RP-000209

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

Title: Agreed CRs to TS 25.123

Source: TSG-RAN WG4

Agenda item: 5.4.3

Doc-1st-	Spec	CR	Re	Phas	Subject	Cat	Version	Version
RP-000209	25.123	800		R99	Correction of UTRAN 'Transmitted carrier power' accuracy	F	3.1.1	3.2.0
RP-000209	25.123	009		R99	Measurement reporting delay	F	3.1.1	3.2.0
RP-000209	25.123	010		R99	Update of UE SIR Measurements performance requirements	F	3.1.1	3.2.0
RP-000209	25.123	011		R99	UE Transport Channel BLER measurement	F	3.1.1	3.2.0
RP-000209	25.123	012		R99	Editorial corrections of 25.123	F	3.1.1	3.2.0
RP-000209	25.123	013		R99	Range and mapping in TS 25.123 (TDD)	F	3.1.1	3.2.0
RP-000209	25.123	014		R99	Requirement for UE Tx Power Measurement	F	3.1.1	3.2.0
RP-000209	25.123	015		R99	Addition of test parameters to RRM Measurements performance	F	3.1.1	3.2.0

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10.2.8 Transmitted carrier power-ratio

Requirement	Accuracy:
	4 0% for 5% <(transmitted carrier power) <= 100%
	\pm +10% in the range 510% \leq TX carrier power ratio \leq 90% -10% in the range 10% \leq TX carrier power ratio \leq 95%

10.2.9 Transmitted code power

Requirement	Absolute accuracy:
	[+/-3]dB over the full range.
	Relative accuracy (relative to the maximum transmit power):
	+/-2dB over the full range.

10.2.10 RX Timing Deviation

Requirement	+/-0.5 chips period

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

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(TDD)' if the monitored cell is a TDD cell and in 3GPP RAN TS 25.214 'Physical layer procedures (FDD)' if it is an FDD cell.

For a TDD cell to monitor after this procedure the exact timing of the midamble of the P-CCPCH is known and the measurements can be performed. Depending on the UE implementation and if timing information about the cell to monitor is available, the UE may perform the measurements on the P-CCPCH directly without prior SCH synchronization.

5.1.2 Handover 3G to 3G

5.1.2.1 TDD/TDD Handover

For the search for other cells the UE is provided by a handover monitoring set by the UTRAN.

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

For the requirements in this section, all cells are assumed to be unsynchronized.

5.1.2.1.1 Requirements

5.1.2.1.1.1 Maximum number of cells to be monitored

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

5.1.2.1.1.2 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 the delay uncertainty resulting when the measurement report is inserted to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

The DL reference measurement channel 12.2 kbps shall be used.

5.1.2.1.1.2.1 Correct reporting of neighbours in AWGN propagation condition

This test will derive that the terminal makes correct reporting of an event Cell 1 is the active cell, Cell 2 is a neighbour cell on the used frequency. The power level on Cell 1 is kept constant and the power level of Cell 2 is changed using 'change of best cell event' as illustrated in Figure5-1. 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 with Event 1G shall be used. P-CCPCH RSCP of the best cell has to be reported together with Event 1G reporting. New measurement control information, which defines neighbour cells etc., is always sent before the event starts.

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10.1.7<u>9.1.1.5</u>SIR

9.1.1.5.1 Absolute accuracy requirements

Table 9-12 SIR Intra frequency absolute accuracy

Parameter	<u>Unit</u>	<u>Accuracy</u>
<u>SIR</u>	<u>dB</u>	[±3 dB for -7 <sir<20db]< td=""></sir<20db]<>

Requirement	Absolute accuracy:
	for []<[]dB
	when UTRA carrier RSSI>= 94dBm

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9.1.1.7 Transport channel BLER

The Transport Channel BLER value shall be calculated from a window with the size equal to the reporting interval (see section 10.3.7.78 Periodical reporting criteria in TS25.331).

D •	
Requirement	The UE shall report the CRC results

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Technical Specification

3rd Generation Partnership Project (3GPP); Technical Specification Group Radio Access Networks; Requirements for Support of Radio Resource Management (TDD) 3G TS 25.123 version 3.1.0



The present document has been developed within the 3rd Generation Partnership Project (3GPP TM) and may be further elaborated for the purposes of 3GPP.

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History	

Foreword

This Technical Specification has been produced by the 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 this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

presented to TSG for information;

presented to TSG for approval;

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 specification.

1 Scope

This Technical Specification specifies requirements for support of Radio Resource Management for TDD. 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.
- A non-specific reference to an TS shall also be taken to refer to later versions published as an EN with the same number.

[1] 3GPP Homepage: <u>www.3GPP.org</u>

[2] 25.150 Introduction

- [3] 25.101 MS Radio transmission and reception (FDD)
- [4] 25.104 BTS Radio transmission and reception (FDD)
- [5] 25.102 MS Radio transmission and reception (TDD)
- [6] 25.105 BTS Radio transmission and reception (TDD)

- [7] 25.103 RF parameters in support of RRM
- [8] 25.141 Basestation conformance testing (FDD)
- [9] 25.142 Basestation conformance testing (TDD)
- [10] 25.113 Basestation EMC
- [11] 25.942 RF System scenarios
- [12] 25.922 RRM Strategies
- [13] 25.215 Physical Layer Measurements (FDD)
- [14] 25.225 Physical Layer Measurements (TDD)
- [15] 25.302 Services provided by Physical Layer
- [16] 25.331 RRC Protocol Specification
- [17] 25.224 Physical Layer Procedures (TDD)
- [18] 25.304 UE procedures in Idle Mode

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purpose of the present document the following definitions apply.

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

3.2 Symbols

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

Symbol	Explanation
[]	Values included in square bracket must be considered for further studies, because it means that a decision about that value was not taken;
Î _{or}	"RXLEV", see 25.101 or 25.102 section 3.3 and Annex C.

3.3 Abbreviations

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

ACPR	Adjacent Channel Power Ratio
BER	Bit Error Ratio
BLER	Block Error Ratio
BS	Base Station
CW	Continuous wave (unmodulated signal)
DL	Down link (forward link)

E _c	The ratio of the average transmit energy per PN chip for different fields or physical
$\overline{I_{or}}$	channels to the total transmit power spectral density.
EIRP	Equivalent Isotropic Radiated Power
<u>FDD</u>	Frequency Division Duplexing
I _{oc}	The power spectral density of a band limited white noise source (simulating interference
	from other cells) as measured at the UE antenna connector.
I _{or}	The total transmit power spectral density of the down link at the base station antenna
	connector.
Â	The received power spectral density of the down link as measured at the UE antenna
<u>-0/</u>	connector.
OCNS	Orthogonal Channel Noise Simulator, a mechanism used to simulate the users or control
	signals on the other orthogonal channels of a Forward link.
$PCCPCH_E_c$	The ratio of the average transmit energy per PN chip for the PCCPCH to the total
	transmit power spectral density.
- or	
<u>PICH</u>	Paging Indicator Channel
<u>PPM</u>	Parts Per Million
RRM	Radio Resource Management
RSSI	Received Signal Strength Indicator
<u>SCH</u>	Synchronization Channel consisting of Primary and Secondary synchronization channels
SIR	Signal to Interference ratio
TDD	<u>Time Division Duplexing</u>
TPC	Transmit Power Control
UE	User Equipment
UL	<u>Up link (reverse link)</u>
UTRA	UMTS Terrestrial Radio Access

