conditions are ~~ffs~~defined in subclause 8.1.2.X).

8.1.2.~~1~~2.3 Periodic Reporting

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

8.1.2.~~1~~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.~~1~~2.5 Event Triggered Reporting.

8.1.2.~~1~~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 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 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.

Unless otherwise stated, event triggered measurement reporting delay shall be less than 480 ms.

8.1.2.~~2~~3 TDD inter frequency measurements

When signalled by the network during CELL_DCH state, the UE shall continuously measure detected inter frequency cells and search for new inter frequency cells indicated in the measurement control information.

8.1.2.~~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

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

~~$$T_{\text{identify inter}} = Max\left\{\lceil 5 \rceil s, T_{\text{basic identify TDD,inter}} \cdot \frac{T_{\text{Measurement Period, Inter}}}{T_{\text{Inter}}} \cdot N_{Freq}\right\}$$~~

8.1.2.~~2~~3.2 Measurement period

When TDD inter frequency measurements are scheduled, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in section 9 with measurement period given by

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

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

In case of a dual receiver UE, the measurement period for inter frequency measurements is ~~[~~480~~]~~ ms.

$T_{\text{Measurement\_Period Inter}}$ = ~~[~~480~~]~~ ms. The period used for calculating the measurement period $T_{\text{measurement\_inter}}$ for inter frequency P-CCPCH measurements.

$T_{\text{Inter:}}$ This is the minimum time available for inter frequency measurements during the period $T_{\text{Measurement\_Period inter}}$ with an arbitrarily chosen timing. The minimum time depends on the channel allocation whereby HW settling time and synchronisation time has to be taken into account (for the description of the idle intervals see Annex A of 25.225). It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements.

$T_{\text{basic\_identify\_TDD,inter}}$ = ~~TBD~~ 5000 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 (side conditions are defined in subclause 8.1.2.X~~ffs~~).

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

$N_{\text{Freq}} \leq 3$: Number of TDD frequencies indicated in the 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.~~2~~3.3 Periodic Reporting

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

8.1.2.~~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 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 than [5] seconds.

~~8.1.2.3 FDD measurements~~

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

~~Editors note: The requirements in this section need to be revised.~~

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

~~8.1.2.3.1 Periodic Reporting~~

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

~~8.1.2.3.2 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 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 uncertanty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertanty is twice the TTI of the uplink DCCH.~~

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

8.1.2.~~3~~4 FDD measurements

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

In the CELL_DCH state when FDD inter frequency measurements are scheduled the UE shall continuously measure detected inter frequency FDD cells and search for new inter frequency 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.

8.1.2.~~3~~4.1 Identification of a new cell

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

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

8.1.2.~~3~~4.2 Measurement period

When FDD inter frequency measurements are scheduled, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

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

$T_{Measurement\_Period\ FDD\ inter}$ = [480] ms. The period used for calculating the measurement period $T_{measurement\_FDD\ inter}$ for inter frequency CPICH measurements.

$T_{FDD\_inter:}$ This is the minimum time that is available for inter frequency measurements, during the period $T_{Measurement\_Period\ FDD\ inter}$ with an arbitrarily chosen timing. The minimum time depends on the channel allocation whereby HW settling time and synchronisation time has to be taken into account (for the description of the idle intervals see Annex A of 25.225). It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements.

$T_{basic\_identify\_FDD,inter}$ = 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.

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

N_{Freq}: ≤ 3 Number of FDD frequencies indicated in the measurement control information.

8.1.2.34.3 Periodic Reporting

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

8.1.2.34.4 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 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 uncertanty is twice the TTI of the uplink DCCH.

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

8.1.2.45 GSM measurements

The requirements in this section applies only to UE supporting TDD and GSM.

When signalled by UTRAN during CELL_DCH state, the UE shall continuously 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". 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.

For the UE performing GSM measurements, the requirements in GSM 05.08 shall apply.

8.1.2.45.1 GSM carrier RSSI

An UE supporting GSM measurements shall be able to measure GSM carrier RSSI levels of GSM cells from the monitored set with acquisition speed defined in Ttable 8.1. 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 the take the same amount of GSM carrier RSSI samples as stated in the GSM specification during the measurement period.

Table 8-1

Idle Interval Length [slots]	Number of GSM carrier RSSI measurements.
4	~~2~~1
5	~~3~~2
>5	≥~~4~~3

In the calculation of the number of GSM carrier measurements based on the the idle interval length, the switching time [~~500~~ 600 us] is already taken into account. For the description of the idle intervals see Annex A of 25.225.

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.

8.1.2.45.2 BSIC verification

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

1) 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 idle intervals as specified in TS 25.225, Annex A (Fig. A.1). The requirements for Initial BSIC identification can be found in 8.1.2.5.2.1 Initial BSIC identification".

2) 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 idle intervals as specified in TS 25.225, Annex A (Fig. A.1). The requirements for Initial BSIC identification can be found in 8.1.2.5.2.2 BSIC re-confirmation".

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 ~~demodulated~~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~~$_{\text{re-confirm GSM}}$ $T_{\text{re-confirm abort}}$ seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified". The time requirement for initial BSIC identification, $T_{\text{identify GSM}}$abort, and the BSIC re-confirmation interval $T_{\text{re-confirm GSM}}$abort can be found in the sections below.

~~If GSM measurements are requested with BSIC verified the UE shall be able to report at least the [6] strongest GSM cells with BSIC verified.~~

The worst-case time for identification of one previously not identified GSM cell measurement is specified in TS 25.225, Annex A.

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.

8.1.2.45.2.1 Initial BSIC identification

This measurement is performed in the idle intervals as specified in TS 25.225, Annex A (Fig. A.1).

For GSM cells that ~~is~~ are requested with BSIC verified the UE shall attempt to ~~demodulate~~ decode the SCH on the BCCH carrier of ~~as many~~ at least [6] GSM cells indicated in the measurement control information ~~as possible~~. The UE shall give priority for synchronisation attempts in decreasing signal strength order. The UE shall be able to perform initial BSIC identification on one new GSM cell within the time specified in Annex A in TS 25.225.

When N new GSM cells are to be BSIC identified the time is changed to $N*T_{\text{identify GSM}}$abort, with

$T_{identify\ GSM\ abort}$ = TBD [5000] ms. This is the time necessary to identify one new GSM cell.

It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements.

Note: The details of the initial BSIC identification procedure must be further clarified.

If the BSIC of a GSM cell has been successfully identified the UE shall continue BSIC identification with the next 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 identified the BSIC within $T_{identify\ abort}$, the UE shall abort the BSIC identification attempts for that GSM cell. The UE shall continue to try to perform BSIC identification on the next GSM cell in signal strength order. The GSM 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 [6] strongest GSM cells with unknown BSIC in the monitored set.

8.1.2.45.2.2 BSIC re-confirmation

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

This measurement shall be based on the idle intervals as specified in TS 25.225, Annex A (Fig. A.1). The time requirement for BSIC re-confirmation is specified in Annex A in TS 25.225.

The UE shall maintain the timing information of at least [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.

If more than one BSIC can be decoded within the same measurement window given by the idle intervals, 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 [6] strongest GSM cells in the monitored list.

$T_{re\text{-}confirm\ abort}$ = [5000] ms. This is the BSIC reconfirmation interval.

It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements.

Note: The details of the BSIC re-confirmation procedure must be further clarified.

8.2 Parallel Measurements in CELL_DCH State

8.2.1 Introduction

The purpose with this section is to ensure that all UE can handle a certain number of measurements in parallel. The measurements are defined in TS 25.225, 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 measurements reporting delays are specified in section 8.1. For the description of the idle intervals see TS 25.225, Annex A.

8.2.2 Requirements

Editors note: The number of events that the UE shall be able to evaluate shall be considered either in this section or in a new section.

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

[The UE shall be able to handle at least [x] TDD cells per carrier on at least [x] TDD carriers and at least [x] FDD cells per carrier on at least [x] FDD carriers and 32 GSM cells in the monitored set.]

The UE shall be able to perform parallel measurements according to table 8-2.

In addition to the requirements in table 8-2 the UE shall in parallel, in state CELL_DCH, also be able to measure and report the quantities according to section 8-2.

Table 8-2 Parallel measurement requirements

Measurement quantity	Number of parallel measurements possible to request from the UE
Transport channel BLER	[1] per TrCh
UE transmitted power	[1]
SFN-SFN observed time difference type 2	[]
UE GPS Timing of Cell Frames for ~~LCS~~UP	[]

Editors Note: The presence of the measurements for location services needs to be revised.

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 8.6. ~~Beyond the individual limits per measurement category, the UE need not track more than [TBD] reporting criteria in total.~~

For the measurement categories: Intra-frequency, Inter frequency and Inter-RAT the UE need not support more than 14 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.

Table 8-6 Requirements for reporting criteria per measurement category

Measurement category	E_{cat}	Note
Intra-frequency	4	Applicable for periodic reporting or TDD events (1G-1I).
Inter-frequency	6	Applicable for periodic reporting or Event 2A-2F
Inter-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	
UP measurements	2	Only applicable for UE with this capability.

~~**Table 8-6 Requirements for reporting criteria per measurement category**~~

~~Measurement category~~	~~E_{cat}~~
~~Intra-frequency~~	~~[]~~
~~Inter-frequency~~	~~[]~~
~~Inter-system~~	~~[]~~
~~UE internal measurements~~	~~[]~~
~~Traffic volume measurements~~	~~[]~~
~~Quality measurements~~	~~[]~~
~~LCS measurements~~	~~[]~~
~~Additional measurements~~	~~[]~~

8.~~3~~4 Measurements in CELL_FACH State

8.~~3~~4.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL_FACH state. The measurements are defined in TS 25.225, 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. For the description of the idle intervals see TS 25.225, Annex A.

8.~~3~~4.2 Requirements

TBD

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 complete list of measurements is specified in 3GPP TS 25.302 "Services Provided by Physical Layer". The physical layer measurements for TDD are described and defined in 3GPP TS 25.225 "Physical layer – Measurements (TDD)". In this clause for TDD, per each measurement the relevant requirements on performance in terms of accuracy are reported.

Unless explicitly stated,

- Reported measurements shall be within defined range in 90 % of the cases.

- Measurement channel is 12,2 kbps as defined in 3GPP TS 25.102 annex A, clause A.3.1. This measurement channel is used both in active cell and cells to be measured.

