RP-000210

TSG-RAN Meeting #8 Düsseldorf, Germany, 21 – 23 June 2000

Title: Agreed CRs to TS 25.133

Source: TSG-RAN WG4

Agenda item: 5.4.3

Doc-1st-	Spec	CR	Re	Phas	Subject	Cat	Versio	Version-
RP-000210	25.133	010		R99	Measurement period for UTRAN SIR	F	3.1.0	3.2.0
RP-000210	25.133	011		R99	Measurement period for UE BLER	F	3.1.0	3.2.0
RP-000210	25.133	013		R99	Measurement delay reporting	F	3.1.0	3.2.0
RP-000210	25.133	015		R99	Correction - Propagation conditions	F	3.1.0	3.2.0
RP-000210	25.133	016		R99	Remove requirements on SSDT from 5.1.1.8.	D	3.1.0	3.2.0
RP-000210	25.133	017		R99	Update of test parameters to P-CCPCH Measurements	F	3.1.0	3.2.0
RP-000210	25.133	018		R99	Repetition Period of System Information	F	3.1.0	3.2.0
RP-000210	25.133	019		R99	Alignment of Cell Selection/reselection test scenario parameters	F	3.1.0	3.2.0
RP-000210	25.133	020		R99	Editorial corrections for TS25.133	F	3.1.0	3.2.0
RP-000210	25.133	021		R99	Removal of Annex A	F	3.1.0	3.2.0
RP-000210	25.133	022		R99	Requirement for UE Tx Power Measurement	F	3.1.0	3.2.0
RP-000210	25.133	023		R99	Insertion of Range/Mapping from TS 25.215 revised	F	3.1.0	3.2.0
RP-000210	25.133	024		R99	Signalling response delay	F	3.1.0	3.2.0
RP-000210	25.133	025		R99	Missing measurement periods	F	3.1.0	3.2.0
RP-000210	25.133	026		R99	RRC Connection mobility in Cell_FACH, Cell_PCH and	F	3.1.0	3.2.0
RP-000210	25.133	027		R99	Switching delay requirement for inter-system handover	F	3.1.0	3.2.0
RP-000210	25.133	028		R99	UE Chip time measurements	F	3.1.0	3.2.0
RP-000210	25.133	029		R99	UE Transmit Timing Adjustment	F	3.1.0	3.2.0
RP-000210	25.133	030		R99	Add GPS timing measurements to TS 25.133	F	3.1.0	3.2.0
RP-000210	25.133	031		R99	Test scenario for UTRAN to GSM cell re-selection	F	3.1.0	3.2.0
RP-000210	25.133	032		R99	Proposed test case for random access procedure (FDD)	F	3.1.0	3.2.0
RP-000210	25.133	033		R99	Inclusion of measurement granularities and ranges	F	3.1.0	3.2.0

RP-000210 25.	.133	034	R99	Parallel measurement requirements	F	3.1.0	3.2.0
RP-000210 25.	5.133	035	R99	UE Hard handover switching time	F	3.1.0	3.2.0

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Source:	Ericsson					Date:	2000-04-12			
Subject:	Measureme	nt period for UTR	AN SIR							
Work item:										
Category: (only one category shall be marked with an X)	 F Correction A Correspond B Addition of C Functional I D Editorial mod 	CorrectionXRelease:Phase 2Corresponds to a correction in an earlier releaseRelease 96Release 96Addition of featureRelease 97Release 97Functional modification of featureRelease 98Release 99Editorial modificationRelease 00Release 00								
<u>Reason for</u> change:	This CR pro UTRAN SIR	poses measurem measurement.	nent peri	od and up	pdated a	ccuracy requir	ement for the			
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8.2.2 SIR

1

The measurement period shall be [1800] ms.

8.2.2.1 Accuracy requirement

Table 8-22

Parameter	Accuracy	Range
SIR	± 3 dB	For $-7 < SIR < 207$ dB when RSSI > -105 dBm

	CHANGE I	REQL		ease see embedd ge for instructions	led help file s on how to	at the bottom of th fill in this form cor	his rectly.			
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Proposed change affects: (U)SIM ME X UTRAN / Radio X Core Network (at least one should be marked with an X)										
Source: Ericsson	n			<u> </u>	Date:	2000-04-12				
Subject: Measur	ement period for UE I	BLER								
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8.1.8 Transport channel BLER

NOTE: This measurement is for outer loop power control.

8.1.8.1 BLER measurement requirement

Transport channel BLER value shall be calculated from a sliding-window containing with the size equal to the reporting interval (see section 10.3.7.78 Periodical reporting criteria in TS 25.331)[20] CRC errors.

		CHANGE I	REQI	JEST	Please page fo	see embedded help f or instructions on how	ile at the bottom of th to fill in this form con	nis rectly.		
		25.133	CR	013		Current Versi	on: 3.1.0			
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Source:	Nokia					Date:	2000-04-28			
Subject:	Measureme	ent reporting delay	1							
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5.1.2.1 FDD Soft/Softer Handover

The soft handover procedure is initiated from UTRAN with an active set update message.

5.1.2.1.1 Maximum number of cells to be reported

The UE shall be capable of reporting the requested measurement quantity of at least [6] cells given in a measurement control message(s).

5.1.2.1.2 Measurement reporting delay

The measurement reporting delay is defined as the time from when a report is triggered at the physical layer according to the event or periodic mechanism set to trigger the measurement report, until the UE starts to transmit the measurement report over the Uu interface. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH.

Next section

5.1.2.2 FDD Hard Handover

The hard handover procedure is initiated from UTRAN with an handover command message. The hard handover procedure may cause the UE to change its frequency. Compressed mode according to the UE Capability may be used to be able to make any measurements on other frequencies.

5.1.2.2.1 Requirements

5.1.2.2.1.1 Maximum number of cells/frequencies to be monitored on other frequencies

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.

The cells and frequencies are given to the UE in a measurement control message(s), and the measurement slots available with compressed mode is given through physical channel reconfiguration parameters.

5.1.2.2.1.2 Measurement reporting delay

The measurement reporting delay is defined as the time from when a report is triggered at the physical layer according to the event or periodic mechanism set to trigger the measurement report, until the UE starts to transmit the measurement report over the Uu interface. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH.

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Fo <u>Proposed chang</u> (at least one should be r	Proposed change affects: (U)SIM ME X UTRAN / Radio Core Network (at least one should be marked with an X)										
Source:	RAN WG4					Date:	2000-05-22				
Subject:	Corrections	- propagation cor	nditions								
Work item:											
Category:FA(only one categoryshall be marked(with an X)	Correction Correspond Addition of Functional I Editorial mo	ls to a correction i feature modification of fea odification	in an ea ature	rlier releas	e	Release:	Phase 2 Release 96 Release 97 Release 98 Release 99 Release 00	x			
<u>Reason for</u> change:	Corrections where the ta	to TS25.133V3.1 aps delays can als	.0 to ref so speci	er the fadir fied.	ng prop	agation condit	ions to TS25.1	01			
Clauses affected	<u>d:</u>										
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<u>Other</u> <u>comments:</u>											

5.1.2.1.3.3 Correct reporting of neighbours in Fading propagation condition

This test will derive that the terminal makes correct reporting of an event. Cell 1 is current active cell. The power level of Cell 1 is kept constant and the power level of Cell 2 is changed using (\hat{I}_{or}/I_{oc}) . Hysteresis, Threshold and Time to Trigger values are given in the table below and they are signaled from test device. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A shall be used. Only the event number is reported in this case. New measurement control information, which defines neighbor cells etc., is sent always during time period Time 1. The number of neighbor cells in the measurement control information is 24.

Parameter	Unit	Ce	11 1	Ce	ell 2	
		Time 1	Time 2	Time 1	Time 2	
CPICH_Ec/lor	dB	-10		-10		
PCCPCH_Ec/lor	dB	-12		-12		
SCH_Ec/Ior	dB	-12		-12		
PICH_Ec/Ior	dB	-15		-15		
DPCH_Ec/lor	dB	TBD		TBD		
OCNS		[To Be Calcula	ted]	[To Be Calculated]		
\hat{I}_{or}/I_{oc}	DB	0	6.97	-Infinity	5.97	
I _{oc}	DBm/3.84 MHz	-70				
CPICH_Ec/Io	DB	-13	-13	-Infinity	-14	
Threshold	DB	3				
Hysteresis	DB	0				
Time to Trigger	Msec	0				
Propagation Condition	2 tap Rayleigh of TS25.101	fading, 0 dB, 1	0 dB, 50km/h<u>C</u>	ase 5 as specifie	<u>d in Annex B</u>	

Table 5-5: Test parameters for correct reporting of neighbours

Time period Time 1 is X seconds. Time period Time 2 is Y seconds.

5.1.2.2.1.3 Correct reporting of neighbours in Fading propagation condition

This test will derive that the terminal makes correct reporting of an event . Cell 1 is current active cell and Cell 2 is a neighbour cell on the un-used frequency. The power level of Cell 1 and Cell 2 are kept constant and the power level of. Hysteresis, Absolute threshold and Time to Trigger values are given in the table below and they are signalled from test device. In the measurement control information it is indicated to the UE that event-triggered reporting 2C shall be used. Only events, which occur, are reported in this case. New measurement control information, which defines neighbour cells etc., is always sent before compressed mode pattern starts. The number of neighbour cells in the measurement control information is 24. The X number of neighbours are on the un-used frequency. The BLER of the current active link is also measured.

Parameter	Unit	Cell 1		Ce	ell 2		
UTRA RF Channel Number		Channel 1		Channel 2			
CPICH_Ec/lor	dB	-10		-10			
PCCPCH_Ec/lor	dB	-12		-12			
SCH_Ec/Ior	dB	-12	-12				
PICH_Ec/Ior	dB	-15		-15			
DPCH_Ec/lor	dB	TBD	TBD		TBD		
OCNS		[To Be Calcul	ated]	[To Be Calculat	ted]		
\hat{I}_{or}/I_{oc}	dB	0	0	-1.8	-1.8		
I _{oc}	dBm/3.84 MHz	-70		-70			
CPICH_Ec/Io	dB	-13	-13	-14	-14		
Absolute							
Threshold	dB	-18					
(Ec/No)							
Hysteresis	dB	0					
Time to Trigger	msec	0					
Propagation	2 tap Raylei	gh fading, 0 dB	, <u>10 dB, 50</u> km/	4 Case 5 as specif	ied in Annex B		
Condition	of TS25.101						

Table 5-10: Test parameters for Correct reporting of neighbours

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		25.133	CR	016		Current Versi	on: <u>3.1.0</u>		
GSM (AA.BB) or 3G (A	AA.BBB) specification n	umber ↑		↑ (CR number	as allocated by MCC	support team		
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Proposed change affects: (U)SIM ME X UTRAN / Radio Core Network (at least one should be marked with an X)									
Source:	RAN WG4					Date:	2000-05-15		
Subject:	Remove require	ments on SS	DT from	5.1.1.8					
Work item:									
Category:FA(only one category(only one categoryshall be markedCwith an X)D	Correction Corresponds to Addition of featu Functional modi Editorial modific	a correction i ure ification of fea ation	in an ea ature	rlier rele		Release:	Phase 2 Release 96 Release 97 Release 98 Release 99 Release 00	X	
<u>Reason for</u> <u>change:</u>	To Incorporate o	outcome from	RAN4-	AH in Ma	almoe				
Clauses affected:	5.1.1.8								
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<u>Other</u> comments:									

5.1.2<u>1.1.68</u> BS Functionality in Site Selection Diversity Transmission (SSDT) Mode

Site Selection Diversity Transmission (SSDT) is an optional feature of BS. This requirement for SSDT mode ensures that BS correctly reacts to Layer 1 feedback signaling messages from UE.

5.1.2<u>1.18</u>.7<u>1</u> Minimum rRequirements

For the conditions specified, the BS shall transmit or not transmit the downlink DPDCH channel.

Parameter	Unit	Test 1	Test 2	Test 3	Test 4
Cell ID of BS under test	-	A	A	A	A
SSDT Quality threshold, Q _{th,} set in BS	DB₫ <u>₿</u>		-	5	
$\frac{\text{Uplink:}}{I_o}$	DB₫ <u>₿</u>	Q⊪+10	Q⊪+10	Q_{th}_3	Q ⊪ 3
Cell ID transmitted by UE	-	A	₿	A	₿
Transmission Of downlink DPCCH	-	Yes	Yes	Yes	Yes
Transmission Of downlink DPDCH	_	Yes	No	Yes	Yes

Table 5-8: Parameters for SSDT mode test

The above test should be for repeated for each of the three code sets "long", "medium" and "short" Cell ID code sets. The UE emulator can check the power ratio of downlink DPDCH/DPCCH in order to confirm whether BS transmitted the DPDCH.

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	25.133	CR	017		Current Versi	on: 3.1.0				
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Proposed change affects: (at least one should be marked with an X)										
Source: RAN WG	4				Date:	22/05/00				
Subject: Update of	test parameters to	P-CCPC	CH Mea	suremen	ts performance	requirements				
Work item:										
Category:FCorrection(only one categoryBAddition of(only one categoryCFunctionashall be markedCFunctionawith an X)DEditorial of	n nds to a correction of feature al modification of fea modification	in an ea ature	rlier rele	ease	<u>Release:</u>	Phase 2 Release 96 Release 97 Release 98 Release 99 Release 00	X			
Reason for change:The test pthe P-CC	parameters for the a PCH RSCP Measu	active FD rement	D cell a	re enclos	sed in the test p	parameter table fo	r			
Clauses affected: 8.1.1	3									
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Other comments:										

8.1.13 P-CCPCH measurements RIMARY COMMON CONTROL PHYSICAL CHANNEL MEASUREMENTS

These measurements consider P-CCPCH RSCP measurements. Only necessary for UEs supporting TDD.

8.1.13.1 Inter frequency test parameters

In this case the cells are on different frequencies. The table $\frac{108}{2} \times 17$ and notes 1-4-3 define the limits of signal strengths and code powers, where the requirement is applicable. <u>Cell 1 is the active cell (FDD) and cell 2 is a TDD cell.</u>

<u>Parameter</u>	<u>Unit</u>	<u>Cell 1</u>	<u>Cell 2</u>
<u>Timeslot Number</u>		<u>n.a.</u>	<u>k</u>
<u>UTRA RF Channel</u> <u>Number</u>		Channel 1	Channel 2
CPICH_Ec/Ior	dB	-10	<u>n.a.</u>
PCCPCH_Ec/lor	dB	-12	-3
SCH_Ec/Ior	dB	-12	
SCH_t_{offset}		<u>n.a.</u>	<u>_</u>
PICH_Ec/lor		<u>-15</u>	<u>_</u>
DPCH_Ec/Ior	dB		
<u>OCNS</u>	<u>dB</u>	[To Be Calculated]	
\hat{I}_{or}/I_{oc}	dB		
I _{oc}	<u>dBm/3.84</u> <u>MHz</u>	Note 3	70
Range 1:Io		<u>-94 –70</u>	<u>-94 –70</u>
<u>Range 2: Io</u>	<u>dBm</u>	<u>-94 –50</u>	<u>-94 –50</u>
Propagation condition	Ξ	AWGN	AWGN

Table 8-17 P-CCPCH inter frequency test parameters

	1	r
Parameter	Unit	Cell 1
UTRA RF Channel number		Channel 1
<i>Timeslot</i>		k
P CCPCH Ec/lor	dB	-3
OCNS	dB	Ð
Îor/Ioc	DB <u>dB</u>	[]
loc	dBm/ 3.84 MHz	Note 4
Range 1:10	dBm	-9470
Range 2: Io		-9450
Propagation condition	-	AWGN

NOTE 1: *P*-*CCPCH_RSCP* \geq -102 dBm.

NOTE $\underline{32}$: / Io – P-CCPCH_Ec/Ior/ \leq [20] dB.

NOTE 43: *loc* level shall be adjusted according the total signal power *Io* at receiver input and the geometry factor \hat{lor}/loc .

8.1.14 P-CCPCH RSCP

8.1.14.1 Absolute accuracy requirements

The absolute accuracy of P-CCPCH RSCP is defined as measured one code power after de-spreading.

Table 8-18: P-CCPCH_RSCP Inter frequency absolute accuracy Range 1

Parameter	Value	Range	Acc	uracy
			Normal conditions	Extreme conditions
P-CCPCH RSCP	<u>dB</u>	<u>1</u>	± 6	± 9
_	<u>dB</u>	<u>2</u>	<u>± 8</u>	<u>± 11</u>

Table 8-19: Range 2

Parameter	Value	Acc	ruracy
		Normal conditions	Extreme conditions
P-CCPCH_RSCP	d₿	<u>± 8</u>	<u>± 11</u>

	CHANGE REQUEST Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.
	25.133 CR 018 Current Version: 3.1.0
GSM (AA.BB) or 3G	(AA.BBB) specification number ↑
For submission list expected approval	to: RAN#8 for approval X strategic (for SMG use only) ↑ for information
Fo Proposed chang (at least one should be re-	rm: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc ge affects: (U)SIM ME X UTRAN / Radio Core Network marked with an X) (U)SIM ME X UTRAN / Radio Core Network
Source:	RAN WG4 Date: 2000-05-18
Subject:	Repetition Period of System Information
Work item:	
Category:FA(only one categoryshall be markedCwith an X)D	CorrectionXRelease:Phase 2Corresponds to a correction in an earlier releaseRelease 96Release 96Addition of featureRelease 97Release 97Functional modification of featureRelease 98Release 98Editorial modificationRelease 90XRelease 00Release 00Release 00
<u>Reason for</u> change:	
Clauses affected	<u>d:</u>
Other specs affected:	Other 3G core specifications \rightarrow List of CRs:Other GSM core specifications \rightarrow List of CRs:MS test specifications \rightarrow List of CRs:BSS test specifications \rightarrow List of CRs:O&M specifications \rightarrow List of CRs:
<u>Other</u> comments:	

4 Idle Mode Tasks

4.1 Introduction

I

NOTE:The paging period and the repetition rate of relevant system information blocks needs to be defined.selection and cell reselection delays are applicable when the repetition period of all relevant systeminformation blocks is not more than 1280 ms and the length of DRX cycle is not longer than 640 ms.

4.2 RF Cell Selection Scenario

NOTE: Some performance requirements in agreed scenarios are added into this subclause. More scenarios will be added later.

	CHANGE REQUEST Please see embedded help file at the bottom o page for instructions on how to fill in this form of	f this correctly.
	25.133 CR 019 Current Version: 3.1.0	
GSM (AA.BB) or 30	G (AA.BBB) specification number ↑	
For submission	n to: TSG RAN#8 for approval X strategic (for al meeting # here for information for information use	SMG only)
Form: CR cover shee	net, version 2 for 3GPP and SMG The latest version of this form is available from: <u>ftp://ftp.3gpp.org/Information/CR-</u>	Form- /2.doc
Proposed chan (at least one should be	nge affects: (U)SIM ME X UTRAN / Radio X Core Netwo	rk 📃
Source:	RAN WG4 2000-04-12	2
Subject:	Alignment of Cell Selection/reselection test scenario parameters	
Work item:		
Category:F(only one categoryEshall be markedCwith an X)E	F Correction X Release: Phase 2 A Corresponds to a correction in an earlier release Release 96 Release 96 B Addition of feature Release 97 Release 97 C Functional modification of feature Release 98 D Editorial modification Release 99 This CR contains changes to TS 25 133 to align parameters for cell selection and re-select	X
<u>change:</u>	test scenarios in this TS with the parameters used in cell selection and re-selection criteria according to TS 25.304 and TS 25.133. Editorial changes according to R4S000033 have been introduced.	
Clauses affecte	ed: 4.2, 4.3	
<u>Other specs</u> affected:	Other 3G core specifications \rightarrow List of CRs:Other GSM core specifications \rightarrow List of CRs:MS test specifications \rightarrow List of CRs:BSS test specifications \rightarrow List of CRs:O&M specifications \rightarrow List of CRs:	
<u>Other</u> comments:		



<----- double-click here for help and instructions on how to create a CR.

4 Idle Mode Tasks

4.1 Introduction

NOTE: The paging period and the repetition rate of relevant system information blocks needs to be defined.

4.2 RF Cell Selection Scenario

NOTE: Some performance requirements in agreed scenarios are added into this subclause. More scenarios will be added later.

4.2.1 Requirements for Cell Selection Single carrier Single cell case

4.2.1.1 Cell Selection delay

The UE shall be capable of selecting a suitable cell within [5] seconds from switch on in the test case defined in following subclause in Table 4-1. The cell selection delay is defined as a time the UE needs for sending RRC Connection Request for Location Registration to UTRAN after the power has been switched on with a valid USIM and PIN is disabled.

4.2.1.2<u>4.2.1.1.1</u> Test <u>p</u>Parameters

The stored information of the last registered PLMN is <u>utilized-utilsed</u> in this test. The stored information includes <u>the UTRA RF CHANNEL NUMBER</u>. The active cell in the test does not contain any neighbour cells in its measurement control information.

Parameter	Unit	Cell 1
UTRA RF Channel Number		Channel 1
CPICH_Ec/Ior	dB	-10
PCCPCH_Ec/Ior	dB	-12
SCH_Ec/Ior	dB	-12
PICH_Ec/lor	dB	-15
OCNS_Ec/Ior	dB	-0.941
\hat{I}_{or}/I_{oc}	dB	0
I _{oc}	dBm/3. 84 MHz	-70
CPICH_Ec/Io	dB	-13
Propagation Condition		AWGN
Q <u>qual</u> min	dB	[]
<u>Qrxlevmin</u>	<u>dBm</u>	Ш
UE_TXPWR_MAX_RA CH	dBm	[]

Table 4-1

4.2.1.34.2.1.1.2 Performance-Minimum Requirement Requirements

Cell selection shall be correct in more than [X %] of the cases. Cell selection is correct if within [5] seconds the UE camps on the cell.

4.2.2 Requirements for Cell Selection multi carrier multi cell case

4.2.2.1 Cell selection delay

The UE shall be capable of selecting a suitable cell within [5 + x] seconds from switch on in the test case defined in following subclause in Table 4-2. The cell selection delay is defined as a time the UE needs for sending RRC Connection Request for Location Registration message to UTRAN after the power has been switched on with a valid USIM and PIN is disabled.

4.2.2.2 Test Parameters 4.2.2.1.1 Test parameters

The stored information of the last registered PLMN is <u>utilized-utilised</u> 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.

NOTE: Here pilot pollution case with different power levels for cells could be included.

Parameter	Unit	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5	Cell 6
UTRA RF Channel Number		Channel 1	Channel 1	Channel 1	Channel 2	Channel 2	Channel 2
CPICH_Ec/lor	dB	-10	-10	-10	-10	-10	-10
PCCPCH_Ec/lor	dB	-12	-12	-12	-12	-12	-12
SCH_Ec/Ior	dB	-12	-12	-12	12	-12	-12
PICH_Ec/Ior	dB	-15	-15	-15	-15	-15	-15
OCNS_Ec/Ior	dB	-0.941	-0.941	-0.941	-0.941	-0.941-	-0.941
\hat{I}_{or}/I_{oc}	dB	5.3	2.3	-1.7	6.3	14.3	2.3
I _{oc}	dBm/3. 84 MHz	-70			-70		1
CPICH_Ec/Io	dB	-13	-16	-20	-19	-11	-23
Propagation Condition		AWGN	1	1	AWGN	1	<u> </u>
<u>Qqual</u> min	dB	[]	[]	[]	[]	[]	[]
<u>Orxlevmin</u>	<u>dBm</u>	Ш	Ш				Ш
UE_TXPWR_MAX_RA CH	dBm	[]	[]	[]	[]	[]	[]
<u>Ooffset_{s, n}</u>	<u>dB</u>	C1, C2: [] C1, C3: [] C1, C4: [] C1, C5: [] C1, C6: []	C2, C1: [] C2, C3: [] C2, C4: [] C2, C5: [] C2, C6: []	C3, C1: [] C3, C2: [] C3, C4: [] C3, C5: [] C3, C6: []	C4, C1: [] C4, C2: [] C4, C3: [] C4, C5: [] C4, C6: []	C5, C1: [] C5, C2: [] C5, C3: [] C5, C4: [] C5, C6: []	C6, C1: [] C6, C2: [] C6, C3: [] C6, C4: [] C6, C5: []

Table 4-2

4.2.2.3

Performance Requirements 4.2.1.1.2 Minimum requirement

Cell selection shall be correct in more than [X%] of the cases. Cell selection is correct if within [5+x] seconds the UE camps on the cell, which fulfils the cell selection criteria.

4.3 RF Cell Re-Selection Scenario

NOTE: One performance requirement in agreed scenario is added into this subclause. More scenarios will be added later.

4.3.1 Requirements for Cell Re-Selection single carrier multi cell case

4.3.1.1 Cell re-selection delay

When the UE is camped on one of the cells, the UE shall be capable of re-selecting a new cell in the test case defined in the following subclause in within [5] seconds from it becoming a cell to be re-selected according

the cell re-selection criteria. The cells, which are possible to be re-reselected during the test are belonging to different location areas. The cell re-selection delay is then defined as a time from when CPICH_Ec/Io is changed on cell 1 and 2 to the moment in time when the UE starts sending the RRC Connection request for Location Update message to the UTRAN.

4.3.1.2 Test Parameters 4.3.1.1.1 Test parameters

One of the 6 cells in Table 4-3 is serving cell and all others are given in the measurement control information of the serving cell. 2 of the cells are possible for cell re-selection and 4 of the cells are steady interfering cells.

Parameter	Unit	Cel	11 1	C	ell 2	Ce	ell 3	Cel	14	C	ell 5	Ce	ell 6
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	Т
UTRA RF Channel Number		Chan	nel 1	Cha	nnel 1	Char	nnel 1	Chan	nel 1	Cha	nnel 1	Chai	nnel 1
CPICH_Ec/lor	dB	-1	10		-10	-	10	-1	0	-	-10	-	10
PCCPCH_Ec/lor	dB	-1	12	-	-12	-	12	-1	2	-	-12	-	12
SCH_Ec/Ior	dB	-1	12	-	-12	-	12	-1	2	-	-12	-	12
PICH_Ec/Ior	dB	-1	15	-	-15	-	15	-1	5	-	-15	-	15
OCNS_Ec/Ior	dB	-0.9	941	-0	.941	-0.	941	-0.9	941	-0.	.941	-0.	941
\hat{I}_{or}/I_{oc}	dB	7.3	10.2 7	10.2 7	7.3	0.	27	0.2	27	0.27		0.27	
I _{oc}	dBm/3. 84 MHz				<u> </u>	I		70				1	
CPICH_Ec/lo	dB	-16	-13	-13	-16	-	23	-2	23	-23		-23	
Propagation Condition			I	1	I	1	AW	VGN				1	
<u>Cell_selection_and</u> reselection_quality_ <u>measure</u>		CPICH	<u>I E_c/N₀</u>	CPIC	<u>H E_c/N₀</u>	CPICI	<u>H E_c/N₀</u>	CPICH	[<u>E_c/N₀</u>	CPIC	<u>H E_c/N₀</u>	CPICI	<u>H E_c/</u> N
<u>Qqualmin</u>	<u>dB</u>	L	1			1	1	1	1			1	1
<u>Qrxlevmin</u>	<u>dBm</u>	1	1			1]	1	1			I	1
<u>UE_TXPWR_MAX_</u> <u>RACH</u>	<u>dB</u>	Ĺ	1			1	1	L	1			1	
Qoffset _{s, n}	<u>dB</u>	$\begin{array}{c} \underline{C1, C2} \\ \underline{C1, C3} \\ \underline{C1, C4} \\ \underline{C1, C5} \\ \underline{C1, C5} \\ \underline{C1, C6} \end{array}$: [] : [] : [] : [] : []	$\begin{array}{c} \underline{C2, C} \\ \underline{C2, C} \end{array}$	1: [] 3: [] 4: [] 5: [] 6: []	$\begin{array}{c} \underline{C3, C1} \\ \underline{C3, C2} \\ \underline{C3, C4} \\ \underline{C3, C5} \\ \underline{C3, C6} \end{array}$: [] 2: [] 5: [] 5: []	$\begin{array}{c} \underline{C4, C1} \\ \underline{C4, C2} \\ \underline{C4, C3} \\ \underline{C4, C3} \\ \underline{C4, C5} \\ \underline{C4, C5} \\ \underline{C4, C6} \end{array}$		<u>C5, C2</u> <u>C5, C2</u> <u>C5, C4</u> <u>C5, C4</u> <u>C5, C4</u>	1: [] 2: [] 3: [] 4: [] 5: []	$ \begin{array}{r} C6, C1 \\ C6, C2 \\ C6, C3 \\ C6, C4 \\ C6, C5 \\ \end{array} $	L: [] 2: [] 3: [] 4: [] 5: []
Qhyst	dB m]]		[]	[]]]		[]	[[]
<u>PENALTY TIME</u>	<u>s</u>	L	1			1	1	1	1			1	1
<u>TEMP OFFSET</u>	<u>dB</u>	L	1			1	1	L	1			1	1
Treselection	<u>s</u>]]		[]	[]	[]		[]	[]

Table 4-3

Release 1	999		PAGE 1	9	3G TS 25.	133 V3.1.0 (2000-0	3)
O Sintrasearch	dB	l n	l n	1 []	l n	[]	r1

Time T1 is X seconds and T2 is Y seconds.

NOTE: T1 and T2 need to be defined so that cell re-selection reaction time is taken into account.

4.3.1.3 Performance Requirements 4.3.1.1.2 Minimum requirements

Cell re-selection shall be correct in more than [X %] of the cases. Cell re-selection is correct if within [5] seconds the UE re-reselects a new cell, which fulfils the cell re-selection criteria.

4.3-1.1-43 Cell List Size

[The UE shall be capable of recording at least [6] of the strongest cells according to the cell re-selection criteria. The number of the strongest cells recorded inside the UE shall be at least [6].]

4.3.1.<u>1.54</u> Maximum number of cells to be monitored

For re-selection purposes, the UE shall be capable of monitoring at least up to 32 neighbouring cells given in the measurement control information. The exact number of cells to be monitored will be determined by the measurement control information broadcast in the serving cell.

4.3.2 Requirements for Cell Re-Selection multi carrier multi cell case

4.3.2.1 Cell re-selection delay

When the UE is camped on one of the cells, the UE shall be capable of re-selecting a new cell in the test case defined in the following subclause in within [Tres] seconds from it becoming a cell to be re-selected according the cell re-selection criteria. The cells, which are possible to be re-reselected during the test are transmitting on different frequencies and are belonging to different location areas. The cell re-selection delay is then defined as a time from when CPICH_Ec/Io is changed on cell 1 and 2 to the moment in time when the UE starts sending the RRC Connection request for Location Update message to the UTRAN.

4.3.2.2 Test Parameters 4.3.2.1.1 Test parameters

6 cells are given in the measurement control information of the serving cell, 3 on each of the two frequencies. One of the 6 cells in 4.4 is the serving cell, totally 2 of the cells are possible for cell re-selection and 4 of the cells are interfering cells.