RRM	Radio Resource Management
ACPR	Adjacent Channel Power Ratio
BS	Base Station
CW	Continuous wave (unmodulated signal)
DL	Down link (forward link)
E _c	The ratio of the average transmit energy per PN chip for different fields or physical
$\frac{l}{I_{or}}$	channels to the total transmit power spectral density.
EIRP	Equivalent Isotropic Radiated Power
FDD	Frequency Division Duplexing
FER	Frame Error Rate
$\frac{1}{1 - c}$	The power spectral density of a band limited white noise source (simulating interference
	from other cells) as measured at the UE antenna connector.
-I _{or}	The total transmit power spectral density of the down link at the base station antenna
	connector.
$\frac{\hat{I}_{ar}}{\hat{I}_{ar}}$	The received power spectral density of the down link as measured at the UE antenna
07	connector.
$PCCPCH_E_c$	The ratio of the average transmit energy per PN chip for the PCCPCH to the total
I _{or}	transmit power spectral density.
PPM	Parts Per Million
- OCNS-	Orthogonal Channel Noise Simulator, a mechanism used to simulate the users or control
	signals on the other orthogonal channels of a Forward link.
PICH	Paging Indicator Channel
RSSI	Received Signal Strength Indicator
SCH	Synchronization Channel consisting of Primary and Secondary synchronization channels
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
RRM	Radio Resource Management
ACPR	Adjacent Channel Power Ratio
BS	Base Station
€₩	Continuous wave (unmodulated signal)
DL	Down link (forward link)
EIRP	Equivalent Isotropic Radiated Power
FDD	Frequency Division Duplexing
FER	Frame Error Rate
PPM	Parts Per Million
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.

Whenever a PLMN has been selected the UE shall start to find a suitable cell to camp on, this is 'cell selection'.

When camped on cell the UE regularly searches for a better cell depending on the cell reselection criteria, this is called 'cell reselection'. The procedures for cell selection and reselection are described in 3GPP RAN TS 25.304 'UE procedures in idle mode' and the measurements carried out by the UE are explained in specification 3GPP RAN TS 25.225 'Physical Layer Measurements (TDD)'. The measurements performance requirements are specified in section 11.

4.2 RF Cell Selection Scenario

[Note: Some performance requirements in agreed scenarios are added into this section. 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 section in Table 0-1. 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-utilised</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		Chan	mel 1		
Timeslot Number		0	8		
PCCPCH_Ec/lor	dB	-3			
SCH_Ec/Ior	dB	-9	-9		
SCH_t _{offset}		0	0		
PICH_Ec/Ior	dB		-3		
OCNS_Ec/lor	dB	-4.28	-4.28		
\hat{I}_{or}/I_{oc}	dB	0	0		
I _{oc}	dBm/3. 84 MHz	-70	-70		
PCCPCH RSCP	dBm	-73			
Propagation Condition		AWGN	AWGN		
Qmin	dBm	[]	[]		
UE_TXPWR_MAX_RA CH	dBm	[]	[]		

Table 4.1

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

4.2.1.3 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] seconds the UE camps on the cell,.

4.2.2 Requirements for Cell Selection single 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 section 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.

Parameter	Unit	Cel	11 1	Cel	11 2	Ce	11 3	Ce	11 4	Ce	11 5	Ce	11 6
UTRA RF Channel Number		Chan	nel 1	Chan	nel 1	Chan	inel 1	Chan	inel 1	Chan	inel 1	Chan	nel 1
Timeslot Number		0	8	0	8	0	8	0	8	0	8	0	8
PCCPCH_Ec/Ior	dB	-3		-3		-3		-3		-3		-3	
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	5	5	10	10	15	15	20	20	25	25
PICH_Ec/Ior	dB		-3		-3		-3		-3		-3		-3
OCNS	dB	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28
\hat{I}_{or}/I_{oc}	dB	10	10	7	7	3	3	0	0	-3	-3	-3	-3
I_{oc}	dBm/3. 84 MHz	-70											
PCCPCH RSCP	dBm	-63		-66		-70		-73		-76		-76	
Propagation Condition		AWGN											
Qmin	dBm	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]
UE_TXPWR_MAX_RA CH	dBm	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]

Table 4.2:

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

4.2.2.3 Performance Requirements 4.2.2.1.2 Minimum requirements

ell 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 fulfills the cell selection criteria.

4.3 RF Cell Re-Selection Scenario

Note: One performance requirement in agreed scenario is added into this section. 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 section inTable 4-3 within [5] seconds from it becoming a cell to be re-selected according to 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 P-CCPCH RSCP 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.

Ta	Ы	~ /	2
ı a	DI	e 4	.3

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0)	8	8)	٤	3		0		8
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Chan	nel 1	Char	nel 1	Char	nel 1	Chan	nel 1	Char	nnel 1	Chan	nel 1
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t _{offset}		0	0	0	0	5	5	5	5	19	10	10	10
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS_Ec/Ior	dB	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28
\hat{I}_{or}/I_{oc}	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset]]]]]]]]]	1]]
Qhyst	dBm	[]	[]	[]	[]	[]		
Treselection		[]	[]	[]	[]	[]	[]	
Qintrasearch	dB	[]	[]	[]	[]	[]	[]
		Cell 4			Cell 5				Cell 6				
Timeslot		0)	8	8	0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Chan	nel 1	Char	nel 1	Chan	nel 1	Chan	nel 1	Char	nnel 1	Channel 1	
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t _{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS	dB	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28
I_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP		-74	-74			-74	-74			-74	-74		
Qoffset		[]	[]	[]	[]	[]] []
Qhyst	dBm	[]	[]	[]	[]				
Treselection]]	[]	[]	[]	[]	[]
Qıntrasearch	dB	[]	[]	[]	[]	[]	[]
I _{oc}	dBm/3. 84 MHz							70					
Propagation Condition	IVIIIZ						AW	'GN					

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.

4.3.1.4<u>4.3.1.1.3</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].]

4.3.1.54.3.1.1.4 Maximum number of cells to be monitored

For re-selection purposes, the UE shall be capable of monitoring at least up to 32 neighboring 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 UTRAN to GSM Cell Re-Selection

Note: These requirements are depending on supported UE capabilities.

Note: Requirements for GSM to UTRAN Cell Re-Selection are defined in the GSM specifications

4.3.2.1 Cell re-selection delay

When the UE is camped on <u>an UTRAN cell</u>, the UE shall be capable of re-selecting a GSM <u>cell cell in the test case</u> defined in the following section in within [] seconds from it becoming a cell to be re-selected according to 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.

4.3.2.2 Test Parameters 4.3.2.1.1 Test parameters

Tbd.

4.3.2.3 Performance Requirements 4.3.2.1.2 Minimum requirements

Cell re-selection shall be correct in more than []% of the cases. Cell re-selection is correct if within [] 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.

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 TS25.225 and UE behaviour in response to UTRAN RRC messages is described in TS25.331.

For the handover preparation the UE receives from the UTRAN a list of cells (e.g. TDD, FDD or GSM).which the UE shall monitor (see 'monitored set' in 3GPP RAN TS 25.331 'RRC Protocol Specification') in its idle timeslots.

At the beginning of the measurement process the UE shall find synchronization to the cell to measure using the synchronization channel. This is described under 'cell search' in 3GPP RAN TS 25.224 'Physical layer procedures

(TDD)' if the monitored cell is a TDD cell and in 3GPP RAN TS 25.214 'Physical layer procedures (FDD)' if it is an FDD cell.

For a TDD cell to monitor after this procedure the exact timing of the midamble of the P-CCPCH is known and the measurements can be performed. Depending on the UE implementation and if timing information about the cell to monitor is available, the UE may perform the measurements on the P-CCPCH directly without prior SCH synchronization.

5.1.2 Handover 3G to 3G

5.1.2.1 TDD/TDD Handover

For the search for other cells the UE is provided by a handover monitoring set by the UTRAN.