- Physical channels used as defined in 3GPP TS 25.101 annex B.

- All requirements are defined when UE is in a CELL_DCH or CELL_FACH stage. The difference between modes are the reporting delay. Some of the measurements are not requested to be reported in both stages.

- Cell 1 is the active cell, if not otherwise stated.

- Single task reporting.

- Power control is active.

9.1 Measurements performance for UE

9.1.1 Performance for UE measurements in downlink (RX)

9.1.1.1 P-CCPCH RSCP (TDD)

These measurements consider *P-CCPCH RSCP* measurements for TDD cells.

The measurement period for CELL_DCH state can be found in section 8.

3GPP TSG RAN WG4 Meeting #16 **R4-010363**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.123 CR 39** ⌘ 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:	⌘	Section 9 Changes
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 19. February 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 relative accuracy of P-CCPCH RSCP has to be aligned with the requirements in section 8 and the test cases in section A8. Refinement of the side conditions of the requirements on the measurements in section 9 needed for clarification of the requirements. Completition of the requirements on 'UTRAN Transmitted code power' absolute accuracy needed.
Summary of change:	⌘	Adaption of requirements for P-CCPCH, change of the mapping of RX Timing deviation and some additional corrections in Section measurements performance requirements. Side Conditions for measurements were added to the requirements in section 9. Square brackets on 'UTRAN Transmitted code power' absolute accuracy requirement are removed.
Consequences if not approved:	⌘	The performance of handover evaluation cannot be ensured with the given P-CCPCH RSCP measurement performance. The proposed mapping of RX Timing Deviation is needed for ~~LCS~~ UP purposes. Requirements on the physical layer measurements are not clear. 'UTRAN Transmitted code power' requirements are missing.

Clauses affected:	⌘	9		
Other specs Affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	Based on endorsed CR by RAN4#15 R4-010179		

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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

8.3 Measurements in CELL_FACH State

8.3.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL_FACH state. The measurements are defined in TS 25.225, 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. For the description of the idle intervals see TS 25.225, Annex A.

8.3.2 Requirements

TBD

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 complete list of measurements is specified in 3GPP TS 25.302 "Services Provided by Physical Layer". The physical layer measurements for TDD are described and defined in 3GPP TS 25.225 "Physical layer – Measurements (TDD)". In this clause for TDD, per each measurement the relevant requirements on performance in terms of accuracy are reported.

Unless explicitly stated,

- Reported measurements shall be within defined range in 90 % of the cases.
- Measurement channel is 12,2 kbps as defined in 3GPP TS 25.102 annex A, clause A.3.1. This measurement channel is used both in active cell and cells to be measured.
- Physical channels used as defined in 3GPP TS 25.101 annex B.
- All requirements are defined when UE is in a CELL_DCH or CELL_FACH stage. The difference between modes are the reporting delay. Some of the measurements are not requested to be reported in both stages.
- Cell 1 is the active cell, if not otherwise stated.
- Single task reporting.
- Power control is active.

9.1 Measurements performance for UE

9.1.1 Performance for UE measurements in downlink (RX)

9.1.1.1 P-CCPCH RSCP (TDD)

These measurements consider *P-CCPCH RSCP* measurements for TDD cells.

The measurement period for CELL_DCH state can be found in section 8.

The accuracy requirements in table 9.1 are valid under the following conditions:

- P-CCPCH RSCP ≥ -102 dBm.
- The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.X

9.1.1.1.1 Absolute accuracy requirements

Table 9.1 P-CCPCH_RSCP absolute accuracy

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

9.1.1.1.2 Relative accuracy requirements

The P-CCPCH_RSCP intra-frequency relative accuracy is defined as the P-CCPCH_RSCP measured from one cell compared to the P-CCPCH_RSCP measured from another cell on the same frequency.

The accuracy requirements in table 9.2 are valid under the following conditions:

- P-CCPCH RSCP1,2 ≥ -102 dBm.
- $\left|\text{P - CCPCH RSCP1}|_{in\ dB} - \text{P - CCPCH RSCP2}|_{in\ dB}\right| \le 20dB$
- The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.X
- It is assumed that the measurements of P-CCPCH RSCP1 and P-CCPCH RSCP2 can be performed within 20ms due to slot allocations in the cells concerned.

Table 9.2 P-CCPCH_RSCP intra-frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions	
		Normal condition	Extreme condition	Io [dBm]	relative RSCP difference [d~~b~~B]
P-CCPCH_RSCP	dBm	±1	±1	-94...-50	≤2
		±2	±2		2...14
		±3	± 3		>14

The P-CCPCH_RSCP inter-frequency relative accuracy is defined as the P-CCPCH_RSCP measured from one cell compared to the P-CCPCH_RSCP measured from another cell on a different frequency.

The accuracy requirements in table 9.3 are valid under the following conditions:

- P-CCPCH RSCP1,2 ≥ -102 dBm.
- $\left|\text{P - CCPCH RSCP1}|_{in\ dB} - \text{P - CCPCH RSCP2}|_{in\ dB}\right| \le 20dB$
- The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.X

Table 9.~~2~~3 P-CCPCH_RSCP inter-frequency relative accuracy

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

9.1.1.1.3 Range/mapping

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

In table 9.~~43~~ mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.~~43~~

Reported value	Measured quantity value	Unit
P-CCPCH RSCP_LEV _00	P-CCPCH RSCP <–115	~~DBm~~dBm
P-CCPCH RSCP_LEV _01	-115 ≤ P-CCPCH RSCP < –114	~~DBm~~dBm
P-CCPCH RSCP_LEV _02	-114 ≤ P-CCPCH RSCP < –113	~~DBm~~dBm
…	…	…
P-CCPCH RSCP_LEV _89	-27 ≤ P-CCPCH RSCP < -26	~~DBm~~dBm
P-CCPCH RSCP_LEV _90	-26 ≤ P-CCPCH RSCP < -25	~~DBm~~dBm
P-CCPCH RSCP_LEV _91	-25 ≤ P-CCPCH RSCP	~~DBm~~dBm

9.1.1..2 CPICH measurements (FDD)

Note: This measurement is used for handover between UTRA TDD and UTRA FDD.

These measurements consider *CPICH RSCP* and *CPICH Ec/Io* measurements. The requirements in this section are valid for terminals supporting this capability.

The measurement period for CELL_DCH state can be found in section 8.

9.1.1.2.1 CPICH RSCP

9.1.1.2.1.1 Inter frequency measurement relative accuracy requirement

The relative accuracy of CPICH RSCP in the 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 9.5 are valid under the following conditions:

- *CPICH_RSCP1,2* ≥ -114 dBm.
- $\left| CPICH\_RSCP1\big|_{in\ dB} - CPICH\_RSCP2\big|_{in\ dB} \right| \le 20dB$
- The received signal levels on SCH and CPICH are according the requirements in paragraph 8.1.2.X.

~~*CPICH_RSCP* ≥ -114 dBm.~~

~~$\left| P\_CCPCH\_RSCP\big|_{in\ dB} - CPICH\_RSCP\big|_{in\ dB} \right| \le 20dB$~~

| Channel 1_Io -Channel 2_Io| ≤ 20 dB.

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

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

Table 9.-54 CPICH_RSCP Inter frequency relative accuracy

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

9.1.1.2.1.2 Range/mapping

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

In table 9.65 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.65

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

9.1.1.2.2 CPICH Ec/Io

9.1.1.2.2.1 Inter frequency measurement 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 a different frequency.

The accuracy requirements in table 9 49.7 are valid under the following conditions:

CPICH_RSCP ≥ -114 dBm.

$$\left|\left|P - CCPCH\_RSCP\right|_{in\ dB} - CPICH\_RSCP\Big|_{in\ dB}\right| \leq 20dB$$

| *Channel 1_Io -Channel 2_Io*| ≤ 20 dB.

- The received signal levels on SCH and CPICH are according the requirements in paragraph 8.1.2.X.

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

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

Table 9.76 CPICH Ec/Io Inter frequency relative accuracy

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

9.1.1.2.2.2 Range/mapping

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

In table 9.87 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.87

Reported value	Measured quantity value	Unit
CPICH_Ec/Io _00	CPICH Ec/Io < –24	dB
CPICH_Ec/Io _01	-24 ≤ CPICH Ec/Io < –23.5	dB
CPICH_Ec/Io _02	-23.5 ≤ CPICH Ec/Io < –23	dB
…	…	…
CPICH_Ec/Io _4847	-1 ≤ CPICH Ec/Io < -0.5	dB
CPICH_Ec/Io _4948	-0.5 ≤ CPICH Ec/Io < 0	dB
CPICH_Ec/Io _5049	0 ≤ CPICH Ec/Io	dB

9.1.1.3 Timeslot ISCP

The measurement period for CELL_DCH state can be found in section 8.9.1.1.3.1 Absolute accuracy requirements

Table 9.98 Timeslot_ISCP Intra frequency absolute accuracy

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

9.1.1.3.2 Range/mapping

The reporting range for *Timeslot ISCP* is from -115...-25 dBm.

In table 9.109 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.109

Reported value	Measured quantity value	Unit
UE_TS_ISCP_LEV_00	Timeslot_ISCP < –115	dBm
UE_TS_ISCP_LEV_01	-115 ≤ Timeslot_ISCP < –114	dBm
UE_TS_ISCP_LEV_02	-114 ≤ Timeslot_ISCP < –113	dBm
…	…	…
UE_TS_ISCP_LEV_89	-27 ≤ Timeslot_ISCP < -26	dBm
UE_TS_ISCP_LEV_90	-26 ≤ Timeslot_ISCP < -25	dBm
UE_TS_ISCP_LEV_91	-25 ≤ Timeslot_ISCP	dBm

9.1.1.4 UTRA carrier RSSI

Note: The purpose of measurement is for Inter-frequency handover evaluation.

The measurement period for CELL_DCH state can be found in section 8.

9.1.1.4.1 Absolute accuracy requirement

Absolute accuracy case only one carrier is applied.