Parameter	Cel	11 1	C	ell 2	Ce	ell 3	Cel	114	Ce	ell 5	Cell 6		
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	Т
UTRA RF Channel Number		Chan	nel 1	Cha	nnel 2	Char	nnel 1	Chan	nel 1	Chai	nnel 2	Char	nnel 2
CPICH_Ec/Ior	dB	-1	0		-10	-	10	-1	0	-	10	-	10
PCCPCH_Ec/lor	dB	-1	2		-12	-	12	-1	2	-	12	-	12
SCH_Ec/Ior	dB	-1	2		-12	-	12	-1	2	-	12	-	12
PICH_Ec/Ior	dB	-1	5		-15	-	15	-1	5	-	15	-	15
OCNS_Ec/Ior	dB	-0.9	941	-0	.941	-0.	941	-0.9	941	-0.	941	-0.	941
\hat{I}_{or}/I_{oc}	dB	-3.4	2.2	2.2	-3.4	-7.4	-4.8	-7.4	-4.8	-4.8	-7.4	-4.8	-7
I _{oc}	dBm/3. 84 MHz				<u> </u>	I	-	70		1		1	L
CPICH_Ec/lo	dB	-16	-13	-13	-16	-	20	-2	20	-	20	-	20
Propagation Condition				•			AW	'GN					
<u>Cell selection and</u> <u>reselection quality</u> <u>measure</u>		CPICH	<u>I E_c/N₀</u>	<u>CPIC</u>	<u>H E_c/N₀</u>	CPICE	<u>H E_c/N₀</u>	CPICH	<u>[E_c/N₀</u>	CPIC	<u>H E_c/N₀</u>	CPICH	<u>+ E_c/</u> N
<u>Qqualmin</u>	<u>dB</u>	1	1		[]	1	1	1	1	l		1]
<u>Qrxlevmin</u>	<u>dBm</u>	L	1			1	1	L	1	J		1	1
<u>UE TXPWR MAX</u> <u>RACH</u>	<u>dB</u>	L	1]	1	1	1			1	l
Qoffset _{s.n}	<u>dB</u>	$ \begin{array}{r} \underline{C1, C2} \\ \underline{C1, C3} \\ \underline{C1, C4} \\ \underline{C1, C5} \\ \underline{C1, C6} \end{array} $: [] : [] : [] : []	$\begin{array}{c} \underline{C2, C} \\ \underline{C2, C} \end{array}$	1: [] 3: [] 4: [] 5: [] 6: []	$ \begin{array}{r} C3, C1 \\ C3, C2 \\ C3, C4 \\ C3, C5 \\ C3, C6 \\ C3, C6 \\ \end{array} $: [] :: [] :: [] :: [] :: []	$ \begin{array}{r} \underline{C4, C1} \\ \underline{C4, C2} \\ \underline{C4, C3} \\ \underline{C4, C5} \\ \underline{C4, C5} \\ \underline{C4, C6} \end{array} $		C5, C1 C5, C2 C5, C2 C5, C4 C5, C4	L: [] 2: [] 3: [] 4: [] 5: []	<u>C6, C1</u> <u>C6, C2</u> <u>C6, C3</u> <u>C6, C4</u> <u>C6, C5</u>	<u>; []</u> <u>; []</u> <u>; []</u> <u>; []</u>
Qhyst	dB	[2	2]		[2]	[2]	[2	2]	[2]	[2	2]
<u>PENALTY_TIME</u>	<u>s</u>	L	1]	1	L	1			1	
TEMP OFFSET	<u>dB</u>	L	1]	1	L	1	J		1	1
Treselection	s	[:	5]	[[5]	[5]	[5	5]	[5]	[5]
Sintrasearch	<u>dB</u>	1	1			1	1	1	1			1	
QS intersearch	dB	[-8	3]	[·	-8]	[-	8]	[-8	3]	[-	8]	[-	8]

Table 4-4

Time T1 is X seconds and T2 is Y seconds.

4.3.2.3 Performance Requirements 4.3.2.1.2 Minimum requirements

Cell re-selection shall be correct in more than [90%] of the cases. Cell re-selection is correct if within Nt seconds the UE re-reselects a new cell, which fulfils the cell re-selection criteria and stays steady on that cell until the channel conditions are changed again.

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GSM (AA.BB) or 3G (AA.BBB) specif	ication number ↑	↑ CR numb	er as allocated by MCC support team	
or submission to: TSG R t expected approval meeting # here ↑	AN#8 for appro for informa	tion	strategic (for non-strategic use	r SMG e only)

Subject:		Editorial corrections				
Work item:						
Category: (only one category shall be marked with an X)	F A B C D	Correction Corresponds to a correction in an earlier release Addition of feature Functional modification of feature Editorial modification	X	<u>Release:</u>	Phase 2 Release 96 Release 97 Release 98 Release 99 Release 00	X
Reason for Editorial corrections to TS25.133V3.1.0 to improve the document presentation and structure.						
Clauses affect	ted:					

Other specs	Other 3G core specifications		\rightarrow List of CRs:		
affected:	Other GSM core specifications		\rightarrow List of CRs:		
	MS test specifications	Х	\rightarrow List of CRs:		
	BSS test specifications		\rightarrow List of CRs:		
	O&M specifications		\rightarrow List of CRs:		
			-		
Other comments:					

3G TS 25.133 V3.1.0 (2000-03)

Technical Specification

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Foreword

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

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

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Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document specifies requirements for support of Radio Resource Management for FDD. These requirements include requirements on measurements in UTRAN and the UE as well as requirements on node dynamical behaviour and interaction, in terms of delay and response characteristics.

2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

1	
[1]	3GPP Homepage: <u>www.3GPP.org</u> .
[2]	spare
[3]	TS 25.101: "UE Radio transmission and reception (FDD)".
[4]	TS 25.104: "BTS Radio transmission and reception (FDD)".
[5]	TS 25.102: "UE Radio transmission and reception (TDD)".
[6]	TS 25.105: "BTS Radio transmission and reception (TDD)".
[7]	TS 25.103: "RF parameters in support of RRM".
[8]	TS 25.141: "Base station conformance testing (FDD)".
[9]	TS 25.142: "Base station conformance testing (TDD)".
[10]	TS 25.113: "Base station EMC".
[11]	TRS 25.942: "RF System scenarios".
[12]	TR 25.922: "RRM Strategies".
[13]	TS 25.215: "Physical Layer Measurements (FDD)".
[14]	TS 25.225: "Physical Layer Measurements (TDD)".
[15]	TS 25.302: "Services provided by Physical Layer".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

The main general definitions strictly related to the Transmission and Reception characteristics but important also for the present document can be found in [3] for UE FDD, in [4] for BS FDD, in [5] for UE TDD, in [6] for BS TDD.

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3.2 Symbols

For the purposes of the present document, the following symbol applies:

[...] Values included in square bracket must be considered for further studies, because it means that a decision about that value was not taken.

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACPR	Adjacent Channel Power Ratio
BER	Bit Error Rate Ratio
BLER	Block Error Rate Ratio
BS	Base Station
CW	Continuous wave (unmodulated signal)
DL	Down link (forward link)
EIRP	Equivalent Isotropic Radiated Power
FDD	Frequency Division Duplexing
FER	Frame Error Ratio
PPM	Parts Per Million
RRM	Radio Resource Management
RSSI	Received Signal Strength Indicator
SIR	Signal to Interference ratio
TDD	Time Division Duplexing
TPC	Transmit Power Control
UE	User Equipment
UL	Up link (reverse link)
UTRA	UMTS Terrestrial Radio Access

4 Idle Mode Tasks

4.1 Introduction

NOTE: The paging period and the repetition rate of relevant system information blocks needs to be defined.

4.2 RF Cell Selection Scenario

NOTE: Some performance requirements in agreed scenarios are added into this sub_clause. More scenarios will be added later.

4.2.1 Requirements for Cell Selection Single carrier Single cell case

4.2.1.1 Cell Selection delay

The UE shall be capable of selecting a suitable cell within [5] seconds from switch on in the test case defined in following subclause in Table 4–1. The cell selection delay is defined as a time the UE needs for sending RRC Connection Request for Location Registration to UTRAN after the power has been switched on with a valid USIM and PIN is disabled.

4.2.1.2 Test Parameters 4.2.1.1.1 Test parameters

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

Parameter	Unit	Cell 1
UTRA RF Channel Number		Channel 1
CPICH_Ec/Ior	dB	-10
PCCPCH_Ec/Ior	dB	-12
SCH_Ec/Ior	dB	-12
PICH_Ec/Ior	dB	-15
OCNS_Ec/Ior	dB	-0.941
\hat{I}_{or}/I_{oc}	dB	0
I _{oc}	dBm/3.84 MHz	-70
CPICH_Ec/Io	dB	-13
Propagation Condition		AWGN
Qmin	dB	[]
UE_TXPWR_MAX_RACH	dBm	[]

Table 4-1: Cell selection single carrier single cell case

4.2.1.1.24.2.1.3 Performance-Minimum requirement_Requirements

Cell selection shall be correct in more than [X %] of the cases. Cell selection is correct if within [5] seconds the UE camps on the cell.

4.2.2 Requirements for Cell Selection multi carrier multi cell case

4.2.2.1 Cell selection delay

The UE shall be capable of selecting a suitable cell within [5 + x] seconds from switch on in the test case defined in following subclause in Table 4-2. The cell selection delay is defined as a time the UE needs for sending RRC Connection Request for Location Registration message to UTRAN after the power has been switched on with a valid USIM and PIN is disabled.

4.2.2.2 Test Parameters 4.2.2.1.1 Test parameters

The stored information of the last registered PLMN is <u>utilizedutilised</u> 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.

NOTE: Here pilot pollution case with different power levels for cells could be included.

Parameter	Unit	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5	Cell 6
UTRA RF Channel Number		Channel 1	Channel 1	Channel 1	Channel 2	Channel 2	Channel 2
CPICH_Ec/lor	dB	-10	-10	-10	-10	-10	-10
PCCPCH_Ec/Ior	dB	-12	-12	-12	-12	-12	-12
SCH_Ec/Ior	dB	-12	-12	-12	12	-12	-12
PICH_Ec/Ior	dB	-15	-15	-15	-15	-15	-15
OCNS_Ec/Ior	dB	-0.941	-0.941	-0.941	-0.941	-0.941	-0.941
\hat{I}_{or}/I_{oc}	dB	5.3	2.3	-1.7	6.3	14.3	2.3
I _{oc}	dBm/3.84 MHz		-70			-70	
CPICH_Ec/Io	dB	-13	-16	-20	-19	-11	-23
Propagation Condition			AWGN			AWGN	
Qmin	dB	[]	[]	[]	[]	[]	[]
UE_TXPWR_MAX_ RACH	dBm	[]	[]	[]	[]	[]	[]

Table 4-2: Cell selection multi carrier multi cell case

4.2.2.2.31.2 Performance Minimum requirements Requirements

Cell selection shall be correct in more than [X%] of the cases. Cell selection is correct if within [5+x] seconds the UE camps on the cell, which fulfils the cell selection criteria.

4.3 RF Cell Re-Selection Scenario

[NOTE: One performance requirement in agreed scenario is added into this sub clause. More scenarios will be added later.]

4.3.1 Requirements for Cell Re-Selection single carrier multi cell case

4.3.1.1 Cell re-selection delay

When the UE is camped on one of the cells, the UE shall be capable of re-selecting a new cell in the test case defined in the following subclause in within [5] seconds from it becoming a cell to be re-selected according the cell re-selection criteria. The cells, which are possible to be re-reselected during the test are belonging to different location areas. The cell re-selection delay is then defined as a time from when CPICH_Ec/Io is changed on cell 1 and 2 to the moment in time when the UE starts sending the RRC Connection request for Location Update message to the UTRAN.

4.3.4<u>1</u>.2<u>1.1</u> Test ₽_parameters

One of the 6 cells in Table 4-3 is serving cell and all others are given in the measurement control information of the serving cell. 2 of the cells are possible for cell re-selection and 4 of the cells are steady interfering cells.

	1													
Parameter	Unit	Cell 1		Cell 2		Cell 3		Cell 4		Cell 5		Cell 6		
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	Т2	
UTRA RF Channel Number		Cha	nnel 1	Channel 1										
CPICH_Ec/lor	dB	-	-10	-1	0	-1	0	-	10	-	-10	-1	0	
PCCPCH_Ec/lor	dB	-	-12	-1	2	-12		-	12	-	-12	-12		
SCH_Ec/Ior	dB	-12		-12		-12		-	12	-	-12	-12		
PICH_Ec/Ior	dB	-15		-15		-15		-15		-15		-15		
OCNS_Ec/Ior	dB	-0.	.941	-0.9	-0.941		-0.941		-0.941		-0.941		-0.941	
\hat{I}_{or}/I_{oc}	dB	7.3	10.27	10.27	7.3	0.27		0.27		0.27		0.2	27	
I _{oc}	dBm/3.84 MHz	-70												
CPICH_Ec/Io	dB	-16	-13	-13	-16	-2	3	-2	23	-	-23	-2	3	
Propagation Condition			AWGN											
Qoffset		[]		[]]	[]]	[]		[]	[]]	
Qhyst	dBm		[]	[]]	[]		[]			[]	[]]	
Treselection					[]		[]	[]]					
Qintrasearch	dB		[]	[]]	[]		[]		[]		[]]	

Table 4-3: Cell re-selection single carrier multi-cell case

Time T1 is X seconds and T2 is Y seconds.

NOTE: T1 and T2 need to be defined so that cell re-selection reaction time is taken into account.

4.3.1.3 Performance Requirements 4.3.1.1.2 Minimum requirements

Cell re-selection shall be correct in more than [X %] of the cases. Cell re-selection is correct if within [[5]] seconds the UE re-reselects a new cell, which fulfils the cell re-selection criteria.

4.3.1<u>.1</u>.4<u>3</u> Cell List Size

[The UE shall be capable of recording at least [6] of the strongest cells according to the cell re-selection criteria. The number of the strongest cells recorded inside the UE shall be at least [6].]

4.3.1.<u>1.54</u> Maximum number of cells to be monitored

For re-selection purposes, the UE shall be capable of monitoring at least up to 32 neighbouring cells given in the measurement control information. The exact number of cells to be monitored will be determined by the measurement control information broadcast in the serving cell.

4.3.2 Requirements for Cell Re-Selection multi carrier multi cell case

4.3.2.1 Cell re-selection delay

When the UE is camped on one of the cells, the UE shall be capable of re-selecting a new cell in the test case defined in the following subclause in within [Tres] seconds from it becoming a cell to be re-selected according the cell re-selection criteria. The cells, which are possible to be re-reselected during the test are transmitting on different frequencies and are belonging to different location areas. The cell re-selection delay is then defined as a time from when CPICH_Ec/Io is changed on cell 1 and 2 to the moment in time when the UE starts sending the RRC Connection request for Location Update message to the UTRAN.

4.3.22.21.1 Test <u>p</u>Parameters

6 cells are given in the measurement control information of the serving cell, 3 on each of the two frequencies. One of the 6 cells in <u>Table 4.4</u> is the serving cell, totally 2 of the cells are possible for cell re-selection and 4 of the cells are interfering cells.

Parameter	Unit	Cell 1		Cell 2		Cell 3		Cell 4		Cell 5		Cell 6		
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel Number		Chanr	Channel 1		Channel 2		Channel 1		Channel 1		Channel 2		Channel 2	
CPICH_Ec/lor	dB	-1	0	-	10	-1	0	-	10	-1	0	-10		
PCCPCH_Ec/lor	dB	-12		-	-12		-12		-12		-12		-12	
SCH_Ec/Ior	dB	-12		-12		-12		-	12	-12		-12		
PICH_Ec/Ior	dB	-15		-15		-15		-15		-15		-15		
OCNS_Ec/Ior	dB	-0.9	41	-0.941		-0.941		-0.941		-0.941		-0.941		
\hat{I}_{or}/I_{oc}	dB	-3.4	2.2	2.2	-3.4	-7.4	-4.8	-7.4	-4.8	-4.8	-7.4	-4.8	-7.4	
I _{oc}	dBm/3.84 MHz							-70						
CPICH_Ec/Io	dB	-16	-13	-13	-16	-2	20	-2	20	-2	0	-	20	
Propagation Condition		AWGN												
Qoffset)]						
Qhyst	dB	[2]	[2	2]	[2]	[2]		[2]		[2	2]	
Treselection		[5]	[.	[5]]	[5]	[5]	[:	5]	
Qintersearch	dB	[-8]	[-8]		[-8]		[-8]		[-8]		[-]	8]	

Table 4-4: Cell re-selection multi carrier multi cell case

Time T1 is X seconds and T2 is Y seconds.

4.3.2.21.2.3 Performance Minimum rRequirements

Cell re-selection shall be correct in more than [90%] of the cases. Cell re-selection is correct if within <u>FNt</u> seconds the UE re-reselects a new cell, which fulfils the cell re-selection criteria and stays steady on that cell until the channel conditions are changed again.

4.3.3 Requirements for UTRAN to GSM Cell Re-Selection

NOTE 1: These requirements are depending on supported UE capabilities.

NOTE 2: Requirements for GSM to UTRAN Cell Re-Selection are defined in the GSM specifications.

4.3.4<u>3.1</u> Cell re-selection delay

When the UE is camped on UTRAN cell, the UE shall be capable of re-selecting a GSM cell in the test case defined in the following subclause in within [TBD] seconds from it becoming a cell to be re-selected according the cell reselection criteria for UTRAN to GSM. The cells, which are possible to be re-reselected during the test, belong to different location areas. The cell re-selection delay is then defined as a time from when radio conditions are changed to the moment in time when the UE starts sending the RR Channel Request message for location update to GSM.

4.3.53.1.1 Test pParameters

Tbd.TBD

4.3.3.1.2 Minimum requirements

The UE shall be capable of re-selecting a GSM cell within [TBD] seconds from it becoming a cell to be re-selected according the cell re-selection criteria for UTRAN to GSM

5 RRC Connection mobility

5.1 Handover

5.1.1 Introduction

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 TS25.215 and UE behaviour in response to UTRAN RRC messages is described in TS25.331.

5.1.2<u>1</u> Handover 3G to 3G FDD Soft/softer Handover

5.1.1.1 FDD Soft/Softer Handover General

The soft handover procedure is initiated from UTRAN with an active set update message.

5.1.1.1.1 Maximum number of cells to be reported

The UE shall be capable of reporting the requested measurement quantity of at least [6] cells given in a measurement control message(s)

5.1.21.1.2 Measurement reporting delay

The measurement reporting delay is defined as the time from when a report is triggered at the physical layer according to the event or periodic mechanism set to trigger the measurement report, until the UE starts to transmit the measurement report over the Uu interface

5.1.1.2 Event triggered reporting in AWGN propagation conditions

This test will derive that the terminal makes correct reporting of an event and that the measurement accuracy of the CPICH_Ec/Io and CFN_SFN_SFN_CFN_observed timed difference between Cell 1 and Cell 2 is within defined limits in AWGN propagation condition..

5.1.1.2.1 5.1.2.1.3 Test parameters

The DL reference measurement channel 12.2 kbps as specified in Annex A, <u>Subsub-</u>clause A.3.1 of TS25.101 shall be used <u>but</u>-with power control turned on [see 25.101].Correct reporting of neighbours and CPICH_Ec/Io and timing measurement accuracies in AWGN propagation condition.

This test will derive that the terminal makes correct reporting of an event and that the measurement accuracy of the CFN SFN observed timed difference between Cell 1 and Cell 2 is within defined limits. Cell 1 is current active cell. The <u>CPICH Ec/Io power</u> level of Cell 1 is kept constant and the <u>CPICH Ec/Iopower</u> level of Cell 2 is changed using (\hat{T}_{or}/I_{oc}) , as illustrated in figure 5-1and table 5.1. Hysteresis, Threshold and Time to Trigger values are given in the table below and they are signalled from test device. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1B shall be used, SFN has to be decoded for neighbour cells. CPICH Ec/IO-Io and the <u>CFN SFN-SFN-CFN</u> observed timed difference has to reported together with Event 1A reporting. New

measurement control information, which defines neighbour cells etc., is always sent during time period Time 1. The number of neighbour cells in the measurement control information is 24.



Figure 5-1: Illustration of parameters for soft handover measurement reporting test case

Parameter	Unit	Ce	ll 1	Cel	12				
		Time 1	Time 2	Time 1	Time 2				
CPICH_Ec/Ior	dB	-1	0	-10					
PCCPCH_Ec/lor	dB	-]	2	-12					
SCH_Ec/Ior	dB	-]	2	-1	2				
PICH_Ec/lor	dB	-]	5	-1	5				
DPCH_Ec/Ior	dB	-]	7	-17					
OCNS		-1.0)49	-1.049					
\hat{I}_{or}/I_{oc}	dB	0	6.97	<u>-∞-Infinity</u>	5.97				
I _{oc}	dBm/3.84 MHz		-7	0					
CPICH_Ec/Io	dB	-13	-13	<u>-∞-Infinity</u>	-14				
Threshold	dB	3							
Hysteresis	dB	0							
Time to Trigger	ms ec		0						
Filter coefficient			<u>0</u>						
Propagation Condition		AWGN							

Table 5-1: Test parameters for handover measurement reporting delay

Time period Time 1 is X seconds. Time period Time 2 is Y seconds.

5.1.21.42.3.1.42 Minimum rRequirements

The measurement reporting delay shall be less then 0.8 seconds in [90]% of the cases.

Reported CPICH Ec/Io of Cell 2 in Event 1A shall have an accuracy of $\pm [1.5]$ dB in [90]% of the 1A reports.

Reported <u>CFN_SFN-SFN-CFN</u> observed time difference shall have an accuracy of \pm [Y] chips in [90]% of the reports.

CPICH

5.1.2<u>1</u>.1.3.2<u>3</u>Event triggered reporting of multiple neighbours in AWGN propagation condition

This test will derive that the terminal makes correct reporting of an event and that the measurement accuracy of the reported values is within the specified limits. In the test 4 cells are present where the \hat{I}_{or}/I_{oc} level of Cell 1 and 2 is kept at a constant and the power level of cell 3 and 4 is changed over time by changing (\hat{I}_{or}/I_{oc})

5.1.1.3.1 Test parameters

In figure 5-2 an illustration of the test case is shown with the parameters specified in table 5.2 and 5.3. In the test 4 cells are present. Cell 1 and 2 are within the active set, as illustrated in figure 5.2. The \hat{f}_{or}/I_{oc} level of Cell 1 and 2 is kept at a constant level according to table 5.3 and the power level of cell 3 and 4 is changed over time by changing (\hat{f}_{or}/I_{oc}) according to table 5.4. Hysteresis, Threshold and Time to Trigger values are given in the tables below and they are signalled from the test device. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1C and 1B shall be used. CPICH Ec/Io and CFN-SFNSFN-CFN-observed time difference shall be reported together with Event 1C. New measurement control information, which defines neighbour cells etc., is continuously sent. The number of neighbour cells in the measurement control information is 32.



Figure 5.2: Illustration of the test case

Parameter	Unit		Ce	<u>ll 1</u>		Cell 2					
		<u>T1</u>	<u>T2</u>	<u>T3</u>	<u>T4</u>	<u>T1</u>	<u>T2</u>	<u>T3</u>	<u>T4</u>		
CPICH_Ec/Ior	dB		_1	10			_	10			
PCCPCH Ec/Ior	<u>dB</u>		<u>-1</u>	12		-12					
<u>SCH Ec/Ior</u>	<u>dB</u>		-]	12			<u>-</u>	<u>12</u>			
<u>PICH Ec/Ior</u>	<u>dB</u>		-]	l <u>5</u>			<u>-</u>	<u>15</u>			
<u>DPCH Ec/Ior</u>	<u>dB</u>		-]	l <u>7</u>			<u>-</u>	<u>17</u>			
OCNS Ec/Ior	<u>dB</u>		<u>-1,</u>	<u>049</u>		<u>-1,049</u>					
\hat{I}_{or}/I_{oc}	<u>dB</u>		<u>18</u>	<u>8,5</u>		<u>17</u>					
Ioc	<u>dBm/3.84</u> <u>MHz</u>	-85									
<u>CPICH_Ec/Io</u>	dB	<u>-12,4</u>	<u>-15,5</u>	<u>-12,4</u>	<u>-15,5</u>	<u>-13,9</u>	<u>-17,0</u>	<u>-13,9</u>	<u>-17,0</u>		
Threshold	dB				-	3					
Hysteresis	dB	0									
Time to Trigger	<u>ms</u>	0									
Filter cofficient		<u>0</u>									
Propagation Condition				AV	VGN						

Table 5.2: Parameters for Event triggered reporting of multiple neighbours in AWGN

Table 5-3: Parameters for Event triggered reporting of multiple neighbours in AWGN

Parameter	<u>Unit</u>	Cell 3				<u>Cell 4</u>			
		<u>T1</u> <u>T2</u> <u>T3</u> <u>T4</u>			<u>T1</u>	<u>T2</u>	<u>T3</u>	<u>T4</u>	
<u>CPICH_Ec/Ior</u>	dB		-1	0		-10			
<u>PCCPCH Ec/Ior</u>	<u>dB</u>		<u>-1</u>	2			<u>-1</u>	12	
<u>SCH Ec/Ior</u>	<u>dB</u>		<u>-1</u>	<u>5</u>			<u>-1</u>	<u>15</u>	
PICH Ec/Ior	<u>dB</u>		<u>-1</u>	<u>5</u>			<u>-1</u>	<u>15</u>	
DPCH Ec/lor	<u>dB</u>		<u>N/</u>	<u>'A</u>			<u>N</u>	/ <u>A</u>	
<u>OCNS</u>	<u>dB</u>		-0,9	<u>941</u>			-0,	<u>941</u>	
\hat{I}_{or}/I_{oc}	<u>dB</u>	-00	<u>18,5</u>	-00	<u>18,5</u>		<u>17,5</u>	-∞	<u>17,5</u>
Ioc	<u>dBm/3.8</u> <u>4 MHz</u>				<u>-8</u> .	<u>5</u>			
<u>CPICH_Ec/lo</u>	<u>dB</u>	-8	<u>-15,5</u>	<u>-∞</u>	<u>-15,5</u>	-8	<u>-16,5</u>	-8	<u>-16,5</u>
Threshold	dB				<u>3</u>				
Hysteresis	dB	<u>0</u>							
Time to Trigger	<u>ms</u>	<u>0</u>							
Filter coefficient					<u>0</u>				
Propagation Condition				AV	VGN				

5.1.1.3.2 Minimum requirements

In table 5-2 the test case is described in detail for each time interval T1 to T4 and Minimum Requirements are given for each time interval.

Table 5-24: Minimum requirements for Event triggered reporting of multiple neighbours in AWGN

I	Time	Value	Cell 1 to 2	Cell 3 to 4						
	T1	>-20 s	Included in	Not visible, e.g. the UE has never had synchronisation to them before.						
	T2	10 s	set, keeping a constant Îor/Ioc level over the test.	Will test the time for initial synchronisation when neighbour 3 and 4 suddenly becomes strong. Cell 3 and 4 becomes stronger than one of the cell in the active set (cell 2) and therefore event 1C shall be triggered. Together with the event a report containing measured CPICH Ec/Io for all cells shall be sent together with the CFN-SFN-CFN observed time difference for cell 3 and 4.						
I				Minimum Requirements						
				Event 1C shall be reported within [800] ms in [90] % of the cases.						
				Reported CPICH Ec/Io of Cell 1 shall have an accuracy of \pm [TBD] dB in [90] %.						
				Reported <u>CFN SFNSFN-CFN</u> observed time difference for Cell 1 shall have an accuracy of \pm [Y] chips in [90] % of the reports.						
				Reported CPICH Ec/Io of Cell 2 shall have an accuracy of \pm [TBD] dB in [90]%.						
				Reported CFN-SFN observed time difference for Cell 2 shall have an accuracy of \pm [Y] chips in [90]% of the reports.						
				Reported CPICH Ec/Io of Cell 3 shall have an accuracy of \pm [TBD] dB in [90] %.						
				Reported <u>CFN_SFNSFN-CFN</u> -observed time difference for Cell 3 shall have an accuracy of \pm [TBD] chips in [90] % of the reports.						
				Reported CPICH Ec/Io of Cell 4 shall have an accuracy of \pm [TBD] dB in [90] %.						
l				Reported CFN SFNSFN-CFN observed time difference for Cell 4 shall have an accuracy of \pm [Y] chips in [90]% of the reports.						
	Т3	15 s		Neighbour 3 and 4 suddenly disappears. Event 1B shall be trigerredtriggered. Together with the event a report containing measured CPICH Ec/Io for all remaining cells shall be sent.						
I				Minimum Requirements.						
				Event 1B shall be reported within [150] ms in [90] % of the cases.						
				Reported CPICH Ec/Io of Cell 1 shall have an accuracy of \pm [TBD] dB in [90] %.						
				Reported CPICH Ec/Io of Cell 2 shall have an accuracy of \pm [TBD] dB in [90] %.						
				3GPP						

Time	Value	Cell 1 to 2	Cell 3 to 4
T4	10 s		Neighbour 4 to 6 suddenly appears again after being gone for T3 s. Event 1C shall be triggered. Together with the event a report containing measured Ec/Io for all cells shall be sent together with the <u>CFN_SFN_CFN</u> observed time difference for cell 3 and 4.
			Minimum Requirements.
			Event 1C shall be reported within [150] ms in [90] % of the cases.
			Reported CPICH Ec/Io of Cell 1 shall have an accuracy of \pm [TBD] dB in [90] %.
			Reported CPICH Ec/Io of Cell 2 shall have an accuracy of \pm [TBD] dB in [90] %.
			Reported CPICH Ec/Io of Cell 3 shall have an accuracy of \pm [TBD] dB in [90] %.
			Reported <u>CFN-SFNSFN-CFN</u> observed time difference for Cell 3 shall have an accuracy of \pm [TBD] chips in [90] % of the reports.
			Reported CPICH Ec/Io of Cell 4 shall have an accuracy of \pm [TBD] dB in [90] %.
			Reported <u>CFN-SFNSFN-CFN</u> observed time difference for Cell 4 shall have an accuracy of \pm [Y] chips in [90] % of the reports.