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

For the requirements in this section, all cells are assumed to be unsynchronized.

5.1.2.1.1 Requirements

5.1.2.1.1.1 Maximum number of cells to be monitored

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

5.1.2.1.1.2 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.

The DL reference measurement channel 12.2 kbps shall be used.

5.1.2.1.1.2.1 Correct reporting of neighbours in AWGN propagation condition

This test will derive that the terminal makes correct reporting of an event Cell 1 is the active cell, Cell 2 is a neighbour cell on the used frequency. The power level on Cell 1 is kept constant and the power level of Cell 2 is changed using 'change of best cell event' as illustrated in Figure5-1. 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 with Event 1G shall be used. P-CCPCH RSCP of the best cell has to be reported together with Event 1G reporting. New measurement control information, which defines neighbour cells etc., is always sent before the event starts.



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

Parameter	Unit		Ce	11 1		Cell 2					
Timeslot Number		()	5	3	()	8	3		
		T1	T2	T1	T2	T1	T2	T1	T2		
UTRA RF Channel Number		Chan	nel 1	Char	nel 1	Chan	nel 1	Chan	nel 1		
PCCPCH_Ec/lor	dB	-3	-3			-3	-3 -3				
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9		
$SCH_{t_{offset}}$		0	0	0	0	15	15	15	15		
PICH_Ec/Ior				-3	-3			-3	-3		
DCH_Ec/Ior		[]	[]	[]	[]	[]	[]	[]	[]		
OCNS		-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28		
\hat{I}_{or}/I_{oc}	dB	3	3	3	3	-Infinity	5	-Infinity	5		
I _{oc}	dBm/3. 84 MHz				-1	70	-Infinity 5 -Infinity 5				
PCCPCH_RSCP	dB	-70	-70			-Infinity	-68				
Absolute Threshold (SIR)	dB				[]					
Hysteresis	dB				[]					
Time to Trigger	msec				[]					
Propagation Condition					AW	/GN					

Tah	
1 20	16-2-1

5.1.2.1.1.2.1.1 Requirements

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 section 11.

5.1.2.1.1.3 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.

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

5.1.2.2 TDD/FDD Handover

The handover procedure is initiated from UTRAN with an handover command message. The handover procedure may cause the UE to change its frequency.

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.

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.

The DL reference measurement channel 12.2 kbps shall be used.

5.1.2.2.1.2.2 Correct 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 FDD cell. The power level of CPICH Ec/Io of cell 2 and the P-CCPCH RSCP of cell 1 is changed. 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 the handover starts. The number of neighbour cells in the measurement control information is FFS.

T - 1, 1 -	F O
I able	5.2

Parameter	Unit	Cell 1					Ce	11 2	
Timeslot Number		0 8			n	.a	n.	a.	
		T1	T2	T1	T2	Т	`1	Т	2
UTRA RF Channel Number			Chan	nel 1			Chan	nel 2	
CPICH_Ec/lor	dB	n.	a.	n.	a.	[]	[]
PCCPCH_Ec/lor	dB	-3	-3			[]	[]
SCH_Ec/Ior	dB	-9	-9	-9	-9	[]	[]
SCH_t_{offset}		0	0	0	0	n.	a.	n.	a.
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		
CPICH_Ec/Io			n.	a.			[]	
PCCPCH_RSCP	dB	[]	[]	[]	[]	n.a.	n.a.	n.a.	n.a.
Absolute Threshold (SIR)	dB					[]		
Hysteresis	dB	0				[]		
Time to Trigger	msec	0				[]		
Propagation Condition			AW	GN			AW	'GN	

5.1.2.2.1.2.2 Requirements

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 section 10.

5.1.2.2.1.2.3 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.

I able 5.5	Т	a	b	le	5.	.3
------------	---	---	---	----	----	----

Number of new cells present in the handover	Maximum update delay [ms]
command message	

	Cells within monitored set	Cells outside monitored set
1-6		

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 section 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].

5.2 Radio Link Management

5.2.1 Link adaptation

5.2.1.1 Definition of the function

Radio link adaptation is the ability of 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.

5.2.1.2 Link adaptation delay-minimum delay requirement

When maximum transmit power has been reached and Inner Loop PC can no longer be maintained, UE shall start to use the transport format combination corresponding to the next lower bit rate within the assigned transport format set, within the maximum delay of [FFS]ms.

5.2.1.3 Link adaptation accuracy minimum requirement

UE shall not adapt to a lower transport format if the Inner Loop PC command requires its average output power over [FFS] ms to stay within [+FFS] dB of UE's maximum output power.

5.3 Cell Update

5.4 URA Update

	C	CHANGE I	REQI	JEST	Please s page for	see embeda instructions	led help fi s on how :	ile at the bottom of t to fill in this form cor	his rectly.
		25.123	CR	013		Current	t Versio	on: 3.1.0	
GSM (AA.BB) or 3G (A	AA.BBB) specificati	on number \uparrow		↑ CF	R number a	s allocated i	by MCC s	support team	
For submission to	b: RAN #8 ating # here ↑	for a for infor	pproval rmation	X		non	strate	gic (for S gic use o	MG nly)
Form: Proposed change (at least one should be mar	CR cover sheet, vers	ion 2 for 3GPP and SMG	The latest	version of this f	form is availai	ble from: ftp:// / Radio	//ftp.3gpp.ol	rg/Information/CR-Form	n-v2.doc
Source:	RAN WG4						Date:	24/05/00	
Subject:	Range and m	happing in TS 25	5 <mark>.123 (T</mark>	DD)					
Work item:									
Category:FA(only one categoryshall be markedCwith an X)D	Correction Corresponds Addition of fe Functional m Editorial mod	to a correction eature lodification of fea dification	in an ea ature	lier releas	se	Rele	ease:	Phase 2 Release 96 Release 97 Release 98 Release 99 Release 00	X
<u>Reason for</u> <u>change:</u>	mapping and	range are move	ed from ⁻	FS 25.225	5 to TS 2	25.123			
Clauses affected:	9								
Other specs O affected: O M B O	other 3G core other GSM co IS test specifi SS test speci 0&M specifica	specifications re specifications cations fications tions			CRs: CRs: CRs: CRs: CRs: CRs:				
Other comments:									

9 Measurements Performance Requirements

One of the key services provided by the physical layer is the measurement of various quantities which are used to trigger or perform a multitude of functions. Both the UE and the UTRAN are required to perform a variety of measurements. The complete list of measurements is specified in TSG RAN WG2 S25.302 "Services Provided by Physical Layer". The physical layer measurements for TDD are described and defined in TSG RAN WG1 TS25.225 "Physical layer – Measurements (TDD)". In this section for TDD, per each measurement the relevant requirements on performance in terms of accuracy are reported.

Unless explicitly stated,

- Reported measurements shall be within defined range in 90 % of the cases.
- Measurement channel is 12.2 kbps as defined in TS 25.102 annex A, section 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 B.
- All requirements are defined when UE is in a CELL_DCH or CELL_FACH stage. The difference between modes are the reporting delay. Some of the measurements are not requested to be reported in both stages.
- Cell 1 is the active cell, if not otherwise stated.-
- Single task reporting.
- Power control is active.

9.140 Measurements Performance for UE

9.1.1 Performance for UE Measurements in Downlink (RX)

If not otherwise stated, the test parameters in table 9-1 should be applied for UE RX measurements requirements in this section.