Table 9.110 UTRA carrier RSSI Inter frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
UTRA Carrier RSSI	dB	± 4	± 7	-94...-70
	dB	± 6	± 9	-94...-50

9.1.1.4.2 Relative accuracy requirement

Relative accuracy requirement is defined as active cell frequency UTRAN RSSI compared to measured other frequency UTRAN RSSI level

The accuracy requirements in table 9.12 ~~11~~ are valid under the following conditions:

| *Channel 1_Io -Channel 2_Io* | < *20 dB.*

Table 9.121 UTRA carrier RSSI Inter frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
UTRA Carrier RSSI	dB	± 5	± 8	-94...-70

9.1.1.4.3 Range/mapping

The reporting range for *UTRA carrier RSSI* is from -100 ...-25 dBm.

In table 9.132 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.132

Reported value	Measured quantity value	Unit
UTRA_carrier_RSSI_LEV _00	UTRA carrier RSSI < –100	dBm
UTRA_carrier_RSSI_LEV _01	-100 ≤ UTRA carrier RSSI < –99	dBm
UTRA_carrier_RSSI_LEV _02	-99 ≤ UTRA carrier RSSI < –98	dBm
…	…	…
UTRA_carrier_RSSI_LEV _74	-27 ≤ UTRA carrier RSSI < -26	dBm
UTRA_carrier_RSSI_LEV _75	-26 ≤ UTRA carrier RSSI < -25	dBm
UTRA_carrier_RSSI_LEV _76	-25 ≤ UTRA carrier RSSI	dBm

9.1.1.5 GSM carrier RSSI

Note: This measurement is for handover between UTRAN and GSM.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for CELL_DCH state can be found in section 8.

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

The reporting range and mapping specified for RXLEV in GSM 05.08 shall apply.

9.1.1.6 SIR

The measurement period for CELL_DCH state can be found in section 8.

9.1.1.6.1 Absolute accuracy requirements

Table 9.143 SIR Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	
SIR	~~DB~~dB	±3 dB for	[ ]	For 0<SIR<20dB and Io range -94...-50
SIR	~~DB~~dB	±(3 - SIR)	[ ]	For -7 ≤ SIR ≤ 0 dB and Io range -94...-50

9.1.1.6.2 Range/mapping

The reporting range for *SIR* is from -11 ...20 dB~~m~~.

In table 9.154 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.154

Reported value	Measured quantity value	Unit
UE_SIR_00	SIR< –11,0	dB
UE_SIR_01	-11,0 ≤ SIR< –10,5	dB
UE_SIR_02	-10,5 ≤ SIR< –10,0	dB
…	…	…
UE_SIR_61	-19 ≤ SIR< 19,5	dB
UE_SIR_62	19,5 ≤ SIR< 20	dB
UE_SIR_63	20 ≤ SIR	dB

9.1.1.7 Transport channel BLER

9.1.1.7.1 BLER measurement requirement

The Transport Channel BLER value shall be calculated from a window with the size equal to the reporting interval (see clause on periodical reporting criteria in TS 25.331).

9.1.1.7.2 Range/mapping

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

In table 9.165 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.165

Reported value	Measured quantity value	Unit
BLER_LOG _00	Transport channel BLER = 0	-
BLER_LOG _01	-∞ < 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	-

9.1.1.8 SFN-SFN observed time difference

The measurement period for CELL_DCH state can be found in section 8.

9.1.1.8.1 Accuracy requirements

The accuracy requirement in table 9-17 is valid under the following conditions:

- *P-CCPCH_RSCP1,2* ≥ -102 dBm..
- $\left|\text{P - CCPCH RSCP1}\right|_{in\ dB} - \text{P - CCPCH RSCP2}\left|_{in\ dB}\right| \leq 20dB$
- The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.X.

Table 9.176 SFN-SFN observed time difference accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm]
SFN-SFN observed time difference	chip	+/-0,5 for both type 1 and 2	-94...-50

9.1.1.8.2 Range/mapping

The reporting range for *SFN-SFN observed time difference type 1* is from 0 ... 9830400 chip.

In table 9.187 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.187

Reported value	Measured quantity value	Unit
T1_SFN-SFN_TIME _0000000	0 ≤ SFN-SFN observed time difference type 1 < 1	chip
T1_SFN-SFN_TIME _0000001	1 ≤ SFN-SFN observed time difference type 1 < 2	chip
T1_SFN-SFN_TIME _0000002	2 ≤ SFN-SFN observed time difference type 1 < 3	chip
…	…	…
T1_SFN-SFN_TIME _9830397	9830397 ≤ SFN-SFN observed time difference type 1 < 9830398	chip
T1_SFN-SFN_TIME _9830398	9830398 ≤ SFN-SFN observed time difference type 1 < 980399	chip
T1_SFN-SFN_TIME _9830399	9830399 ≤ SFN-SFN observed time difference type 1 < 9830400	chip

The reporting range for *SFN-SFN observed time difference type 2* is from –1280 ... +1280 chip.

In table 9.198 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.198

Reported value	Measured quantity value	Unit
T2_SFN-SFN_TIME _00000	SFN-SFN observed time difference type 2 < -1280,0000	chip
T2_SFN-SFN_TIME _00001	-1280,0000 ≤ SFN-SFN observed time difference type 2 < -1279,9375	chip
T2_SFN-SFN_TIME _00002	-1279,9375 ≤ SFN-SFN observed time difference type 2 < -1279,8750	chip
…	…	…
T2_SFN-SFN_TIME _40959	1279,8750 ≤ SFN-SFN observed time difference type 2 < 1279,9375	chip
T2_SFN-SFN_TIME _40960	1279,9375 ≤ SFN-SFN observed time difference type 2 < 1280,0000	chip
T2_SFN-SFN_TIME _40961	1280,0000 ≤ SFN-SFN observed time difference type 2	chip

9.1.1.9 Observed time difference to GSM cell

Note: This measurement is used to determine the system time difference between UTRAN and GSM cells.

The requirements in this section are valid for terminals supporting UTRA TDD and GSM.

The measurement period for CELL_DCH state is [10 s].

9.1.1.9.1 Accuracy requirements

Table 9.2019 Observed time difference to GSM cell accuracy

Parameter	Unit	Accuracy [chip]	Conditions
Observed time difference to GSM cell	chip	± 20	

9.1.1.9.2 Range/mapping

The reporting range for *Observed time difference to GSM cell* is from 0 ... 3060/13 ms.

In table 9.210 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.210

Reported value	Measured quantity value	Unit
GSM_TIME _0000	0 ≤ Observed time difference to GSM cell < 1x3060/(4096x13)	ms
GSM_TIME _0001	1x3060/(4096x13) ≤ Observed time difference to GSM cell < 2x3060/(4096x13)	ms
GSM_TIME _0002	2x3060/(4096x13)≤ Observed time difference to GSM cell <	ms

	3x3060/(4096x13)	
GSM_TIME _0003	3x3060/(4096x13) ≤ Observed time difference to GSM cell < 4x3060/(4096x13)	ms
…	…	…
GSM_TIME _4093	4093x3060/(4096x13) ≤ Observed time difference to GSM cell < 4094x3060/(4096x13)	ms
GSM_TIME _4094	4094x3060/(4096x13) ≤ Observed time difference to GSM cell < 4095x3060/(4096x13)	ms
GSM_TIME _4095	4095x3060/(4096x13) ≤ Observed time difference to GSM cell < 3060/13	ms

9.1.1.10 UE GPS Timing of Cell Frames for ~~LCS~~UP

9.1.1.10.1 Accuracy requirement

The requirements in this section are valid for terminals supporting this capability

The measurement period for CELL_DCH state can be found in section 8.

Table 9.2~~2~~1

Parameter	Unit	Accuracy [chip]	Conditions
UE GPS Timing of Cell Frames for ~~LCS~~UP	chip	[ ]	

9.1.1.10.2 UE GPS timing of Cell Frames for ~~LCS~~UP measurement report mapping

.

The reporting range for *UE GPS timing of Cell Frames for ~~LCS~~UP* is from 0 ... 2319360000000 chip.

In table 9.2~~3~~2 mapping of the measured quantity is defined.

Table 9.2~~3~~2

Reported value	Measured quantity value	Unit
GPS_TIME_00000000000000	UE GPS timing of Cell Frames for ~~LCS~~UP < 0,0625	chip
GPS_TIME_00000000000001	0,0625 ≤ UE GPS timing of Cell Frames for ~~LCS~~UP < 0,1250	chip
GPS_TIME_00000000000002	0,1250 ≤ UE GPS timing of Cell Frames for ~~LCS~~UP < 0,1875	chip
...	...	...
GPS_TIME_37109759999997	2319359999999,8125 ≤ UE GPS timing of Cell Frames for ~~LCS~~UP < 2319359999999,8750	chip
GPS_TIME_37109759999998	2319359999999,8750 ≤ UE GPS timing of Cell Frames for ~~LCS~~UP < 2319359999999,9375	chip

GPS_TIME_37109759999999	2319359999999,9375 ≤ UE GPS timing of Cell Frames for ~~LCS~~UP < 2319360000000,0000	chip

9.1.1.11 SFN-CFN observed time difference

Note: This measurement is for handover timing purposes to identify active cell and neighbour cell time difference.

The measurement period for CELL_DCH state can be found in section 8.

9.1.1.11.1 Accuracy requirements

The accuracy requirements in tables 9.24 are valid under the following conditions:

- *P-CCPCH_RSCP1,2* ≥ -102dBm.
- $\left|\text{P - CCPCH RSCP1}\right|_{in\ dB} - \text{P - CCPCH RSCP2}\left|_{in\ dB}\right| \le 20dB$
- The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.X

Table 9.2~~3~~4 SFN-CFN observed time difference accuracy for a TDD neighbour cell

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm]
SFN-CFN observed time difference	chip	+/-0,5	-94...-50

The accuracy requirements in tables 9.25 are valid under the following conditions:

- *CPICH_RSCP1,2* ≥ -114 dBm.
- $\left|CPICH\_RSCP1\right|_{in\ dB} - CPICH\_RSCP2\left|_{in\ dB}\right| \le 20dB$
- The received signal levels on SCH and CPICH are according the requirements in paragraph 8.1.2.X

Table 9.2~~4~~5 SFN-CFN observed time difference accuracy for a FDD neighbour cell

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm]
SFN-CFN observed time difference	chip	+/-1	-94...-50

9.1.1.11.2 Range/mapping

The reporting range for *SFN-CFN observed time difference* for a TDD neighbour cell is from 0...256 frames.