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Table 5.3

Parameter	Unit		Ce	ll 1		Cell 2			
		T1	T2	T3	T4	T1	T2	T3	T4
CPICH_Ec/lor	dB	-10				-10			
PCCPCH_Ec/lor	dB	-12				-12			
SCH_Ec/lor	dB	-12				-12			
PICH_Ec/Ior	dB	-15				-15			
DPCH_Ec/lor	dB	-17				-17			
OCNS_Ec/lor	dB	-1,049				-1,04 9)		
$\frac{\hat{H}_{or}}{H_{oc}}$	d₿	18,5				17			
-I _{oc}	dBm/3.84 MHz	-85							
CPICH_Ec/lo	dB	-12,4	-15,5	-12,4	-15,5	- 13,9	-17,0	- 13,9	-17,0
Threshold	dB	3							
Hysteresis	dB	θ							
Time to Trigger	msec	θ							
Propagation Condition	AWGN								

3GPP

Parameter	Unit		Cel	13		Cell-4			
		T1	T2	T3	T4	T1	T2	T3	T4
CPICH_Ec/lor	dB	-10				-10			
PCCPCH_Ec/lor	dB	-12				-12			
SCH_Ec/lor	dB	-15				-15			
PICH_Ec/Ior	dB	-15				-15			
DPCH_Ec/lor	dB	N/A				N/A			
OCNS	dB	-0,941	ŀ			-0,9 4	4		
$\frac{\hat{H}_{or}}{I_{oc}}$	d₿	-Inf	18,5	-Inf	18,5	-Inf	17,5	-Inf	17,5
-I _{oc}	dBm/3.84 MHz	-85							
CPICH_Ec/lo	d₿	-Inf	-15,5	-Inf	-15,5	-Inf	-16,5	-Inf	-16,5
Threshold	dB	3							
Hysteresis	dB	θ							
Time to Trigger	msec	θ							
Propagation Condition	AWGN								

Table 5-4

5.1.2.1.3.35.1.1.4 Correct reporting of neighbours in Fading propagation condition

This test will derive that the terminal makes correct reporting of an event. Cell 1 is current active cell. The <u>CPICH_Ec/Iopower</u> level of Cell 1 is kept constant and the power level of Cell 2 is changed using (\hat{I}_{or}/I_{oc}) .

5.1.1.4.1 Test parameters

<u>The test parameters are specified in table 5.5.</u> Hysteresis, Threshold and Time to Trigger values are given in the table below and they are <u>signaledsignalled</u> from test device. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A shall be used. Only the event number is reported in this case. New measurement control information, which defines <u>neighborneighbour</u> cells etc., is sent always during time period Time 1. The number of <u>neighborneighbour</u> cells in the measurement control information is 24.

Parameter	Unit	Ce	ll 1	Cel	12	
		Time 1 Time 2		Time 1	Time 2	
CPICH_Ec/Ior	dB	-]	10	-10		
PCCPCH_Ec/lor	dB	-]	12	-1	2	
SCH_Ec/Ior	dB	-]	12	-1	2	
PICH_Ec/Ior	dB	-]	15	-1	5	
DPCH_Ec/Ior	dB	TI	BD	TB	D	
OCNS		[To Be C	alculated]	[To Be Ca	lculated]	
\hat{I}_{or}/I_{oc}	DBdB	0	6.97	<u>-∞-Infinity</u>	5.97	
I _{oc}	DBmdBm/3. 84 MHz	-70				
CPICH_Ec/Io	DB <u>dB</u>	-13	-13	<u>-∞-Infinity</u>	-14	
Threshold	DBdB		3			
Hysteresis	DBdB		0			
Time to Trigger	Msecms	0				
Filter coefficient		<u>0</u>				
Propagation Condition		2-tap Rayleigh	n fading, 0 dB, -1	0 dB, 50km/h		

Table 5-5: Test parameters for correct reporting of neighbours

Time period Time 1 is X seconds. Time period Time 2 is Y seconds

5.1.1.4.25.1.2.1.3.3.1 Minimum rRequirement

The measurement reporting delay shall be less then XX seconds in YY%.

5.1.2.1.3.45.1.1.5 CPICH_Ec/lo measurement accuracy and incorrect reporting of neighbours in AWGN propagation condition

The test case will derive the terminal's measurement accuracy of CPICH_Ec/Io and false detection resistance.

5.1.1.5.1 **Test parameters**

The test parameters are specified in table 5.6. The terminal measurement accuracy of CPICH_Ec/Io is derived using the periodical reporting of active cell's measured CPICH_Ec/Io. The terminal's false detection resistance is derived by recording the amount of erroneous reports. Both Cell 1 and Cell 2 powers (\hat{I}_{or}/I_{oc}) are constant during the test case. Cell 2 is near to reporting range. Hysteresis, Threshold, Time to Trigger values and reporting period for active cell are given in the table below and they are signaled signalled from test device. In the measurement control information it is indicated to the UE that the CPICH_Ec/Io level of the active set cell has to reported periodically (and reporting period) and event-triggered reporting (1A) will also be used. The number of neighbour cells in the measurement control information is 24.

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Parameter	Unit	Cell 1	Cell 2			
CPICH_Ec/Ior	DBdB	-10	-10			
PCCPCH_Ec/Ior	DB dB	-12	-12			
SCH_Ec/Ior	DB dB	-12	-12			
PICH_Ec/lor	DB dB	-15	-15			
DPCH_Ec/Ior	DB dB	TBD	TBD			
OCNS		[To Be Calculated]	[To Be Calculated]			
\hat{I}_{or}/I_{oc}	DB dB	1.68	-3.32			
I	DBmdBm/	70				
I OC	3.84 MHz	-70				
CPICH_Ec/Io	DB dB	-13	-18			
Threshold	DB dB	3				
Hysteresis	DB dB	0				
Time to Trigger	Msecms	0				
Reporting period	Msecms	TBD				
Filter coefficient		<u>0</u>				
Propagation Condition		AWGN				

Table 5-6: Test parameters for CPICH_Ec/lo measurement accuracy and incorrect reporting of neighbours

5.1.1.5.25.1.2.1.3.4.1 Minimum rRequirements

Event triggered report rate shall not exceed X reports in Y seconds.

In the periodical reporting the reported CPICH_Ec/Io for Cell 1 shall have an accuracy of \pm [TBD] dB in [90] % of the reports.

5.1.21.1.46 Active set dimension

The active set is defined as set of radio links simultaneously involved in a specific communication service between an User Equipment and a UTRAN access point. The UE shall be capable of supporting at least [6] radio links in the active set.

5.1.2<u>1.1.5.7</u> Active set update delay

The active set update delay start is defined as the time from when the UE receives the active set update message from UTRAN, or at the time stated through the activation time when to perform the active set update. The activation time stop is defined as the time when the UE successfully only uses the set of radio links stated in that message for power control. The active set update delay is defined as the time between the active set update start and the active set stop.

The active set update delay for different number of added cells is stated in the table below. There is different requirement on the active set update delay depending on if the cell has been within the monitored set of cells for the last [FFS] [s] or not.

[Editor's Note: the requirement of an active set update of at least [1] second after the reception of the UTRAN acknowledgement as proposed in R4-99712, shall be considered as a starting point for the setting of this requirement].

Number of new cells present in the active set update message	Maximum active set update delay [ms]				
	Cells within monitored set	Cells outside monitored set			
1					
2					

Table 5-7

3	
4	
5	
6	

If an active set update includes a combination of cells included and not included in the monitored set the maximum active set update delay is the sum of respective maximum delays.

5.1.21.1.68 BS Functionality in Site Selection Diversity Transmission (SSDT) Mode

Site Selection Diversity Transmission (SSDT) is an optional feature of BS. This requirement for SSDT mode ensures that BS correctly reacts to Layer 1 feedback <u>signalingsignalling</u> messages from UE.

5.1.2<u>1.48</u>.7<u>1</u> Minimum <u>r</u>Requirements

For the conditions specified, the BS shall transmit or not transmit the downlink DPDCH channel.

Parameter	Unit	Test 1	Test 2	Test 3	Test 4
Cell ID of BS under test	-	А	А	А	А
SSDT Quality threshold, Q _{th,} set in BS	DB <u>d</u> B			-5	
Uplink: $\frac{DPCH - E_c}{I_o}$	DB<u>d</u> <u>B</u>	Q _{th} + 10	Q _{th} + 10	Q _{th} - 3	$Q_{th} - 3$
Cell ID transmitted by UE	-	А	В	А	В
Transmission Of downlink DPCCH	-	Yes	Yes	yes	Yes
Transmission Of downlink DPDCH	-	Yes	No	yes	Yes

Table 5-8: Parameters for SSDT mode test

The above test should be for repeated for each of the three code sets "long", "medium" and "short" Cell ID code sets. The UE emulator can check the power ratio of downlink DPDCH/DPCCH in order to confirm whether BS transmitted the DPDCH.

5.1.2.22 FDD Hard Handover

The hard handover procedure is initiated from UTRAN with an handover command message. The hard handover procedure may cause the UE to change its frequency. Compressed mode according to the UE Capability may be used to be able to make any measurements on other frequencies.

5.1.2.2.1 Requirements 5.1.2.1 General

5.1.2.2.1.12.1.1 Maximum number of cells/frequencies to be monitored on other frequencies

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.

The cells and frequencies are given to the UE in a measurement control message(s), and the measurement slots available with compressed mode is given through physical channel reconfiguration parameters.

5.1.2.2.1.22.1.2 Measurement reporting delay

The measurement reporting delay is defined as the time from when a report is triggered at the physical layer according to the event or periodic mechanism set to trigger the measurement report, until the UE starts to transmit the measurement report over the Uu interface

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5.1.2.2.1.2.1.2.1.2 Test <u>p</u>Parameters for DL compressed mode

The DL reference measurement channel 12.2 kbps shall be used, with power control turned on [see 25.101]. Test parameters for DL compressed mode are given in Annex $\frac{22}{100}$ A5 of TS25.101.

5.1.2.2.1.2.2<u>5.1.2.2</u> <u>CPICH_Ec/lo measurement accuracy and correctCorrect</u> reporting of neighbours in AWGN propagation condition.

This test will derive that the terminal makes correct reporting of an event. Cell 1 is current active cell, Cell 2 is a neighbour cell on the used frequency and Cell 3 is a neighbour cell on the un-used frequency. The measurement reporting delay is defined as the time from when a report is triggered at the physical layer according to the event or periodic mechanism set to trigger the measurement report, until the UE starts to transmit the measurement report over the Uu interface.

5.1.2.2.1 Test parameters

The <u>CPICH_Ec/Iopower</u> level of Cell 1 and Cell 3 are kept constant and the power level of Cell 2 is changed using (\hat{I}_{or}/I_{oc}) , as illustrated in Figure 5-23. Hysteresis, Absolute threshold and Time to Trigger values are given in the table below and they are signalled from the test device. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A, 1B and 2C shall be used. The CPICH Ec/I0 of the best cell on the un-used frequency has to reported together with Event 2C reporting. New measurement control information, which defines neighbour cells etc., is always sent before compressed mode pattern starts. The number of neighbour cells in the measurement control information is 24. The X number of neighbours are on the un-used frequency. The BLER of the current active link is also measured.



Figure 5-3: Illustration of parameters for handover measurement reporting test case

Table-5-9: Test parameters for CPICH_	_Ec/lo measurement accuracy and correct reporting of
	neighbours

Parameter	Unit	Ce	11	Cel	2	Cell 3		
		Time 1	Time 2	Time 1	Time 2	Time 1	Time 2	
UTRA RF Channel Number		Chan	nel 1	Channel 1		Channel 2		
CPICH_Ec/Ior	dB	-1	0	-10)	-10		
PCCPCH_Ec/lor	dB	-1	2	-12	2	-1	2	
SCH_Ec/Ior	dB	-1	2	-12	2	-1	2	
PICH_Ec/Ior	dB	-1	.5	-1:	5	-1	.5	
DPCH_Ec/Ior	dB	TE	BD	TB	D	TBD		
OCNS		[To Be Ca	alculated]	[To Be Calculated]		[To Be Calculated]		
\hat{I}_{or}/I_{oc}	dB	0	4.39	<u>₋∞</u> _ Infinity	2.39	-1.8	-1.8	
I _{oc}	dBm/3.84 MHz		-	70		-70		
CPICH_Ec/lo	dB	-13	-13	<u>₋∞</u> - Infinity	-15	-14	-14	
Absolute Threshold (Ec/No)	dB	-18						
Hysteresis	dB	0						
Time to Trigger	ms ec	0						
Filter coefficient		<u>0</u>						
Propagation Condition				AWGN				

Time period Time 1 is X seconds. Time period Time 2 is Y seconds.

5.1.2.2.25.1.2.2.1.2.2 Minimum rRequirements

The measurement reporting delay shall be less than [5] seconds in [90] % of the cases.

Reported CPICH Ec/Io of Cell 3 in Event 2C shall have an accuracy of to ±[TBD] dB of the 2C reports.

The BLER of the DCH shall not exceed [TBD] value.

5.1.2.2.1.35.1.2.3 Correct reporting of neighbours in Fading propagation condition

This test will derive that the terminal makes correct reporting of an event . Cell 1 is current active cell and Cell 2 is a neighbour cell on the un-used frequency. The <u>CPICH_Ec/Iopower</u> level of Cell 1 and Cell 2 are kept constant and the power level of. Hysteresis,

5.1.2.3.1 Test parameters

<u>Hysteresis</u>, Absolute threshold and Time to Trigger values are given in the table below and they are signalled from test device. In the measurement control information it is indicated to the UE that event-triggered reporting 2C shall be used. Only events, which occur, are reported in this case. New measurement control information, which defines neighbour cells etc., is always sent before compressed mode pattern starts. The number of neighbour cells in the measurement control information is 24. The X number of neighbours are on the un-used frequency. The BLER of the current active link is also measured.

Parameter	Unit	Cell 1	Cell 2		
UTRA RF Channel Number		Channel 1	Channel 2		
CPICH_Ec/Ior	dB	-10	-10		
PCCPCH_Ec/Ior	dB	-12	-12		
SCH_Ec/Ior	dB	-12	-12		
PICH_Ec/lor	dB	-15	-15		
DPCH_Ec/Ior	dB	TBD	TBD		
OCNS		[To Be Calculated]	[To Be Calculated]		
\hat{I} /I	dD	0	-1.8		
I_{or}/I_{oc}	UD	θ	-1.8		
I _{oc}	dBm/3.84 MHz	-70	-70		
CDICIL Eg/Ig	đD	-13	-14		
CPICH_EC/10	aв	-13	-14		
Absolute Threshold (Ec/No)	dB	-18			
Hysteresis	dB	0			
Time to Trigger	msee	0			
Filter coefficient		<u>0</u>			
Propagation Condition	2-tap	2-tap Rayleigh fading, 0 dB, -10 dB, 50km/h			

Table 5-10: Test parameters for Correct reporting of neighbours

5.1.2.3.25.1.2.2.1.3.1 Minimum rRequirements

The measurement reporting delay shall be less then Y seconds in [90] % of the cases.

The BLER of the DCH shall not exceed [TBD] value.

5.1.2.2.1.45.1.2.4 Hard Handover Delay

The hard handover delay is defined as the time from when the UE receives the handover command message from UTRAN, until the UE successfully uses the entire set of radio links stated in that message for power control.

The hard handover delay is stated in the table below. There is different requirement on the hard handover delay depending on if the cell has been within the monitored set of cells for the last [FFS] [s] or not.

Number of new cells present in the handover command message	Maximum active set update delay [ms]		
	Cells within monitored set	Cells outside monitored set	
1-6			

Table 5-11: FDD/FDD hard handover delay

5.1.2.35.1.3 FDD/TDD Handover

The handover procedure is initiated from UTRAN with an handover command message. The handover procedure may cause the UE to change its frequency. Compressed mode according to the UE Capability may be used to be able to make any measurements on other frequencies.

5.1.2.3.15.1.3.1 General Requirements

5.1.2.3.1.15.1.3.1.1 Maximum number of cells/frequencies to be monitored on other frequencies

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.

The cells and frequencies are given to the UE in a measurement control message(s), and the measurement slots available with compressed mode is given through physical channel reconfiguration parameters.

5.1.2.3.1.25.1.3.1.2 Measurement reporting delay

The measurement reporting delay is defined as the time from when a report is triggered at the physical layer according to the event or periodic mechanism set to trigger the measurement report, until the UE starts to transmit the measurement report over the Uu interface.

5.1.2.3.1.2.15.1.3.1.3 Test parameters for DL compressed mode

The DL reference measurement channel 12.2 kbps shall be used, with power control turned on [see 25.101]. Test parameters for DL compressed mode are given in Annex A.4 of TS25.101.

5.1.2.3.1.2.25.1.3.2 Correct reporting of TDD neighbours in AWGN propagation condition

This test will derive that the terminal makes correct reporting of an event. Cell 1 is current active cell, Cell 2 is a TDD cell. The power level of P-CCPCH RSCP of cell 2 and the CPICH Ec/Io of cell 1 is changed.

5.1.3.2.1 Test parameters

Hysteresis, Absolute threshold and Time to Trigger values are given in the table below and they are signalled from test device. New measurement control information, which defines neighbour cells etc., is always sent before compressed mode pattern starts. The number of neighbour cells in the measurement control information is FFS.

Parameter	Unit	Cell 1		Cell 2			
Timeslot Number		n.a.		0		8	
		T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Chan	nel 1		Chan	nel 2	
CPICH_Ec/Ior	dB	[_]	[_]	n.	a.	n.	a.
PCCPCH_Ec/Ior	dB	[_]	[_]	-3	-3		
SCH_Ec/Ior	dB	[_]	[_]	-9	-9	-9	-9
SCH_t_{offset}		n.a.	n.a.	15	15	15	15
PICH_Ec/Ior		[_]	[_]			-3	-3
DCH_Ec/Ior	dB		[_]	[_]	[_]		[_]
OCNS	dB	[_]	[_]	-4.28	-4.28	-4.28	-4.28
\hat{I}_{or}/I_{oc}	dB	[]	[]	[_]	[_]	[_]	[_]
I _{oc}	dBm/3.84 MHz	-70 -70		70			
CPICH_Ec/Io		[_]]	n.a.			
PCCPCH_RSCP	dB	n.a.	n.a.	[_]	[_]	[_]	[_]
Absolute Threshold (SIR)	dB						
Hysteresis	dB						
Time to Trigger	ms ec						
Filter coefficient							
Propagation Condition		AWGN -AWGN					

Table 5-12: Correct reporting of TDD neighbours in AWGN

5.1.3.2.2 5.1.2.3.1.2.3 Minimum rRequirements

The measurement reporting delay shall be less then [5] seconds in [90]% of the cases.

All the reported entities shall be within the requirements, as defined in clause $\frac{108}{2}$.

Editor's note: Reported quantities are not defined in the test.

The BLER of the DCH shall not exceed [TBD] value.

5.1.2.3.1.3<u>5.1.3.3</u> Handover Delay

The handover delay is defined as the time from when the UE receives the handover command message from UTRAN, until the UE successfully uses the entire set of radio links stated in that message for power control.

The handover delay is stated in the table below. There is different requirement on the handover delay depending on if the cell has been within the monitored set of cells for the last [FFS] [s] or not.

Table 5-13: FDD/TDD handover delay

Number of new cells present in the handover command message	Maximum update delay [ms]		
	Cells within monitored set	Cells outside monitored set	
1-6			

5.1.3<u>4</u> Handover 3G to 2G

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 utilise 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.

5.1.<u>34</u>.1 Handover to GSM

This sub_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 recommendations.

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.

The MS (GSM terminology) shall be able to monitor up to [32] carriers.

The MS shall be able synchronizesynchronise to [6] carriers.

The MS shall be able to report back to the network on the [6] strongest cells with correctly identified BSIC.

The MS shall be able to perform this task at levels down to the reference sensitivity level or reference interference levels as specified in GSM 05.05.

The MS shall demodulate the SCH on the BCCH carrier of each surrounding cell and decode the BSIC as often as possible, and as a minimum at least once every [10 seconds].

5.1.3.1.14.1.1 Requirements

5.1.3.1.24.1.2 RF Parameters

5.2 Radio Link Management

5.2.1 Link adaptation

5.2.1.1 Definition of the function

Radio link adaptation is the ability of the UE to select the suitable transport format combination from the assigned transport format combination set, in order to maintain inner loop power control, in the case of reaching its maximum transmit power. This is necessary for supporting the highest bit-rate as possible when enough transmit power is not available.

5.2.1.2 Link adaptation delay minimum delay requirement

In this sub_clause, the UE maximum transmit power is defined as the UE maximum output power, which is defined by the UE power class.

When the UE output power is approaching the UE maximum transmit power and the inner loop power control can no longer be maintained for coverage reasons, the UE shall adapt to the transport format combination corresponding to the next lower bit-rate. Before doing that, the UE output power measured over at least [t1] ms shall be [margin1] dB within the maximum (margin1 is FFS).

As soon as the UE output power is [margin1] dB below the UE maximum transmit power and the UE has enough data to send, it shall continuously estimate whether the output power needed for a switch to the transport format combination corresponding to the next higher bit-rate does not exceed [margin1] dB below the maximum. Before the UE switches to the next higher rate transport format it shall have enough power to support that up-switch for at least [t2] ms.

The minimum delay requirements t1 and t2 shall be zero or a multiple of 10 ms. (Whether t1, t2 and margin1 should be configurable is FFS).

5.2.1.3 Link adaptation maximum delay requirement

As soon as the UE has detected the switching feasibility, it shall start to use the transport format combination corresponding to the new bit-rate selected within 10 ms.

6 RRC Connection Control

6.1 Requirements for RRC Re-establishment

6.1.1 RRC Re-establishment delay

When the UE is in Cell_DCH state, the UE shall be capable of sending a RRC CONNECTION RE-ESTABLISHMENT CONNECT message within $T_{RE-ESTABLISH}$ seconds from when the CPHY-Out-Of-Synch primitive indicates lost synchronisation. The RRC Re-establishment delay requirement ($T_{RE-ESTABLISH-REQ}$) is defined as the time between the moment when erroneous CRCs are applied, to when the UE starts to send preambles on the PRACH. This is illustrated in Figure 6.1, where the RRC Re-establishment delay ($T_{RE-ESTABLISH-REQ}$) is the time between T_{start} and T_{stop} . T_{PRIM} is the time it takes for the CPHY-Out-Of-Synch primitive to detect lost synchronisation and $T_{RE-ESTABLISH}$ is the time to perform higher layer functionality.



Figure 6.1: RRC Connection Re-establishment Requirement

6.1.2<u>1.1</u> Test <u>p</u>Parameters

This test shall include 6 cells, one serving, one target and four steady interferes. The UE shall be in connected mode with a DL reference measurement channel 12.2 kbps dedicated traffic channel ongoing to one cell (serving cell). Measurement control information shall be signalled from the test device at least 5 seconds before T_{start} . At T_{start} faulty CRCs are applied on all transport blocks on all transport channels. T_{stop} is defined as the time when the UE starts to send preambles on PRACH to the target cell.

Unless explicitly stated the test parameters should be similar to the test parameters for Cell Reselection, time T1, sub_clause 4.3.1.2.1.1 System information shall be provided in the same manner as for the test for cell re-selection, sub_clause 4.3.1.2.1.1.

The following additional parameters are needed:

Parameter	Unit	Value
DPCH_Ec/Ior	dB	-16.6
N313	Frames	20
N315	Frames	20
T313	seconds	0 and 3

Table 6-1: Test parameters for RRC connection re-establishment

6.1.2<u>1</u>.4<u>2</u> Test 1 – Target Cell known by UE

All six cells in the test shall be given in the measurement control information to the UE before the test is started.

6.1.21.23 Test 2 – Target cell not known by UE

All cells except the target cell shall be in the measurement control information to the UE before the test is started.

6.1.2<u>1</u>.3<u>4</u> Performance Minimum rRequirements

RRC Re-establishment is correct if within $T_{RE-ESTABLISH-REQ}$ seconds the UE tries to re-establish the RRC connection with the target cell. $T_{RE-ESTABLISH-REQ}$ is defined in Table 6.2.

Table 6.2: Requirements for RRC Re-establishment

	Test 1	Test 2
Intra Frequency, T313=0	$T_{RE-ESTABLISH-REQ} = 1000 \text{ ms}$	$T_{RE-ESTABLISH-REQ} = 3200 \text{ ms}$
Intra Frequency, T313=3	$T_{RE-ESTABLISH-REQ} = 4000 \text{ ms}$	$T_{RE-ESTABLISH-REQ} = 6200 \text{ ms}$

6.2 Radio Access Bearer Control

[Editor's Note: Radio Access Bearer Control Procedures are a series of mechanisms used to control the UE and system resources. Some of these procedures cause Physical Channel Reconfiguration and Transport Channel Reconfiguration. This sub_clause specifies time delay requirements on Physical Channel Reconfiguration and Transport Channel configuration in different reconfiguration cases.]

7 Timing characterisitics

7.1 Synchronisation Performance

7.1.1 Search of other Cells

Search for other cells is used to check whether the UE correctly searches and measures other BS(s) during the specified operation.

7.1.1.1 Minimum requirement

TBD

Parameter	Unit	Channel 1		Channel 2	
		Time 1	Time 2	Time 1	Time 2
$\frac{PCCPCH}{I_{or}}$	d₿				
$\frac{\hat{I}_{or}}{I_{oc}}$	dB				
-H _{oc}	dBm/3.84 MHz			-60	
$\frac{PCCPCH}{I_o}$	d₿				

Table 7-1: Test Parameters for the Search of other Cells

7.2 Spare

7.31 UE Transmit Timing

7.3<u>1</u>.1 Initial transmission timing, Maximum timing adjustment size and Maximum timing adjustment rate

The UE shall have capability to follow the frame timing change of the connected Node B. UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, and maximum adjustment rate are defined in the following requirements.

7.3<u>1</u>.1.1 Minimum requirement

For parameters specified in Table in Table 7.2, $_{7}$ UE initial transmission timing error shall be less than or equal to ± 1.5 Chip. The reference point for the UE initial transmit timing control requirement shall be the first significant path of the corresponding downlink DPCCH/DPDCH frame.

The UE shall be capable of changing the transmission timing according the received downlink DPCCH/DPDCH frame. The maximum amount of the timing change in one adjustment shall be 1/4 Chip.

The maximum adjustment rate shall be 1/4 chip per 280ms. In particular, within any given 280 ms period, the UE transmit timing shall not change in excess of +-1/4 chip from the timing at the beginning of this 280ms period.

Parameter	Unit	Cell 1 and 2 level	
DPCH_Ec/ Ior	dB	-17	
Î _{or,} Cell 1	dBm/3.84 MHz	-96	
Î _{or,} Cell 2	dBm/3.84 MHz	-97	
Information data rate	Kbpskbps	12.2	
TFCI	-	On	
Propagation condition	AWGN		

Table 7-2: Test parameters for Transmission timing requirement

a) Cell 2 starts transmission 5 seconds after call has been initiated. UE shall maintain it's original timing properties.

b) Cell 1 stop transmission 5 seconds after cell 2 has started transmission. UE shall adjust transmission timing with a maximum change of 1/4 chip per adjustment, and maximum timing adjustment rate of 1/4 chip per 280 ms.

7.4<u>2</u> <u>UE Reception Receive</u> Timing

The reception timing of the MS is determined during the specified operation.

7.4<u>2</u>.1 Minimum requirement

TBD

7.53 Signalling requirements

7.53.1 Signalling response delay

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

The signalling response delay is defined as the time from when the UE receives the RRC message from UTRAN, until the UE successfully has performed actions according to the RRC message and the UE tries to transmit the RRC response message over the Uu interface.

7.53.21.1 Test pParameters

For all the tests the TTI for the DCCH shall be set to 80 ms.

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

7.5.3<u>1.2</u> Performance Minimum requirements

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

General processing delay shall not exceed 100 ms in 90 % of the cases with 95 % confidence.

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

Table 7-3: Signalling response delay

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

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

7.5.42 Signalling processing

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

7.5.5<u>2.1</u> Test parameters

For all the tests the TTI for the transport channel carrying DCCH shall be 80 ms.

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

The rest of the parameters are TBD.

7.5.62.1.1 Performance Minimum requirements

The UE shall be able to respond according to the test in 97.5.2.4.1 in 90 % of the cases with 95 % confidence.

8 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 TSG RAN WG2 S25.302 "Services Provided by Physical Layer". The physical layer measurements for FDD are described and defined in TSG RAN WG1 TS25.215 "Physical layer – Measurements (FDD)". In this clause for FDD, 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 TS 25.101 annex A, sub_clause A.3.1. This measurement channel is used both in active cell and cells to be measured.
- Physical channels used as defined in TS 25.101 annex C.
- 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.
- Single task reporting.
- Power control is active.

8.1 Measurements Performance for UE

Test conditions are specified in subclauses 10.1.1, 10.1.4 and 10.1.7.

8.1.1 COMMON PILOT MEASUREMENTSCPICH measurements

These measurement consider CPICH RSCP and CPICH Ec/Io measurements.

8.1.1.1 Intra frequency test parameters

In this case all cells are in the same frequency. The table 8-1 and notes 1-4 define the limits of signal strengths and code powers, where when the requirements is are applicable.

Table 8-1: CPICH Intra frequency test parameters

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 1

CPICH_Ec/lor	dB	-10	-10
PCCPCH_Ec/lor	dB	-12	-12
SCH_Ec/lor	dB	-12	-12
PICH_Ec/lor	dB	-15	-15
DPCH_Ec/lor	dB	-15	-15
OCNS	dB	-1.11	-1.11
Îor/Ioc	dB	10.5	10.5
Ioc	dBm/ 3.84 MHz	Note 4	Note 4
Range 1:Io	dBm	-9470	-9470
Range 2: Io		-9450	-9450
Propagation condition	-	AWGN	

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NOTE 1: $CPICH_RSCP1, 2 \ge -114$ dBm.

NOTE 2: / *CPICH_RSCP1* − *CPICH_RSCP2* /≤ 20 dB.

NOTE 3: $| Io - CPICH_Ec/Ior | \le 20 \text{ dB}.$

NOTE 4: *Ioc* level shall be adjusted according the total signal power *Io* at receiver input and the geometry factor $\hat{Ior/Ioc}$. *Io* –13.7 dBdB = Ioc.

8.1.1.2 Inter frequency test parameters

In this case both cells are in different frequency and compressed mode is applied. The gap length is 7 [14 slots is FSS]. The table 8-2 and notes 1-5 define the limits of signal strengths and code powers, where the requirement is applicable.

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 2
CPICH_Ec/lor	dB	-10	-10
PCCPCH_Ec/lor	dB	-12	-12
SCH_Ec/lor	dB	-12	-12
PICH_Ec/lor	dB	-15	-15
DPCH_Ec/Ior	dB	-15	-15
OCNS	dB	-1.11	-1.11
Îor/Ioc	dB	10.1	10.1
Ioc	dBm/ 3.84 MHz	Note 5	Note 5
Range 1:Io	dBm	-9470	-9470
Range 2: Io	, april	-9450	-9450
Propagation condition	-	AV	VGN

Table 8-2: CPICH Inter frequency tests parameters

NOTE 1: *CPICH_RSCP1*, $2 \ge -114$ dBm.

NOTE 2: $/ CPICH_RSCP1 - CPICH_RSCP2 / \le 20 \text{ dB}.$

NOTE 3: / Channel 1_Io –Channel 2_Io/ \leq 20 dB.

NOTE 4: $| Io - CPICH_Ec/Ior | \le 20 \text{ dB}.$

NOTE 5: *Ioc* level shall be adjusted in each carrier frequency according the total signal power *Io* at receiver input and the geometry factor $\hat{I}or/Ioc$. *Io* -10.6 dB = Ioc.

8.1.2 CPICH RSCP

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

8.1.2.1 Intra frequency measurements accuracy

The measurement period for CELL_DCH stage is [150 ms] and for CELL_FACH stage [600 ms].