Table 9-1 Intra frequency test parameters for UE RX Measurements

Parameter	Unit	<u>Cell 1</u>		<u>Cell 2</u>	
UTRA RF Channel number		Channel 1		Channel 1	
<u>Timeslot</u>		<u>0</u>	<u>8</u>	<u>0</u>	<u>8</u>
<u>P-CCPCH Ec/Ior</u>	<u>dB</u>	<u>-3</u>	Ξ	<u>-3</u>	Ξ
<u>SCH Ec/Ior</u>	<u>dB</u>	<u>-9</u>	<u>-9</u>	<u>-9</u>	<u>-9</u>
<u>PICH Ec/Ior</u>	<u>dB</u>	Ξ	<u>-3</u>	Ξ	<u>-3</u>
<u>DPCH_Ec/lor</u>	<u>dB</u>	[]	[]	[]	Π
<u>OCNS</u>	<u>dB</u>	Π	П	Π	П
<u> Îor/Ioc</u>	<u>dB</u>	Ĺ		Ĺ	
<u>Ioc</u>	<u>dBm/ 3.84 MHz</u>	<u>-70</u>		<u>-70</u>	
<u>Range 1:Io</u>	dBm	<u>-9470</u>		<u>-9470</u>	
<u>Range 2: Io</u>		<u> </u>		<u> </u>	

Propagation condition	Ξ	AWGN	AWGN

109.1.1.1 PRIMARY COMMON CONTROL PHYSICAL CHANNEL MEASUREMENTS

These measurements consider *P-CCPCH RSCP* measurements for TDD cells and CPICH RSCP and CPICH Ec/Io measurements for FDD cells respectively. The corresponding measurements are necessary for UEs supporting the individual mode(s) only.

9.1.1.1.1 P-CCPCH RSCP (TDD)

109.1.1.1.1.1 Intra frequency test parameters

In this case all cells are in the same frequency. The table $\frac{109-1-2}{2}$ and notes 1-4 define the limits of signal strengths and code powers, where the requirement is applicable.

Table 10.9-12 P-CCPCH RSCP intra	frequency test parameters

Parameter	Unit	Cell 1		Cell 2	
UTRA RF Channel number		Channel 1		Channel 1	
Timeslot		0	8	0	8
P-CCPCH Ec/lor	dB	-3	-	-3	-
SCH Ec/lor	dB	-9	-9	-9	-9
PICH_Ec/Ior	dB	-	-3	-	-3
OCNS	dB	[]	[]	[]	[]
Îor/Ioc	<u>d</u> ₽B	[]		[]
Ioc	dBm/ 3.84 MHz	Note 4		Note 4	
Range 1:Io	dBm	[] -9470		[]9470	
Range 2: Io		[]9450		[]9450	
Propagation condition	-	AWGN			

Note 1: P- $CCPCH_RSCP1, 2 \ge -[102]$ dBm.

Note 2: / *P*-*CCPCH_RSCP1* − *PCCPCH_RSCP2* /≤ 20 dB.

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

Note 4: *loc* level shall be adjusted according the total signal power *lo* at receiver input and the geometry factor $\hat{lor/loc}$. $\frac{Io - 13.7 dB = Ioc}{D}$.

10.1.1.2 P-CCPCH RSCP

10.1.1.2.19.1.1.1.1.2 Absolute accuracy requirements

The absolute accuracy of P-CCPCH RSCP is defined as measured one code power after de-spreading. In this test only Cell 1 in table $\frac{10.9-1-3}{10}$ is present.

	<u>Table</u>	<u>9-3:</u>	P-CCPC	<u>H_R</u>	SCP Intra fre	quei	ncy absolute acc	uracy		
	Parameter		Value		e <u>Range</u>		Accuracy			
							Normal conditions		reme conditions	
	P-CCPCH RSCP		dB		<u>1</u>	<u>± 6</u>			<u>± 9</u>	
	<u>r coron_noor</u>		dB		<u>2</u>		<u>± 8</u>		<u>± 11</u>	
		Tat	de 10.2 R	ange) 1					
	Parameter Value		Value	Accuracy						
					Normal conditions		HS Extreme conditions			
	P-CCPCH_RSCP		d₿	±6 ±9						
	Table 10.3 Range 2									
	Parameter Value			Accuracy						
				A	lormal condition	ms Extreme conditions		ons		
	P CCPCH_RSCP		d₿	±8 ±11						

10.1.1.2.29.1.1.1.1.3 Relative accuracy requirements

The relative accuracy of P-CCPCH 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.

Parameter	Unit Value	Acc	uracy	
		Normal conditions	Extreme conditions	
P-CCPCH_RSCP	dB	± 3	± 3	

9.1.1.1.1.4 Range/mapping

Range/mapping	P-CCPCH RSCP is given with a resolution of 1 dB with the range [-115,, -25] dBm. P-CCPCH RSCP shall be reported in the unit P-CCPCH_RSCP_LEV where:							
	P-CCPCH_RSCP_LEV_00:		P-CCPCH_RSCP < -115dBm					
	P-CCPCH_RSCP_LEV_01: -115dBm	\leq	P-CCPCH_RSCP < -114dBm					
	P-CCPCH_RSCP_LEV_02: -114dBm	\leq	P-CCPCH_RSCP < -113dBm					
	<u></u>							
	P-CCPCH_RSCP_LEV_89: -27dBm	\leq	P-CCPCH_RSCP < -26dBm					
	P-CCPCH_RSCP_LEV_90: -26dBm	\leq	P-CCPCH_RSCP < -25dBm					
	P-CCPCH_RSCP_LEV_91: -25dBm	ı ≤	P-CCPCH_RSCP					

10.1.29.1.1.1.2 COMMON PILOT MEASUREMENTSCPICH Measurements (FDD)

These measurements consider CPICH RSCP and CPICH Ec/Io measurements. Only necessary for UEs supporting FDD.

10.1.2.1 Intra frequency test parameters

In this case all cells are in the same frequency. The table 10.5 and notes 1-4 define the limits of signal strengths and code powers, where the requirement is applicable.

Table 10.5

Parameter	Unit	Cell 1	Cell 2

UTRA RF Channel number		Channel 1	Channel 1
CPICH_Ec/lor	d₿	-10	-10
PCCPCH_Ec/lor	d₿	-12	-12
SCH_Ec/lor	d₿	-12	-12
PICH_Ec/Ior	d₿	- 15	-15
DPCH_Ec/lor	d₿	-15	-15
OCNS	d₿	-1.11	-1.11
Îor/Ioc	dB	10.5	10.5
	dBm/ 3.84 MHz	Note 4	Note 4
Range 1:10	dBm	-94 70	-94 70
Range 2: Io		-94 50	-94 50
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 $\hat{I}or/Ioc. Io - 13.7 dB = Ioc.$

10.1.2.29.1.1.1.2.1 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 $\frac{10.69-5}{10.69-5}$ and notes 1-5 define the limits of signal strengths and code powers, where the requirement is applicable.