In table 9.265 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.265 SFN-CFN observed time difference range/mapping for a TDD neighbour cell

Reported value	Measured quantity value	Unit
SFN-CFN_TIME_000	0 ≤ SFN-CFN observed time difference < 1	frame
SFN-CFN_TIME_001	1 ≤ SFN-CFN observed time difference < 2	frame
SFN-CFN_TIME_002	2 ≤ SFN-CFN observed time difference < 3	frame
…	…	…
SFN-CFN_TIME_253	253 ≤ SFN-CFN observed time difference < 254	frame
SFN-CFN_TIME_254	254 ≤ SFN-CFN observed time difference < 255	frame
SFN-CFN_TIME_255	255 ≤ SFN-CFN observed time difference < 256	frame

The reporting range for *SFN-CFN observed time difference* for a FDD neighbour cell is from 0 ... 9830400 chip.

In table 9.276 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.276 SFN-CFN observed time difference range/mapping for a FDD neighbour cell

Reported value	Measured quantity value	Unit
SFN-CFN_TIME _0000000	0 ≤ SFN-CFN observed time difference < 1	chip
SFN-CFN_TIME _0000001	1 ≤ SFN-CFN observed time difference < 2	chip
SFN-CFN_TIME _0000002	2 ≤ SFN-CFN observed time difference < 3	chip
…	…	…
SFN-CFN_TIME _9830397	9830397 ≤ SFN-CFN observed time difference < 9830398	chip
SFN-CFN_TIME _9830398	9830398 ≤ SFN-CFN observed time difference < 9830399	chip
SFN-CFN_TIME _9830399	9830399 ≤ SFN-CFN observed time difference < 9830400	chip

9.1.2 Performance for UE Measurements in Uplink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0{,}22$ and a bandwidth equal to the chip rate.

9.1.2.1 UE transmitted power

The measurement period for CELL_DCH state is [1 slot].

9.1.2.1.1 Absolute accuracy requirements

Table 9.287 UE transmitted power absolute accuracy

Parameter	Unit	PUEMAX	
		24dBm	21dBm
UE transmitted power=PUEMAX	dB	+1/-3	±2
UE transmitted power=PUEMAX-1	dB	+1,5/-3,5	±2,5
UE transmitted power=PUEMAX-2	dB	+2/-4	±3
UE transmitted power=PUEMAX-3	dB	+2,5/-4,5	±3,5
PUEMAX-10≤UE transmitted power<PUEMAX-3	dB	+3/-5	±4

Note 1: User equipment maximum output power, PUEMAX, is the maximum output power level without tolerance defined for the power class of the UE in 3GPP TS 25.102 "UTRA (UE) TDD; Radio Transmission and Reception".

Note 2: UE transmitted power is the reported value.

9.1.2.1.2 Range/mapping

The reporting range for *UE transmitted power* is from -50 ...+~~33~~ 34 dBm.

In table 9.298 mapping of the measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.298

Reported value	Measured quantity value	Unit
UE_TX_POWER _021	-50 ≤ UE transmitted power < -49	dBm
UE_TX_POWER _022	-49 ≤ UE transmitted power < -48	dBm
UE_TX_POWER _023	-48 ≤ UE transmitted power < -47	dBm
…	…	…
UE_TX_POWER _102	31 ≤ UE transmitted power < 32	dBm
UE_TX_POWER _103	32 ≤ UE transmitted power < 33	dBm
UE_TX_POWER _104	33 ≤ UE transmitted power < 34	dBm

9.2 Measurements Performance for UTRAN

9.2.1 Performance for UTRAN Measurements in Uplink (RX)

9.2.1.1 RSCP

The measurement period shall be [100] ms.

9.2.1.1.1 Absolute accuracy requirements

Table 9.3029 RSCP absolute accuracy

		Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm]
RSCP	dB	± 6	± 9	-105..-74

9.2.1.1.2 Relative accuracy requirements

The relative accuracy of RSCP in inter frequency case is defined as the RSCP measured from one UE compared to the RSCP measured from another UE.

Table 9.314 RSCP relative accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm]
RSCP	dB	± 3 for intra-frequency	-105..-74

9.2.1.1.3 Range/mapping

The reporting range for *RSCP* is from -120 ...-80 dBm.

In table 9.321 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.321

Reported value	Measured quantity value	Unit
RSCP_LEV _00	RSCP <–120,0	dBm
RSCP_LEV _01	-120,0 ≤ RSCP < –119,5	dBm
RSCP_LEV _02	-119,5 ≤ RSCP < –119,0	dBm
…	…	…
RSCP_LEV _79	-81,0 ≤ RSCP < -80,5	dBm
RSCP_LEV _80	-80,5 ≤ RSCP < -80,0	dBm
RSCP_LEV _81	-80,0 ≤ RSCP	dBm

9.2.1.2 Timeslot ISCP

The measurement period shall be [100] ms.

9.2.1.2.1 Absolute accuracy requirements

Table 9.332 Timeslot ISCP Intra frequency absolute accuracy

		Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm]
Timeslot ISCP	dB	± 6	± 9	-105..-74

9.2.1.2.2 Range/mapping

The reporting range for *Timeslot ISCP* is from -120...-80 dBm.

In table 9.343 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.343

Reported value	Measured quantity value	Unit
UTRAN_TS_ISCP_LEV_00	Timeslot_ISCP < –120,0	dBm
UTRAN_TS_ISCP_LEV_01	-120,0 ≤ Timeslot_ISCP < –119,5	dBm
UTRAN_TS_ISCP_LEV_02	-119,5 ≤ Timeslot_ISCP < –119,0	dBm
…	…	…
UTRAN_TS_ISCP_LEV_79	-81,0 ≤ Timeslot_ISCP < -80,5	dBm
UTRAN_TS_ISCP_LEV_80	-80,5 ≤ Timeslot_ISCP < -80,0	dBm
UTRAN_TS_ISCP_LEV_81	-80,0 ≤ Timeslot_ISCP	dBm

9.2.1.3 RECEIVED TOTAL WIDE BAND POWER

The measurement period shall be [100] ms.

9.2.1.3.1 Absolute accuracy requirements

Table 9.354 RECEIVED TOTAL WIDE BAND POWER Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm]
RECEIVED TOTAL WIDE BAND POWER	dB	± 4	-105..-74

9.2.1.3.2 Range/mapping

The reporting range for *RECEIVED TOTAL WIDE BAND POWER* is from -112 ... -50 dBm.

In table 9.365 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.365

Reported value	Measured quantity value	Unit
RECEIVED TOTAL WIDE BAND POWER_LEV _000	RECEIVED TOTAL WIDE BAND POWER < –112,0	dBm
RECEIVED TOTAL WIDE BAND POWER_LEV _001	-112,0 ≤ RECEIVED TOTAL WIDE BAND POWER < –111,9	dBm
RECEIVED TOTAL WIDE BAND POWER_LEV _002	-111,9 ≤ RECEIVED TOTAL WIDE BAND POWER < –111,8	dBm
…	…	…
RECEIVED TOTAL WIDE BAND POWER_LEV _619	-50,2 ≤ RECEIVED TOTAL WIDE BAND POWER < -50,1	dBm
RECEIVED TOTAL WIDE BAND POWER_LEV _620	-50,1 ≤ RECEIVED TOTAL WIDE BAND POWER < -50,0	dBm
RECEIVED TOTAL WIDE BAND POWER_LEV _621	-50,0 ≤ RECEIVED TOTAL WIDE BAND POWER	dBm

9.2.1.4 SIR

The measurement period shall be [80] ms.

9.2.1.4.1 Absolute accuracy requirements

Table 9.367 SIR Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Range
SIR	dB	± 3	For 0<SIR<20 dB when Io > -105 dBm
SIR	dB	+/-(3 - SIR)	For -7<SIR<0 dB when Io > -105 dBm

9.2.1.4.2 Range/mapping

The reporting range for *SIR* is from -11 ... 20 dB.

In table 9.387 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.387

Reported value	Measured quantity value	Unit
UTRAN_SIR_00	SIR < –11,0	dB
UTRAN_SIR_01	-11,0 ≤ SIR < –10,5	dB
UTRAN_SIR_02	-10,5 ≤ SIR < –10,0	dB
…	…	…

Reported value	Measured quantity value	Unit
UTRAN_SIR_61	19,0 ≤ SIR < 19,5	dB
UTRAN_SIR_62	19,5 ≤ SIR < 20,0	dB
UTRAN_SIR_63	20,0 ≤ SIR	dB

9.2.1.5 Transport Channel BER

The measurement period shall be equal to the [TTI] of the transport channel. Each reported Transport channel BER measurement shall be an estimate of the BER averaged over one measurement period only.

9.2.1.5.1 Accuracy requirement

The average of consecutive Transport channel BER measurements is required to fulfil the accuracy stated in table 9-48 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 9.39~~9 38~~.

Table 9.39~~ 38~~ Transport channel BER accuracy

Parameter	Unit	Accuracy [% of the absolute BER value]	Conditions
			Range
TrpBER	-	+/- 10	Convolutional coding 1/3rd with any amount of repetition or a maximum of 25% puncturing: for absolute BER value ≤ 15% Convolutional coding 1/2 with any amount of repetition or no puncturing: for absolute BER value ≤ 15% Turbo coding 1/3rd with any amount of repetition or a maximum of 20% puncturing: for absolute BER value ≤ 15%.

9.2.1.5.2 Range/mapping

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

In table 9.40~~39~~ mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.40~~39~~

Reported value	Measured quantity value	Unit
TrCh_BER_LOG_000	Transport channel BER = 0	-
TrCh_BER_LOG_001	-∞ < Log10(Transport channel BER) < -2,06375	-
TrCh_BER_LOG_002	-2,06375≤ Log10(Transport channel BER) < -2,055625	-
TrCh_BER_LOG_003	-2,055625 ≤ Log10(Transport channel BER) < -2,0475	-
…	…	…
TrCh_BER_LOG_253	-0,024375 ≤ Log10(Transport channel BER) < -0,01625	-
TrCh_BER_LOG_254	-0,01625 ≤ Log10(Transport channel BER) < -0,008125	-

TrCh_BER_LOG_255	-0,008125 ≤ Log10(Transport channel BER) ≤ 0	-

9.2.1.6 RX Timing Deviation

The measurement period shall be [100] ms.

9.2.1.6.1 Accuracy requirements

Table 9.4~~1~~0 RX Timing Deviation accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Range [chips]
RX Timing Deviation	chip	+/- 0,5	-256, …, 256

9.2.1.6.2 Range/mapping

The reporting range for *RX Timing Deviation* is from -255,9375~~256~~ ... 255,9375 ~~256~~ chips.