8.1.2.1.1 Absolute accuracy requirement

The absolute accuracy of CPICH RSCP is defined as measured one code power after de-spreading. In this test only Cell 1 in table 8-1 is present.

Table 8-3: <u>CPICH_RSCP Intra frequency absolute accuracyRange 1</u>

Parameter	Value	<u>Range</u>	Accuracy	
			Normal condition	Extreme condition
CPICH_RSCP	<u>dB</u>	<u>1</u>	± 6	± 9
	<u>dB</u>	<u>2</u>	<u>± 8</u>	<u>± 11</u>

Table 8-4: Range 2

Parameter	Value	Accuracy		
		Normal condition	Extreme condition	
CPICH_RSCP	d₿	± 8	±11	

8.1.2.1.2 Relative accuracy requirement

The relative accuracy of CPICH RSCP is defined as measured code powers from active cell and one or more cells after de-spreading. The reported value is relative to active cell value. In this test Cell 1 and 2 in table 1 are present.

Table 8-54: <u>CPICH_RSCP Intra frequency relative accuracyRange 2</u>

Parameter	Value	<u>Range</u>	Accuracy	
			Normal condition	Extreme condition
CPICH_RSCP	<u>dB</u>	<u>2</u>	± 3	± 3
8.1.2.2 Inter frequency measurement relative accuracy requirement

The measurement period for CELL_DCH stage is [240 ms], and for CELL_FACH stage [960 ms].

8.1.2.2.1 Relative accuracy requirement

The relative accuracy of CPICH RSCP in inter frequency case is defined as measured code powers after de-spreading from active cell and one or more cells received from two or more RF–carriers. The reported values are relative to active cell value. In this test parameters in table 8-2 is used. In this test cells 1 and 2 are present.

Table 8-65: CPICH_RSCP Inter frequency relative accuracyRange 2

Parameter	Value	Range	Acc	Accuracy	
			Normal condition	Extreme condition	
CPICH_RSCP	<u>dB</u>	<u>2</u>	± 6	± 6	

8.1.3 CPICH Ec/lo

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

8.1.3.1 Intra frequency measurements accuracy

The measurement period for CELL_DCH stage is [150 ms], and for CELL_FACH stage [600 ms].

8.1.3.1.1 Absolute accuracy requirement

The absolute accuracy of CPICH Ec/Io is defined as measured energy per chip divided by power density in the band from one cell. In this test only Cell 1 in table 8-1 is present.

Table 8-76: CPICH_Ec/lo Intra frequency absolute accuracyRange 2

Parameter	Value	Range	Accuracy	
			Normal condition	Extreme condition
CPICH_Ec/lo	<u>dB</u>	<u>2</u>	± 4	± 4

8.1.3.1.2 Relative accuracy requirement

The relative accuracy of CPICH Ec/Io is defined as measured energy per chip divided by power density in the band received from active cell and one more cells. The reported value is relative to active cell value. In this test Cells 1 and 2 in table 8-1 are present.

Table 8-87: CPICH_Ec/lo Intra frequency relative accuracyRange 2

Parameter	Value	Range	Accuracy		
		80	Normal condition	Extreme condition	
CPICH_Ec/lo	dB	2	± 3	± 3	

8.1.3.2 Inter frequency measurement relative accuracy requirement

The measurement period for CELL_DCH stage is [240 ms], and for CELL_FACH stage [960 ms].

8.1.3.2.1 Relative accuracy requirement

The relative accuracy of CPICH Ec/Io in the inter frequency case is defined as measured energy per chip divided by power density in the band. The reported <u>values</u> are relative to active cell value. In this test the parameters in table 8-2 is used. In this test cells 1 and 2 are present.

Table 8-98: CPICH_Ec/lo Inter frequency relative accuracyRange 2

Parameter	Value	Range	Accuracy	
			Normal condition	Extreme condition
CPICH_Ec/Io	<u>dB</u>	<u>2</u>	± 6	± 6

8.1.4 DEDICATED CHANNEL MEASUREMENTSDCH measurements

These measurement consider SIR, which is based on dedicated channel. The power ratio between DPDCH bits and DPCCH bits is 1. The relative power of PO1, PO2 and PO3 for TPC, TCFI and Pilot fields are same. The number of dedicated pilot bits is 8. Dedicated channel measurements are always intra frequency type.

8.1.4.1 Test parameters

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 1
CPICH_Ec/lor	dB	-10	-10
PCCPCH_Ec/lor	dB	-12	-12
SCH_Ec/lor	dB	-12	-12
PICH_Ec/lor	dB	-12	-12
DPCH_Ec/lor	dB	-15	-15
OCNS	dB	-1.11	-1.11
Îor/Ioc	dB	10.5	10.5
Ioc	dBm/ 3.84 MHz	Note 5	Note 5
Range 1:10	dBm	-9470	-9470
Range 2: Io		-9450	-9450
Propagation condition	-	AWGN	

Table 8-109: DCH Intra frequency test parameters

NOTE 1: *DPCH_Ec/Ior* ≥-114 dBm.

- NOTE 2: / DPCH_Ec/Ior1 DPCH_Ec/Ior2 |≤ 20 dB.
- NOTE 3: $| Io CPICH_Ec/Ior | \le 20 \text{ dB}.$
- NOTE 4: *Ioc* level shall be adjusted according the total signal power *Io* at receiver input and the geometry factor $\hat{I}or/Ioc$. *Io* -13.7 dB = Ioc.

8.1.5 SIR

NOTE: The purpose of this measurement is for DL inner/outer loop power control, DL open loop power control.

8.1.5.1 Absolute accuracy requirement

The basic measurement period is in CELL_DCH stage is [100 ms].

The SIR absolute accuracy is defined as RSCP divided by ISCP after RL combination. In this test only Cell 1 in table 8-10 is present.

Table 8-11: Range 1

Normal condition Extreme condition DPCCH_SIR ±{}		Parameter		Value		Accuracy				
$\frac{DPCCH_SIR}{\pm[\cdot]} \qquad \pm[\cdot]$					Nor	mal cor	ndition	Ext	reme condition	
	_		DPCCH_SIR				<u>±{</u>]		±[]	

Table 8-12: Range 2

Parameter	Value	Acc	zuracy
		Normal condition	Extreme condition
DPCCH_SIR	d₿	±[]	<u>±{}</u>

8.1.65 UTRA Carrier RSSI

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

8.1.65.1 Test parameters for requirement

The table <u>13-11</u> and notes 1,2 define the limits of signal strengths, where the requirement is applicable.

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channei number	-	Channel 1	Channel 2
Îor/Ioc	dB	-1	-1
Ioc	dBm/ 3.84 MHz	Note 3	Note 3
Range 1: Io	dBm/ 3.84 MHz	-9470	-9470
Range 2: Io		-9450	-9450
Propagation condition	-	AWGN	

Table 8-1311: UTRA RSSI Inter frequency test parameters

NOTE 1: For relative accuracy requirement / *Channel 1_Io –Channel 2_Io / < 20 dB*.

NOTE 2: *Ioc* level shall be adjusted according the total signal power *Io* at receiver input and the geometry factor $\hat{I}or/Ioc$. *Io* -4.13 dB = Ioc.

8.1.65.2 Absolute accuracy requirement

The measurement period is in CELL_DCH stage [150 ms], and CELL_FACH stage [600 ms].

Absolute accuracy case only one carrier is applied (Cell 1).

Parameter	Parameter <u>Value</u> <u>Range</u>		Accuracy		
			Normal condition	Extreme condition	
Іо	<u>dBm</u>	<u>1</u>	± 4	±7	
	<u>dBm</u>	<u>2</u>	<u>± 6</u>	<u>± 9</u>	

Table 8-1412: Io Inter frequency absolute accuracyRange 1

Table 8-15: Range 2

Parameter	Value	Accuracy	
		Normal condition	Extreme condition
Ь	dBm	± 6	± 9

8.1.65.3 Relative accuracy requirement

The measurement period in CELL_DCH stage is [240 ms], and in CELL_FACH stage [960 ms].

Relative accuracy requirement is defined as active cell frequency UTRAN RSSI compared to measured other frequency UTRAN RSSI level. In relative accuracy test case both carriers in table 8-16-13 are used.

Table 8-1613: Io Inter frequency relative accuracyRange 1

Parameter	Value	Range	Accuracy		
			Normal condition	Extreme condition	
Io	<u>dBm</u>	<u>1</u>	± 7	± 11	

8.1.7<u>6</u> GSM carrier RSSI

NOTE: The measurement is for Inter radio access technology (RAT) handover.

For terminals supporting this capability.

The accuracy requirement is specified in GSM 05.08.

[The GSM reporting period is 480 ms. In case of parallel measurements, the reporting period of each single neighbour can be a multiple of 480 ms, and the reporting period of each neighbour can be irregular.]

8.1.87 Transport channel BLER

NOTE: This measurement is for outer loop power control.

8.1.87.1 BLER measurement requirement

Transport channel BLER value shall be calculated from a sliding window containing [20] CRC errors.

8.1.98 UE transmitted power

Relative Accuracy.

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The measurement period in CELL_DCH stage is [ ].
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Relative Accuracy.

8.1.109 CFN-SFNSFN-CFN observed time difference

Requirement +/-0.5 chips period

The measurement period in CELL_DCH stage is [150 ms].

8.1.1110 SFN-SFN observed time difference

 Requirement
 +/-0.5 chips period for both type 1 and type 2.

The measurement period in CELL_DCH stage is [150 ms], and in CELL_FACH stage [600 ms].

8.1.1211 UE Rx-Tx time difference

Requirement +/-1.5 chips period.

The measurement period in CELL_DCH stage is [ms]

8.1.1212.1 Observed time difference to GSM cell

For terminal supporting this capability.

Requirement +- 20 chips.

8.1.13 P-CCPCH measurements RIMARY COMMON CONTROL PHYSICAL CHANNEL MEASUREMENTS

These measurements consider P-CCPCH RSCP measurements. Only necessary for UEs supporting TDD.

8.1.13.1 Inter frequency test parameters

In this case the cells are on different frequencies. The table $\frac{108-x-17}{2}$ and notes 1-4-3 define the limits of signal strengths and code powers, where the requirement is applicable.

Parameter	Unit	Cell 1
UTRA RF Channel number		Channel 1
Timeslot		k
P-CCPCH Ec/lor	dB	-3
OCNS	dB	[]
Îor/Ioc	DB <u>dB</u>	[]
Іос	dBm/ 3.84 MHz	Note 4
Range 1:Io	dBm	-9470

Table 8-17 P-CCPCH inter frequency test parameters

Range 2: Io		-94 –50
Propagation condition	-	AWGN

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NOTE 1: P- $CCPCH_RSCP \ge -102$ dBm.

NOTE 32: | Io - P-CCPCH_Ec/Ior $| \le [20] dB$.

NOTE 4<u>3</u>: *loc* level shall be adjusted according the total signal power *Io* at receiver input and the geometry factor \hat{lor}/loc .

8.1.14 P-CCPCH RSCP

8.1.14.1 Absolute accuracy requirements

The absolute accuracy of P-CCPCH RSCP is defined as measured one code power after de-spreading.

Table 8-18: P-CCPCH_RSCP Inter frequency absolute accuracy Range 1

Parameter Value Range		Range	Accuracy	
			Normal conditions	Extreme conditions
P-CCPCH RSCP	<u>dB</u>	<u>1</u>	± 6	± 9
	<u>dB</u>	2	<u>± 8</u>	<u>± 11</u>

Table 8-19: Range 2

Parameter	Value	Accuracy	
		Normal conditions	Extreme conditions
P-CCPCH_RSCP	d₿	± 8	<u>± 11</u>

8.2 Measurements Performance for UTRAN

8.2.1 RSSI

The measurement period shall be [100] ms.

8.2.1.1 Absolute accuracy requirement

Table 8-2019

Parameter	Accuracy	Range
Іо	$\pm 4 \text{ dB}$	For levels <= -74 dBm

8.2.1.2 Relative accuracy requirement

Table 8-21<u>20</u>

Parameter	Accuracy	Range
Іо	± [0.5] dB	For changes <= ±5.0dB for levels <= -74dBm

8.2.2 SIR

The measurement period shall be [100] ms.

8.2.2.1 Accuracy requirement

Table 8-2221

Parameter	Accuracy	Range
SIR	± 3 dB	For -7 <sir<7 db="" rssi<br="" when="">> -105 dBm</sir<7>

8.2.3 Transmitted carrier power

The measurement period shall be [100] ms.

8.2.3.1 Relative accuracy requirement

Table 8-2322

Parameter	Accuracy	Range
Ptot	± 5% units	For 5% ≤ Transmitted carrier power ≤95%

8.2.4 Transmitted code power

The measurement period shall be [100] ms.

8.2.4.1 Absolute accuracy requirement

Table 8-2423

Parameter	Accuracy	Range
Pcode	$\pm 3 \text{ dB}$	Over the full range

8.2.4.2 Relative accuracy requirement

Table 8-2524

Parameter	Accuracy	Range

Іо	$\pm 2 \text{ dB}$	Over the full range

8.2.5 Transport channel BLER

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

8.2.5.1 Accuracy requirement

Table 8-2625

Parameter	Accuracy	Range
BLER		

8.2.6 Physical channel BER

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

8.2.6.1 Accuracy requirement

Table 8-2726

Parameter	Accuracy	Range
BER	+/- 10% of the absolute BER value.	

8.2.7 Round trip time

The measurement period shall b e[100] ms.

8.2.7.1 Absolute accuracy requirement

Table 8-2827

Parameter	Accuracy	Range
RTT	+/- 0.5 chip	[876,, 2923.75] chips

8.2.8 Transport Channel BER

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

8.2.8.1 Accuracy requirement

Table 8-2928

Parameter	Accuracy	Range
TrpBER	+/- []% of the absolute BER value.	

9 UE parallel measurements

9.1 General

The UE shall be able to perform parallel measurements according to table <u>NEW 3.9.1</u>

In addition to the requirements in table NEW-3 the UE shall in parallel, in state CELL_DCH, also be able to measure and report the quantities according to table 9-1.

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Measurement quantity	Number of parallel measurements possible to request from the UE	Minimum periodic reporting period (ms)
Transport channel BLER	[1] per TrCh	[_]
Physical channel BER	[1]	[_]
Editors Note: The <u>precencepresence</u> of this		
measurement is depending on		
desicions <u>decisions</u> in WGI.		
DPCCH SIR	[1]	[_]
UE transmitted power	[1]	[_]
UE Rx-Tx time difference	[1] including timing to all	[_]
	radio links in active set	
SFN-SFN observed time difference type 2	[_]	[_]
UE GPS Timing of Cell Frames for LCS	[_]	[_]

Table 9-1

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

9.2 Parallel Measurement Requirements

Table 9-2: Network scenarios

Case	Network sceanrioscenario	Number of UMTS carriers present
1a	single carrier UMTS network with no interaction with GSM networks or other UMTS networks	1
2a	multi carrier UMTS network with no interaction with GSM networks	2
2b		2
2c		3

Case	Network sceanrioscenario	Number of UMTS carriers present
3a	single carrier UMTS network together with a GSM network	1
3b		1
4a	multi carrier UMTS network together with a GSM network	2
4b		2
4c		3

Table 9-3: Layer 1 parallel measurement capability

Case	Intra-frequency CPICHInter-frequencyRSCP or CPICH Ec/IoRSCP or C		Inter-frequen RSCP or CP	cy CPICH ICH Ec/Io	Inter-System GSM carrier RSSI		Filtering period setting (ms) Note 4		
	including c Also the UTRA shall be reporte	ell search. A carrier RSSI ed .	including ce Also one UTRA per measured car reported.	ll search. carrier RSSI rier shall be			Intra-freq.	Inter-freq	GSM
	Minimum number of neighbours to be reported to higher layers	Neighbour list size Note 1	Minimum number of neighbours to be reported to higher layers Note 2	Neighbour list size Note 3	Minimum number of neighbours to be reported to higher layers	Neighbour list size Note 1			
1a	[6]	[32]	[0]	[0]	[0]	[0]	[150]	-	-
2a	[6]	[20]	[4]	[12]	[0]	[0]	[150]	[240]	-
2b	[6]	[20]	[6]	[12]	[0]	[0]	[150]	[480]	-
2c	[6]	[16]	[4+4]	[8+8]	[0]	[0]	[150]	[480]	-
3a	[6]	[16]	[0]	[0]	[16]	[16]	[150]	-	[480]
3b	[6]	[12]	[0]	[0]	[20]	[20]	[150]	-	[960] Note 5
4a	[6]	[12]	[3]	[10]	[10]	[10]	[150]	[240]	[480]
4b	[6]	[12]	[6]	[10]	[10]	[10]	[150]	[480]	[960] Note 5
4c	[6]	[10]	[3+3]	[6+6]	[10]	[10]	[150]	[480]	[480]

NOTE 1: The total number of neighbours is in total [32]. The detailed share between intra-, inter and GSM cells is FFS.

- NOTE 2: The number of neighbours to be reported is given in the form X or X+Y, where X and Y represents the number of neighbours to report from each carrier respectively, e.g. 4+4 indicates that 4 neighbours shall be measured on each of two inter-frequency carriers and 4 indicates that 4 neighbours shall be measured from 1 inter-frequency carrier.
- NOTE 3: In the same manner as in Note 2, the number of neighbours in the neighbour list is given in the form X or X+Y, where X and Y represents the number of neighbours in the list for each carrier respectively.
- NOTE 4: When the parameters for higher layer filtering is completed by WG2 this column will be updated to indicate the specific parameter setting for the in WG2 (25.331) specified parameters that controls the filtering.
- NOTE 5: The GSM reporting period is 480 ms. In case of multiple measurement tasks, the reporting period of each single neighbour can be a multiple of 480 ms. Reporting period of each neighbour can be irregular.

Pattern for compressed mode measurements:

7 slot gap every 3rd frame, double frame method, 8 gaps / 240 ms, 16 gaps/ 480ms.

Annex A (Informative): Measurement Definition

In this Annex the definitions of those Measurements, whose requirements are specified, in <u>clause-section 10-8</u> of this specification are reported for information. The complete list of measurements is specified in TSG RAN WG2 TS25.302 "Services Provided by Physical Layer". The physical layer measurements for FDD are described and defined in TSG RAN WG1 TS25.215 "Physical layer – Measurements (FDD)".

A.1 Measurements Performance for UE

A.1.1 CPICH RSCP

Definition Received Signal Code Power, the received power on one code after de-spreading measured on the pilot bits of the CPICH. The reference point for the RSCP is the antenna connector at the UE.

A.1.2 RSCP

[Editor's Note: in accordance to RP-99564, while this measurement is agreed in TS 25.215 is not considered yet in TS 25.302; this measurement is here reported for consistency with TDD mode since during WG4#8 it was decided to consider this measurement for TDD].

Definition	Received Signal Code Power, the received power on one code after de-spreading measured
	on the pilot bits of the DPCCH after RL combination. The reference point for the RSCP is the
	antenna connector at the UE.

A.1.3 ISCP

Note that it is not a requirement that the ISCP shall be possible to report to higher layers. The ISCP is defined in this sub_clause because it is included in the definition of SIR.

Definition	Interference Signal Code Power, the interference on the received signal after de-spreading. Only
	the non-orthogonal part of the interference is included in the measurement. The reference point
	for the ISCP is the antenna connector at the UE.

A.1.4 SIR

Definition	Signal to Interference Ratio, defined as the RSCP divided by ISCP. The SIR shall be measured
	on DPCCH after RL combination. The reference point for the SIR is the antenna connector of the
	UE.

A.1.5 UTRA carrier RSSI

Definition	Received Signal Strength Indicator, the wide-band received power within the relevant channel bandwidth. Measurement shall be performed on a UTRAN downlink carrier. The reference point for the RSSL is the antenna connector at the UE

A.1.6 GSM carrier RSSI

Definition	Received Signal Strength Indicator, the wide-band received power within the relevant channel bandwidth. Measurement shall be performed on a GSM BCCH carrier. The reference point for
	the RSSI is the antenna connector at the UE.

A.1.7 CPICH Ec/No

Definition	The received energy per chip divided by the power density in the band. The Ec/No is identical to RSCP/RSSI. Measurement shall be performed on the CPICH. The reference point for Ec/No is
	the antenna connector at the UE.

A.1.8 Transport channel BLER

Definition	Estimation of the transport channel block error rate (BLER). The BLER estimation shall be based
	on evaluating the CRC on each transport block after RL combination. BLER estimation is only
	required for transport channels containing CRC. In connected mode the BLER shall be possible
	to measure on any transport channel. If requested in idle mode it shall be possible to measure
	the BLER on transport channel PCH.

A.1.9 Physical channel BER

Definition	The physical channel BER is an estimation of the average bit error rate (BER) before channel decoding of the DPDCH data after RL combination. At most it shall be possible to report a
	physical channel BER estimate at the end of each TTI for the transferred TrCh's, e.g. for TrCh's with a TTI of x ms a x ms averaged physical channel BER shall be possible to report every x ms.

A.1.10 UE transmitted power

Definition The total UE transmitted power on one carrier. The reference point for the UE transmitted power shall be the UE antenna connector.

A.1.11 CFN-SFNSFN-CFN-observed time difference

Definition	The <u>CFN-SFNSFN-CFN</u> -observed time difference to cell is defined as: OFF \times 38400+ T _m , where:
	$T_m = T_{RxSFN} - (T_{UETx}-T_0)$, given in chip units with the range [0, 1,, 38399] chips
	T_{UETx} is the time when the UE transmits an uplink DPCCH/DPDCH frame.
	T₀ is defined in TS 25.211 subclause 7.1.3.
	T_{RxSFN} is time at the beginning of the next received neighbouring P-CCPCH frame after the time instant T_{UETx} - T_0 in the UE. If the next neighbouring P-CCPCH frame is received exactly at T_{UETx} - T_0 then T_{RxSFN} = T_{UETx} - T_0 (which leads to T_m =0)
	- and And
	$OFF=(CFN_{Tx}SFN-SFNCFN_{Tx})$ mod 256, given in number of frames with the range [0, 1,, 255] frames
	CFN_{Tx} is the connection frame number for the UE transmission of an uplink DPCCH/DPDCH frame at the time $T_{UETx}.$
	SFN = the system frame number for the neighbouring P-CCPCH frame received in the UE at the time T_{RxSFN} .

A.1.12 SFN-SFN observed time difference

Definition	
	The SFN-SFN observed time difference to cell is defined as: OFF×38400+ T _m , where:
	$T_m = T_{RxSFNj} - T_{RxSFNi}$, given in chip units with the range [0, 1,, 38399] chips
	T_{RxSFNj} is the time at the beginning of a received neighbouring P-CCPCH frame from cell j.
	T_{RxSFNi} is time at the beginning of the next received neighbouring P-CCPCH frame from cell i after the time instant T_{RxSFNj} in the UE. If the next neighbouring P-CCPCH frame is received exactly at T_{RxSFNj} then T_{RxSFNj} = T_{RxSFNi} (which leads to T_m =0).
	And
	$OFF=(SFN_{i} - SFN_{i}) \mod 256$, given in number of frames with the range [0, 1,, 255] frames
	SFN _j = the system frame number for downlink P-CCPCH frame from cell j in the UE at the time T_{RxSFNj} .
	SFN _i = the system frame number for the P-CCPCH frame from cell i received in the UE at the time T_{RxSFNi} .
	Type 2: The relative timing difference between cell j and cell i, defined as T _{CPICHRxj} - T _{CPICHRxi} , where:
	$T_{CPICHRxj}$ is the time when the UE receives one CPICH slot from cell j
	T _{CPICHRxi} is the time when the UE receives the CPICH slot from cell i that is closest in time to the CPICH slot received from cell j
Applicable for	Type 1: Idle, Connected Intra
	Type 2: Idle, Connected Intra, Connected Inter

A.1.13 UE Rx-Tx time difference

Definition	The difference in time between the UE uplink DPCCH/DPDCH frame transmission and the first significant path, of the downlink DPCH frame from the measured radio link. Measurement shall
	be made for each cell included in the active set. Note: The definition of "first significant path" needs further elaboration.

A.1.14 Observed time difference to GSM cell

Definition	Time difference between the Primary CCPCH of the current cell and the timing of the GSM cell. The exact definition and further details on this parameter is contained in Chapter 9 of the
	TS25.302 "Services Provided by the Physical Layer".

A.2 Measurements Performance for UTRAN

A.2.1 RSSI

Definition	Received Signal Strength Indicator, the wide-band received power within the UTRAN uplink carrier channel bandwidth in an UTRAN access point. The reference point for the RSSI
	measurements shall be the antenna connector.

A.2.2 SIR

Definition	Signal to Interference Ratio, is defined as: (RSCP/ISCP)×SF. Measurement shall be performed on the DPCCH after RL combination in Node B. The reference point for the SIR measurements
	shall be the antenna connector.

A.2.3 Transmitted carrier power

Definition	Transmitted carrier power is the ratio between the total transmitted power and the maximum
	transmission power. Total transmitted power is the mean power [W] on one carrier from one
	UTRAN access point. Maximum transmission power is the mean power [W] on one carrier from
	UTRAN access point when transmitting at the configured maximum power for the cell.
	Measurement shall be possible on any carrier transmitted from the UTRAN access point. The
	reference point for the total transmitted power measurement shall be the antenna connector. In
	case of Tx diversity the total transmitted power for each branch shall be measured.

A.2.4 Transmitted code power

Definition	Transmitted code power, is the transmitted power on one carrier, one scrambling code and one channelisation code. Measurement shall be possible on any channelisation code transmitted
	from the UTRAN access point. The reference point for the transmitted code power measurement
	shall be the antenna connector. In case of Tx diversity the transmitted code power for each
	branch shall be measured.

A.2.5 Transport channel BLER

Definition	Estimation of the transport channel block error rate (BLER). The BLER estimation shall be based
	on evaluating the CRC on each transport block. Measurement shall be possible to perform on
	any transport channel after RL combination in Node B. BLER estimation is only required for
	transport channels containing CRC.

A.2.6 Transport Channel BER

Definition	The transport channel BER is an estimation of the average bit error rate (BER)) of RL-combined DPDCH data. The transport channel (TrCH) BER is measured from the data considering only
	non-punctured bits at the input of the channel decoder in Node B. It shall be possible to report an estimate of the transport channel BER for a TrCH after the end of each TTI of the TrCH. The reported TrCH BER shall be an estimate of the BER during the latest TTI for that TrCH. Transport channel BER is only required to be reported for TrCHs that are channel coded.

A.2.7 Physical channel BER

Definition	The Physical channel BER is an estimation of the average bit error rate (BER) on the DPCCH
	after RL combination in Node B. An estimate of the Physical channel BER shall be possible to be
	reported after the end of each TTI of any of the transferred TrCHs. The reported physical
	channel BER shall be an estimate of the BER during the latest TTI.

A.2.8 Round trip time

NOTE: The relation between this measurement and the TOA measurement defined by WG2 needs clarification.

Definition	Round trip time (RTT), is defined as RTT = $T_{RX} - T_{TX}$, where
	T_{TX} = The time of transmission of the beginning of a downlink DPCH frame to a UE.
	T_{RX} = The time of reception of the beginning (the first significant path) of the corresponding uplink DPCCH/DPDCH frame from the UE.
	Note: The definition of "first significant path" needs further elaboration. Measurement shall be possible on DPCH for each RL transmitted from an UTRAN access point and DPDCH/DPCCH for each RL received in the same UTRAN access point.

Annex B (informative): Change History

Document history						
V3.0.0	December 1999					
V3.1.0	March 2000					

RAN doc	Spec	CR	Re	Phas	Subject	Cat	Current	New
RP-000021	25.133	001		R99	Modification of RL Failure Requirement	F	3.0.0	3.1.0
RP-000021	25.133	002		R99	Idle Mode Tasks	С	3.0.0	3.1.0
RP-000021	25.133	003		R99	Revised UE handover requirements	F	3.0.0	3.1.0
RP-000021	25.133	004		R99	Editorial corrections	D	3.0.0	3.1.0
RP-000021	25.133	005		R99	UE measurement requirement update	F	3.0.0	3.1.0
RP-000021	25.133	006		R99	TDD Measurements Performance Requirements	В	3.0.0	3.1.0
RP-000021	25.133	007		R99	UTRAN measurement requirement update	F	3.0.0	3.1.0
RP-000021	25.133	008		R99	Requirements on parallel measurements	F	3.0.0	3.1.0
RP-000021	25.133	009		R99	Inclusion on transport channel BER.	F	3.0.0	3.1.0

Note on implementation of CR 25.133-003. On page 16 there is a dotted line above title 5.1.2.1.4 ACTIVE SET DIMENSION. The text following is a duplication of version 3.0.0 to the point of sub_clause 5.1.2.2.1.3. HARD HANDOVER DELAY. Therefore all text from page 16 starting from 5.1.2.1.4 ACTIVE SET DIMENSION is moved to sub_clause 5.1.2.2.1.3 HARD HANDOVER DELAY on page 19.

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Annex A (Informative): Measurement Definition

In this Annex the definitions of those Measurements, whose requirements are specified, in clause 10 of this specification are reported for information. The complete list of measurements is specified in TSG RAN WG2 TS25.302 "Services Provided by Physical Layer". The physical layer measurements for FDD are described and defined in TSG RAN WG1 TS25.215 "Physical layer — Measurements (FDD)".

A.1 Measurements Performance for UE

A.1.1 CPICH RSCP

Definition

Received Signal Code Power, the received power on one code after de-spreading measured on the pilot bits of the CPICH. The reference point for the RSCP is the antenna connector at the UE.

A.1.2 RSCP

[Editor's Note: in accordance to RP 99564, while this measurement is agreed in TS 25.215 is not considered yet in TS 25.302; this measurement is here reported for consistency with TDD mode since during WG4#8 it was decided to consider this measurement for TDD].

Definition

Received Signal Code Power, the received power on one code after de-spreading measured on the pilot bits of the DPCCH after RL combination. The reference point for the RSCP is the antenna connector at the UE.

A.1.3 ISCP

Note that it is not a requirement that the ISCP shall be possible to report to higher layers. The ISCP is defined in this subclause because it is included in the definition of SIR.

Def	inition	Interference Signal Code Power, the interference on the received signal after de-spreading. Only
		the non-orthogonal part of the interference is included in the measurement. The reference point
		for the ISCP is the antenna connector at the UE.

efinition Signal to Interference Ratio, defined as the RSCP divided by ISCP. The SIR shall be measured on DPCCH after RL combination. The reference point for the SIR is the antenna connector of the UE.

A.1.5 UTRA carrier RSSI

Def	inition	Received Signal Strength Indicator, the wide-band received power within the relevant channel
		bandwidth. Measurement shall be performed on a UTRAN downlink carrier. The reference point
		for the RSSI is the antenna connector at the UE.