Table 10.69-5	CPICH	Inter	frequency	v test	parameters

Parameter	<u>Unit</u>	<u>Ce</u>	<u>ll 1</u>	<u>Cell 2</u>
<u>Timeslot Number</u>		<u>0</u>	<u>8</u>	<u>n.a</u>
<u>UTRA RF Channel</u> <u>Number</u>		Chan	mel 1	Channel 2
<u>CPICH_Ec/Ior</u>	dB	<u>n.a.</u>	<u>n.a.</u>	-10
<u>P-CCPCH Ec/Ior</u>	<u>dB</u>	<u>-3</u>		<u>-12</u>
<u>SCH_Ec/Ior</u>	<u>dB</u>	<u>-9</u>		<u>-12</u>
<u>SCH_t_{offset}</u>		<u>0</u>	<u>0</u>	<u>n.a.</u>
<u>PICH_Ec/Ior</u>			<u>-3</u>	<u>-15</u>
<u>DPCH_Ec/Ior</u>	<u>dB</u>	<u>[]</u>	<u>[]</u>	<u>-15</u>
<u>OCNS</u>	<u>dB</u>	<u>-4.28</u>	<u>-4.28</u>	<u>-1.11</u>
\hat{I}_{or}/I_{oc}	<u>dB</u>	П	П	<u>10.5</u>
I _{oc}	<u>dBm/3.</u> <u>84</u> <u>MHz</u>	70		Note 5
Range 1:Io		<u>-9470</u>		-9470
<u>Range 2: Io</u>	<u>dBm</u>	<u>-9450</u>		<u>-9450</u>
<u>Propagation</u> <u>condition</u>	=	AW	<u>'GN</u>	AWGN

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
<u>SCH_Ec/lor</u>	d₿	-12	-12
PICH_Ec/lor	d₿	-15	-15
DPCH_Ec/lor	dB	-15	-15
OCNS	dB	-1.11	-1.11
Îor/Ioc	dB	10.1	10.1
loc	dBm/ 3.84 MHz	Note 5	Note 5
Range 1:10	dBm	-94 70	-94 70
Range 2: Io		-94 50	-94 50
Propagation condition	_	AW	'GN

Note 1: $CPICH_RSCP1, 2 \ge -114 \text{ dBm}.$

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.

10.1.2.39.1.1.1.2.2 CPICH RSCP

[Informative note: This measurement is for handover-evaluation, DL open loop power control, UL open loop power control and for the calculation of pathloss.]

10.1.2.4 Intra frequency measurements accuracy

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

10.1.2.4.1 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 10 1 is present.

Table 10.7 Range 1

Parameter	Value	Acc	uracy
		Normal condition	Extreme condition
CPICH_RSCP	d₿	±6	<u>±9</u>

Table 10.8 Range 2

Parameter	Value	Acc	uracy
		Normal condition	Extreme condition
CPICH_RSCP	d₿	±8	<u>± 11</u>

10.1.2.4.2 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 10.9 Range 2

Parameter	Value	Accuracy	
Furameter		Normal condition	Extreme condition
CPICH_RSCP	d₿	<u>±3</u>	<u>±3</u>

10.1.2.59.1.1.1.2.2.1 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 10-2 is used. In this test cells 1 and 2 are present.

Parameter	<u>Unit</u> Value	Accuracy		
		Normal condition	Extreme condition	

CPICH_RSCP	dB	± 6	± 6

9.1.1.1.2.2.2 Range/mapping

CPICH	RSCP i	is give	en with	n a resolution	of 1 dB	3 with the range [-115,, -25] dBm.	
CPICH	RSCP :	shall b	e rep	orted in the u	nit CPIC	CH_RSCP_LEV where:	
CPICH	RSCP	LEV	00:			CPICH_RSCP < -115dBm	
CPICH	RSCP	LEV	01:	-115dBm	\leq	CPICH_RSCP < -114dBm	
CPICH	RSCP	LEV	02:	-114dBm	\leq	CPICH_RSCP < -113dBm	
CPICH	RSCP	LEV	89:	-27dBm	\leq	CPICH_RSCP < -26dBm	
CPICH	RSCP	LEV	90:	-26dBm	\leq	CPICH_RSCP < -25dBm	
CPICH	RSCP	LEV	91:	-25dBm	\leq	CPICH_RSCP	

10.1.39.1.1.1.2.3 CPICH Ec/lo

[Informative note: This measurement is for Cell selection/re selection and for handover evaluation.]

10.1.3.1 Intra frequency measurements accuracy

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

10.1.3.1.1 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 10-1 is present.

Table 10.11 Range 2

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

10.1.3.1.2 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 10 1 are present.

Table 10.12 Range 2

Parameter	Value	Accuracy	
		Normal condition	Extreme condition
CPICH_Ec/lo	dB	±3	<u>±3</u>

10.1.3.29.1.1.1.2.3.1 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 values are relative to active cell value. In this test the parameters in table $\frac{10-29-7}{10-29-7}$ is used. In this test cells 1 and 2 are present.

Table 10.139-7 Range 2 CPICH Ec/Io Inter frequency relative accuracy

Parameter	<u>Unit</u> Value	Accuracy

		Normal condition	Extreme condition
CPICH_Ec/Io	dB	± 6	± 6

9.1.1.1.2.3.2 Range/mapping

CPICH Ec/No is g	iven with a	resolution of 1 dB with the range [-24,, 0] dB.
CPICH Ec/No sha	Il be reporte	ed in the unit CPICH_Ec/No where:
CPICH_Ec/No_00:		CPICH_Ec/No < -24dB
CPICH_Ec/No_01:	-24dB ≤	CPICH_Ec/No < -23dB
CPICH_Ec/No_02:	-23dB ≤	CPICH_Ec/No < -22dB
<u></u>		
CPICH_Ec/No_23:	-2dB ≤	<u>CPICH_Ec/No < -1dB</u>
CPICH_Ec/No_24:	-1dB ≤	CPICH_Ec/No < 0dB
CPICH_Ec/No_25:	0dB ≤	CPICH_Ec/No

10.1.49.1.1.2 Timeslot ISCP

9.1.1.2.1 Absolute accuracy requirements

Table 9-8: Timeslot ISCP Intra frequency absolute accuracy

Parameter	Value	Range	Accuracy Range	
			Normal conditions	Extreme conditions
Timeslot ISCP	<u>dB</u>	<u>1</u>	<u>± 6</u>	<u>± 9</u>
	<u>dB</u>	<u>2</u>	<u>± 8</u>	<u>± 11</u>

9.1.1.2.2 Range/mapping

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Requirement	Absolute accuracy:
	Normal Conditions
	-+/-6dB for levels below -70dBm;
	-+/-8dB-over the full range
	Valid for UTRA carrier RSSI $\geq = -94$ dBm.
	Extreme Conditions
	-+/-9dB for levels below -70dBm;
	-+/-11dB-over the full range
	Valid for UTRA carrier RSSI >= 94dBm.

10.1.59.1.1.3UTRA carrier RSSI

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

9.1.1.3.1 Test parameters for requirement

The table 9-9 and notes 1,2 define the limits of signal strengths, where the requirement is applicable.

Table 9-9 UTRA carrier RSSI Inter frequency test parameters

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

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 <u>*Îor/Ioc*</u>.

9.1.1.3.2 Absolute accuracy requirement

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

Table 9-10: UTRA carrier RSSI Inter frequency absolute accuracy

Parameter	Value	Range	<u>Accuracy</u>	
			Normal conditions	Extreme conditions
UTRA Carrier RSSI	<u>dB</u>	<u>1</u>	<u>± 4</u>	<u>± 7</u>
	<u>dB</u>	<u>2</u>	<u>± 6</u>	<u>± 9</u>

9.1.1.3.3 Relative accuracy requirement

<u>Relative accuracy requirement is defined as active cell frequency UTRAN RSSI compared to measured other frequency</u> <u>UTRAN RSSI level. In relative accuracy test case both carriers in table 9-9 are used.</u>

Table 9-11 UTRA carrier RSSI Inter frequency relative accuracy

Parameter	Unit	Accuracy	
		Normal condition	Extreme condition
<u>Io</u>	<u>dBm</u>	<u>± 5</u>	<u>± 8</u>

9.1.1.3.4 Range/mapping

UTRA	carrier	RSSI	is gi	ven	with a resolutic	n of	1 dB with the range [-94,, -32] dBm.
UTRA	carrier	RSSI	shal	l be	reported in the	unit	UTRA carrier RSSI LEV where:
UTRA	carrier	RSSI	LEV	00:			UTRA_carrier_RSSI < -94dBm
UTRA	carrier	RSSI	LEV	01:	-94dBm	\leq	UTRA_carrier_RSSI < -93dBm
UTRA	carrier	RSSI	LEV	02:	-93dBm	\leq	UTRA_carrier_RSSI < -92dBm
<u></u>							
UTRA	carrier	RSSI	LEV	61:	-34dBm	\leq	UTRA_carrier_RSSI < -33dBm
UTRA	carrier	RSSI	LEV	62:	-33dBm	\leq	UTRA_carrier_RSSI < -32dBm
UTRA	_carrier_	RSSI	LEV	63:	-32dBm	\leq	UTRA_carrier_RSSI

Requirement	Absolute accuracy:
	Normal Conditions
	+/-4dB for levels below 70dBm
	Valid for levels > 94dBm.
	Extreme Conditions
	+/-7dB for levels below -70dBm
	Valid for levels > -94dBm.
	Relative accuracy (between measurements on two carriers):
	+/ 5dB over the full range
	Valid when the minimum level > -94 dBm and the difference < 20 dB.