In table 9.4~~1~~ mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.4~~1~~

Reported value	Measured quantity value	Unit
RX_TIME_DEV_~~0001~~0000	RX Timing Deviation < –~~256,00~~ 255,9375	chip
RX_TIME_DEV_~~0002~~0001	-255,9375~~256,00~~≤ RX Timing Deviation < ~~255,75~~-255,875	chip
RX_TIME_DEV_~~0003~~0002	-255,875~~255,75~~≤ RX Timing Deviation < –255,8125~~255,50~~	chip
…	…	…
RX_TIME_DEV_~~1024~~10254096	000,00≤ RX Timing Deviation < ~~000,25~~0,0625	chip
…	…	…
RX_TIME_DEV_~~2046~~20478189	~~255,5~~255,8125 ≤ RX Timing Deviation < ~~255,75~~255,875	chip
RX_TIME_DEV_~~2047~~20488190	~~255,75~~255,875 ≤ RX Timing Deviation < ~~256,00~~255,9375	chip
RX_TIME_DEV_~~2048~~20498191	~~256,00~~255,9375 ≤ RX Timing Deviation	chip

Note: This measurement may be used for timing advance calculation or location services.

9.2.1.9 UTRAN GPS Timing of Cell Frames for ~~LCS~~UP

9.2.1.9.1 Accuracy requirement

Only necessary for UEs supporting ~~LCS~~UP.

Table 9.4~~2~~3

Parameter	Unit	Accuracy [chip]	Conditions
UTRAN GPS timing of Cell Frames for ~~LCS~~UP	Chip	[ ]	

9.2.1.9.2 Range/mapping

The reporting range for *UTRAN GPS timing of Cell Frames for ~~LCS~~UP* is from 0 ... 2319360000000 chip.

In table 9.4~~2~~3 the mapping of measured quantity is defined.

Table 9.4~~2~~3

Reported value	Measured quantity value	Unit
GPS_TIME_00000000000000	UTRAN GPS timing of Cell Frames for ~~LCS~~UP < 0,0625	chip
GPS_TIME_00000000000001	0,0625 ≤ UTRAN GPS timing of Cell Frames for ~~LCS~~UP < 0,1250	chip
GPS_TIME_00000000000002	0,1250 ≤ UTRAN GPS timing of Cell Frames for ~~LCS~~UP < 0,1875	chip
…	…	…
GPS_TIME_37109759999997	2319359999999,8125 ≤ UTRAN GPS timing of Cell Frames for ~~LCS~~UP < 2319359999999,8750	chip
GPS_TIME_37109759999998	2319359999999,8750 ≤ UTRAN GPS timing of Cell Frames for ~~LCS~~UP < 2319359999999,9375	chip
GPS_TIME_37109759999999	2319359999999,9375 ≤ UTRAN GPS timing of Cell Frames for ~~LCS~~UP < 2319360000000,0000	chip

9.2.2 Performance for UTRAN measurements in downlink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate.

9.2.2.1 Transmitted carrier power

The measurement period shall be [100] ms.

9.2.2.1.1 Accuracy requirements

Table 9.454 Transmitted carrier power accuracy

Parameter	Unit	Accuracy [% units]	Conditions
			Range
Transmitted carrier power	%	± 10	For 10% ≤ Transmitted carrier power ≤90%

9.2.2.1.2 Range/mapping

The reporting range for *Transmitted carrier power* is from 0 ... 100 %.

In table 9.465 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.465

Reported value	Measured quantity value	Unit
UTRAN_TX_POWER _000	Transmitted carrier power = 0	%
UTRAN_TX_POWER _001	0 < Transmitted carrier power ≤ 1	%
UTRAN_TX_POWER _002	1 < Transmitted carrier power ≤ 2	%
UTRAN_TX_POWER _003	2 < Transmitted carrier power ≤ 3	%
…	…	…
UTRAN_TX_POWER _098	97 < Transmitted carrier power ≤ 98	%
UTRAN_TX_POWER _099	98 < Transmitted carrier power ≤ 99	%
UTRAN_TX_POWER _100	99 < Transmitted carrier power ≤ 100	%

9.2.2.2 Transmitted code power

The measurement period shall be [100] ms.

9.2.2.2.1 Absolute accuracy requirements

Table 9.46 Transmitted code power absolute accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Range
Transmitted code power	dB	[± 3]	Over the full range

9.2.2.2.2 Relative accuracy requirements

The relative accuracy of transmitted code power is defined as the transmitted code power measured at one dedicated radio link compared to the transmitted code power measured from a different dedicated radio link in the same cell.

Table 9.4~~8~~7 Transmitted code power relative accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Range
Transmitted code power	dB	± 2	Over the full range

9.2.2.2.3 Range/mappingThe reporting range for *Transmitted code power* is from -10 ... 46 dBm.

In table 9.4~~9~~8 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.4~~9~~8

Reported value	Measured quantity value	Unit
UTRAN_CODE_POWER _010	-10,0 ≤ Transmitted code power < -9,5	dBm
UTRAN_CODE_POWER _011	-9,5 ≤ Transmitted code power < -9,0	dBm
UTRAN_CODE_POWER _012	-9,0 ≤ Transmitted code power < -8,5	dBm
…	…	…
UTRAN_CODE_POWER _120	45,0 ≤ Transmitted code power < 45,5	dBm
UTRAN_CODE_POWER _121	45,5 ≤ Transmitted code power < 46,0	dBm
UTRAN_CODE_POWER _122	46,0 ≤ Transmitted code power < 46,5	dBm

3GPP TSG RAN WG4 Meeting #16 **R4-010389**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.123** **CR** **40** ⌘ 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 cell-reselection and handover requirements 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:	⌘	Adaptation of cell re-selection requirements in connected mode to the requirements in idle mode. Correction of handover requirements.
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 UTRAN Connected Mode Mobility

This section contains the requirements on the mobility procedures in UTRAN connected mode such as handover and cell re-selection.
Requirements related to the measurements in support of the execution of the UTRAN connected mode mobility procedures are specified, currently not necessarily for all UTRAN connected mode states, in section 8 .
The radio links the UE shall use are controlled by UTRAN with RRC signalling.
UE behaviour in response to UTRAN RRC messages is described in TS25.331.
The purpose of Cell reselection in CELL_FACH, CELL_PCH and URA_PCH states is that the UE shall select a better cell according to the cell reselection criteria in TS 25.303. CELL_FACH, CELL_PCH and URA_PCH states are described in TS 25.331.
The handover process should be implemented in both the UE and UTRAN. The UE measurements and which radio links the UE shall use is controlled by UTRAN with RRC signalling.
Measurements are specified in TS25.225 and UE behaviour in response to UTRAN RRC messages is described in 3GPP TS 25.331. Further descriptions of the measurement procedures can be found in chapter 8.

5.1 TDD/TDD Handover

5.1.1 Introduction

The purpose of TDD/TDD handover is to change the cell of the connection between UE and UTRAN. The handover procedure is initiated from UTRAN with a RRC message that implies a handover ~~(PHYSICAL CHANNEL RECONFIGURATION, RADIO BEARER SETUP, RADIO BEARER RECONFIGURATION, RADIO BEARER RELEASE, or TRANSPORT CHANNEL RECONFIGURATION).~~, refer to TS25.331.
The handover procedure may cause the UE to change its frequency.

5.1.2 Requirements

5.1.2.1 TDD/TDD 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 $D_{handover}$ 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 5.1.2.2.
~~When the UE receives a RRC message that implies a handover, the UE shall start transmission of the new uplink DPCCH within [Xms] 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.~~

5.1.2.2 Interruption time

The interruption time i.e. the time between the last TTI containing a transport block on the old DP~~T~~CH and the time the UE starts transmission of the new uplink DP~~C~~CH, shall be less than the value in table 5-1 for intra-frequency handover and TDD/TDD inter-frequency handover . ~~This requirement does not include a delay due to SFN decoding of the new cell when this is needed.~~ There is different requirement on the ~~handover delay~~ interruption time depending on if the cell is known or not.~~has been within the monitored setor not~~.

A cell shall be regarded as known by the UE if
- it has been measured during the last 5 seconds or

- a dedicated connection existed between the UE and the cell during the last 5 seconds.

Table 5.12 TDD/TDD handover – interruption time

~~Number of new cells present in the handover command message~~ TDD/TDD handover case	Maximum ~~update~~ delay [ms]	
	One Known Cell~~s within monitored set~~ in HO command	One Unknown Cell~~s outside monitored set~~ in HO command
Intra-frequency	40	350
Inter-frequency ~~1~~	~~[40~~20~~]~~	~~[4000]~~350

The interruption time includes the time that can elapse till the appearance of the channel required for the synchronisation, which can be up to one frame (10ms). And the time that can elapse till the appearance of the slot in which the new uplink DPCH shall be transmitted , which can be up to one frame (10ms).
The requirement in Table 5-1 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.

5.2 TDD/FDD Handover

5.2.1 Introduction

The purpose of TDD/FDD handover is to change the mode between FDD and TDD.
The handover procedure is initiated from UTRAN with a handover command message ~~(PHYSICAL CHANNEL RECONFIGURATION, RADIO BEARER SETUP, RADIO BEARER RECONFIGURATION, RADIO BEARER RELEASE, or TRANSPORT CHANNEL RECONFIGURATION),~~ refer to TS25.331.~~.~~ The handover procedure causes the UE to change its frequency.

5.2.2 Requirements

These requirements shall apply only to TDD/FDD UE.
The requirements do not apply if FDD macro-diversity is used.

5.2.2.1 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 $D_{handover}$ 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 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 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. 2.2.23 Interruption time

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPTCH and the time the UE starts transmission of the new uplink DPCCH .. The interruption time shall be less than the value in table 5-23. 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 handover delay depending on if the cell is known or nothas been within the monitored set or not.

The definition of known cell can be found in section 5.1.2.2.

Table 5.2 TDD/FDD interruption time

Number of new cells present in the handover command message	Maximum update delay [ms]	
	Known Cells within monitored set	Unknown Cells outside monitored set
1	[100]	[350]

The interruption time includes the interruption uncertainty when changing the timing from the old TDD to the new FDD cell, which can be up to one frame (10ms) and the time required for measuring the downlink DPCCH channel as stated in TS 25.214 section 4.3.1.2 into account.