	A.1.6	GSM carrier RSSI
Đe	inition	Received Signal Strength Indicator, the wide-band received power within the relevant channel bandwidth. Measurement shall be performed on a GSM BCCH carrier. The reference point for the RSSI is the antenna connector at the UE.
	A.1.7	CPICH Ec/No
Đə	inition	The received energy per chip divided by the power density in the band. The Ec/No is identical to RSCP/RSSI. Measurement shall be performed on the CPICH. The reference point for Ec/No is the antenna connector at the UE.
	A.1.8	Transport channel BLER
Đe	inition	Estimation of the transport channel block error rate (BLER). The BLER estimation shall be based on evaluating the CRC on each transport block after RL combination. BLER estimation is only required for transport channels containing CRC. In connected mode the BLER shall be possible to measure on any transport channel. If requested in idle mode it shall be possible to measure the BLER on transport channel PCH.
	A.1.9	Physical channel BER
Đe	inition	The physical channel BER is an estimation of the average bit error rate (BER) before channel decoding of the DPDCH data after RL combination. At most it shall be possible to report a physical channel BER estimate at the end of each TTI for the transferred TrCh's, e.g. for TrCh's with a TTI of x ms a x ms averaged physical channel BER shall be possible to report every x ms.
	A.1.10	UE transmitted power
Đe	inition	The total UE transmitted power on one carrier. The reference point for the UE transmitted power shall be the UE antenna connector.
	A.1.11	CFN-SFN observed time difference
Đe	inition	The CFN-SFN observed time difference to cell is defined as: OFF×38400+ T _m , where: T _m = T _{RxSFN} (T _{UETx} -T ₀), given in chip units with the range [0, 1,, 38399] chips T _{UETx} is the time when the UE transmits an uplink DPCCH/DPDCH frame. T ₀ is defined in TS 25.211 subclause 7.1.3. T _{RxSFN} is time at the beginning of the next received neighbouring P-CCPCH frame after the time instant T _{UETx} -T ₀ in the UE. If the next neighbouring P-CCPCH frame is received exactly at T _{UETx} - T ₀ then T _{RxSFN} =T _{UETx} -T ₀ (which leads to T _m =0). and OFF=(CFN _{Tx} -SFN) mod 256, given in number of frames with the range [0, 1,, 255] frames CFN _{Tx} is the connection frame number for the UE transmission of an uplink DPCCH/DPDCH frame at the time T _{UETx} - SFN = the system frame number for the neighbouring P-CCPCH frame received in the UE at the time T _{RxSFN} -

	A.1.12	SEN-SEN observed time difference
Đe	inition	Type 1:
		The SEN-SEN observed time difference to cell is defined as: OFE×38400+ T _m , where:
		$T_{\text{RXSEN}} \rightarrow T_{\text{RXSEN}}$, given in one units with the range [0, 1,, social ones] T_{RXSEN} is the time at the beginning of a received neighbouring P-CCPCH frame from cell j.
		T _{RXSENI} is time at the beginning of the next received neighbouring P-CCPCH frame from cell i
		after the time instant T _{RXSEN} in the UE. If the next neighbouring P-CCPCH frame is received
		And
		OFF=(SFN;- SFN;) mod 256, given in number of frames with the range [0, 1,, 255] frames
		SFN; = the system frame number for downlink P-UCPCH frame from cell j in the UE at the time
		SFN; = the system frame number for the P-CCPCH frame from cell i received in the UE at the
		time T _{RXSENi} .
		The relative timing difference between cell i and cell i, defined as Topoupy - Topoupy, where:
		T _{CPICHRxi} is the time when the UE receives one CPICH slot from cell j
		T _{CPICHRxi} is the time when the UE receives the CPICH slot from cell i that is closest in time to the CPICH slot received from cell i
Ap	olicable for	Type 1: Idle, Connected Intra
		Type 2: Idle, Connected Intra, Connected Inter
	A.1.13	UE Rx-Tx time difference
De	inition	The difference in time between the UE uplink DPCCH/DPDCH frame transmission and the first
		be made for each cell included in the active set.
		Note: The definition of "first significant path" needs further elaboration.
	A.1.14	Observed time difference to GSM cell
_		
Đe	inition	Time difference between the Primary CCPCH of the current cell and the timing of the GSM cell.
		The exact definition and further details on this parameter is contained in Chapter 9 of the
		IS25.302 "Services Provided by the Physical Layer".
	A.2 ₩	leasurements Performance for UTRAN
	A 2 1	<u>PSSI</u>
	1.2.1	
De	inition	Received Signal Strength Indicator, the wide-band received power within the UTRAN uplink
		carrier channel bandwidth in an UTRAN access point. The reference point for the RSSI
L		
		CID
	A.2.2	- NK
De	inition	Signal to Interference Ratio is defined as: (RSCP/ISCP)/SE. Measurement shall be performed
		on the DPCCH after RL combination in Node B. The reference point for the SIR measurements
		shall be the antenna connector.

A.2.3	Transmitted carrier power
Definition	Transmitted carrier power is the ratio between the total transmitted power and the maximum transmission power. Total transmitted power is the mean power [W] on one carrier from one UTRAN access point. Maximum transmission power is the mean power [W] on one carrier from UTRAN access point when transmitting at the configured maximum power for the cell. Measurement shall be possible on any carrier transmitted from the UTRAN access point. The reference point for the total transmitted power measurement shall be the antenna connector. In case of Tx diversity the total transmitted power for each branch shall be measured.
A.2.4	Transmitted code power
Definition	Transmitted code power, is the transmitted power on one carrier, one scrambling code and one channelisation code. Measurement shall be possible on any channelisation code transmitted from the UTRAN access point. The reference point for the transmitted code power measurement shall be the antenna connector. In case of Tx diversity the transmitted code power for each branch shall be measured.
A.2.5	Transport channel BLER
Definition	Estimation of the transport channel block error rate (BLER). The BLER estimation shall be based on evaluating the CRC on each transport block. Measurement shall be possible to perform on any transport channel after RL combination in Node B. BLER estimation is only required for transport channels containing CRC.
A.2.6	Transport Channel BER
D of inition	The transport channel BER is an estimation of the average bit error rate (BER)) of RL-combined DPDCH data. The transport channel (TrCH) BER is measured from the data considering only non-punctured bits at the input of the channel decoder in Node B. It shall be possible to report an estimate of the transport channel BER for a TrCH after the end of each TTI of the TrCH. The reported TrCH BER shall be an estimate of the BER during the latest TTI for that TrCH. Transport channel BER is only required to be reported for TrCHs that are channel coded.
A.2.7	Physical channel BER
Definition	The Physical channel BER is an estimation of the average bit error rate (BER) on the DPCCH after RL combination in Node B. An estimate of the Physical channel BER shall be possible to be reported after the end of each TTI of any of the transferred TrCHs. The reported physical channel BER shall be an estimate of the BER during the latest TTI.
<mark>A.2.8</mark> Note:	Round trip time The relation between this measurement and the TOA measurement defined by WG2 needs clarification.
Definition	Round trip time (RTT), is defined as $RTT = T_{RX} - T_{TX}$, where $T_{TX} = The time of transmission of the beginning of a downlink DPCH frame to a UE. T_{RX} = The time of reception of the beginning (the first significant path) of the corresponding uplink DPCCH/DPDCH frame from the UE. Note: The definition of "first significant path" needs further elaboration. Measurement shall be possible on DPCH for each RL transmitted from an UTRAN access point and DPDCH/DPCCH for each RL received in the same UTRAN access point.$

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Subject:	Requireme	ent for UE Tx Powe	e <mark>r Measu</mark>	irement				
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8.1.9 UE transmitted power

8.1.9.1 Accuracy requirement

The measurement period in CELL DCH state is 1 slot.

Table 8-x UE transmitted power absolute accuracy

Parameter		PUEMAX	
		<u>24dBm</u>	<u>21dBm</u>
<u>UE transmitted power=PUEMAX</u>	<u>dB</u>	<u>+1/-3</u>	<u>±2</u>
<u>UE transmitted power=PUEMAX-1</u>	<u>dB</u>	+1.5/-3.5	<u>±2.5</u>
<u>UE transmitted power=PUEMAX-2</u>	<u>dB</u>	+2/-4	<u>±3</u>
<u>UE transmitted power=PUEMAX-3</u>	<u>dB</u>	+2.5/-4.5	<u>±3.5</u>
<u>PUEMAX-10≤UE transmitted power<puemax-3< u=""></puemax-3<></u>	<u>dB</u>	+3/-5	<u>±4</u>

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 3G TS 25.101 'UTRA (UE) FDD; Radio Transmisson and Reception' section 6.2.1 table 6.1.

Note 2: UE transmitted power is the reported value.

For each empty slot created by compressed mode, the UE L1 shall respond with a value of -50 dBm.

Relative Accuracy.

The measurement period in CELL_DCH stage is [].

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Subject:	Insertion of	Range/Mapping f	rom TS	<mark>25.215 r</mark>	evised			
Work item:								
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<u>Other</u> comments:								

8.2 Measurements Performance for UTRAN

8.2.1 RSSI

The measurement period shall be [100] ms.

8.2.1.1 Absolute accuracy requirement

Table 8-20

Parameter	Accuracy	Range
Іо	$\pm 4 \text{ dB}$	For levels <= -74 dBm

8.2.1.2 Relative accuracy requirement

Table 8-21

Parameter	Accuracy	Range
Ιο	± [0.5] dB	For changes <= ±5.0dB for levels <= -74dBm

8.2.1.3 RSSI measurement report mapping

The reporting range for RSSI is from -112 ... -50 dBm.

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

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Reported value	Measured quantity value	<u>Unit</u>
RSSI LEV 000	<u>RSSI < -112.0</u>	<u>dBm</u>
RSSI LEV 001	$-112.0 \le \text{RSSI} < -111.9$	<u>dBm</u>
RSSI LEV 002	$-111.9 \le \text{RSSI} < -111.8$	<u>dBm</u>
<u></u>	<u></u>	<u></u>
 <u>RSSI LEV 619</u>	 -50.2 ≤ RSSI < -50.1	<u></u> <u>dBm</u>
RSSI LEV 619 RSSI LEV 620	$\frac{-50.2 \le \text{RSSI} < -50.1}{-50.1 \le \text{RSSI} < -50.0}$	<u></u> <u>dBm</u> <u>dBm</u>

8.2.2 SIR

The measurement period shall be [100] ms.

8.2.2.1 Accuracy requirement

Table 8-22

Parameter	Accuracy	Range
SIR	± 3 dB	For -7 <sir<7 db="" rssi<br="" when="">> -105 dBm</sir<7>

8.2.2.2 SIR measurement report mapping

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

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

	<u>Table 8-r</u>	
Reported value	Measured quantity value	<u>Unit</u>
UTRAN SIR 00	<u>SIR < -11.0</u>	<u>dB</u>
UTRAN SIR 01	$-11.0 \le SIR < -10.5$	<u>dB</u>
UTRAN SIR 02	$-10.5 \le SIR < -10.0$	<u>dB</u>
<u></u>	<u></u>	<u></u>
UTRAN SIR 61	$\underline{19.0 \leq \text{SIR} < 19.5}$	<u>dB</u>
<u>UTRAN SIR 62</u>	$\underline{19.5 \le \text{SIR} < 20.0}$	<u>dB</u>
UTRAN SIR 63	$\underline{20.0 \leq SIR}$	<u>dB</u>

8.2.3 Transmitted carrier power

The measurement period shall be [100] ms.

8.2.3.1 Relative accuracy requirement

Table 8-23

Parameter	Accuracy	Range
Ptot	\pm 5% units	For 5% ≤ Transmitted carrier power ≤95%

8.2.3.2 Transmitted carrier power measurement report mapping

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

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

<u>Table 8-r</u>

Reported value	Measured quantity value	<u>Unit</u>
UTRAN TX POWER 000	<u>Transmitted carrier power = 0</u>	<u>%</u>
UTRAN TX POWER 001	$0 < \text{Transmitted carrier power} \le 1$	<u>%</u>
UTRAN TX POWER 002	$1 < \text{Transmitted carrier power} \le 2$	<u>%</u>
UTRAN TX POWER 003	$2 < \text{Transmitted carrier power} \le 3$	<u>%</u>
····	····	<u></u>
UTRAN TX POWER 098	$97 < \text{Transmitted carrier power} \le 98$	<u>%</u>
UTRAN TX POWER 099	$98 < \text{Transmitted carrier power} \le 99$	<u>%</u>
UTRAN TX POWER 100	$99 < \text{Transmitted carrier power} \le 100$	<u>%</u>

8.2.4 Transmitted code power

The measurement period shall be [100] ms.

8.2.4.1 Absolute accuracy requirement

Table 8-24

Parameter	Accuracy	Range
Pcode	± 3 dB	Over the full range

8.2.4.2 Relative accuracy requirement

Table 8-25

Parameter	Accuracy	Range
Іо	$\pm 2 \text{ dB}$	Over the full range

8.2.4.3 Transmitted code power measurement report mapping

The reporting range for *Transmitted code power* is from -10 ... 46 dBm.

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

	<u>Table 8-r</u>	
Reported value	Measured quantity value	<u>Unit</u>
UTRAN CODE POWER 010	$-10.0 \le \text{Transmitted code power} < -9.5$	<u>dBm</u>
UTRAN_CODE_POWER_011	<u>$-9.5 \leq \text{Transmitted code power} < -9.0$</u>	<u>dBm</u>
UTRAN_CODE_POWER_012	$-9.0 \le \text{Transmitted code power} < -8.5$	<u>dBm</u>
····	·	<u>····</u>

Reported value	Measured quantity value	<u>Unit</u>
UTRAN CODE POWER 120	$45.0 \le \text{Transmitted code power} < 45.5$	<u>dBm</u>
UTRAN CODE POWER 121	$45.5 \le \text{Transmitted code power} < 46.0$	<u>dBm</u>
UTRAN CODE POWER 122	$46.0 \le \text{Transmitted code power} < 46.5$	<u>dBm</u>

8.2.5 Transport channel BLER

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

8.2.5.1 Accuracy requirement

Table 8-26

Parameter	Accuracy	Range
BLER		

8.2.5.2 Transport channel BLER measurement report mapping

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

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

	<u>Table 8-r</u>	
Reported value	Measured quantity value	<u>Unit</u>
BLER LOG 00	<u>Transport channel BLER = 0</u>	Ξ
BLER LOG 01	$-\infty < Log10(Transport channel BLER) < -4.03$	=
BLER LOG 02	$-4.03 \le \text{Log}10(\text{Transport channel BLER}) < -3.965$	=
BLER LOG 03	$-3.965 \le Log10(Transport channel BLER) < -3.9$	=
····	<u></u>	<u></u>
BLER LOG 61	$-0.195 \le Log10(Transport channel BLER) < -0.13$	=
BLER_LOG_62	$-0.13 \le Log10(Transport channel BLER) < -0.065$	=
BLER LOG 63	$-0.065 \le \text{Log10}(\text{Transport channel BLER}) \le 0$	=

8.2.6 Physical channel BER

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

8.2.6.1 Accuracy requirement

Table 8-27

Parameter	Accuracy	Range
BER	+/- 10% of the	

8.2.6.2 Physical channel BER measurement report mapping

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

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

<u>Table 8-r</u>		
Reported value	Measured quantity value	<u>Unit</u>
PhCh_BER_LOG_000	<u>Physical channel BER = 0</u>	11
PhCh_BER_LOG_001	$-\infty < Log10(Physical channel BER) < -2.06375$	Ц
PhCh_BER_LOG_002	<u>-2.06375≤ Log10(Physical channel BER) < -2.055625</u>	Ц
PhCh_BER_LOG_003	$-2.055625 \le \text{Log10}(\text{Physical channel BER}) < -2.0475$	Ц
<u></u>		<u></u>
PhCh_BER_LOG_253	$-0.024375 \le \text{Log10}(\text{Physical channel BER}) < -0.01625$	1
PhCh_BER_LOG_254	$-0.01625 \le \text{Log10}(\text{Physical channel BER}) < -0.008125$	Ξ
PhCh_BER_LOG_255	$-0.008125 \le \text{Log10}(\text{Physical channel BER}) \le 0$	=

8.2.7 Round trip time

The measurement period shall b e[100] ms.

8.2.7.1 Absolute accuracy requirement

Table 8-28

Parameter	Accuracy	Range
RTT	+/- 0.5 chip	[876,, 2923.75] chips

8.2.7.2 Round trip time measurement report mapping

The Round trip time reporting range is from 876.00 ... 2923.50 chip.

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

			•••	
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Reported value	Measured quantity value	<u>Unit</u>
RT TIME 0000	Round trip time < 876.00	<u>chip</u>
<u>RT_TIME_0001</u>	$\underline{876.00 \le \text{Round trip time} < 876.25}$	<u>chip</u>
<u>RT_TIME_0002</u>	$876.25 \le \text{Round trip time} < 876.50$	<u>chip</u>

<u>RT_TIME_0003</u>	$\underline{876.50 \le \text{Round trip time} < 876.75}$	<u>chip</u>
<u></u>		<u></u>
<u>RT TIME 8188</u>	$\underline{2922.75 \leq \text{Round trip time} < 2923.00}$	<u>chip</u>
<u>RT_TIME_8189</u>	$\underline{2923.00 \le \text{Round trip time} < 2923.25}$	<u>chip</u>
<u>RT_TIME_8190</u>	$\underline{2923.25 \le \text{Round trip time} < 2923.50}$	<u>chip</u>
<u>RT TIME 8191</u>	$2923.50 \le \text{Round trip time}$	<u>chip</u>

8.2.8 Transport Channel BER

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

8.2.8.1 Accuracy requirement

Table 8-29

Parameter	Accuracy	Range
TrpBER	+/- []% of the absolute BER value.	

8.2.8.2

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

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

Transport channel BER measurement report mapping

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	11	171	P	· () ·	-,

Reported value	Measured quantity value	<u>Unit</u>
TrCh_BER_LOG_000	<u>Transport channel BER = 0</u>	Ξ
TrCh_BER_LOG_001	$-\infty < Log10(Transport channel BER) < -2.06375$	-
TrCh_BER_LOG_002	<u>-2.06375≤ Log10(Transport channel BER) < -2.055625</u>	-
TrCh BER LOG 003	$-2.055625 \le \text{Log10}(\text{Transport channel BER}) < -2.0475$	-
<u></u>		<u></u>
TrCh BER LOG 253	$-0.024375 \le \text{Log10}(\text{Transport channel BER}) < -0.01625$	=
TrCh_BER_LOG_254	$-0.01625 \le \text{Log10}(\text{Transport channel BER}) < -0.008125$	=
TrCh_BER_LOG_255	$-0.008125 \le \text{Log10}(\text{Transport channel BER}) \le 0$	-

8.2.9 Propagation delay

8.2.9.1 Accuracy requirement

Parameter	Accuracy	Range
<u>PropDelay</u>	<u>+/- [] chip</u>	

8.2.9.2 Propagation delay measurement report mapping

The *Propagation delay* reporting range is from 0 ... 765 chip.

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

<u>Table 8-r</u>				
Reported value	Measured quantity value	<u>Unit</u>		
PROP_DELAY_000	$0 \leq \text{Propagation delay} < 3$	<u>chip</u>		
PROP_DELAY_001	$3 \leq \text{Propagation delay} < 6$	<u>chip</u>		
PROP_DELAY_002	$6 \le Propagation delay < 9$	<u>chip</u>		
····	····	<u></u>		
PROP_DELAY_252	$756 \le Propagation delay < 759$	<u>chip</u>		
PROP_DELAY_253	$759 \le Propagation delay < 762$	<u>chip</u>		
PROP_DELAY_254	$762 \le Propagation delay < 765$	<u>chip</u>		
PROP_DELAY_255	$765 \le Propagation delay$	<u>chip</u>		

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Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc Proposed change affects: (U)SIM ME X UTRAN / Radio Core Network (at least one should be marked with an X) (U)SIM ME X UTRAN / Radio Core Network								
Source:	RAN WG4					Dat	<u>e:</u> 2000-0	05-18
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<u>change:</u>	The definition of signalling response delay does not exclude delay uncertainty caused by the TTI of uplink DCCH and therefore modification based on the earlier agreement to exclude TTI uncertainty. The definition of signalling response delay is also clarified. The 90% rule is not necessary in signalling delay and therefore it is proposed to be removed. For all actions not listed the requirement on delay is set to zero but this may not always be the case.							
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7.5 Signalling requirements

7.5.1 Signalling response delay

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

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

7.5.<u>1.1</u>2 Test Parameters

For all the tests the TTI for the DCCH shall be set to $\frac{8040}{10}$ ms.

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

7.5.<u>1.2</u>³ Performance requirements

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

General processing delay shall not exceed 100 ms. in 90 % of the cases with 95 % confidence.

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

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

NOTE: For all actions not listed the requirement on delay is <u>FFS</u>zero.

7.5.24 Signalling processing

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

7.5.<u>2.1</u>5 Test parameters

For all the tests the TTI for the transport channel carrying DCCH shall be $\frac{8040}{10}$ ms.

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

The rest of the parameters are TBD.

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7.5.<u>2.2</u>6 Performance requirements

The UE shall be able to respond according to the test in 9.4.1 in 90 % of the cases with 95 % confidence.
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8.1.10 CFN-SFN observed time difference

Requirement +/-0.5 chips period

The measurement period in CELL_DCH stage is [150 ms].

8.1.11 SFN-SFN observed time difference

Requirement	+/-0.5 chips period for both type 1 and type 2.

The measurement period in CELL_DCH stage is [150 ms], and in CELL_FACH stage [600 ms].

8.1.12 UE Rx-Tx time difference

Requirement +/-1.5 chips period.

The measurement period in CELL_DCH state is [100 ms]

8.1.12.1 Observed time difference to GSM cell

For terminal supporting this capability.

Requirement +- 20 chips.

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

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Source:	RAN WG4					Date:	2000-04-28	
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Category:FA(only one categoryshall be markedwith an X)D	Correction Corresponds t Addition of fea Functional mo Editorial modif	o a correction ture dification of fea ication	in an ear ature	lier releas	Se X	Release:	Phase 2 Release 96 Release 97 Release 98 Release 99 Release 00	X
<u>Reason for</u> change:	Performance re Cell_FACH, Ce	equirements (c ell_PCH and U	cell re-sel	ection de l are miss	lay) for th sing.	ne Connected	d Mode states	
Clauses affected	<u>d:</u> <u>5.1.2</u>							
Other specs affected:	Other 3G core s Other GSM core specifications MS test specifica BSS test specific O&M specification	becifications ations cations cations		 → List of (CRs: CRs: CRs: CRs: CRs: CRs:			
<u>Other</u> comments:								

5.1.2.x Cell Re-selection in Cell_FACH

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.

<u>Cell selection and cell reselection delays are applicable when the repetition period of all relevant system information blocks is not more than 1280 ms.</u>

5.1.2.x.1 Cell re-selection single carrier multi cell case

5.1.2.x.1.1 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 from when radio conditions are changed according to the test scenario to the moment in time when the UE starts sending the RRC Cell Update message to the UTRAN.

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<u>T2</u>

5.1.2.x.1.1.1 Test parameters

Table x-x													
Parameter	<u>Unit</u>	<u>Ce</u>	<u>211 1</u>	<u>Cel</u>	12	Cel	<u>13</u>	Ce	<u>ll 4</u>	<u>Ce</u>	<u>ell 5</u>	Cel	<u>ll 6</u>
		<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>
<u>UTRA RF Channel</u> <u>Number</u>		Char	nnel 1	Chan	<u>nel 1</u>	Chan	<u>nel 1</u>	Chan	nel 1	Char	nnel 1	Chan	<u>nel 1</u>
CPICH Ec/lor	dB		<u>10</u>	<u>0 -10 -10 -10</u>					_	<u>10</u>	1	10	
PCCPCH Ec/lor	dB		12	<u>-12</u> <u>-12</u> <u>-12</u>						12	<u>-1</u>	12	
<u>SCH_Ec/Ior</u>	dB	_	12	<u>-1</u>	2	<u>-1</u>	2		12	_	12		12
PICH Ec/Ior	dB	_	<u>15</u>	<u>-1</u>	5	<u>-1</u>	5		<u>15</u>	_	<u>15</u>]	15
OCNS Ec/lor	dB	<u>-0.</u>	<u>941</u>	<u>-0.9</u>	<u>41</u>	<u>-0.941</u> <u>-0.941</u> <u>-0.941</u>		<u>-0.941</u>) 41			
$\frac{\hat{I}_{or}/I_{oc}}{}$	<u>dB</u>	<u>7.3</u>	<u>10.27</u>	<u>10.27</u>	<u>7.3</u>	0.27		<u>0.</u>	27	<u>0.</u>	27	<u>0.2</u>	27
	<u>dBm/3.8</u> <u>4 MHz</u>						<u> </u>	<u>0</u>					
CPICH Ec/Io	<u>dB</u>	<u>-16</u>	-13	<u>-13</u>	<u>-16</u>	-23		-23		-23		-23	
Propagation Condition		AWG	N										
<u>Cell_selection_and_</u> <u>reselection_quality_</u> <u>measure</u>		CPICI	<u>H E_c/N₀</u>	<u>CPICH</u>	<u>E_c/N</u> 0	<u>CPI</u> <u>E_c/</u>	<u>CH</u> <u>N</u> 0	<u>CPI</u> <u>E</u> _c /	<u>ICH</u> N ₀	CPICE	<u>H E_c/N₀</u>	<u>CPI</u> <u>E_</u>	<u>CH</u> <u>N₀</u>
<u>Qqualmin</u>	dB	1	1		1	L	1	Ĺ	1	1	1	1	1
<u>Qrxlevmin</u>	<u>dBm</u>	1	1	Ľ	1	1	1	L	1	1	1	1	1
<u>UE TXPWR</u> <u>MAX RACH</u>	<u>dBm</u>	I	1								1	L	1
		$\frac{C1, 0}{C1}$	<u>C2: []</u> C3: []	<u>C2, C</u> C2, C	<u>1: []</u> 3: []	$\frac{C3, C}{C3, C}$	<u>1: []</u> 2: []	$\frac{C4, C}{C4, C}$	<u>[]</u> []	<u>C5, 0</u>	<u>C1: []</u> C2: []	<u>C6, C</u> C6, C	<u>]1: []</u>]2: []

<u>UE TXPWR</u> <u>MAX RACH</u>	<u>dBm</u>	Ш	Ш	Ш	Ш	Ш	Ш
<u>Qoffset</u>	<u>dB</u>	C1, C2: [] C1, C3: [] C1, C4: [] C1, C5: [] C1, C6: []	C2, C1: [] C2, C3: [] C2, C4: [] C2, C5: [] C2, C6: []	C3, C1: [] C3, C2: [] C3, C4: [] C3, C5: [] C3, C6: []	C4, C1: [] C4, C2: [] C4, C3: [] C4, C5: [] C4, C6: []	C5, C1: [] C5, C2: [] C5, C3: [] C5, C4: [] C5, C6: []	C6, C1: [] C6, C2: [] C6, C3: [] C6, C4: [] C6, C5: []
Qhyst	dB	Ш	П	Ш	Ш	Ш	Ш
<u>PENALTY_TIME</u>	<u>s</u>			П			Ш
TEMP_OFFSET	dB	П	П	Ш		Ш	Ш
<u>Treselection</u>	<u>s</u>	Ш	П	П			Ш
Sintrasearch	dB	Ш	Ш	Ш	Ш		Ш

Time T1 is X seconds and T2 is Y seconds.

NOTE: T1 and T2 need to be defined so that cell re-selection reaction time is taken into account.

5.1.2.x.1.1.2 Minimum requirements

<u>Cell re-selection shall be correct in more than [X %] of the cases. Cell re-selection is correct if within [x] seconds the UE re-selects a new cell, which fulfils the cell re-selection criteria.</u>

5.1.2.x.2 Cell re-selection multi carrier multi cell case

NOTE: The scheduling of Measurement Occasions needs to be defined for the purpose of these scenarios.

5.1.2.x.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 from when radio conditions are changed according to the test scenario to the moment in time when the UE starts sending the RRC Cell Update message to the UTRAN.

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5.1.2.x.2.1.1 **Test Parameters** Table x-x **Parameter** Unit Cell 1 <u>Cell 2</u> Cell 3 <u>Cell 4</u> Cell 5 Cell 6 <u>T1</u> **T1** <u>T2</u> **T1 T2 T1 T2 T1** <u>T2</u> **T2 T1** <u>T2</u> UTRA RF Channel Channel 2 Channel 1 Channel 1 Channel 1 Channel 2 Channel 2 <u>Number</u> CPICH Ec/lor dB -10 -10 -10 -10 -10 -10 PCCPCH Ec/lor dB -12 -12 -12 -12 -12 -12 SCH Ec/lor dB -12 -12 -12 -12 -12 -12 PICH Ec/Ior dB -15 -15 -15 -15 -15 -15 -0.941 OCNS Ec/lor -0.941 -0.941 -0.941 -0.941 -0.941 dB \hat{I}_{or}/I_{oc} dB -3.4 2.2 2.2 -3.4 -7.4 -4.8 -7.4 -4.8 -4.8 -7.4 -4.8 -7.4 dBm/3. I_{oc} -70 84 MHz CPICH_Ec/Io dB -16 -20 -20 -16 -13 -13 -20 -20 Propagation AWGN Condition Cell selection **CPICH CPICH** CPICH **CPICH** CPICH and_reselection_ CPICH E_c/N₀ $\underline{E_c/N_0}$ $\underline{E_c/N_0}$ $\underline{E_c/N_0}$ $\underline{E_c/N_0}$ $\underline{E_c/N_0}$ *quality_measure* <u>Qqualmin</u> dB [] [] [] [] [] [] dBm [] [] [] [] [] [] Qrxlevmin UE_TXPWR_ dBm [][] \square [] \square []MAX RACH <u>C1, C2: []</u> C2, C1: [] <u>C3, C1: []</u> <u>C4, C1: []</u> C5, C1: [] <u>C6, C1: []</u> <u>C2, C3: []</u> <u>C3, C2: []</u> C4, C2: [] C5, C2: [] <u>C6, C2: []</u> <u>C1, C3: []</u> **O**offset C1, C4: [] C2, C4: [] C3, C4: [] C4, C3: [] C5, C3: [] C6, C3: [] dB C1, C5: [] C2, C5: [] C3, C5: [] C4, C5: [] C5, C4: [] C6, C4: [] C3, C6: [] C6, C5: [] C1, C6: [] C2, C6: [] C4, C6: [] C5, C6: [] Qhys dB [] \square [][] [][]PENALTY_TIME [] \square [][] [] []<u>s</u> TEMP_OFFSET dB [][][][] [][]**Treselection** <u>s</u> [][][][][][]Sintrasearch dB [][][][] \square \square [] \square Sintersearch dB [] \square [][]

Time T1 is X seconds and T2 is Y seconds.

5.1.2.x.2.1.2 Minimum requirements

<u>Cell re-selection shall be correct in more than [X %] of the cases. Cell re-selection is correct if within [x] seconds the UE re-selects a new cell, which fulfils the cell re-selection criteria.</u>

5.1.2.y Cell Re-selection in Cell_PCH

<u>Cell selection and cell reselection delays are applicable when the repetition period of all relevant system</u> information blocks is not more than 1280 ms and the length of DRX cycle is not longer than [640] ms.