10.1.69.1.1.4 GSM carrier RSSI

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

Only necessary for UEs supporting GSM.

The accuracy requirement is specified in GSM 05.08.

9.1.1.4.1 Range/mapping

According to the definition of RXLEV in GSM 05.08.

Requirement

According to the definition of RXLEV in GSM 05.08.

10.1.7<u>9.1.1.5</u>SIR

9.1.1.5.1 Absolute accuracy requirements

Table 9-12 SIR Intra frequency absolute accuracy

Parameter	<u>Unit</u>	Accuracy	
		Normal conditions	Extreme conditions
<u>SIR</u>	<u>dB</u>		
 _ / .			

9.1.1.5.2 Range/mapping

SIR is given with a	resolutio	on of 0.5 dB with the range [-11,, 20] dB.	
SIR shall be report	ted in the	e unit UE_SIR where:	
UE_SIR_00:		<u>SIR < -11.0dB</u>	
UE_SIR_01: -11.0c	B ≤	SIR < -10.5dB	
UE_SIR_02: -10.5c	B ≤	SIR < -10.0dB	
<u></u>			
UE_SIR_61: 19.0dl	B ≤	SIR < 19.5dB	
UE_SIR_62: 19.5d	B ≤	SIR < 20.0dB	
UE_SIR_63: 20.0d	B ≤	SIR	

Requirement	Absolute accuracy:
	for []<[]dB
	when UTRA carrier RSSI>= 94dBm

10.1.8 Physical channel BER

Requirement	+/ 10% of the absolute Physical channel BER value

10.1.99.1.1.6 Transport channel BLER

Requirement	The UE shall re	port the CRC results
9.1.1.6.1	Range/mapping	1
Transpor	t channel BI FR is (niven with a logarithmic resolution of 0.065 with the range
[10^-4.03	11 including a se	eparate case Transport channel BLER=0.
Transpor	t channel BLER sha	all be reported in the unit BLER_LOG, where:
BLER_L	$OG_{00}: BLER = 0$	
BLER_L	OG_01: -∞	< Log10(Transport channel BLER) < -4.030
BLER_L	DG_02: -4.030	≤ Log10(Transport channel BLER) < -3.965
BLER_L	DG_03: -3.965	≤ Log10(Transport channel BLER) < -3.900
<u></u>		
BLER_L	DG_61: -0.195	≤ Log10(Transport channel BLER) < -0.130
BLER_L	DG 62: -0.130	≤ Log10(Transport channel BLER) < -0.065
BLER_L	DG_63: -0.065	\leq Log10(Transport channel BLER) \leq 0.000
		and time difference
9.1.1.7 5	-IN-SEIN ODSEIV	rea time ainerence

9.1.1.7.1 accuracy requirements

Table 9-13 SFN-SFN observed time difference accuracy

Parameter_	<u>Unit</u>	Accuracy
<u>SFN-SFN observed time</u> <u>difference</u>	<u>chips</u> period	± -0.5 for both type 1 and 2

9.1.1.7.2 Range/mapping

Type 1:

SFN-SFN observed time difference is given with a resolution of 1 chip with the range
[0; 9830400) chips (24 bits).
SFN-SFN observed time difference shall be reported in the unit T1_SFN-SFN_TIME, where
T1 SFN-SFN TIME N:
N* 1 chip \leq SFN-SFN observed time difference < (N+1)* 1 chip
With N= 0, 1, 2,, 9830399
Type 2:
SFN-SFN observed time difference is given with a resolution of 0.25 chip with the range
(-1280; 1280] chips (14 bits).
SFN-SFN observed time difference shall be reported in the unit T2_SFN-SFN_TIME, where
T2 SFN-SFN TIME N:
N* 0.25 chip –1280 chips < SFN-SFN observed time difference \leq (N+1)* 0.25 chip –1280 chips
With N= 0, 1, 2,, 10239

9.1.1.8 Observed time difference to GSM cell

Only necessary for UEs supporting GSM.

9.1.1.8.1 accuracy requirements

Table 9-14 Observed time difference to GSM cell accuracy

Parameter	<u>Unit</u>	<u>Accuracy</u>
Observed time difference to GSM cell	<u>chips</u> period	+/-20

9.1.1.8.2 Range/mapping

Observed time difference to GSM cell is given with a resolution of 3060ms/(13*4096) (12 bit) with the range [0, 3060/13) ms. Observed time difference to GSM cell shall be reported in the unit GSM_TIME, where GSM_TIME_N: N* 3060ms/(13*4096) ≤ Observed time difference to GSM cell < (N+1)* 3060ms/(13*4096) With N= 0, 1, 2, ..., 4095

9.1.2 Performance for UE Measurements in Uplink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0.22$ and a bandwidth equal to the chip rate.

10.1.109.1.2.1 UE transmitted power

9.1.2.1.1 Absolute accuracy requirements

Table 9-15 UE transmitted power absolute accuracy

Parameter	<u>Unit</u>	Acc	<u>euracy</u>
		Normal conditions	Extreme conditions
<u>UE transmitted power</u>	<u>dB</u>	<u>+/-9</u>	<u>+/-12</u>

9.1.2.1.2 Range/mapping

UE transmitted power is given with a resolution of 1dB with the range [-50,, 33] dBm.
UE transmitted power shall be reported in the unit UE_TX_POWER, where:
UE_TX_POWER_000 to UE_TX_POWER_020: reserved
UE TX POWER 021: -50dBm < UE transmitted power < -49dBm
UE_TX_POWER_022: -49dBm < UE_transmitted_power < -48dBm
UE_TX_POWER_023: -48dBm < UE_transmitted_power < -47dBm
<u></u>
UE_TX_POWER_102: 31dBm ≤ UE_transmitted_power < 32dBm
<u>UE_TX_POWER_103: 32dBm < UE_transmitted_power < 33dBm</u>
UE_TX_POWER_104: 33dBm < UE_transmitted_power < 34dBm
· ·

Requirement

Absolute	accuracy:

Normal Conditions

Extreme Conditions

-+/-12dB over the full range.

10.1.11 SFN-SFN observed time difference

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

10.1.12 Observed time difference to GSM cell

Requirement	+/ 20chips.

109.2 __Measurements Performance for UTRAN

9.2.1 Performance for UTRAN Measurements in Uplink (RX)

If not otherwise stated, the test parameters in table 9-16 should be applied for UE RX measurements requirements in this section.