The requirement in Table 5-2 for the unknown cell shall apply if the signal quality of the unknown cell is good enough for successful synchronisation with one attempt.

5. 3 TDD/GSM Handover

In the early days of UMTS deployment it can be anticipated that the service area will not be as contiguous and extensive as existing second generation systems. It is also anticipated that UMTS network will be an overlay on the 2nd generation network and utilize the latter, in the minimum case, as a fall back to ensure continuity of service and maintain a good QoS as perceived by the user.

5. 3.1 Introduction

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

NOTE: Support of Blind Handover should be stated.

5.3.2 Requirements

These requirements shall apply only to TDD/GSM UE.

This clause presents some of the important aspects of GSM handover required to be performed by the UE. For the full specifications reference should be made the GSM Technical Specifications.
The underlying requirement is to ensure continuity of service to the UMTS user. The handover requirements for 3G to GSM should be comparable to GSM to GSM handover requirements.

5.3.2.1 Inter-system Hhandover delay

When the UE receives a RRC INTER SYSTEM HANDOVER FROM UTRAN COMMAND with the activation time "now" or earlier than the value in Table 5-3 from the end of the last TTI containing the RRC command, the UEit shall be ready to transmit (as specified in GSM 05.10) on the new channel within 120 ms of the new RAT within the value in Table 5-3 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.

If the access is delayed to an indicated activation time later than the value in Table 5-3 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 5-3: TDD/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

5.3.2.2 Interruption time

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old channel and the time the UE is ready to transmit on the new channel, shall be less than ~~40 ms~~ the value in Table 5-4. The requirement in Table 5-4 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 5-4: TDD/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

NEXT CHANGED SECTION

5.5 Cell Re-selection in Cell_PCH

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 25.303, based on radio measurements, and if a better cell is found that cell is selected.

5.5.2 Requirements

Requirements for cell re-selection in Cell_PCH state are the same as for cell re-selection in idle mode, see section 4.2. The UE shall support all DRX cycle lengths in table 4.1, according to TS25.331.

~~Cell reselection delays are applicable when the repetition period of all relevant system information blocks is not more than 1 280 ms and the length of DRX cycle is not longer than [640] ms.~~

~~5.5.2.1 Cell re-selection delay~~

~~When the UE is camped in Cell_PCH state on one of the cells, the UE shall be capable of re-selecting a new cell according the cell re-selection criteria. The cell re-selection delay is then 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 All cells in the neighbour list belong to the same frequency~~

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

~~5.5.2.1.2 The cells in the neighbour list belong to different frequencies~~

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

5.6 Cell Re-selection in URA_PCH

5.6.1 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 25.303, based on radio measurements, and if a better cell is found that cell is selected.

5.6.2 Requirements

Requirements for cell re-selection in URA_PCH state are the same as for cell re-selection in idle mode, see section 4.2. The UE shall support all DRX cycle lengths in table 4.1, according to TS25.331.
~~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.~~

~~5.6.2.1 Cell re-selection delay~~

~~When the UE is camped URA_PCH state on one of the cells, the UE shall be capable of re-selecting a new cell according the cell re-selection criteria. The cell re-selection delay is then 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.~~

~~5.6.2.1.1 All cells in the neighbour list belong to the same frequency~~

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

~~5.6.2.1.2 The cells in the neighbour list belong to different frequencies~~

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

NEXT CHANGED SECTION

A.5 UTRAN Connected Mode Mobility

A.5.1 TDD/TDD Handover

NOTE: This section is included for consistency with numbering with section 5; currently no test covering requirements in sections 5.1.2.1 and 5.1.2.2 exists.

A.5.2 TDD/FDD Handover

NOTE: This section is included for consistency with numbering with section 5 currently no test covering requirements in sections 5.2.2.1 and 5.2.2.2 exists.

A.5.3 TDD/GSM Handover

NOTE: This section is included for consistency with numbering with section 5 currently no test covering requirements in sections 5.3.2.1 and 5.3.2.2 exists.

NEXT CHANGED SECTION

A.5.5 Cell Re-selection in CELL_PCH

NOTE: Requirements for cell re-selection in Cell_PCH state are the same as for cell re-selection in idle mode, therefore no seperate test cases are required.

~~A.5.5.1 One frequency present in the neighbour list~~

~~A.5.5.1.1 Test Purpose and Environment~~

~~The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_PCH state in section 5.5.2.1.1.~~
~~The test parameters are given in Table A5.5 and A5.6~~

~~Table A.5.5: General test parameters for Cell Re-selection in CELL_PCH~~

~~Parameter~~		~~Unit~~	~~Value~~	~~Comment~~
~~initial condition~~	~~Active cell~~		~~Cell1~~	
	~~Neighbour cells~~		~~Cell2, Cell3,Cell4, Cell5, Cell6~~	
~~final condition~~	~~Active cell~~		~~Cell2~~	
~~T1~~		~~s~~		~~T1 need to be defined so that cell re-selection reaction time is taken into account.~~
~~T2~~		~~s~~		~~T2 need to be defined so that cell re-selection reaction time is taken into account.~~

Table A.5.6: Cell specific test parameters for Cell re-selection in CELL_PCH state

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset		[-]		[-]		[-]		[-]		[-]		[-]	
Qhyst Treselection Qintrasearch	dBm dB	[-] [-] [-]		[-] [-] [-]		[-] [-] [-]		[-] [-] [-]		[-] [-] [-]		[-] [-] [-]	
		Cell 4				Cell 5				Cell 6			
Timeslot		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP		-74	-74			-74	-74			-74	-74		
Qoffset		[-]		[-]		[-]		[-]		[-]		[-]	
Qhyst Treselection Qintrasearch	dBm dB	[-] [-] [-]		[-] [-] [-]		[-] [-] [-]		[-] [-] [-]		[-] [-] [-]		[-] [-] [-]	
I_{oc}	dBm/3.84 MHz	-70											
Propagation Condition		AWGN											

Note: PCCPCH_RSCP is the quality measure for cell selection and re-selection.

A.5.5.1.2 Test Requirements

The UE shall select cell 2 within a cell re-selection delay specified in 5.5.2.1.1

A.5.5.2 Two frequencies present in the neighbour list

A.5.5.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_PCH state in in section 5.5.2.1.2.
The test parameters are given in Table A.5.7 and A.5.8

Table A.5.7: General test parameters for Cell Re-selection in CELL_PCH

Parameter		Unit	Value	Comment
initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
final condition	Active cell		Cell2	
T1		s		T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		s		T2 need to be defined so that cell re-selection reaction time is taken into account.

Table A.5.8: Cell specific test parameters for Cell re-selection in CELL_PCH state

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	3	0	3	0	0	3	0	3	-3	-3	-3	-3
PCCPCH RSCP	dBm	-70	-73			-73	-70			-76	-76		
Qoffset		[-]		[-]		[-]		[-]		[-]		[-]	
Qhyst	dBm	[-]		[-]		[-]		[-]		[-]		[-]	
Treselection		[-]		[-]		[-]		[-]		[-]		[-]	
Qintrasearch	dB	[-]		[-]		[-]		[-]		[-]		[-]	
		Cell 4				Cell 5				Cell 6			
Timeslot		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		20	20	20	20	15	15	15	15	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
PCCPCH RSCP		-76	-76			-76	-76			-76	-76		
Qoffset		[-]		[-]		[-]		[-]		[-]		[-]	
Qhyst	dBm	[-]		[-]		[-]		[-]		[-]		[-]	
Treselection		[-]		[-]		[-]		[-]		[-]		[-]	
Qintrasearch	dB	[-]		[-]		[-]		[-]		[-]		[-]	
I_{oc}	dBm/3.84 MHz	-70											
Propagation Condition		AWGN											

Note: PCCPCH_RSCP is the quality measure for cell selection and re-selection.

A.5.5.2.2 Test Requirements

The UE shall select cell 2 within a cell re-selection delay specified in 5.5.2.1.2

A.5.6 Cell Re-selection in URA_PCH

NOTE: Requirements for cell re-selection in URA_PCH state are the same as for cell re-selection in idle mode, therefore no seperate test cases are required.

~~A.5.6.1 One frequency present in the neighbour list~~

~~A.5.6.1.1 Test Purpose and Environment~~

~~The purpose of this test is to verify the requirement for the cell re-selection delay in URA_PCH state in in section 5.6.2.1.1.~~
~~The test parameters are given in Table A.5.9 and A.5.10.~~
~~Cells possible for re-selection shall belong to different UTRAN Registration Areas (URA).~~

~~Table A.5.9: General test parameters for Cell Re-selection in URA_PCH~~

~~Parameter~~		~~Unit~~	~~Value~~	~~Comment~~
~~initial condition~~	~~Active cell~~		~~Cell1~~	
	~~Neighbour cells~~		~~Cell2, Cell3,Cell4, Cell5, Cell6~~	
~~final condition~~	~~Active cell~~		~~Cell2~~	
~~T1~~		~~s~~		~~T1 need to be defined so that cell re-selection reaction time is taken into account.~~
~~T2~~		~~s~~		~~T2 need to be defined so that cell re-selection reaction time is taken into account.~~

Table A.5.10: Cell specific test parameters for Cell re-selection in URA_PCH state

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset		[-]		[-]		[-]		[-]		[-]		[-]	
Qhyst	dBm	[-]		[-]		[-]		[-]		[-]		[-]	
Treselection		[-]		[-]		[-]		[-]		[-]		[-]	
Qintrasearch	dB	[-]		[-]		[-]		[-]		[-]		[-]	
		Cell 4				Cell 5				Cell 6			
Timeslot		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP		-74	-74			-74	-74			-74	-74		
Qoffset		[-]		[-]		[-]		[-]		[-]		[-]	
Qhyst	dBm	[-]		[-]		[-]		[-]		[-]		[-]	
Treselection		[-]		[-]		[-]		[-]		[-]		[-]	
Qintrasearch	dB	[-]		[-]		[-]		[-]		[-]		[-]	
I_{oc}	dBm/3.84 MHz	-70											
Propagation Condition		AWGN											

Note: PCCPCH_RSCP is the quality measure for cell selection and re-selection.

A.5.6.1.2 Test Requirements

The UE shall select cell 2 within a cell re-selection delay specified in 5.6.2.1.1

A.5.6.2 Two frequencies present in the neighbour list

A.5.6.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in URA_PCH state in section 5.6.2.1.2.
The test parameters are given in Table A5.11 and A5.12.