5.1.2.y.1 Requirements for Cell re-selection single carrier multi cell case

5.1.2.y.1.1 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 a time from when radio conditions are changed according to the test scenario to the moment in time when the UE starts sending the RRC Cell Update message to the UTRAN.

5.1.2.y.1.2 Test Parameters

	Table x-x														
<u>Pa</u>	<u>rameter</u>	<u>Unit</u>	<u>Ce</u>	<u>III 1</u>	<u>Cel</u>	12	<u>Cel</u>	<u>13</u>	<u>Ce</u>	<u>ll 4</u>	<u>C</u>	e <u>ll 5</u>	<u>Ce</u>	<u>ll 6</u>	
			<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	
<u>UTRA F</u> <u>Number</u>	<u>RF Channel</u>		Char	nnel 1	Chan	nel 1	Chan	nel 1	Chan	nel 1	Char	nnel 1	Chan	nel 1	
<u>CPICH</u>	Ec/Ior	<u>dB</u>	_	<u>10</u>	<u>-10</u>		1	0		<u>10</u>	10		1	<u>10</u>	
<u>PCCPC</u>	<u>'H Ec/Ior</u>	<u>dB</u>		<u>12</u>	1	2	<u>-1</u>	2		<u>12</u>		12]	12	
<u>SCH E</u>	c/Ior	<u>dB</u>		12	<u>-1</u>	2	<u>-1</u>	<u>-12</u> <u>-12</u>			12	1	12		
<u>PICH 1</u>	<u>Ec/Ior</u>	<u>dB</u>		<u>15</u>	1	5	<u>-1</u>	5		<u>15</u>		15]	<u>15</u>	
<u>OCNS</u>	<u>Ec/Ior</u>	<u>dB</u>	<u>-0.</u>	<u>941</u>	<u>-0.9</u>	<u>941</u>	<u>-0.9</u>	<u>41</u>	<u>-0.9</u>	<u>941</u>	<u>-0.</u>	<u>941</u>	<u>-0.9</u>	<u>941</u>	
\hat{I}_{or}/I_{oo}	2	<u>dB</u>	<u>7.3</u>	<u>10.27</u>	<u>10.27</u>	<u>7.3</u>	0.27		<u>0.</u>	27	<u>0</u>	.27	<u>0.</u> 2	27	
I _{oc}		<u>dBm/3.8</u> <u>4 MHz</u>		<u>–70</u>								1			
<u>CPICH</u>	<u>Ec/Io</u>	<u>dB</u>	<u>-16</u>	-13	<u>-13</u>	<u>-16</u>	-23		-23		-23		-23		
Propaga Conditi	<u>ition</u> on		AWGI	N	•	1					•		1		
<u>Cell_se</u> <u>reselect</u> <u>measure</u>	lection_and_ ion_quality_ 2		CPICH	<u>H E_c/N₀</u>	<u>CPICH</u>	[<u>E_c/N₀</u>	<u>CPI</u> <u>E_/</u>	<u>CH</u> N ₀	<u>CP</u> <u>E</u>	<u>ICH</u> / <u>N</u> 0	CPICI	<u>H E_c/N₀</u>	<u>CPI</u> <u>E_</u>	I <u>CH</u> / <u>N₀</u>	
<u>Qqualm</u>	<u>vin</u>	<u>dB</u>	1	1	Ľ	1	Ľ	1	1	1	1]	1	1	
<u>Qrxlevn</u>	<u>nin</u>	<u>dBm</u>	1	1	Ľ	1		1	1	1	1	1]	1	
<u>UE TX</u> MAX R	<u>PWR</u> ACH	<u>dBm</u>	1	1	Ľ	1	[]	1]	1	1]]	
<u>Qoffset</u>		<u>dB</u>	<u>C1, 0</u> <u>C1, 0</u> <u>C1, 0</u> <u>C1, 0</u> <u>C1, 0</u>	C2: [] C3: [] C4: [] C5: [] C6: []	<u>C2, C</u> <u>C2, C</u> <u>C2, C</u> <u>C2, C</u> <u>C2, C</u>	1: [] 3: [] 4: [] 5: []	$\begin{array}{c} \underline{C3, C} \\ \underline{C3, C} \end{array}$	1: [] 2: [] 4: [] 5: [] 6: []	$\begin{array}{c} \underline{C4, 0}\\ \underline{C4, 0}\\ \underline{C4, 0}\\ \underline{C4, 0}\\ \underline{C4, 0}\\ \underline{C4, 0}\\ \underline{C4, 0}\end{array}$	C1: [] C2: [] C3: [] C5: [] C6: []	<u>C5, 0</u> <u>C5, 0</u> <u>C5, 0</u> <u>C5, 0</u> <u>C5, 0</u>	C1: [] C2: [] C3: [] C4: [] C6: []	$\begin{array}{c} \underline{C6, C}\\ \end{array}$	C1: [] C2: [] C3: [] C4: [] C5: []	
<u>Qhyst</u>		dB	1]	Ĺ	1		1]	1	1	1	1	1	
PENAL	TY_TIME	<u>s</u>	1	1	1	1			1						
TEMP_	<u>OFFSET</u>	<u>dB</u>	1	1	1	1		1]	1	1	1]	1	
Treseled	<u>etion</u>	<u>s</u>	1	1	1	1		1]	1			Ш		
Sintrase	arch	dB]	1	َ	<u> </u>				1	[]]		

Time T1 is X seconds and T2 is Y seconds.

NOTE: T1 and T2 need to be defined so that cell re-selection reaction time is taken into account.

5.1.2.y.1.3 Performance Requirements

Cell re-selection shall be correct in more than [X %] of the cases. Cell re-selection is correct if within [5] seconds the UE re-selects a new cell, which fulfils the cell re-selection criteria.

5.1.2.y.2 Cell re-selection multi carrier multi cell case

5.1.2.y.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 a time from when radio conditions are changed according to the test scenario to the moment in time when the UE starts sending the RRC Cell Update message to the UTRAN.

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5.1.2.y.2.2 Test Parameters

Table x-x													
<u>Parameter</u>	<u>Unit</u>	Ce	<u>l1</u>	<u>Ce</u>	<u>ell 2</u>	Cel	13	Ce	<u>ll 4</u>	Cell	5	Ce	<u>ll 6</u>
		<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>
<u>UTRA RF Channel</u> <u>Number</u>		Chan	<u>Channel 1</u> <u>Channel 2</u> <u>Channel 1</u> <u>Chan</u>			<u>Chan</u>	<u>nel 1</u>	Chann	<u>nel 2</u>	Char	nnel 2		
<u>CPICH Ec/Ior</u>	dB]	0	-	10	<u>-1</u>	0		10	1	0		<u>10</u>
PCCPCH Ec/lor	dB		2	-	<u>12</u>	<u>-1</u>	2		12	-12	2	12	
<u>SCH Ec/Ior</u>	<u>dB</u>]	2	_	12	<u>-1</u>	2		12	-12	2		12
PICH Ec/lor	<u>dB</u>]	5	-	<u>15</u>	<u>-1</u>	<u>5</u>		<u>15</u>	1:	5		<u>15</u>
OCNS Ec/lor	<u>dB</u>	<u>-0.9</u>	<u>941</u>	<u>-0.</u>	<u>941</u>	<u>-0.9</u>	41	<u>-0.9</u>	<u>941</u>	<u>-0.9</u>	<u>41</u>	<u>-0.</u>	<u>941</u>
$\frac{\hat{I}_{or}/I_{oc}}{}$	<u>dB</u>	<u>-3.4</u>	<u>2.2</u>	<u>2.2</u>	<u>-3.4</u>	<u>-7.4</u>	<u>-4.8</u>	<u>-7.4</u>	<u>-4.8</u>	<u>-4.8</u>	<u>-7.4</u>	<u>-4.8</u>	<u>-7.4</u>
	<u>dBm/3.</u> <u>84 MHz</u>					1		-70			I	I	
<u>CPICH Ec/lo</u>	<u>dB</u>	<u>-16</u>	-13	<u>-13</u>	<u>-16</u>	2	<u>0</u>		20	20	0		<u>20</u>
Propagation Condition		AWG	N			<u> </u>						<u> </u>	
<u>Cell_selection</u> and_reselection quality_measure		<u>CPI</u> <u>E_</u> /	<u>CH</u> N ₀	<u>CP</u> <u>E</u> c	<u>ICH</u> / <u>N₀</u>	<u>CPI</u> <u>E_c/1</u>	<u>CH</u> N ₀	<u>CPI</u> <u>E_/</u>	<u>CH</u> N ₀	<u>CPICH</u>	<u>E_c/N₀</u>	<u>CPICH</u> <u>E_c/N₀</u>	
<u>Qqualmin</u>	<u>dB</u>	1	1	1	1	Ľ	1	1	1			1	1
<u>Orxlevmin</u>	<u>dBm</u>	1	1]	1	Ľ	1]	1			1	1
<u>UE TXPWR</u> <u>MAX RACH</u>	<u>dBm</u>	Ĺ	1	[1	1	1	Ĺ	1]	l
<u>Qoffset</u>	<u>dB</u>	C1, C C1, C C1, C C1, C C1, C	2: [] 3: [] 4: [] 5: []	$\begin{array}{c} \underline{C2,0}\\ \underline{C2,0}\\ \underline{C2,0}\\ \underline{C2,0}\\ \underline{C2,0}\\ \underline{C2,0}\\ \underline{C2,0}\\ \end{array}$	C1: [] C3: [] C4: [] C5: [] C6: []	C3, C C3, C C3, C C3, C C3, C	1: [] 2: [] 4: [] 5: [] 6: []	<u>C4, 0</u> <u>C4, 0</u> <u>C4, 0</u> <u>C4, 0</u> <u>C4, 0</u>	21: [] 22: [] 23: [] 25: [] 26: []	<u>C5, C</u> <u>C5, C</u> <u>C5, C</u> <u>C5, C</u> <u>C5, C</u>	1: [] 2: [] 3: [] 4: [] 5: []	<u>C6, 0</u> <u>C6, 0</u> <u>C6, 0</u> <u>C6, 0</u> <u>C6, 0</u>	C1: [] C2: [] C3: [] C4: [] C5: []
Qhyst	<u>dB</u>	1	1]	1	1	1	1	1			1	1
<u>PENALTY_TIME</u>	<u>s</u>	L	1]	1	1	l]]]	1
TEMP_OFFSET	<u>dB</u>	1	1]	1	<u> </u>	l]	1]	1
<u>Treselection</u>	<u>S</u>]	1]	1	<u>َ</u> ا ا ا		1			1	1	
<u>Sintrasearch</u>	<u>dB</u>]	1]	1	<u> </u>	l]	1			1]
<u>Sintersearch</u>	<u>dB</u>	1	1]	1	<u> </u>	1]	1			1	1

Time T1 is X seconds and T2 is Y seconds.

5.1.2.y.2.3 Minimum Requirements

<u>Cell re-selection shall be correct in more than [X %] of the cases. Cell re-selection is correct if within [x]</u> seconds the UE re-selects a new cell, which fulfils the cell re-selection criteria.

5.1.2.z Cell Re-selection in URA_PCH

<u>Cell selection and cell reselection delays are applicable when the repetition period of all relevant system</u> information blocks is not more than 1280 ms and the length of DRX cycle is not longer than [640] ms.

5.1.2.z.1 Requirements for Cell re-selection single carrier multi cell case

5.1.2.z.1.1 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 a time from when radio conditions are changed according to the test scenario to the moment in time when the UE starts sending the RRC Cell Update message to the UTRAN.

5.1.2.z.1.2 Test Parameters

	Table x-x												
<u>Parameter</u>	<u>Unit</u>	<u>Ce</u>	<u>ll 1</u>	Cel	12	Cel	<u>13</u>	Ce	<u>ll 4</u>	<u>C</u>	<u>ell 5</u>	Ce	<u>ll 6</u>
		<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>
<u>UTRA RF Channel</u> <u>Number</u>		Char	nnel 1	Chan	nel 1	Chan	nel 1	Chan	nel 1	Char	nnel 1	Chan	inel 1
<u>CPICH</u> Ec/lor	dB	_	10	<u>-10</u> <u>-10</u>					10		10		10
PCCPCH Ec/lor	dB	_	<u>12</u>	<u>-1</u>	2	<u>-1</u>	2		12		12		<u>12</u>
<u>SCH Ec/Ior</u>	dB		12	1	2	<u>-1</u>	2		12		12		<u>12</u>
<u>PICH Ec/Ior</u>	dB		<u>15</u>	<u>-15</u> <u>-15</u>					<u>15</u>		15		<u>15</u>
OCNS Ec/lor	dB	<u>-0.</u>	<u>941</u>	<u>-0.941</u> <u>-0.941</u> <u>-0.94</u>				<u>941</u>	<u>-0</u> .	<u>941</u>	<u>-0.9</u>	<u>941</u>	
$\frac{\hat{I}_{or}/I_{oc}}{}$	dB	<u>7.3</u>	10.27	<u>10.27</u>	<u>7.3</u>	0.27		<u>0.</u>	27	<u>0</u>	.27	<u>0.</u>	27
	<u>dBm/3.8</u> <u>4 MHz</u>		_70										
<u>CPICH</u> Ec/Io	dB	<u>-16</u>	-13	<u>-13</u>	<u>-16</u>	-23		<u>-23</u>		-23		<u>-23</u>	
Propagation Condition		AWGI	N		•	•						•	
<u>Cell_selection_and</u> <u>reselection_quality</u> <u>measure</u>		CPICH	<u>H E_c/N₀</u>	<u>CPICH</u>	[<u>E_c/N₀</u>	<u>CPI</u> <u>E</u> <u>c</u> /	<u>CH</u> N ₀	<u>CPI</u> <u>E_c/</u>	<u>CH</u> <u>N₀</u>	CPICI	<u>H E_c/N₀</u>	<u>CPI</u> <u>E</u> c/	I <u>CH</u> / <u>N</u> 0
<u>Qqualmin</u>	dB	1	1	L	1	L	1	L	1	1	1	1	1
<u>Qrxlevmin</u>	<u>dBm</u>	1	1	L	1	Ĺ	1	L	1	1	1	1]
<u>UE TXPWR</u> <u>MAX RACH</u>	<u>dBm</u>	1	1	1	1	1	1]	1	l]]	1
<u>Qoffset</u>	dB	C1, 0 C1, 0 C1, 0 C1, 0 C1, 0	C2: [] C3: [] C4: [] C5: [] C6: []	$\begin{array}{c} \underline{C2, C}\\ \underline{C2, C}\\ \underline{C2, C}\\ \underline{C2, C}\\ \underline{C2, C}\\ \underline{C2, C}\\ \underline{C2, C}\end{array}$	21: [] 23: [] 24: [] 25: [] 26: []	$\begin{array}{c} \underline{C3, C} \\ \underline{C3, C} \end{array}$	1: [] 2: [] 4: [] 5: [] 6: []	$\begin{array}{c} \underline{C4, 0}\\ \underline{C4, 0}\\ \underline{C4, 0}\\ \underline{C4, 0}\\ \underline{C4, 0}\\ \underline{C4, 0}\\ \underline{C4, 0}\end{array}$	C1: [] C2: [] C3: [] C5: [] C6: []	<u>C5, 0</u> <u>C5, 0</u> <u>C5, 0</u> <u>C5, 0</u> <u>C5, 0</u>	C1: [] C2: [] C3: [] C4: [] C6: []	<u>C6, C</u> <u>C6, C</u> <u>C6, C</u> <u>C6, C</u> <u>C6, C</u>	<u>]1: []</u> <u>]2: []</u>]3: []]4: []]5: []
Qhyst	dB	1	1	L	1	1	1]	1	1	1]	1
PENALTY_TIME	<u>S</u>	1	1	L	1	Ĺ	1]	1	1	1]	1
TEMP_OFFSET	dB	1	1	L	1	1	1]	1	1	1]	1
Treselection	<u>S</u>	1	1	L	1			Ш				Ш	
<u>Sintrasearch</u>	dB	1	1	Ш		Ш				Ш			

All cells shall belong to different UTRAN Registration Areas (URA)

Time T1 is X seconds and T2 is Y seconds.

NOTE: T1 and T2 need to be defined so that cell re-selection reaction time is taken into account.

5.1.2.z.1.3 Minimum Requirements

Cell re-selection shall be correct in more than [X %] of the cases. Cell re-selection is correct if within [x] seconds the UE re-selects a new cell, which fulfils the cell re-selection criteria.

5.1.2.z.2 Requirements for Cell re-selection multi carrier multi cell case

5.1.2.z.2.1 Cell re-selection delay

When the UE is camped in 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 a time from when radio conditions are changed according to the test scenario to the moment in time when the UE starts sending the RRC Cell Update message to the UTRAN.

5.1.2.z.2.2 Test Parameters

	Table x-x												
<u>Parameter</u>	<u>Unit</u>	<u>Ce</u>	<u>ll 1</u>	<u>C</u> e	<u>ell 2</u>	Cel	13	<u>Ce</u>	<u>ll 4</u>	Cel	15	<u>Ce</u>	<u>ll 6</u>
		<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>
<u>UTRA RF Channel</u> <u>Number</u>		Chan	nel 1	Channel 2 Channel 1		Chan	<u>nel 1</u>	Chanr	<u>nel 2</u>	Char	<u>inel 2</u>		
<u>CPICH Ec/lor</u>	<u>dB</u>	_]	0	_	10	<u>-1</u>	0]	0	-1	<u>-10</u>		<u>10</u>
<u>PCCPCH Ec/lor</u>	<u>dB</u>]	2	_	12	<u>-1</u>	2	_]	2	<u>-1</u>	2	_	12
<u>SCH</u> Ec/Ior	<u>dB</u>]	2	_	12	<u>-1</u>	2]	2	<u>-1</u>	2		<u>12</u>
<u>PICH_Ec/Ior</u>	<u>dB</u>]	5		<u>15</u>	<u>-1</u>	<u>5</u>]	5	<u>-1</u>	<u>5</u>		<u>15</u>
OCNS Ec/Ior	<u>dB</u>	<u>-0.9</u>	<u>941</u>	<u>-0.</u>	<u>941</u>	<u>-0.9</u>	41	<u>-0.9</u>	941	<u>-0.9</u>	<u>41</u>	<u>-0.9</u>	<u>941</u>
$\frac{\hat{I}_{or}}{I_{oc}}$	<u>dB</u>	<u>-3.4</u>	<u>2.2</u>	<u>2.2</u>	<u>-3.4</u>	<u>-7.4</u>	<u>-4.8</u>	<u>-7.4</u>	<u>-4.8</u>	<u>-4.8</u>	<u>-7.4</u>	<u>-4.8</u>	<u>-7.4</u>
	<u>dBm/3.</u> <u>84 MHz</u>							-70					
<u>CPICH Ec/lo</u>	<u>dB</u>	<u>-16</u>	-13	<u>-13</u>	<u>-16</u>	2	0		20	2	0		<u>20</u>
Propagation Condition		AWG	AWGN						<u> </u>				
<u>Cell_selection</u> and_reselection <u>quality_measure</u>		<u>CPI</u> <u>E_</u> /	<u>CH</u> N ₀	<u>CP</u> <u>E</u> c	<u>ICH</u> / <u>N</u> 0	<u>CPI</u> <u>E_</u> /	<u>CH</u> N ₀	<u>CPI</u> <u>E_c</u> /	<u>CH</u> N ₀	<u>CPICH</u>	<u>E_c/N₀</u>	$\frac{CP}{\underline{E}_{c'}}$	<u>ICH</u> / <u>N₀</u>
<u>Qqualmin</u>	<u>dB</u>]	1	[1		1	1	1		l	1	1
<u>Qrxlevmin</u>	<u>dBm</u>	1	1]	1		1	1	1		l		
<u>UE TXPWR</u> MAX RACH	<u>dBm</u>	1	1	I	1		1]	1		l	1	1
<u>Qoffset</u>	<u>dB</u>	C1, C C1, C C1, C C1, C C1, C	2: [] 23: [] 24: [] 25: [] 26: []	$\begin{array}{c} \underline{C2,0}\\ \underline{C2,0}\\ \underline{C2,0}\\ \underline{C2,0}\\ \underline{C2,0}\\ \underline{C2,0}\\ \underline{C2,0}\\ \end{array}$	C1: [] C3: [] C4: [] C5: [] C6: []	C3, C C3, C C3, C C3, C C3, C	1: [] 2: [] 4: [] 5: [] 6: []	C4, C C4, C C4, C C4, C C4, C	21: [] 22: [] 33: [] 25: [] 26: []	<u>C5, C</u> <u>C5, C</u> <u>C5, C</u> <u>C5, C</u> <u>C5, C</u>	1: [] 2: [] 3: [] 4: [] 6: []	<u>C6, 0</u> <u>C6, 0</u> <u>C6, 0</u> <u>C6, 0</u> <u>C6, 0</u>	C1: [] C2: [] C3: [] C4: [] C5: []
Qhyst	<u>dB</u>]]	[]	1	1	1	1		l]]
<u>PENALTY_TIME</u>	<u>S</u>]	1]	1		1	1	1			1	1
TEMP_OFFSET	<u>dB</u>]	1	[1]	1]	
<u>Treselection</u>	<u>8</u>]	1	1 Ц Ц		1]	1			
<u>Sintrasearch</u>	dB]	1	[1		1	1	1		l]	
<u>Sintersearch</u>	dB]	1	[<u> </u>		1	1	1]	1

3GPP

All cells shall belong to different UTRAN Registration Areas (URA)

Time T1 is X seconds and T2 is Y seconds.

5.1.2.z.2.3 Minimum Requirements

Cell re-selection shall be correct in more than [X %] of the cases. Cell re-selection is correct if within [x] seconds the UE re-selects a new cell, which fulfils the cell re-selection criteria.

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5.1.3 Handover 3G to 2G

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 utilise 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.

5.1.3.1 Handover to GSM

This subclause 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 recommendations.

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.

The MS (GSM terminology) shall be able to monitor up to [32] carriers.

The MS shall be able synchronize to [6] carriers.

The MS shall be able to report back to the network on the [6] strongest cells with correctly identified BSIC.

The MS shall be able to perform this task at levels down to the reference sensitivity level or reference interference levels as specified in GSM 05.05.

The MS shall demodulate the SCH on the BCCH carrier of each surrounding cell and decode the BSIC as often as possible, and as a minimum at least once every [10 seconds].

5.1.3.1.1 Requirements

5.1.3.1.2 Switching Requirements RF Parameters

When the UE receives a RRC INTER-SYSTEM HANDOVER COMMAND it shall be ready to transmit on the new channel within 120 ms from the last TTI containing the RRC command, unless the access is delayed to an indicated starting time, in which case it shall be ready to transmit on the new channel at the designated starting time, or within 120 ms, whichever is the later. The interruption time, i.e. the time between 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 definition of "ready to transmit" is specified in GSM 05.10.

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8 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 TSG RAN WG2 S25.302 "Services Provided by Physical Layer". The physical layer measurements for FDD are described and defined in TSG RAN WG1 TS25.215 "Physical layer – Measurements (FDD)". In this clause for FDD, 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 TS 25.101 annex A, subclause A.3.1. This measurement channel is used both in active cell and cells to be measured.
- Physical channels used as defined in TS 25.101 annex C.
- 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.
- Single task reporting.
- Power control is active.

8.1 Measurements Performance for UE

Test conditions are specified in subclauses 10.1.1, 10.1.4 and 10.1.7.

8.1.1 COMMON PILOT MEASUREMENTS

These measurement consider *CPICH RSCP* and <u>,</u> *CPICH Ec/Io*, <u>SFN-CFN</u> observed time difference, <u>SFN-SFN</u> observed time difference type1 and 2 and <u>UE RX/TX timing</u> -measurements.

8.1.1.1 Intra frequency test parameters

In this case all cells are in the same frequency. The table 8-1 and notes 1-4 define the limits of signal strengths and code powers, where the requirement is applicable.

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 1
CPICH_Ec/lor	dB	-10	-10
PCCPCH_Ec/lor	dB	-12	-12
SCH_Ec/Ior	dB	-12	-12
PICH_Ec/lor	dB	-15	-15
DPCH_Ec/Ior	dB	-15	-15
OCNS	dB	-1.11	-1.11

Table 8-1

2

Îor/Ioc	dB	10.5	10.5
Ioc	dBm/ 3.84 MHz	Note 4	Note 4
Range 1:10	1D	-9470	-9470
Range 2: Io	aBm	-9450	-9450
Propagation condition	-	AW	GN

NOTE 1: *CPICH_RSCP1*, $2 \ge -114$ dBm.

NOTE 2: / CPICH_RSCP1 – CPICH_RSCP2 /≤ 20 dB.

NOTE 3: $| Io - CPICH_Ec/Ior | \le 20 \text{ dB}.$

NOTE 4: *Ioc* level shall be adjusted according the total signal power *Io* at receiver input and the geometry factor $\hat{Ior/Ioc}$. *Io*-13.7 dB= *Ioc*.

8.1.1.2 Inter frequency test parameters

In this case both cells are in different frequency and compressed mode is applied. The gap length is 7<u>, detailed</u> <u>definition is in TS 25.101 annex A.5</u>-[14 slots is FSS]. The table 8-2 and notes 1-5 define the limits of signal strengths and code powers, where the requirement is applicable.

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 2
CPICH_Ec/lor	dB	-10	-10
PCCPCH_Ec/lor	dB	-12	-12
SCH_Ec/lor	dB	-12	-12
PICH_Ec/lor	dB	-15	-15
DPCH_Ec/lor	dB	-15	-15
OCNS	dB	-1.11	-1.11
Îor/Ioc	dB	10.1	10.1
Ioc	dBm/ 3.84 MHz	Note 5	Note 5
Range 1:10	dBm	-9470	-9470
Range 2: Io		-9450	-9450
Propagation condition	-	AW	/GN

Table 8-2

NOTE 1: $CPICH_RSCP1, 2 \ge -114$ dBm.

NOTE 2: $/ CPICH_RSCP1 - CPICH_RSCP2 / \le 20 \text{ dB}.$

NOTE 3: | Channel 1_Io – Channel 2_Io | ≤ 20 dB.

NOTE 4: $| Io - CPICH_Ec/Ior | \le 20 \text{ dB}.$

NOTE 5: *Ioc* level shall be adjusted in each carrier frequency according the total signal power *Io* at receiver input and the geometry factor $\hat{Ior/Ioc}$. *Io* –10.6 dB = Ioc.

8.1.10 8.1.10 CFN-SFN observed time difference

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

8.1.10.1 Intra frequency measurement requirement

The measurement period in CELL_DCH state is [150 ms].

Test parameters are defined in section 8.1.1, in the table 8-1 and notes 1-4. During the test the timing difference between Cell 1 and 2 can be set to value from 0...9830399 chips.

Table 8-y: Range 2

Parameter	Value	Accuracy
<u>SFN-CFN observed time</u> <u>difference</u>	<u>chip</u>	<u>±1</u>

8.1.10.2 Inter frequency measurement requirement

The measurement period in CELL_DCH stage is [] ms.

Test parameters are defined in section 8.1.1, in the table 8-2 and notes 1-5. During the test the timing difference between Cell 1 and 2 can be set to value from 0...9830399 chips.

Table 8-t: Range 2

Parameter	Value	Accuracy
<u>SFN-CFN observed time</u> <u>difference</u>	<u>chip</u>	<u>± 1</u>

Requirement -+/-0.5 chips period

The measurement period in CELL_DCH stage is [150 ms].

8.1.11 8.1.11 SFN-SFN observed time difference

8.1.11.1 SFN-SFN observed time difference type 1

Requirement +/-0.5 chips period for both type 1 and type 2. Note: This measurement is for identifying time difference between two cells.

8.1.11.1.1 Measurement requirement

The measurement period in CELL_DCH state is [150 ms], and in CELL_FACH state [600 ms].

The test paremeters are defined in section 8.1.1. During the test the timing difference between Cell 1 and 2 can be set to value from 0...9830399 chips.

Table 8-y: Range 2

Parameter	<u>Value</u>	<u>Accuracy</u>
<u>SFN-SFN observed time</u> <u>difference type1</u>	Chip period	<u>± 1</u>

8.1.11.2 SFN-SFN observed time difference type 2

Note: This measurement is for location service purposes to identify time difference between two cells. It is optional for terminal to support a subset of LCS methods.

Note: Requirement on the UE shall be reconsidered when the state of the art technology progress.

8.1.11.2.1 Test parameters

The test scenario is defined in section 8.1.1. During the test the time difference between Cell 1 and 2 can be set to value from -1279.75 to 1280 chips.

8.1.11.2.1.1 Test parameters for IPDL pattern

In table 8- new x shows the idle period parameters.

Table 8-new x			
Parameter	<u>Unit</u>	<u>Cell 1</u>	<u>Cell 2</u>
<u>IP Status</u>	Ξ	continous	continous
<u>IP Spacing</u>	Frames	[10]	[10]
<u>IP Lenght</u>	<u>Symbols</u>	<u>10</u>	<u>10</u>
<u>IP Offset</u>	<u>frame</u>	<u>NA</u>	<u>NA</u>
<u>Seed</u>	integer	[13]	[4]
<u>Burst Start</u>		<u>NA</u>	<u>NA</u>
<u>Burst Length</u>		NA	<u>NA</u>
<u>Burst Freq</u>		NA	<u>NA</u>

Note The total signal *Io* will change only downwards during BS transmission gap.

8.1.11.2.2 Intra frequency measurement requirement accuracy without IPDL period active

The measurement period in CELL DCH state is [150 ms], and in CELL FACH state [600 ms].

Table 8-y: Range 2

Parameter	<u>Value</u>	<u>Accuracy</u>
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<u>SFN-SFN observed time</u> <u>difference type2</u>	Chip period	<u>± 0.5</u>
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8.1.11.2.3 Intra frequency measurement requirement accuracy with IPDL period active

The measurement period in CELL_DCH stage is [600 ms], and in CELL_FACH stage [600 ms].

Table 8-y: Range 2

Parameter	Value	<u>Accuracy</u>
<u>SFN-SFN observed time</u> <u>difference type 2</u>	Chip period	<u>± 0.5</u>

8.1.11.2.4 Inter frequency measurement requirement accuracy

The measurement period in CELL DCH state is [150 ms], and in CELL FACH state [600 ms].

Table 8-y: Range 2

Parameter	<u>Value</u>	Accuracy
<u>SFN-SFN observed time</u> <u>difference type 2</u>	Chip period	<u>± 1</u>

The measurement period in CELL_DCH stage is [150 ms], and in CELL_FACH stage [600 ms].

8.1.12 UE Rx-Tx time difference

 Requirement
 +/-1.5 chips period.

 Note:
 This measurement is used for call set up purposes to compensate propagation delay of DL and UL.

The UE shall adjust the transmission initial time based on measurement result. See also the detailed requirement for UE TX timing is in the subclause 7.3. This is intra frequency measurement. The test scenario is defined in section 8.1.1 in table 8-1 and notes 1-4.