Table 9-16 Intra frequency test parameters for UTRAN RX Measurements

Parameter	Unit	<u>Cell 1</u>

UTRA RF Channel number		Channel 1
<u>Timeslot</u>		
<u>DPCH Ec/Ior</u>	<u>dB</u>	Ц
<u> Îor/Ioc</u>	<u>dB</u>	
<u>Ioc</u>	<u>dBm/ 3.84 MHz</u>	<u>-89</u>
<u>Range: Io</u>	<u>dBm</u>	<u>-10574</u>
Propagation condition	=	AWGN

109.2.1.2.1 RSCP

9.2.1.1.1 Absolute accuracy requirements

Table 9-17 RSCP Intra frequency absolute accuracy

Parameter	<u>Unit</u>	Acc	<u>uracy</u>
		Normal conditions	Extreme conditions
<u>RSCP</u>	<u>dB</u>	<u>+/-6dB</u>	<u>+/-9dB</u>

9.2.1.1.2 Relative accuracy requirements

Table 9-18 RSCP Intra frequency relative accuracy

Parameter	<u>Unit</u>	Accuracy
<u>RSCP</u>	<u>dB</u>	+/-3dB for intra-frequency

9.2.1.1.3 Range/mapping

RSCP is given with a resolution of (0.5 dB with the range [-120,, -80] dBm.
RSCP shall be reported in the unit I	RSCP LEV where:
RSCP_LEV_00:	RSCP < -120.0dBm
<u>RSCP_LEV_01:</u> -120.0dBm ≤	RSCP < -119.5dBm
<u>RSCP_LEV_02:</u> -119.5dBm ≤	RSCP < -119.0dBm
<u></u>	
<u>RSCP_LEV_79:</u> -81.0dBm ≤	RSCP < -80.5dBm
<u>RSCP_LEV_80:</u> -80.5dBm ≤	<u>RSCP < -80.0dBm</u>
<u>RSCP_LEV_81:</u> -80.0dBm ≤	RSCP

Requirement	Absolute accuracy:
	Normal Conditions
	-+/-6dB for levels below 70dBm;
	+/-8dB-over the full range
	Valid for RSSI >= -94dBm
	Extreme Conditions
	-+/-9dB for levels below - 70dBm;
	+/-11dB-over the full range
	Valid for RSSI >= 94dBm
	Relative accuracy:
	+/ 3dB for intra frequency
	Valid when the minimum level > 95 10log10(SF)dBm, the difference in signal level < 20dB and RSSI>= 94dBm.

109.2.1.2.2 Timeslot ISCP

9.2.1.2.1 Absolute accuracy requirements

Table 9-19 Timeslot ISCP Intra frequency absolute accuracy

Parameter	<u>Unit</u>	Accuracy	
		Normal conditions	Extreme conditions
<u>Timeslot ISCP</u>	<u>dB</u>	<u>+/-6dB</u>	<u>+/-9dB</u>

9.2.1.2.2 Range/mapping

Timeslot ISCP is given with a	resolution of 0	.5 dB	with the range [-120,, -80] dBm.
Timeslot ISCP shall be reported	ed in the unit L	JTRA	N_TS_ISCP_LEV where:
UTRAN_TS_ISCP_LEV_00:			Timeslot_ISCP < -120.0dBm
UTRAN_TS_ISCP_LEV_01:	-120.0dBm	\leq	Timeslot_ISCP < -119.5dBm
UTRAN_TS_ISCP_LEV_02:	-119.5dBm	\leq	Timeslot_ISCP < -119.0dBm
UTRAN_TS_ISCP_LEV_79:	-81.0dBm	\leq	Timeslot_ISCP < -80.5dBm
UTRAN_TS_ISCP_LEV_80:	-80.5dBm	\leq	Timeslot_ISCP < -80.0dBm
UTRAN TS ISCP LEV 81:	-80.0dBm	\leq	Timeslot ISCP

Requirement	Absolute accuracy:
	Normal Conditions
	+/-6dB for levels below -70dBm;
	+/ 8dB over the full range
	Extreme Conditions
	-+/-9dB for levels below 70dBm;
	+/ 11dB over the full range

10<u>9.2.1</u>.2.3 RSSI

9.2.1.3.1 Absolute accuracy requirements

Table 9-20 RSSI Intra frequency absolute accuracy

Parameter	<u>Unit</u>	<u>Accuracy</u>
<u>RSSI</u>	<u>dB</u>	<u>+/-4dB</u>

9.2.1.3.2 Range/mapping

RSSI is given with a	resolution of 0.1d	B wit	<u>th the range [-112,, -50] dBm.</u>
RSSI shall be reported	ed in the unit RSS	SI LE	V, where:
RSSI_LEV_000:			RSSI < -112.0dBm
RSSI_LEV_001:	-112.0dBm	\leq	RSSI < -111.9dBm
RSSI_LEV_002:	-111.9dBm	\leq	RSSI < -111.8dBm
<u></u>			
RSSI_LEV_619:	-50.2dBm	\leq	RSSI < -50.1dBm
RSSI_LEV_620:	-50.1dBm	\leq	RSSI < -50.0dBm
RSSI LEV 621:	-50.0dBm	≤	RSSI

Requirement	Absolute accuracy:
	+/ 4dB over the full range.

10<u>9.2.1</u>.2.4 SIR

9.2.1.4.1 Absolute accuracy requirements

Table 9-21 SIR Intra frequency absolute accuracy

Parameter	<u>Unit</u>	<u>Accuracy</u>
<u>SIR</u>	<u>dB</u>	<u>+/-3dB for 0<sir<10 db<="" u=""></sir<10></u>

9.2.1.4.2 Range/mapping

SIR is given with	a resolution	of 0.5 dB	with the range [-11,, 20] dB.
SIR shall be repo	rted in the u	Init UTRAN	N_SIR where:
UTRAN_SIR_00:		SIR	< -11.0dB
UTRAN_SIR_01:	-11.0dB	≤ SIR	<u>< -10.5dB</u>
UTRAN_SIR_02:	-10.5dB	≤ SIR	<u>< -10.0dB</u>
<u></u>			
UTRAN_SIR_61:	19.0dB	≤ SIR	< 19.5dB
UTRAN_SIR_62:	19.5dB	≤ SIR	< 20.0dB
UTRAN_SIR_63:	20.0dB	<u>≤ SIR</u>	

Requirement	Absolute accuracy:
	+/-3dB for 0 <sir<10 db<="" th=""></sir<10>
	when RSSI>= 104dBm.

109.2.1.2.5 Physical channel BER

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

109.2.1.5.1 Accuracy requirement

Table 9-22 Physical channel BER Intra frequency accuracy

Parameter	<u>Unit</u>	<u>Accuracy</u>
<u>BER</u>		+/- 10% of the absolute BER value

9.2.1.5.2 Range/mapping

Physical channel BER is given with a logarithmic resolution of 0.008125 within the range
[10^-2.06375 1] with two separate cases Physical channel BER=0 and Physical channel BER
between 0 and 10^-2.06375.
Physical channel BER shall be reported in the unit BER LOG, where:
<u>BER_LOG_000: Physical channel BER = 0</u>
BER LOG 001: $-\infty$ < Log10(Physical channel BER) < -2.06375
BER_LOG_002: -2.06375 ≤ Log10(Physical channel BER) < -2.055625
BER_LOG_003: -2.055625 ≤ Log10(Physical channel BER) < -2.0475
<u></u>
BER_LOG_253: -0.024375 ≤ Log10(Physical channel BER) < -0.01625
BER_LOG_254: -0.01625 ≤ Log10(Physical channel BER) < -0.008125
BER_LOG_255: -0.008125 ≤ Log10(Physical channel BER) ≤ 0.000