Cells possible for re-selection shall belong to different UTRAN Registration Areas (URA).

Table A.5.11: General test parameters for Cell Re-selection in URA_PCH

Parameter		Unit	Value	Comment
initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
final condition	Active cell		Cell2	
T1		s		T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		s		T2 need to be defined so that cell re-selection reaction time is taken into account.

Table A.5.12: Cell specific test parameters for Cell re-selection in URA_PCH state

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	3	0	3	0	0	3	0	3	-3	-3	-3	-3
PCCPCH RSCP	dBm	-70	-73			-73	-70			-76	-76		
Qoffset		[-]		[-]		[-]		[-]		[-]		[-]	
Qhyst	dBm	[-]		[-]		[-]		[-]		[-]		[-]	
Treselection		[-]		[-]		[-]		[-]		[-]		[-]	
Qintrasearch	dB	[-]		[-]		[-]		[-]		[-]		[-]	
		Cell 4				Cell 5				Cell 6			
Timeslot		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		20	20	20	20	15	15	15	15	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
PCCPCH RSCP		-76	-76			-76	-76			-76	-76		
Qoffset		[-]		[-]		[-]		[-]		[-]		[-]	
Qhyst	dBm	[-]		[-]		[-]		[-]		[-]		[-]	
Treselection		[-]		[-]		[-]		[-]		[-]		[-]	
Qintrasearch	dB	[-]		[-]		[-]		[-]		[-]		[-]	
I_{oc}	dBm/3.84 MHz	-70											
Propagation Condition		AWGN											

Note: PCCPCH_RSCP is the quality measure for cell selection and re-selection.

A.5.6.2.2 Test Requirements

The UE shall select cell 2 within a cell re-selection delay specified in 5.6.2.1.2

3GPP TSG RAN WG4 Meeting #16 **R4-010390**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.123** **CR** **41** ⌘ 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:	⌘	Change and completion of the cell-reselection requirements in CELL-FACH state.
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:	⌘	Undefined requirements for cell-reselection in Cell-FACH state.
Summary of change:	⌘	
Consequences if not approved:	⌘	Inconsistency between WG2 and WG4; 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.

5.4 Cell Re-selection in Cell_FACH

5.4.1 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 25.303, based on radio measurements, and if a better cell is found that cell is selected.

5.4.2 Requirements

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

~~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 UE shall measure all cells that are in the monitored set signalled by the network it has capability for.

The measurements on inter-frequency and inter-RAT cells shall be performed during the idle timeslots. In addition in case of TDD inter-frequency cells measurement occasions according to TS25.331 section 8.5.11 may be used. The use of the measurement occasions for inter-frequency TDD cells is indicated if the P-CCPCH of the target cell is in prallel with the own FACH slot.
If several TDD cells require the measurement occasions the time shall be equaly shared between these cells.

5.4.2.1 Measurements

The UE measurement capability according to section 8.1.2.1 shall apply.
A UE shall measure all cells indicated in the measurement control information it has capability for at least

-once every 5 seconds in case of UTRAN cells

$$T_{Measurement,period\_UTRAN} = 5\,\text{sec}$$

- once every 2,5seconds in case of GSM cells.

$$T_{Measurement,period\_GSM} = 2.5\,\text{sec}$$

Note:
This shall only apply for inter-frequency TDD cells if sufficient measurement occasions according to TS25.331 are provided for the cells this is required for.

The same requirements one the signal level and quality measure indicating a cell re-selection for the intra-frequency, inter-frequency and inter-RAT case as in idle mode shall apply.
The times required for the identification of a cell according to section 8 shall also apply.

5.4.2.2~~1~~ Cell re-selection delay

When the UE is camped in Cell_FACH state on one of the cells, the UE shall be capable of re-selecting a new cell according the cell re-selection criteria. ~~The cell re-selection delay is then defined as a time between the occurence of an event which will trigger Cell Reselection process and to the moment in time when the UE starts sending the RRC Cell Update message to the UTRAN.~~

5.4.2.21.1 Intra-frequency cell re-selection ~~All cells in the neighbour list belong to the same frequency~~

The cell re-selection delay in CELL_FACH state for intra-frequency cells shall be less than:

$$T_{reselection,intra} = T_{identify,intra} + T_{Measurement\ period\_UTRAN} + 40ms + T_{SI}$$

where

40ms time required for the synchronisation

$T_{identify\_intra}$ = Specified in 8.1.2.2.1.

$T_{Measurement,period\_UTRAN}$ = Specified in 5.4.2.1

T_{SI} = Maximum repetition rate of relevant system info 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.

~~be less than [x] seconds when all cells in the neighbour list belong to the same frequency~~

5.4.2.21.2 Inter-frequency TDD cell re-selection ~~The cells in the neighbour list belong to different frequencies~~

The cell re-selection delay in CELL_FACH state for inter-frequency TDD cells shall be less than:

$$T_{reselection,TDD,inter} = T_{identify,inter} + T_{Measurement\ period\_UTRAN} + 40ms + T_{SI}$$

where

40ms time required for the synchronisation

$T_{identify\_inter}$ = Specified in 8.1.2.3.1.

$T_{Measurement\ period\_UTRAN}$ = Specified in 5.4.2.1

T_{SI} = Maximum repetition rate of relevant system info 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.

NOTE: This requirement shall only apply if sufficient measurement occasions according to TS25.331 section 8.5.11 are available if this is required. ~~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 [x] frequencies.~~

5.4.2.2.3 Inter-frequency FDD cell re-selection

The cell re-selection delay in CELL_FACH state for inter-frequency FDD cells shall be less than:

$$T_{reselection,FDD} = T_{identify,FDD} + T_{Measurement\ period\_UTRAN} + [40ms] + T_{SI}$$

where

[40ms] time required for the synchronisation

$T_{identify,FDD}$ = Specified in 8.1.2.4.2.

$T_{Measurement\ period\_UTRAN}$ = Specified in 5.4.2.1

T_{SI} = Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell.

5.4.2.2.4 Inter-RAT cell re-selection

The cell re-selection delay in CELL_FACH state for inter-RAT cells shall be less than:

$$T_{reselection,GSM} = T_{identify,abort,GSM} + 4 \cdot T_{Measurement\ period\_GSM} + 40ms + T_{SI}$$

where

40ms time required for the synchronisation

$T_{identify,abort,GSM}$ = Specified in 8.1.2.4.

$T_{Measurement,period\_GSM}$ = Specified in 5.4.2.1

T_{SI} = Maximum repetition rate of relevant system info 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.

Note:
The UE shall measure each GSM cell indicated in the monitored set once every 2,5 seconds.
The UE shall maintain a running average of 4 measurements for each GSM cell.

5.4.2.3 Interruption in FACH message reception Measurements

The UE shall not interrupt the FACH message reception during measurements required for cell re-selection except in TDD inter-frequency measurements during the specified measurement occasions according to TS25.331 8.5.11 if FACH messages are transmitted during the defined measurement occasions.
The UE shall not interrupt the FACH message reception during the evaluation process of a cell required for a cell re-selection.
In case the UE reselects a cell in Cell_FACH state the time the UE is not able to receive FACH messages shall be less than:

$$T_{FACH\_interrupt} = 50ms + MAX\{T_{rep,reselection}, T_{rep\_FACH\_indication}\} + T_{cell\_update}$$

Where:

$T_{FACH\_interrupt}$
Is the time between the UE is not able to listen to FACH messages in the old cell and the point in time the UE listens to the FACH slot/messages in the new cell.

$50ms$
Are required to synchronise to the new cell (40ms) and the time that can elapse till the slot appears containing the FACH messages or the interruption uncertainty when changing the timing from the old TDD to the new FDD cell.

$MAX\{T_{rep,reselection}, T_{rep\_FACH\_indication}\}$
Is the maximum of the repetion period of the system information blocks required for the cell re-selection on the target cell and the system information indicating the position of the FACH slot in case of TDD, or a similar information how to acpuire the FACH messages in case of FDD or GSM.

This requirement assumes sufficient radio conditions so that synchronisation and reading the system information can be done without errors.

NEXT CHANGED SECTION

A.5.4 Cell Re-selection in CELL_FACH

NOTE: The cell re-selection delay is sufficiently covered by the test cases proposed in section A.4. The requirements for interruption in FACH message reception in section 5.4 is not tested. If a suitable test is evaluated it may be included in this section.

~~A.5.4.1 One frequency present in neighbour list~~

~~A.5.4.1.1 Test Purpose and Environment~~

~~The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_FACH state in the single carrier case reported in section 5.4.2.1.1.~~
~~The test parameters are given in Table A.5.1 and A.5.2~~

~~Table A.5.1 General test parameters for Cell Re-selection in CELL_FACH~~

~~Parameter~~		~~Unit~~	~~Value~~	~~Comment~~
~~initial condition~~	~~Active cell~~		~~Cell1~~	
	~~Neighbour cells~~		~~Cell2, Cell3,Cell4, Cell5, Cell6~~	
~~final condition~~	~~Active cell~~		~~Cell2~~	
~~T1~~		~~s~~		~~T1 need to be defined so that cell re-selection reaction time is taken into account.~~
~~T2~~		~~s~~		~~T2 need to be defined so that cell re-selection reaction time is taken into account.~~

Table A.5.2 Cell specific test parameters for Cell Re-selection in CELL_FACH

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset		[-]		[-]		[-]		[-]		[-]		[-]	
Qhyst	dBm	[-]		[-]		[-]		[-]		[-]		[-]	
Treselection		[-]		[-]		[-]		[-]		[-]		[-]	
Qintrasearch	dB	[-]		[-]		[-]		[-]		[-]		[-]	
		Cell 4				Cell 5				Cell 6			
Timeslot		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 1				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP		-74	-74			-74	-74			-74	-74		
Qoffset		[-]		[-]		[-]		[-]		[-]		[-]	
Qhyst	dBm	[-]		[-]		[-]		[-]		[-]		[-]	
Treselection		[-]		[-]		[-]		[-]		[-]		[-]	
Qintrasearch	dB	[-]		[-]		[-]		[-]		[-]		[-]	
I_{oc}	dBm/3.84 MHz	-70											
Propagation Condition		AWGN											

Note: PCCPCH_RSCP is the quality measure for cell selection and re-selection.