The measurement period in CELL_DCH stage is [ms]

8.1.12.1 Measurement requirement

Table 8-z: Range 2

Parameter	Value	Accuracy
UE RX-TX time difference	Chip period	<u>± 1.5</u>

8.1.1<u>3.2.1</u> Observed time difference to GSM cell

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

For terminal supporting this capability.

8.1.13.1 Test parameters

Note: The requirement scenario is FFS.

+- 20 chips.

8.1.13.2 Measurement requirement

The time difference is defined as time difference between the beginning of UTRAN P-CCPCH with SFN equal to 0 and the starting point of 51-multiframe of BCCH in GSM system.

<u> Table 8-z:</u>

Parameter	Value	<u>Accuracy</u>
Observed time difference to <u>GSM cell</u>	Chip period	<u>± 20</u>

Requirement

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7.3 UE Transmit Timing

7.3.1 Initial transmission timing, Maximum timing adjustment size, and Minimum and Maximum timing adjustment rate

The UE shall have capability to follow the frame timing change of the connected Node B. UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, <u>minimum</u> and maximum adjustment rate are defined in the following requirements.

7.3.1.1 Minimum requirement

For parameters specified in Table <u>7-2</u>, UE initial transmission timing error shall be less than or equal to ± 1.5 Chip. The reference point for the UE initial transmit timing control requirement shall be the <u>time when the</u> first significant path of the corresponding downlink DPCCH/DPDCH frame is received plus 1024 chips.

The UE shall be capable of changing the transmission timing according the received downlink DPCCH/DPDCH frame. The maximum amount of the timing change in one adjustment shall be 1/4 Chip.

<u>The minimum adjustment rate shall be 233ns per second.</u> The maximum adjustment rate shall be 1/4 chip per <u>200280</u>ms. In particular, within any given <u>200280</u> ms period, the UE transmit timing shall not change in excess of +-1/4 chip from the timing at the beginning of this <u>200280</u>ms period.

Parameter	Unit	Cell 1 and 2 level
		value
DPCH_Ec/ Ior	dB	-17
Î _{or,} Cell 1	dBm/3.84 MHz	-96
Î _{or,} Cell 2	dBm/3.84 MHz	-9 <u>9</u> 7
Information data rate	Kbps	12.2
TFCI	-	On
<u>Relative delay of path</u> <u>received from cell 2 with</u> <u>respect to cell 1</u>	<u>из</u>	<u>+2</u>
Propagation condition	AWGN	

Table 7-2: Test parameters for Transmission timing requirement

a) Cell 2 starts transmission 5 seconds after call has been initiated. UE shall maintain it's original timing properties.

b) Cell 1 stop transmission 5 seconds after cell 2 has started transmission. UE shall adjust transmission timing with a maximum change of 1/4 chip per adjustment, and maximum timing adjustment rate of 1/4 chip per 280 ms.

7.3.1.2 Example for the structure of the test procedure

The relevant soft handover parameters shall be set such that the UE enters soft handover with cell 1 and cell 2 when both cells are sending a signal.

a) After a connection is set up with cell 1, the test system shall verify that the UE transmit timing offset is within 1024 +/- 1.5 chips with respect to the first significant received path of the downlink DPCCH/DPDCH of cell 1.

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- b) Test system introduces cell 2 into the test system at delay $+2 \mu s$ from cell 1.
- c) Test system verifies that cell 2 is added to the active set.
- d) Test system shall verify that the UE transmit timing offset is within 1024 +/- 1.5 chips with respect to the first significant received path of the downlink DPCCH/DPDCH of cell 1.
- e) Test system stops sending cell 1 signal.
- f) Test system verifies that UE transmit timing adjustment starts with an adjustment step size and an adjustment rate according to the requirements until the UE transmit timing offset is within 1024 +/- 1.5 chips with respect to the first significant received path of the downlink DPCCH/DPDCH cell 2.
- g) Test system shall verify that the UE transmit timing offset is within 1024 +/- 1.5 chips with respect to the first significant received path of the downlink DPCCH/DPDCH of cell 2.
- h) Test system starts sending cell 1 signal again with its original timing.
- i) Test system verifies that cell 1 is added to the active set.
- j) Test system verifies that UE transmit timing adjustment starts with an adjustment step size and an adjustment rate according to the requirements until the UE transmit timing offset is within 1024 +/- 1.5 chips with respect to the first significant received path of the downlink DPCCH/DPDCH of cell 1.
- <u>k)</u> Test system shall verify that the UE transmit timing offset is within 1024 +/- 1.5 chips with respect to the first significant received path of the downlink DPCCH/DPDCH of cell 1.

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8.1.15 UE GPS Timing of Cell Frames for LCS

For terminals supporting this capability:

Requirement	[] chips period.

8.1.15.1 UE GPS timing of Cell Frames for LCS measurement report mapping

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

In table 8-a the mapping of measured quantity is defined.

	<u>Table 8-a</u>	
Reported value	Measured quantity value	<u>Unit</u>
<u>GPS_TIME_00000000000000</u>	<u>UE GPS timing of Cell Frames for LCS < 0.125</u>	<u>chip</u>
<u>GPS_TIME_00000000000001</u>	$\frac{0.125 \le \text{UE GPS timing of Cell Frames for LCS} \le 0.250}{0.250}$	<u>chip</u>
<u>GPS_TIME_00000000000002</u>	$\frac{0.250 \le \text{UE GPS timing of Cell Frames for LCS} <}{0.375}$	<u>chip</u>
<u>····</u>		<u></u>
<u>GPS_TIME_18554879999997</u>	2319359999999.625 ≤ UE GPS timing of Cell Frames for LCS < 2319359999999.750	<u>chip</u>
<u>GPS_TIME_18554879999998</u>	2319359999999.750 ≤ UE GPS timing of Cell Frames for LCS < 231935999999.875	<u>chip</u>
<u>GPS_TIME_18554879999999</u>	2319 359999 999.875 ≤ UE GPS timing of Cell Frames for LCS < 231936000000.000	<u>chip</u>

8.2.9 UTRAN GPS Timing of Cell Frames for LCS

Requirement	[] chips period.	
8.2.9.1 UTRAN GPS tir mapping	ning of Cell Frames for LCS measuremer	<u>nt report</u>
The reporting range is for UTRAN GP	S timing of Cell Frames for LCS is from 0 23193600	000000 chip.
In table 8-b the mapping of measured quan	tity is defined.	
	<u>Table 8-b</u>	
Reported value	Measured quantity value	<u>Unit</u>
<u>GPS TIME 0000000000000</u>	<u>UTRAN GPS timing of Cell Frames for LCS <</u>	<u>chip</u>

	0.125	
<u>GPS TIME 0000000000001</u>	$\frac{0.125 \le \text{UTRAN GPS timing of Cell Frames for}}{\text{LCS} \le 0.250}$	<u>chip</u>
<u>GPS TIME 0000000000002</u>	$\frac{0.250 \le \text{UTRAN GPS timing of Cell Frames for}}{\text{LCS} < 0.375}$	<u>chip</u>
<u></u>		<u></u>
<u>GPS_TIME_18554879999997</u>	2319359999999.625 ≤ UTRAN GPS timing of Cell Frames for LCS < 2319359999999.750	<u>chip</u>
<u>GPS TIME 18554879999998</u>	2319359999999.750 ≤ UTRAN GPS timing of Cell Frames for LCS < 2319359999999.875	<u>chip</u>
<u>GPS TIME 18554879999999</u>	2319 359999 999.875 ≤ UTRAN GPS timing of Cell Frames for LCS < 231936000000.000	<u>chip</u>

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4.3.3 Requirements for UTRAN to GSM Cell Re-Selection

NOTE 1: These requirements are depending on supported UE capabilities.

NOTE 2: Requirements for GSM to UTRAN Cell Re-Selection are defined in the GSM specifications.

4.3.<u>3</u>4.1 Cell re-selection delay

When the UE is camped on UTRAN cell, the UE shall be capable of re-selecting a GSM cell in the test case defined in the following subclause in within [TBD] seconds from it becoming a cell to be re-selected according the cell re-selection criteria for UTRAN to GSM. The cells, which are possible to be re-reselected during the test, belong to different location areas. The cell re-selection delay is then defined as a time from when radio conditions are changed to the moment in time when the UE starts sending the RR Channel Request message for location update to GSM.

4.3.35.1.1	Test Pparameters

Tbd.

Table 4-x

<u>Parameter</u>	<u>Unit</u>	<u>Cel</u> (UT	<u>l 1</u> RA)
		<u>T1</u>	<u>T2</u>
<u>UTRA RF Channel</u> <u>Number</u>		<u>Chan</u>	nel 1
<u>CPICH Ec/Ior</u>	<u>dB</u>	<u>-1</u>	0
<u>PCCPCH Ec/lor</u>	<u>dB</u>	<u>-1</u>	.2
<u>SCH Ec/lor</u>	<u>dB</u>	<u>-1</u>	2
<u>PICH_Ec/Ior</u>	<u>dB</u>	<u>-1</u>	5
OCNS Ec/Ior	<u>dB</u>	<u>-0.9</u>	<u>941</u>
$\frac{\hat{I}_{or}/I_{oc}}{}$	<u>dB</u>	<u>10.3</u>	<u>7.3</u>
<u>I_{oc}</u>	<u>dBm/3.</u> <u>84</u> <u>MHz</u>	<u>_7</u>	<u>′0</u>
<u>CPICH Ec/lo</u>	<u>dB</u>	<u>-13</u>	<u>-16</u>
<u>CPICH RSCP</u>	<u>dBm</u>	<u>[L1]</u>	[L2]
Propagation Condition		AWGN	
Cell_selection_and_ reselection_quality_ <u>measure</u>		CPICH	[<u>E_c/N₀</u>
<u>Qqualmin</u>	<u>dB</u>	1	1
<u>Qrxlevmin</u>	<u>dBm</u>	l	1
<u>UE_TXPWR_MAX_</u> <u>RACH</u>	<u>dBm</u>	L	1
<u>Ooffset_{s, n}</u>	<u>dB</u>	<u>C1, C2</u>	:[]
<u>Qhyst</u>	<u>dB</u>	Ш	
<u>PENALTY_TIME</u>	<u>s</u>	<u>C2</u> :	[]
<u>TEMP OFFSET</u>	<u>dB</u>	<u>C2</u> :	[]
Treselection	<u>s</u>	L	1
<u>Ssearch_{RAT}</u>	dB	L	1

Table 4-y

Parameter	<u>Unit</u>	<u>Cell 2 (GSM)</u>		
		<u>T1</u>	<u>T2</u>	
Absolute RF Channel <u>Number</u>		ARF	<u>CN 1</u>	
<u>RXLEV</u>	<u>dBm</u>	<u>-70</u>	<u>-60</u>	
<u>RXLEV ACCESS</u> <u>MIN</u>	<u>dBm</u>	Ш		
<u>MS TXPWR MAX</u> <u>CCH</u>	<u>dBm</u>	L	1	

Time T1 is X seconds and T2 is Y seconds.

NOTE: T1 and T2 need to be defined so that cell re-selection reaction time is taken into account.

4.3.3.1.2 Minimum requirement

<u>Cell re-selection shall be correct in more than [90%] of the cases. Cell re-selection is correct if within [x] seconds the UE re-selects a new cell, which fulfils the cell re-selection criteria and stays steady on that cell until the channel conditions are changed again.</u>

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6.3 Requirements for Random Access (new)

The UE shall have capability to calculate initial power according to the open loop algorithm and apply this power level at the first preamble and increase the power on additional preambles. The UE shall stop transmit preambles upon a ACK/NACK on the AICH has been received or if the maximum number of preambles within on cycle has been reached. Upon an ACK has been received the UE shall transmit a message otherwise the ramping procedure shall be repeated.

6.3.1 Test Parameters

Table 6-3: RF Parameters for Random Access test

<u>Parameter</u>	<u>Unit</u>	<u>Cell 1</u>
<u>UTRA RF Channel</u> <u>Number</u>		Channel 1
<u>CPICH_Ec/lor</u>	<u>dB</u>	[-10]
<u>PCCPCH Ec/lor</u>	<u>dB</u>	[-12]
<u>SCH Ec/Ior</u>	<u>dB</u>	[-12]
<u>AICH_Ec/Ior</u>	<u>dB</u>	[-10]
<u>PICH_Ec/Ior</u>	<u>dB</u>	[-15]
<u>OCNS Ec/Ior</u>	<u>dB</u>	<u>[-0.941]</u>
$\frac{\hat{I}_{or}/I_{oc}}{}$	<u>dB</u>	<u>[0]</u>
I _{oc}	<u>dBm/3.</u> <u>84</u> <u>MHz</u>	[-70]
<u>CPICH Ec/lo</u>	<u>dB</u>	[-13]
Propagation Condition		AWGN
<u>UE TXPWR MAX RA</u> <u>CH</u>	<u>dBm</u>	[15]

|--|

Parameter	<u>Unit</u>	<u>Value</u>
RACH Transport Format IEs - Number of Transport blocks - Octet mode RLC size info (i.e. RLC block size) - Transmission time interval - Type of channel coding - Coding Rate - Rate matching attribute - CRC size	<u>ms</u> <u>bits</u>	П П [10] П П П П
Access Service Class (ASC) – PRACH partition – Persistence value	<u>01</u>	
<u>Maximum number of</u> <u>preamble ramping cycles</u> (<u>M_{max}).</u>		[2]
<u>Maximum number of</u> <u>preambles in one preamble</u> <u>ramping cycle</u> (Preamble Retrans Max)		[20]
<u>The backoff time T_{B01}</u> <u>- T_{B01min}</u> <u>- T_{B01max}</u>	<u>ms</u> <u>ms</u>	
Power step when no acquisition indicator is received (Power offset P0)	<u>dB</u>	[3]
Power offset between the last transmitted preamble and the control part of the message (Power offset P p-m)	<u>dB</u>	<u>[0]</u>

Table 6-5: UTRAN parameters for Random Access test

Parameter	<u>Unit</u>	<u>Value</u>
RACH Transport Format IEs- Number of Transport blocks- Octet mode RLC size info(i.e. RLC block size)- Transmission time interval- Type of channel coding- Coding Rate- Rate matching attribute- CRC size	<u>ms</u> <u>bits</u>	П П [10] П П П П
Primary CPICH DL TX power	<u>dBm</u>	П
UL interference	<u>dBm</u>	[noise floor]
Constant value	dB	[0]

6.3.2 Correct behaviour when receiving an ACK

The UE shall stop transmitting preambles upon a ACK on the AICH has been received and then transmit a message. An ACK shall be transmitted after the [10] preambles have been received by the UTRAN.

6.3.2.1 Minimum requirement

The absolute power applied to the first preamble shall be [-30 dBm] with an accuracy as specified in table 6.3 of 25.101 [3]. The relative power applied to additional preambles shall have an accuracy as specified in section 6.5.2.1 of 25.101 [3].

The UE shall transmit [10] preambles and [1] message.

6.3.3 Correct behaviour when receiving an NACK

The UE shall stop transmitting preambles upon a NACK on the AICH has been received and then repeat the ramping procedure. The NACK shall be transmitted after the [10] preambles have been received by the UTRAN.

6.3.3.1 Minimum requirement

The UE shall transmit [10] preambles in the first ramping cycle and no transmission shall be done by the UE within [] ms after the NACK has been transmitted by the UTRAN. Then the UE shall start the second preamble ramping cycle.

The relative power increase applied to the first preamble of the second cycle shall have an accuracy of +/- [] dB (or +/- [] dB in extreme conditions). The power increase shall be compared to the last preamble of the first cycle.

6.3.4 Correct behaviour at Time-out

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

6.3.4.1 Minimum requirements

The UE shall transmit [2] preambles cycles, consisting of [20] preambles in each preamble cycle.

6.3.5 Correct behaviour when reaching maximum transmit power

The UE shall not exceed the maximum transmit power specified by the UTRAN. No ACK/NACK shall be sent by UTRAN during this test.

6.3.5.1 Minimum Requirements

The absolute power of the preambles belonging to the first or second preamble cycle shall not exceed [15] dBm with an accuracy of +/-[] dB (or +/- [] dB in extreme conditions).

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8 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 TSG RAN WG2 S25.302 "Services Provided by Physical Layer". The physical layer measurements for FDD are described and defined in TSG RAN WG1 TS25.215 "Physical layer – Measurements (FDD)". In this clause for FDD, per each measurement the relevant requirements on the reporting range, granularity and 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 TS 25.101 annex A, subclause A.3.1. This measurement channel is used both in active cell and cells to be measured.
- Physical channels used as defined in TS 25.101 annex C.
- 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.
- Single task reporting.
- Power control is active.

8.1 Measurements Performance for UE

Test conditions are specified in subclauses 10.1.1, 10.1.4 and 10.1.7.

8.1.1 COMMON PILOT MEASUREMENTS

These measurement consider CPICH RSCP and CPICH Ec/Io measurements.

8.1.1.1 Intra frequency test parameters

In this case all cells are in the same frequency. The table 8-1 and notes 1-4 define the limits of signal strengths and code powers, where the requirement is applicable.

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 1
CPICH_Ec/lor	dB	-10	-10
PCCPCH_Ec/lor	dB	-12	-12
SCH_Ec/Ior	dB	-12	-12
PICH_Ec/Ior	dB	-15	-15
DPCH_Ec/Ior	dB	-15	-15
OCNS	dB	-1.11	-1.11

Table 8-1

2

Îor/Ioc	dB	10.5	10.5
Ioc	dBm/ 3.84 MHz	Note 4	Note 4
Range 1:Io	JD	-9470	-9470
Range 2: Io	aBm	-9450	-9450
Propagation condition	-	AWGN	

NOTE 1: *CPICH_RSCP1,2* \geq -114 dBm.

NOTE 2: / *CPICH_RSCP1* − *CPICH_RSCP2* /≤ 20 dB.

NOTE 3: $| Io - CPICH_Ec/Ior | \le 20 \text{ dB}.$

NOTE 4: *Ioc* level shall be adjusted according the total signal power *Io* at receiver input and the geometry factor $\hat{Ior/Ioc}$. *Io*-13.7 dB= *Ioc*.

8.1.1.2 Inter frequency test parameters

In this case both cells are in different frequency and compressed mode is applied. The gap length is 7 [14 slots is FSS]. The table 8-2 and notes 1-5 define the limits of signal strengths and code powers, where the requirement is applicable.

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 2
CPICH_Ec/lor	dB	-10	-10
PCCPCH_Ec/lor	dB	-12	-12
SCH_Ec/lor	dB	-12	-12
PICH_Ec/Ior	dB	-15	-15
DPCH_Ec/lor	dB	-15	-15
OCNS	dB	-1.11	-1.11
Îor/Ioc	dB	10.1	10.1
Іос	dBm/ 3.84 MHz	Note 5	Note 5
Range 1:Io	dBm	-9470	-9470
Range 2: Io		-9450	-9450
Propagation condition	-	AWGN	

Table 8-2

NOTE 1: *CPICH_RSCP1*, $2 \ge -114$ dBm.

NOTE 2: $| CPICH_RSCP1 - CPICH_RSCP2 | \le 20 \text{ dB}.$

NOTE 3: / Channel 1_Io –Channel 2_Io/ \leq 20 dB.

NOTE 4: $| Io - CPICH_Ec/Ior | \le 20 \text{ dB}.$

NOTE 5: *Ioc* level shall be adjusted in each carrier frequency according the total signal power *Io* at receiver input and the geometry factor \hat{Ior}/Ioc . *Io* -10.6 dB = Ioc.

8.1.2 CPICH RSCP

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

8.1.2.1 Intra frequency measurements accuracy

The measurement period for CELL_DCH stage is [150 ms] and for CELL_FACH stage [600 ms].

8.1.2.1.1 Absolute accuracy requirement

The absolute accuracy of CPICH RSCP is defined as measured one code power after de-spreading. In this test only Cell 1 in table 8-1 is present.

Parameter	Value	Acc	uracy
		Normal condition	Extreme condition
CPICH_RSCP	dB	± 6	± 9

Table 8-3: Range 1

Table 8-4: Range 2

Parameter	Value	Acc	euracy
		Normal condition	Extreme condition
CPICH_RSCP	dB	± 8	± 11

8.1.2.1.2 Relative accuracy requirement

The relative accuracy of CPICH RSCP is defined as measured code powers from active cell and one or more cells after de-spreading. The reported value is relative to active cell value. In this test Cell 1 and 2 in table 1 are present.

Table 8-5: Range 2

Parameter	Value	Acc	uracy
		Normal condition	Extreme condition
CPICH_RSCP	dB	± 3	± 3

8.1.2.2 Inter frequency measurement relative accuracy requirement

The measurement period for CELL_DCH stage is [240 ms], and for CELL_FACH stage [960 ms].

The relative accuracy of CPICH RSCP in inter frequency case is defined as measured code powers after de-spreading from active cell and one or more cells received from two or more RF–carriers. The reported values are relative to active cell value. In this test parameters in table 8-2 is used. In this test cells 1 and 2 are present.

Table 8-6: Range 2

Parameter	Value	Accuracy	
		Normal condition	Extreme condition

CPICH_RSCP	dB	± 6	± 6

8.1.2.3 <u>CPICH RSCP measurement report mapping</u>

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

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

<u>Table 8-r</u>				
Reported value	Measured quantity value	<u>Unit</u>		
CPICH_RSCP_LEV_00	<u>CPICH RSCP <-115</u>	<u>dBm</u>		
CPICH_RSCP_LEV_01	$-115 \le CPICH RSCP < -114$	<u>dBm</u>		
CPICH_RSCP_LEV_02	$-114 \le CPICH RSCP < -113$	<u>dBm</u>		
<u></u>	<u></u>	····		
CPICH_RSCP_LEV_89	$-27 \le \text{CPICH RSCP} < -26$	<u>dBm</u>		
CPICH_RSCP_LEV_90	$-26 \le \text{CPICH RSCP} < -25$	<u>dBm</u>		
CPICH_RSCP_LEV_91	$-25 \le CPICH RSCP$	<u>dBm</u>		

8.1.3 CPICH Ec/lo

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

8.1.3.1 Intra frequency measurements accuracy

The measurement period for CELL_DCH stage is [150 ms], and for CELL_FACH stage [600 ms].

8.1.3.1.1 Absolute accuracy requirement

The absolute accuracy of CPICH Ec/Io is defined as measured energy per chip divided by power density in the band from one cell. In this test only Cell 1 in table 8-1 is present.

Table 8-7: Range 2

Parameter	Value	Accuracy	
		Normal condition	Extreme condition
CPICH_Ec/Io	dB	± 4	± 4

8.1.3.1.2 Relative accuracy requirement

The relative accuracy of CPICH Ec/Io is defined as measured energy per chip divided by power density in the band received from active cell and one more cells. The reported value is relative to active cell value. In this test Cells 1 and 2 in table 8-1 are present.

Parameter	Value	Accuracy	
		Normal condition	Extreme condition
CPICH_Ec/Io	dB	± 3	± 3

Table 8-8: Range 2

8.1.3.2 Inter frequency measurement relative accuracy requirement

The measurement period for CELL_DCH stage is [240 ms], and for CELL_FACH stage [960 ms].

The relative accuracy of CPICH Ec/Io in the inter frequency case is defined as measured energy per chip divided by power density in the band. The reported valus are relative to active cell value. In this test the parameters in table 8-2 is used. In this test cells 1 and 2 are present.

Table 8	3-9: R	ange 2
---------	--------	--------

Parameter	Value	Accuracy	
		Normal condition	Extreme condition
CPICH_Ec/lo	dB	± 6	± 6

CPICH Ec/lo measurement report mapping 8.1.3.3

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

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

<u>1 able 8-r</u>				
Reported value	Measured quantity value	<u>Unit</u>		
CPICH_Ec/No_00	<u>CPICH Ec/Io < -24</u>	<u>dB</u>		
CPICH_Ec/No_01	$-24 \le \text{CPICH Ec/Io} < -23.5$	<u>dB</u>		
CPICH_Ec/No_02	$-23.5 \le \text{CPICH Ec/Io} < -23$	<u>dB</u>		
<u></u>	<u></u>	<u></u>		
CPICH_Ec/No_48	$-1 \le \text{CPICH Ec/Io} < -0.5$	<u>dB</u>		
CPICH_Ec/No_49	$-0.5 \le \text{CPICH Ec/Io} < 0$	dB		
CPICH_Ec/No_50	$\underline{0 \leq \text{CPICH Ec/Io}}$	<u>dB</u>		

T 11 0

8.1.4 DEDICATED CHANNEL MEASUREMENTS

These measurement consider SIR, which is based on dedicated channel. The power ratio between DPDCH bits and DPCCH bits is 1. The relative power of PO1, PO2 and PO3 for TPC, TCFI and Pilot fields are same. The number of dedicated pilot bits is 8. Dedicated channel measurements are always intra frequency type.

8.1.4.1 Test parameters

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 1
CPICH_Ec/lor	dB	-10	-10
PCCPCH_Ec/Ior	dB	-12	-12
SCH_Ec/Ior	dB	-12	-12
PICH_Ec/Ior	dB	-12	-12
DPCH_Ec/Ior	dB	-15	-15
OCNS	dB	-1.11	-1.11
Îor/Ioc	dB	10.5	10.5
Ioc	dBm/ 3.84 MHz	Note 5	Note 5
Range 1:10	dBm	-9470	-9470
Range 2: Io		-9450	-9450
Propagation condition	-	AW	/GN

Table 8-10

NOTE 1: $DPCH_Ec/lor \ge -114 \text{ dBm}.$

- NOTE 2: / DPCH_Ec/Ior1 DPCH_Ec/Ior2 |≤ 20 dB.
- NOTE 3: $| Io CPICH_Ec/Ior | \le 20 \text{ dB}.$
- NOTE 4: *Ioc* level shall be adjusted according the total signal power *Io* at receiver input and the geometry factor $\hat{I}or/Ioc$. *Io* -13.7 dB = Ioc.

8.1.5 SIR

NOTE: The purpose of this measurement is for DL inner/outer loop power control, DL open loop power control.

8.1.5.1 Absolute accuracy requirement

The basic measurement period is in CELL_DCH stage is [100 ms].

The SIR absolute accuracy is defined as RSCP divided by ISCP after RL combination. In this test only Cell 1 in table 8-10 is present.

Parameter	Value	Accuracy	
		Normal condition	Extreme condition
DPCCH_SIR	dB	±[]	±[]

Table 8-11: Range 1

Table 8-12: Range 2

Parameter	Value	Accuracy	
		Normal condition	Extreme condition
DPCCH_SIR	dB	±[]	±[]

8.1.6 UTRA Carrier RSSI

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

8.1.6.1 Test parameters for requirement

The table 13 and notes 1,2 define the limits of signal strengths, where the requirement is applicable.

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channei number	-	Channel 1	Channel 2
Îor/Ioc	dB	-1	-1
Ioc	dBm/ 3.84 MHz	Note 3	Note 3
Range 1: Io	dBm/ 3.84 MHz	-9470	-9470
Range 2: Io		-9450	-9450
Propagation condition	-	AW	'GN

Table 8-13

NOTE 1: For relative accuracy requirement / *Channel 1_Io –Channel 2_Io / < 20 dB*.

NOTE 2: *Ioc* level shall be adjusted according the total signal power *Io* at receiver input and the geometry factor $\hat{I}or/Ioc$. *Io* -4.13 dB = Ioc.

8.1.6.2 Absolute accuracy requirement

The measurement period is in CELL_DCH stage [150 ms], and CELL_FACH stage [600 ms].

Absolute accuracy case only one carrier is applied (Cell 1).

Parameter	Value	Accuracy	
		Normal condition	Extreme condition
Іо	dBm	± 4	±7

Table 8-14: Range 1

Table 8-15: Range 2

Parameter	Value	Accuracy	
		Normal condition	Extreme condition
Іо	dBm	± 6	± 9

8.1.6.3 Relative accuracy requirement

The measurement period in CELL_DCH stage is [240 ms], and in CELL_FACH stage [960 ms].

Relative accuracy requirement is defined as active cell frequency UTRAN RSSI compared to measured other frequency UTRAN RSSI level. In relative accuracy test case both carriers in table 8-16 are used.

Table 8-16: Range 1

Parameter	Value	Acc	euracy
		Normal condition	Extreme condition
Іо	dBm	± 7	± 11

8.1.6.4 UTRA Carrier RSSI measurement report mapping

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

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

Table 01				
Reported value	Measured quantity value	<u>Unit</u>		
UTRA_carrier_RSSI_LEV _00	UTRA carrier RSSI < -100	<u>dBm</u>		
UTRA_carrier_RSSI_LEV_01	$-100 \le \text{UTRA carrier RSSI} < -99$	<u>dBm</u>		
UTRA_carrier_RSSI_LEV_02	$-99 \le \text{UTRA carrier RSSI} < -98$	<u>dBm</u>		
<u></u>	::	<u></u>		
UTRA_carrier_RSSI_LEV _74	$-27 \le \text{UTRA carrier RSSI} < -26$	<u>dBm</u>		
UTRA_carrier_RSSI_LEV_75	$-26 \le \text{UTRA carrier RSSI} < -25$	<u>dBm</u>		
UTRA_carrier_RSSI_LEV_76	$-25 \le \text{UTRA carrier RSSI}$	<u>dBm</u>		

Table 8-r

8.1.7 GSM carrier RSSI

NOTE: The measurement is for Inter radio access technology (RAT) handover.

For terminals supporting this capability.

The accuracy requirement and reporting range is specified in GSM 05.08.

[The GSM reporting period is 480 ms. In case of parallel measurements, the reporting period of each single neighbour can be a multiple of 480 ms, and the reporting period of each neighbour can be irregular.]

8.1.8 Transport channel BLER

NOTE: This measurement is for outer loop power control.

8.1.8.1 BLER measurement requirement

Transport channel BLER value shall be calculated from a sliding window containing [20] CRC errors.

8.1.8.2 Transport channel BLER measurement report mapping

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

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

Reported value	Measured quantity value	<u>Unit</u>
BLER LOG 00	<u>Transport channel BLER = 0</u>	Ξ
BLER LOG 01	$-\infty < Log10(Transport channel BLER) < -4.03$	- -
BLER LOG 02	$-4.03 \le Log10$ (Transport channel BLER) < -3.965	=
BLER LOG 03	$-3.965 \le Log10(Transport channel BLER) < -3.9$	=
<u></u>		<u></u>
BLER LOG 61	$-0.195 \le Log10(Transport channel BLER) < -0.13$	=
BLER LOG 62	$-0.13 \le Log10$ (Transport channel BLER) < -0.065	=
BLER LOG 63	$-0.065 \le Log10(Transport channel BLER) \le 0$	-

Table 8-r

8.1.9 UE transmitted power

Relative Accuracy.

The measurement period in CELL_DCH stage is [].