A.5.4.1.2 Test Requirements

The UE shall select cell 2 within a cell re-selection delay specified in 5.4.2.1.1

A.5.4.2 Two frequencies present in the neighbour list

A.5.4.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_FACH state in section 5.4.2.1.2.The test parameters are given in Table A5-3 and A5-4.

Table A.5.3: General test parameters for Cell Re-selection in CELL_FACH

Parameter		Unit	Value	Comment
initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
final condition	Active cell		Cell2	
T1		s		T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		s		T2 need to be defined so that cell re-selection reaction time is taken into account.

Table A.5.4: Cell specific test parameters for Cell re-selection in CELL_FACH state

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5	10	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	3	0	3	0	0	3	0	3	-3	-3	-3	-3
PCCPCH RSCP	dBm	-70	-73			-73	-70			-76	-76		
Qoffset		[-]		[-]		[-]		[-]		[-]		[-]	
Qhyst	dBm	[-]		[-]		[-]		[-]		[-]		[-]	
Treselection		[-]		[-]		[-]		[-]		[-]		[-]	
Qintrasearch	dB	[-]		[-]		[-]		[-]		[-]		[-]	
		Cell 4				Cell 5				Cell 6			
Timeslot		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		20	20	20	20	15	15	15	15	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS	dB	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
PCCPCH RSCP		-76	-76			-76	-76			-76	-76		
Qoffset		[-]		[-]		[-]		[-]		[-]		[-]	
Qhyst	dBm	[-]		[-]		[-]		[-]		[-]		[-]	
Treselection		[-]		[-]		[-]		[-]		[-]		[-]	
Qintrasearch	dB	[-]		[-]		[-]		[-]		[-]		[-]	
I_{oc}	dBm/3.84 MHz	-70											
Propagation Condition		AWGN											

Note: PCCPCH_RSCP is the quality measure for cell selection and re-selection.

A.5.4.2.2 Test Requirements

The UE shall select cell 2 within a cell re-selection delay specified in 5.4.2.1.2

3GPP TSG RAN WG4 Meeting #16 **R4-010377**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.123** **CR** **42** ⌘ 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:	⌘	Change of the cell-reselection requirements.
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 19-23 Feb2001
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:	⌘	Change of DRX cycle in WG2. State more precisely the requirements for cell-reselection.
Summary of change:	⌘	
Consequences if not approved:	⌘	Inconsistency between specification 25.123, 25.304 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.

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 *Normally Camped* state on a TDD cell, the UE shall attempt to detect, synchronise and monitor intra-frequency, inter-frequency and inter-RAT cells indicated in the measurment control system information of the serving cell. If~~and~~ the occasions/triggers occur, as specified in 25.304, the UE shall perform the Cell Reselection Evaluation process.

4.2.2 Requirements

4.2.2.1 Measurement and evaluation of cell selection criteria S_{rxlev} of serving cell ~~Number of cells to be monitored~~

The UE shall measure the PCCPCH RSCP level of the serving cell and evaluate the cell selection criterion S_{rxlev} defined in TS25.304 for the serving cell at least once per DRX cycle. The UE shall filter the PCCPCH RSCP measurement of the serving cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureTDD}/2$ (see table 4.1).

If the UE has evaluated in N_{serv} successive measurements that the serving cell does not fulfil the cell selection criterion S_{rxlex}, 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.

~~The UE shall be capable of monitoring at least [x] neighbour cells per carrier frequency for at least [x] carriers.~~

4.2.2.2 -Measurement of intra-frequency cells~~Cell re-selection delay~~

The UE shall measure PCCPCH RSCP at least every $T_{measureTDD}$ (see table 4.1) for intra-frequency cells that are detected and measured according to the measurement rules. $T_{measureTDD}$ is defined in Table 4.1. The UE shall filter PCCPCH 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 $T_{measureTDD}/2$.
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 $T_{evaluateTDD}$ (see table 4.1), from the moment the intra-frequency cell became at least 2 dB better ranked than the current serving cell, provided that Treselection timer is set to zero.
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.

~~The cell re-selection delay is defined as the time between the occurence of any event which will trigger Cell Reselection Evaluation process, as specified in 25.304, and the moment in time when the UE starts sending the preamble for RRC Connection request for Location Update message to the UTRAN.~~

~~4.2.2.2.1~~4.2.2.3 Measurement of inter-frequency TDD cells~~Single carrier case~~

~~In a single carrier case, the cell re-selection delay shall be equal or less than [5] seconds.~~
The UE shall measure PCCPCH RSCP at least every $(N_{carrier}-1) * T_{measureTDD}$ (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 TDD cells. The maximum number of carriers is 3 including the carrier the UE is camped on.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 $(N_{carrier}-1) * T_{evaluateTDD}$ 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 Treselection timer has a 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 Measurement of inter-frequency FDD cells ~~4.2.2.2.2 Multi carrier case~~

~~In a multi carrier case, the cell re-selection delay shall be equal or less than [Nt] seconds.~~

The UE shall measure the signal level CPICH RSCP of each FDD 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 $T_{measureFDD}$ (see table 4.1). The UE shall filter CPICH RSCP measurements of each measured inter-frequency cell using at least 2 measurements. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.
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 $NFDD_{carrier} * T_{evaluateFDD}$ 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 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 criteria specified in TS25.304. The use of mapping functions is indicated in the broadcast.

~~4.3~~4.2.2.5 Measurement of inter-RAT GSM cells ~~UTRAN to GSM Cell Re-Selection~~

~~Introduction~~

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.

The UTRAN to GSM Cell Re-Selection allows a UE, supporting both radio access technologies and camped on a UTRAN cell, to re-select a GSM cell and camp on it according to the cell re-selection criteria described in TS 25.304.

4.2.2.6 Evaluation of cell reselection criteria ~~4.3.2 Requirements~~

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 once 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 time in paging reception ~~4.3.2.1 Cell Re-Selection delay~~

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

DRX cycle length [s]	N_{serv} [number of successive measurements]	$T_{measureTDD}$ [s] (number of DRX cycles)	$T_{evaluateTDD}$ [s] (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)	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].

~~The cell re-selection delay is defined as the time between the occurence of any event which will trigger Cell Reselection Evaluation process, as specified in 25.304, and the moment in time when the UE starts sending the RR Channel Request message for location update to GSM.~~
~~The UTRAN to GSM cell re-selection delay shall be equal or less than [x].~~

4.2.2.8 Numbers of cells in neighbouring cell list

The UE shall be capable of monitoring 32 intra-frequency TDD cells (including serving cell), 32 inter-frequency cells (including TDD Mode cells and FDD Mode cells if FDD is supported by the UE). The TDD inter-frequency cells can be located on two additional frequencies besides the serving cell and the inter-frequncy FDD cells can be located on up to 3 carriers. In addition the UE shall be able to monitor 32 GSM carriers if GSM is supported by the UE. UE measurement activity is controlled by measurement rules defined in in TS25.304, allowing the UE to limit its measurment activity if certain conditions are fulfilled.

3GPP TSG RAN WG4 Meeting #16 **R4-010452**

Vienna, Austria 19th - 23rd February 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.123** **CR** **43** ⌘ 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:	⌘	Extension of reporting range for UTRAN UL measurements
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)*
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Detailed explanations of the above categories can be found in 3GPP TR 21.900.

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

Reason for change:	⌘	To improve the measurement for different base station classes in future releases.
Summary of change:	⌘	Reporting ranges of UTRAN uplink measurements are extended.
Consequences if not approved:	⌘	Additional measurements with the same measurement purpose are required in future releases.

Clauses affected:	⌘	9.2.1.1.3; 9.2.1.2.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

9.2 Measurements Performance for UTRAN

9.2.1 Performance for UTRAN Measurements in Uplink (RX)

9.2.1.1 RSCP

The measurement period shall be [100] ms.

9.2.1.1.1 Absolute accuracy requirements

Table 9.29 RSCP absolute accuracy

		Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm]
RSCP	dB	± 6	± 9	-105..-74

9.2.1.1.2 Relative accuracy requirements

Table 9.34 RSCP relative accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm]
RSCP	dB	± 3 for intra-frequency	-105..-74

9.2.1.1.3 Range/mapping

The reporting range for *RSCP* is from -120 ...-57~~80~~ dBm.

In table 9.31 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.31

Reported value	Measured quantity value	Unit
RSCP_LEV _00	RSCP <–120,0	dBm~~DBm~~
RSCP_LEV _01	-120,0 ≤ RSCP < –119,5	dBm~~DBm~~
RSCP_LEV _02	-119,5 ≤ RSCP < –119,0	dBm~~DBm~~
…	…	…
RSCP_LEV _125~~79~~	-~~81~~58,0 ≤ RSCP < -~~80~~57,5	dBm~~DBm~~
RSCP_LEV _126~~80~~	-~~80~~57,5 ≤ RSCP < -~~80~~57,0	dBm~~DBm~~
RSCP_LEV _127~~81~~	-~~80~~57,0 ≤ RSCP	dBm~~DBm~~

9.2.1.2 Timeslot ISCP

The measurement period shall be [100] ms.

9.2.1.2.1 Absolute accuracy requirements

Table 9.32 Timeslot ISCP Intra frequency absolute accuracy

		Accuracy [dB]		Conditions
		Normal conditions	**Extreme conditions**	**Io [dBm]**
Timeslot ISCP	dB	± 6	± 9	-105..-74

9.2.1.2.2 Range/mapping

The reporting range for *Timeslot ISCP* is from -120...-57~~80~~ dBm.

In table 9.33 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.33

Reported value	Measured quantity value	Unit
UTRAN_TS_ISCP_LEV_00	Timeslot_ISCP < –120,0	dBm
UTRAN_TS_ISCP_LEV_01	-120,0 ≤ Timeslot_ISCP < –119,5	dBm
UTRAN_TS_ISCP_LEV_02	-119,5 ≤ Timeslot_ISCP < –119,0	dBm
…	…	…
UTRAN_TS_ISCP_LEV_125~~79~~	~~-81~~58,0 ≤ Timeslot_ISCP < ~~-80~~57,5	dBm
UTRAN_TS_ISCP_LEV_126~~80~~	~~-80~~57,5 ≤ Timeslot_ISCP < ~~-80~~57,0	dBm
UTRAN_TS_ISCP_LEV_127~~81~~	~~-80~~57,0 ≤ Timeslot_ISCP	dBm