8.1.9.1 UE transmitted power measurement report mapping

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

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

Table 8-r

Reported value	Measured quantity value	<u>Unit</u>
UE_TX_POWER_021	$-50 \le \text{UE transmitted power} \le -49$	<u>dBm</u>
UE_TX_POWER_022	$-49 \le \text{UE transmitted power} < -48$	<u>dBm</u>
UE_TX_POWER_023	$-48 \le \text{UE transmitted power} < -47$	<u>dBm</u>
····		<u></u>
UE TX POWER 102	$31 \le UE$ transmitted power < 32	<u>dBm</u>
UE TX POWER 103	$32 \le UE \text{ transmitted power} < 33$	<u>dBm</u>
LIE TY DOWED 104	22 < 115 + + + + + + + < 24	dDm

8.1.10 CFN-SFN observed time difference

Requirement +/-0.5 chips period

The measurement period in CELL_DCH stage is [150 ms].

8.1.10.1 CFN-SFN observed time difference measurement report mapping

The reporting range is for CFN-SFN observed time difference is from 0 ... 9830400 chip.

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

Reported value	Measured quantity value	<u>Unit</u>
CFN-SFN TIME 0000000	$0 \le \text{Time difference} \le 1$	<u>chip</u>
CFN-SFN TIME 0000001	$1 \leq \text{Time difference} < 2$	<u>chip</u>
CFN-SFN TIME 0000002	$2 \le \text{Time difference} < 3$	<u>chip</u>
····		<u>····</u>
CFN-SFN TIME 9830397	$9830397 \le$ Time difference < 9830398	<u>chip</u>
CFN-SFN TIME 9830398	$9830398 \le$ Time difference < 980399	<u>chip</u>
<u>CFN-SFN TIME 9830399</u>	$9830399 \le \text{Time difference} \le 9830400$	<u>chip</u>

<u>Table 8-r</u>

8.1.11 SFN-SFN observed time difference

Requirement +/-0.5 chips period for both type 1 and type 2.

The measurement period in CELL_DCH stage is [150 ms], and in CELL_FACH stage [600 ms].

8.1.11.1 SFN-SFN observed time difference measurement report mapping

SFN_SFN observed time difference type 1 measurement report mapping 8.1.11.1.1

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

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

Table 8-r				
Reported value	Measured quantity value	<u>Unit</u>		
T1 SFN-SFN TIME 0000000	$0 \le \text{Time difference} \le 1$	<u>chip</u>		
T1 SFN-SFN TIME 0000001	<u>$1 \leq \text{Time difference} < 2$</u>	<u>chip</u>		
<u>T1_SFN-SFN_TIME_0000002</u>	$2 \le \text{Time difference} < 3$	<u>chip</u>		
<u></u>	<u></u>	<u></u>		
T1_SFN-SFN_TIME_9830397	$\underline{9830397} \leq \text{Time difference} < 9830398$	<u>chip</u>		
T1_SFN-SFN_TIME _9830398	$9830398 \le$ Time difference < 980399	<u>chip</u>		
T1 SFN-SFN TIME 9830399	$9830399 \le \text{Time difference} \le 9830400$	<u>chip</u>		

8.1.11.1.2 SFN-SFN observed time difference type 2 measurement report mapping

The reporting range is for SFN-SFN observed time difference type 2 is from -1279.75 ... 1280 chip.

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

Reported value	Measured quantity value	<u>Unit</u>
T2_SFN-CFN_TIME_00000	$-1279.75 < \text{Time difference} \le -1279.50$	<u>chip</u>
T2_SFN-CFN_TIME_00001	$-1279.50 \le$ Time difference < -1279.25	<u>chip</u>
T2 SFN-CFN TIME 00002	$-1279.25 \le$ Time difference < -1279.00	<u>chip</u>
<u></u>		<u></u>
T2 SFN-CFN TIME 10236	$1279.25 \le$ Time difference < 1279.50	<u>chip</u>
T2_SFN-CFN_TIME _10237	$1279.50 \le$ Time difference < 1279.75	<u>chip</u>
T2_SFN-CFN_TIME_10238	$1279.75 \le$ Time difference ≤ 1280.00	<u>chip</u>

Table 8-r

UE Rx-Tx time difference 8.1.12

Requirement +/-1.5 chips period.

The measurement period in CELL_DCH stage is [ms]

8.1.12.1 UE Rx-Tx time difference measurement report mapping

The reporting range is for UE Rx-Tx time difference is from 876 ... 1170 chip.

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

Table 8-r				
Reported value	Measured quantity value	<u>Unit</u>		
RX-TX_TIME_0000	<u>UE Rx-Tx Time difference < 876.00</u>	<u>chip</u>		
RX-TX_TIME_0001	$\underline{876.00 \le \text{UE Rx-Tx Time difference} < 876.25}$	<u>chip</u>		
RX-TX_TIME_0002	$876.25 \le \text{UE Rx-Tx Time difference} < 876.50$	<u>chip</u>		
RX-TX_TIME_0003	$876.50 \le \text{UE Rx-Tx Time difference} < 876.75$	<u>chip</u>		
<u></u>		<u></u>		
<u>RX-TX_TIME_1182</u>	$1171.25 \le \text{UE Rx-Tx Time difference} < 1171.50$	<u>chip</u>		
<u>RX-TX_TIME_1183</u>	$1171.50 \le \text{UE Rx-Tx Time difference} < 1171.75$	<u>chip</u>		
RX-TX_TIME_1184	$1171.75 \le \text{UE Rx-Tx Time difference} \le 1172.00$	<u>chip</u>		
<u>RX-TX_TIME_1185</u>	$1172.00 \le \text{UE Rx-Tx Time difference}$	<u>chip</u>		

8.1.1213.1 Observed time difference to GSM cell

For terminal supporting this capability.

Requirement +- 20 chips.

8.1.13.1 Observed time difference to GSM cell measurement report mapping

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

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

Table 8-r			
Reported value	Measured quantity value	<u>Unit</u>	
GSM TIME 0000	$0 \le \text{Observed time difference to GSM cell} < 1x3060/(4096x13)$	<u>ms</u>	
GSM TIME 0001	$1x3060/(4096x13) \le$ Observed time difference to GSM cell $< 2x3060/(4096x13)$	<u>ms</u>	
GSM TIME 0002	$2x3060/(4096x13) \le$ Observed time difference to GSM cell < $3x3060/(4096x13)$	<u>ms</u>	
GSM_TIME _0003	$3x3060/(4096x13) \le$ Observed time difference to GSM cell $< 4x3060/(4096x13)$	<u>ms</u>	
····	· · · ·	<u></u>	
<u>GSM TIME 4093</u>	$\frac{4093x3060/(4096x13) \le \text{Observed time difference to GSM cell} < \frac{4094x3060/(4096x13)}{1000000000000000000000000000000000000$	<u>ms</u>	
GSM TIME 4094	$\frac{4094x3060/(4096x13) \le \text{Observed time difference to GSM cell} <}{4095x3060/(4096x13)}$	ms	

 $\underline{\text{GSM}_\text{TIME}}_{4095} 4095 \times 3060 / (4096 \times 13) \le \text{Observed time difference to GSM cell} < 3060 / 13 \qquad \underline{\text{ms}}$

8.1.1314 PRIMARY COMMON CONTROL PHYSICAL CHANNEL MEASUREMENTS

These measurements consider P-CCPCH RSCP measurements. Only necessary for UEs supporting TDD.

8.1.1314.1 Inter frequency test parameters

In this case the cells are on different frequencies. The table 10-x and notes 1-4 define the limits of signal strengths and code powers, where the requirement is applicable.

Parameter	Unit	Cell 1
UTRA RF Channel number		Channel 1
Timeslot		k
P-CCPCH Ec/lor	dB	-3
OCNS	dB	[]
Îor/Ioc	DB	[]
Ioc	dBm/ 3.84 MHz	Note 4
Range 1:10	dBm	-94 –70
Range 2: Io		-9450
Propagation condition	-	AWGN

Table 8-17

NOTE 1: P- $CCPCH_RSCP \ge -102$ dBm.

NOTE 3: | Io - P-CCPCH_Ec/Ior $| \leq [20]$ dB.

NOTE 4: *Ioc* level shall be adjusted according the total signal power *Io* at receiver input and the geometry factor \hat{lor}/loc .

8.1.44<u>15</u> P-CCPCH RSCP

8.1.4415.1 Absolute accuracy requirements

The absolute accuracy of P-CCPCH RSCP is defined as measured one code power after de-spreading.

Table 8-18: Range 1

Parameter	Value	Acc	euracy
		Normal conditions	Extreme conditions
P-CCPCH_RSCP	dB	± 6	± 9

Table 8-19: Range 2

Parameter	Value	Acc	euracy
		Normal conditions	Extreme conditions
P-CCPCH_RSCP	dB	± 8	± 11

8.1.15.2 P-CCPCH RSCP measurement report mapping

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

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

Reported value	Measured quantity value	<u>Unit</u>
PCCPCH_RSCP_LEV _00	PCCPCH RSCP< -115	<u>dBm</u>
PCCPCH_RSCP_LEV _01	<u>-115 ≤ PCCPCH RSCP< -114</u>	<u>dBm</u>
PCCPCH_RSCP_LEV_02	<u>-114 ≤ PCCPCH RSCP< -113</u>	<u>dBm</u>
PCCPCH RSCP LEV 03	$-113 \le \text{PCCPCH RSCP} < -112$	<u>dBm</u>
<u></u>	<u></u>	<u></u>
PCCPCH_RSCP_LEV _89	$-27 \le PCCPCH RSCP < -26$	<u>dBm</u>
PCCPCH_RSCP_LEV _90	$-26 \le PCCPCH RSCP < -25$	<u>dBm</u>
PCCPCH_RSCP_LEV_91	$-25 \le \text{PCCPCH RSCP}$	<u>dBm</u>

Table 8-r

		CHANGE I	REQI	JEST	Please page fo	see embedded help f or instructions on how	ile at the bottom of th to fill in this form con	is rectly.
		25.133	CR	034		Current Versi	on: 3.1.0	
GSM (AA.BB) or 3G	(AA.BBB) specifica	ation number \uparrow		↑ CF	R number a	as allocated by MCC s	support team	
For submission t	:0: TSG RA eeting # here ↑	N#8 for a for infor	oproval mation	X		strate non-strate	gic (for S. gic use of	MG nly)
Proposed chang (at least one should be m	n: CR cover sheet, ve <u>e affects:</u> arked with an X)	(U)SIM	ME	X	JTRAN	/ Radio	Core Network	-v2.doc
Source:	RAN WG4					Date:	00.05.25	
Subject:	Parallel mea	asurement require	ements r	evised				
Work item:								
Category:FA(only one categoryshall be markedCwith an X)D	Correction Correspond Addition of Functional Editorial mo	ds to a correction i feature modification of fea odification	in an ea ature	rlier releas	se	Release:	Phase 2 Release 96 Release 97 Release 98 Release 99 Release 00	X
<u>Reason for</u> change:	Clarification	of the parallel me	easurem	ent requir	rements	5		
Clauses affected	l: 5.1.3, 8	3 <mark>.1.2, 8.1.3, 8.1.6</mark> ,	8.1.7, 9	<mark>.1, 9.2, A</mark> l	<mark>nnex (n</mark>	ew)		
Other specs	Other 3G cord Other GSM c MS test speci BSS test specific O&M specific	e specifications ore specifications ifications cifications ations			CRs: CRs: CRs: CRs: CRs: CRs:			
<u>Other</u> comments:								

5.1.3 Handover 3G to 2G

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 utilise 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.

5.1.3.1 Handover to GSM

The requirements in this section shall apply to multi-RAT UE.

This subclause 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 recommendations.

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.

The MS (GSM terminology) shall be able to monitor up to [32] carriers.

The MS shall be able synchronize to [6] carriers.

The MS shall be able to report back to the network on the [6] strongest cells with correctly identified BSIC.

5.1.3.1.1 BSIC Verification

Note: The definition of the BSIC verification will be inserted when it is clarified.

The <u>UEMS</u> shall be able to perform <u>BSIC verification</u> this task at levels down to the reference sensitivity level or reference interference levels as specified in GSM 05.05.

The MS shall demodulate the SCH on the BCCH carrier of each surrounding cell and decode the BSIC as often as possible, and as a minimum at least once every [10 seconds].

5.1.3.1.1 Requirements

8.1.2 CPICH RSCP

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

8.1.2.1 Intra frequency measurements accuracy

The measurement period for CELL_DCH stage state is [150 ms] and for CELL_FACH stage state [600 ms].

8.1.2.1.1 Absolute accuracy requirement

The absolute accuracy of CPICH RSCP is defined as measured one code power after de-spreading. In this test only Cell 1 in table 8-1 is present.

Parameter	Value	Acc	euracy
		Normal condition	Extreme condition
CPICH_RSCP	dB	± 6	± 9

Т	able	8-3:	Range	1

Table 8-4: Range 2

Parameter	Value	Acc	euracy
		Normal condition	Extreme condition
CPICH_RSCP	dB	± 8	±11

8.1.2.1.2 Relative accuracy requirement

The relative accuracy of CPICH RSCP is defined as measured code powers from active cell and one or more cells after de-spreading. The reported value is relative to active cell value. In this test Cell 1 and 2 in table 1 are present.

Table 8-5: Range 2

Parameter	Value	Acc	euracy
		Normal condition	Extreme condition
CPICH_RSCP	dB	± 3	± 3

8.1.2.2 Inter frequency measurement relative accuracy requirement

The measurement period for CELL_DCH stagestate is [240-480 ms], and for CELL_FACH stagestate [960 ms].

The relative accuracy of CPICH RSCP in inter frequency case is defined as measured code powers after de-spreading from active cell and one or more cells received from two or more RF–carriers. The reported values are relative to active cell value. In this test parameters in table 8-2 is used. In this test cells 1 and 2 are present.

Table 8-6: Range 2

Parameter	Value	Acc	euracy
		Normal condition	Extreme condition

CPICH_RSCP	dB	± 6	± 6

8.1.3.1 Intra frequency measurements accuracy

The measurement period for CELL_DCH stage state is [150 ms], and for CELL_FACH stage state [600 ms].

8.1.3.1.1 Absolute accuracy requirement

The absolute accuracy of CPICH Ec/Io is defined as measured energy per chip divided by power density in the band from one cell. In this test only Cell 1 in table 8-1 is present.

Table 8-7: Range 2

Parameter	Value	Acc	curacy
		Normal condition	Extreme condition
CPICH_Ec/Io	dB	± 4	± 4

8.1.3.1.2 Relative accuracy requirement

The relative accuracy of CPICH Ec/Io is defined as measured energy per chip divided by power density in the band received from active cell and one more cells. The reported value is relative to active cell value. In this test Cells 1 and 2 in table 8-1 are present.

Table 8-8: Range 2

Parameter	Value	Acc	curacy
		Normal condition	Extreme condition
CPICH_Ec/Io	dB	± 3	± 3

8.1.3.2 Inter frequency measurement relative accuracy requirement

The measurement period for CELL_DCH stagestate is [240-480 ms], and for CELL_FACH stagestate [960 ms].

The relative accuracy of CPICH Ec/Io in the inter frequency case is defined as measured energy per chip divided by power density in the band. The reported value are relative to active cell value. In this test the parameters in table 8-2 is used. In this test cells 1 and 2 are present.

Parameter	Value	Acc	uracy
		Normal condition	Extreme condition
CPICH_Ec/Io	dB	± 6	± 6

Table 8-9: Range 2

8.1.6.2 Absolute accuracy requirement

The measurement period is in CELL_DCH <u>stage state [150 ms] for intra frequency measurements and [480 ms] for</u> inter frequency measurements., For <u>and CELL_FACH</u> <u>stage state the measurement period is [600 ms].</u>

Absolute accuracy case only one carrier is applied (Cell 1).

Table 8-14: Range 1

Parameter	Value	Accuracy				
		Normal condition	Extreme condition			
Іо	dBm	± 4	± 7			

Table 8-15: Range 2

Parameter	Value	Acc	euracy
		Normal condition	Extreme condition
Іо	dBm	± 6	± 9

8.1.7 GSM carrier RSSI

NOTE: The measurement is for Inter radio access technology (RAT) handover.

For terminals supporting this capability.

The accuracy requirement is specified in GSM 05.08.

The measurement period in CELL_DCH state is [480 ms], and in CELL_FACH state [960 ms].

[The GSM reporting period is 480 ms. In case of parallel measurements, the reporting period of each single neighbour can be a multiple of 480 ms, and the reporting period of each neighbour can be irregular.]

9.1 General

The UE shall be able to perform parallel measurements according to table $\underline{\text{NEW-39-2}}$.

In addition to the requirements in table $\underline{NEW \ 39-2}$ the UE shall in parallel, in state CELL_DCH, also be able to measure and report the quantities according to table 9-1.

Measurement quantity	Number of parallel measurements possible to request from the UE	Minimum periodic reporting period (ms)
Transport channel BLER	[1] per TrCh	Ð
Physical channel BER	[1]	Ð
Editors Note: The precence of this		
measurement is depending on desicions in		
<i>WGI.</i>		
DPCCH SIR	[1]	Ð
UE transmitted power	[1]	Ð
UE Rx-Tx time difference	[1] including timing to all radio links in active	Ð
	set	
SFN-SFN observed time difference type 2	[]	Ð
UE GPS Timing of Cell Frames for LCS	[]	Ð

Table 9-1

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

9.2 Parallel Measurement Requirements

Table 9-2: Network scenarios

Case	Network sceanrio	Number of UMTS carriers present
la	single carrier UMTS network with no interaction with GSM networks or other UMTS networks	1
2a	multi carrier UMTS network with no interaction with GSM networks	2
2b		2
2c		3
3a	single carrier UMTS network together with a GSM	1
3b		1
4 a	multi carrier UMTS network together with a GSM	2
4 b		2
4 c		3

Table 9-2 shall be read as follows:

If the UE receives a neighbour list of
not more than X1 cells on Freq. #0 and
not more than X2 cells on Freq. #1 and
not more than X3 cells on Freq. #2 and
not more than X4 GSM cells,
the UE L1 shall be able to deliver
Y1 CPICH measurements on Freq. #0 and
Y2 CPICH measurements on Freq. #1 and
Y3 CPICH measurements on Freq. #2 and
Y4 UTRAN carrier RSSI measurements on Freq. #0 and
Y5 UTRAN carrier RSSI measurements on Freq. #1 and

Y6 UTRAN carrier RSSI measurements on Freq. #2 and

Y7 GSM carrier RSSI measurements (BSIC verified)

Y8 GSM carrier RSSI measurements (BSIC non-verified)

with the periodicity given by the measurement periods in section 8 and accuracy requirements given in section 8.

Xn and Yn are numbers taken from the same column in Table 9-2.

Scenario (see annex B)			<u>1a</u>	<u>2b</u>	<u>2c</u>	<u>3a</u>	<u>4b</u>	<u>4c</u>
<u>Neigbour list</u> size	<u>X1</u>	Freq #0	[32]	[24]	[24]	[24]	[24]	[24]
<u>512C</u>	<u>X2</u>	<u>Freq #1</u>	[0]	[12]	[12]	[0]	[12]	[12]
	<u>X3</u>	<u>Freq #2</u>	[0]	<u>[0]</u>	[12]	[0]	[0]	[12]
	<u>X4</u>	<u>GSM (any</u> <u>band /</u> <u>carrier)</u>	<u>[0]</u>	<u>[0]</u>	<u>[0]</u>	[20] Note4	[12]	[8]
<u>Parallell</u> <u>measurement</u> <u>requirements</u>	<u>Y1</u>	<u>CPICH</u> <u>meas.</u> <u>Freq#0</u>	[6]	[6]	[6]	[6]	[6]	<u>[6]</u>
	<u>Y2</u>	<u>CPICH</u> <u>meas.</u> <u>Freq#1</u>	<u>[0]</u>	<u>[6]</u>	<u>[4]</u>	<u>[0]</u>	[6]	<u>[3]</u>
	<u>¥3</u>	<u>CPICH</u> <u>meas.</u> Freq#2	<u>[0]</u>	<u>[0]</u>	<u>[4]</u>	<u>[0]</u>	<u>[0]</u>	<u>[3]</u>
	<u>Y4</u>	<u>UTRAN</u> <u>carrier</u> RSSI Freq <u>#0</u>	[1]	[1]	[1]	[1]	[1]	[1]
	<u>Y5</u>	<u>UTRAN</u> <u>carrier</u> <u>RSSI Freq</u> <u>#1</u>	<u>[0]</u>	[1]	[1]	[0]	[1]	[1]
	<u>¥6</u>	<u>UTRAN</u> carrier RSSI Freq #2	[0]	[0]	[1]	<u>[0]</u>	[0]	[1]
	<u>¥7</u>	GSM RSSI, BSIC non- verified	<u>[0]</u>	<u>[0]</u>	<u>[0]</u>	П	П	П

Table 9-2: UE Layer 1 parallel measurement capability

		<u>Y8</u>	<u>GSM RSSI,</u> <u>BSIC</u> verified	<u>[0]</u>	<u>[0]</u>	<u>[0]</u>	П	П	Ω	
			vermen							
Note 1:	Altho	ough tal	ole 9-2 puts requ	irements	s on L1,	these re	quiremen	its can b	e verifie	ed from L3 with a filter
	coeff	icient =	0, in the higher	layer filt	er.					
Note 2:	Com	pressed	mode reference	pattern	2.1 is as	sumed f	for the rec	juireme	nts in tal	ble 9-2. If other compressed
	mode	patteri	ns are used, the	UE L1 sl	hall deli	ver as n	nany meas	uremen	ts as pos	ssible.
Note 3:	In tab	ole 9-2,	CPICH measure	ements c	an be ei	ther the	CPICH E	c/Io or	the CPI	CH RSCP measurement.
Note4:	This	figure v	vill be checked a	after the	BSIC d	efinitior	is resolv	ed.		

C	ase	Intra-frequenc or CPICH Ec/I	y CPICH RSCP o including cell	Inter-frequency RSCP or CPICI	y CPICH H Ec/lo	Inter-System G RSSI	SM carrier	Filtering period setting (ms) Note 4			
		search. Also the UTRA shall be reporte	. carrier RSSI ed.	including cell s one UTRA carr measured carr reported.	search. Also ier RSSI per ier shall be			Intra-freq.	Inter-freq	GSM	
		Minimum number of neighbours to be reported to higher layers	Neighbour list size Note 1	Minimum number of neighbours to be reported to higher layers Note 2	Neighbour list size Note 3	Minimum number of neighbours to be reported to higher layers	Neighbour list size Note 1				
- 1 a	t	[6]	[32]	[0]	[0]	[0]	[0]	[150]	-	-	
2 a	ŧ	[6]	[20]	[4]	[12]	[0]	[0]	[150]	[240]	-	
26	,	[6]	[20]	[6]	[12]	[0]	[0]	[150]	[480]	-	
2 e	÷	[6]	[16]	[4+4]	[8 + 8]	[0]	[0]	[150]	[480]	-	
3 a	t	[6]	[16]	[0]	[0]	[16]	[16]	[150]	-	[480]	
36	•	[6]	[12]	[0]	[0]	[20]	[20]	[150]	-	[960] Note 5	
4a	ŧ	[6]	[12]	[3]	[10]	[10]	[10]	[150]	[240]	[480]	
41	,	[6]	[12]	[6]	[10]	[10]	[10]	[150]	[480]	[960] Note 5	
4e	÷	[6]	[10]	[3+3]	[6 + 6]	[10]	[10]	[150]	[480]	[480]	
						•	•	•		•	

Table 9-3: Layer 1 parallel measurement capability

- NOTE 1: The total number of neighbours is in total [32]. The detailed share between intra , inter and GSM cells is FFS.
- NOTE 2: The number of neighbours to be reported is given in the form X or X+Y, where X and Y represents the number of neighbours to report from each carrier respectively, e.g. 4+4 indicates that 4 neighbours shall be measured on each of two inter frequency carriers and 4 indicates that 4 neighbours shall be measured from 1 inter frequency carrier.
- NOTE 3: In the same manner as in Note 2, the number of neighbours in the neighbour list is given in the form X or X+Y, where X and Y represents the number of neighbours in the list for each carrier respectively.
- NOTE 4: When the parameters for higher layer filtering is completed by WG2 this column will be updated to indicate the specific parameter setting for the in WG2 (25.331) specified parameters that controls the filtering.
- NOTE 5: The GSM reporting period is 480 ms. In case of multiple measurement tasks, the reporting period of each single neighbour can be a multiple of 480 ms. Reporting period of each neighbour can be irregular.

Pattern for compressed mode measurements:

7 slot gap every 3rd frame, double frame method, 8 gaps / 240 ms, 16 gaps/ 480ms.

<u>Annex B (Informative):</u> <u>Scenario Description for Parallel Measurements</u>

The following table gives a brief explanation on which scenarios that have been used to set up the parallel measurement requirements.

General Assumptions

- Freq. #0, #1 and #2 are arbitrary UMTS frequencies, assigned for one operator.
- The UE is assumed to have the active set on Freq. #0

Case	<u>Network scenario</u>	Number of	<u>Neigbour List Size</u>				
		<u>carriers</u> present	<u>Freq.</u> <u>#0</u>	<u>Freq.</u> <u>#1</u>	<u>Freq.</u> <u>#2</u>	<u>GSM</u>	
<u>1a</u>	single carrier UMTS network with no interaction with GSM networks or other UMTS networks	<u>1</u>	<u>32</u>	<u>0</u>	<u>0</u>	<u>0</u>	
<u>2b</u>	multi carrier UMTS network with no interaction with GSM networks	2	<u>24</u>	<u>12</u>	<u>0</u>	<u>0</u>	
<u>2c</u>		<u>3</u>	<u>24</u>	<u>12</u>	<u>12</u>	<u>0</u>	
<u>3a</u>	single carrier UMTS network together with a GSM network	1	<u>24</u>	<u>0</u>	<u>0</u>	<u>20</u>	
<u>4b</u>	multi carrier UMTS network together with a GSM network	2	<u>24</u>	<u>12</u>	<u>0</u>	<u>12</u>	
<u>4c</u>		<u>3</u>	<u>24</u>	<u>12</u>	<u>12</u>	<u>8</u>	

Annex <u>B-C (informative)</u>: Change History

	Document history								
V3.0.0	December 1999								
V3.1.0	March 2000								

RAN doc	Spec	CR	Re	Phas	Subject	Cat	Current	New
RP-000021	25.133	001		R99	Modification of RL Failure Requirement	F	3.0.0	3.1.0
RP-000021	25.133	002		R99	Idle Mode Tasks	С	3.0.0	3.1.0
RP-000021	25.133	003		R99	Revised UE handover requirements	F	3.0.0	3.1.0
RP-000021	25.133	004		R99	Editorial corrections	D	3.0.0	3.1.0
RP-000021	25.133	005		R99	UE measurement requirement update	F	3.0.0	3.1.0
RP-000021	25.133	006		R99	TDD Measurements Performance Requirements	В	3.0.0	3.1.0
RP-000021	25.133	007		R99	UTRAN measurement requirement update	F	3.0.0	3.1.0
RP-000021	25.133	008		R99	Requirements on parallel measurements	F	3.0.0	3.1.0
RP-000021	25.133	009		R99	Inclusion on transport channel BER.	F	3.0.0	3.1.0

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		CHANGE F	REQI	JEST	Please see emb page for instruct	bedded help f tions on how	ile at the bottom of t to fill in this form co	his rectly.			
		25.133	CR	035	Curre	ent Versio	on: 3.1.0				
GSM (AA.BB) or 3G (AA.BBB) specification number ↑ ↑ CR number as allocated by MCC support team											
For submission	gic (for Si gic use of	MG nly)									
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Source:	RAN WG4					Date:	2000-05-26				
Subject:	UE Hard ha	ndover switching	time								
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Category:FA(only one categoryshall be markedCwith an X)D	Correction Correspond Addition of Functional r Editorial mo	s to a correction i feature nodification of fea dification	n an ea ature	rlier release		<u>elease:</u>	Phase 2 Release 96 Release 97 Release 98 Release 99 Release 00	X			
<u>Reason for</u> change:	Requiremer	t definition modifi	cation to	hard hand	dover requir	ements.					
Clauses affected	<u>1:</u>										
Other specs affected:	Other 3G core Other GSM co specificati MS test speci BSS test speci O&M specific	e specifications ore ons fications cifications ations		$\begin{array}{l} \rightarrow \text{ List of C} \\ \rightarrow \text{ List of C} \end{array}$	Rs: Rs: Rs: Rs: Rs: Rs:						
<u>Other</u> comments:											

5.1.2.2 FDD Hard Handover

The hard handover procedure is initiated from UTRAN with an handover command message. The hard handover procedure may cause the UE to change its frequency. Compressed mode according to the UE Capability may be used to be able to make any measurements on other frequencies.

5.1.2.2.1 Requirements

5.1.2.2.1.1 Maximum number of cells/frequencies to be monitored on other frequencies

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.

The cells and frequencies are given to the UE in a measurement control message(s), and the measurement slots available with compressed mode is given through physical channel reconfiguration parameters.

5.1.2.2.1.2 Measurement reporting delay

The measurement reporting delay is defined as the time from when a report is triggered at the physical layer according to the event or periodic mechanism set to trigger the measurement report, until the UE starts to transmit the measurement report over the Uu interface. 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.

5.1.2.2.1.2.1 Test Parameters for DL compressed mode

The DL reference measurement channel 12.2 kbps shall be used, with power control turned on [see 25.101]. Test parameters for DL compressed mode are given in Annex $\frac{22}{100}$ A.5. in table A-26 of TS25.101.

5.1.2.2.1.4 Hard Handover Delay

The hard handover delay is defined as the time from when the UE receives the handover command message from UTRAN, until the UE starts transmission to the target cell. successfully uses the entire set of radio links stated in that message for power control.

When the UE receives a RRC message that implies a hard handover (PHYSICAL CHANNEL RECONFIGURATION, RADIO BEARER SETUP, RADIO BEARER RECONFIGURATION, RADIO BEARER RELEASE, or TRANSPORT CHANNEL RECONFIGURATION), it shall be ready to transmit on the new channel within [X ms] from the last TTI containing the RRC command. However, if the command includes an indicated starting time, the UE shall be ready to transmit on the new channel at the designated starting time, or within [X ms], whichever is the later. The interruption time, i.e. the time between the last TTI containing a transport block on the old channel and the time the UE is ready to transmit on the new channel, shall be less than the value in table 5-11. The ready to transmit means that the UE should initiate L1 uplink synchronisation. This hard handover delay does not include a delay due to SFN decoding of the new cell in case it is needed.

The hard handover delay <u>requirements</u> is <u>stated</u> in the table (5-11) below. There is different requirement on the hard handover delay depending on if the cell has been within the monitored set of cells for the last [FFS] [s] or not.

Table 5-11

Number of new cells present in the handover	Maximum active set updatehard handover delay [ms]
command message	

	Cells <u>in neighbor list and</u> reported to UTRAN within monitored set	Cells outside <u>neighbor cell</u> <u>list monitored set</u>
1 -6	[20]	[4000]
<u>2FFS</u>	Ŀ	-0
<u>3</u>	П	П
4	П	П
<u>5</u>	П	П
<u>6</u>	П	П

Note: The case of multiple cells present in the handover command is FFS