Table 10.14

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

109.2.1.2.6 Transport channel BLER

9.2.1.6.1 Accuracy requirement

Table 9-23 Transport channel BLER accuracy

Parameter	<u>Unit</u>	Accuracy
<u>TrpBLER</u>	Ξ	Ц

9.2.1.6.2 Range/mapping

Transport channel BLER is given with a logarithmic resolution of 0.065 with the range $[10^{-4.03} \dots 1]$ including a separate case Transport channel BLER=0.Transport channel BLER shall be reported in the unit BLER_LOG, where:BLER_LOG_00: BLER = 0BLER_LOG_01: -\infty < Log10(Transport channel BLER) < -4.030BLER_LOG_02: -4.030 < Log10(Transport channel BLER) < -3.965BLER_LOG_03: -3.965 < Log10(Transport channel BLER) < -3.900BLER_LOG_61: -0.195 < Log10(Transport channel BLER) < -0.130BLER_LOG_62: -0.130 < Log10(Transport channel BLER) < -0.065BLER_LOG_63: -0.065 BLER_LOG_63: -0.065 BLER_LOG_63: -0.065					
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Transport channel BLER is given with a logarithmic resolution of 0.065 with the range				
Transport channel BLER shall be reported in the unit BLER_LOG, where:BLER_LOG_00:BLER = 0BLER_LOG_01: $-\infty$ < Log10(Transport channel BLER) < -4.030	[10^-4.03 1] including a separate case Transport channel BLER=0.				
BLER LOG 00: BLER = 0BLER LOG_01: $-\infty$ < Log10(Transport channel BLER) < -4.030	Transport channel BLER shall be reported in the unit BLER LOG, where:				
BLER_LOG_01: $-\infty$ < Log10(Transport channel BLER) < -4.030BLER_LOG_02: -4.030< Log10(Transport channel BLER) < -3.965	BLER LOG 00: BLER = 0				
BLER_LOG_02: -4.030 \leq Log10(Transport channel BLER) < -3.965BLER_LOG_03: -3.965 \leq Log10(Transport channel BLER) < -3.900	BLER_LOG_01: $-\infty$ < Log10(Transport channel BLER) < -4.030				
BLER LOG 03: -3.965 \leq Log10(Transport channel BLER) < -3.900BLER LOG 61: -0.195 \leq Log10(Transport channel BLER) < -0.130	BLER_LOG_02: -4.030 ≤ Log10(Transport channel BLER) < -3.965				
$\frac{1.1}{BLER \ LOG \ 61: \ -0.195} \leq Log10(Transport channel BLER) < -0.130$ $\frac{BLER \ LOG \ 62: \ -0.130}{SLER \ LOG \ 63: \ -0.065} \leq Log10(Transport channel BLER) < -0.065$ $\frac{BLER \ LOG \ 63: \ -0.065}{SLER \ LOG \ 63: \ -0.065} \leq Log10(Transport channel BLER) < -0.000$	BLER_LOG_03: -3.965 <pre></pre>				
BLER LOG 61: $-0.195 \le Log10$ (Transport channel BLER) < -0.130 BLER LOG 62: $-0.130 \le Log10$ (Transport channel BLER) < -0.065 BLER LOG 63: $-0.065 \le Log10$ (Transport channel BLER) < -0.000	<u></u>				
BLER LOG 62: -0.130 \leq Log10(Transport channel BLER) $<$ -0.065 BLER LOG 63: -0.065 \leq Log10(Transport channel BLER) \leq 0.000	BLER LOG 61: -0.195 \leq Log10(Transport channel BLER) < -0.130				
BLER LOG 63 -0.065 < $log 10$ (Transport channel BLER) < 0.000	BLER_LOG_62: -0.130 <pre></pre>				
	BLER_LOG_63: -0.065 ≤ Log10(Transport channel BLER) ≤ 0.000				

Requirement

109.2.1.2.7 Transport Channel BER

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

109.2.1.2.7.1 Accuracy requirement

Table 9-24 Transport channel BER accuracy

Parameter	<u>Unit</u>	<u>Accuracy</u>
<u>TrpBER</u>	Ξ	+/- []% of the absolute BER value

9.2.1.7.2 Range/mapping

Transport channel BER is given with a logarithmic resolution of 0.008125 within the range			
[10^-2.06375 1] with two separate cases Transport channel BER=0 and Transport channel			
BER between 0 and 10^-2.06375			
Transport channel BER shall be reported in the unit TrCH BER LOG, where:			
TrCH BER LOG 000: Transport channel BER = 0			
TrCH BER LOG 001: $-\infty$ < Log10(Transport channel BER) < -2.06375			
TrCH BER $ OG 002$; -2.06375 < $ Og 10$ (Transport channel BER) < -2.055625			
TrCH BER LOG 003: $-2.055625 \le \log 10$ (Transport channel BER) ≤ -2.0475			
TrCH_BER_LOG_253: -0.024375 < Log10(Transport channel BER) < -0.01625			
TrCH BER LOG 254: -0.01625 \leq log10(Transport channel BER) \leq -0.008125			
TrCH BER $ OG 255$ -0.008125 < log10(Transport channel BER) < 0.000			
1001200 - 200 - 0.000120 - 20010 (Tabloport on anno Dert) - 0.000			

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

9.2.1.8 RX Timing Deviation

9.2.1.8.1 Accuracy requirements

Table 9-25 RX Timing Deviation accuracy

Parameter_	<u>Unit</u>	Accuracy
RX Timing Deviation	<u>-chips</u> period	+/-0.5

9.2.1.8.2 Range/mapping

RX Timing Deviation is given with a resolution of 0.25 chip with the range [-256; 256)	chips (11
bit).	
RX Timing Deviation cell shall be reported in the unit RX_TIME_DEV, where	
RX_TIME_DEV: (N* 0.25 – 256) chips \leq RX Timing Deviation < ((N+1)* 0.25 – 256) ch	nips
With N= 0, 1, 2,, 2047	

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

9.2.2 Performance for UTRAN Measurements in Downlink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0.22$ and a bandwidth equal to the chip rate.

10.2.89.2.2.1 Transmitted carrier power

9.2.2.1.1 Accuracy requirements

Table 9-26 Transmitted carrier power accuracy

Parameter	<u>Unit</u>	<u>Accuracy</u>
<u>Transmitted carrier power</u>	-	40% for 5%<(transmitted carrier power)<=100%

9.2.2.1.2 Range/mapping

Transmitted carrier power is given with a resolution of 1% with the range [0,, 100] %.				
Transmitted carrier power shall be reported in the unit UTRAN_TX_POWER, where:				
<u>UTRAN_TX_POWER_000: Transmitted carrier power = 0%</u>				
<u>UTRAN_TX_POWER_001: 0%</u> < <u>Transmitted carrier power ≤ 1%</u>				
UTRAN TX POWER 002: 1% < Transmitted carrier power $\leq 2\%$				
UTRAN_TX_POWER_003: 2% < Transmitted carrier power $\leq 3\%$				
UTRAN_TX_POWER_098: 97% < Transmitted carrier power ≤ 98%				
UTRAN_TX_POWER_099: 98% < Transmitted carrier power ≤ 99%				
UTRAN_TX_POWER_100: 99% < Transmitted carrier power ≤ 100%				

Requirement	-Accuracy:
	40% for 5% <(transmitted carrier power) <= 100%

10.2.99.2.2.2 Transmitted code power

9.2.2.2.1 Absolute accuracy requirements

Table 9-27 Transmitted code power absolute accuracy

Parameter	<u>Unit</u>	Accuracy
Transmitted code power	<u>dB</u>	<u>[+/-3]dB</u>

9.2.2.2.2 Relative accuracy requirements

Table 9-28 Transmitted code power relative accuracy

Parameter_	<u>Unit</u>	Accuracy
<u>Transmitted code power</u>	<u>dB</u>	<u>+/-2dB</u>

9.2.2.2.3 Range/mapping

Transmitted code power is given with a resolution of 0.5dB with the range [-10,, 46] dBm.
Transmitted code power shall be reported in the unit UTRAN_TX_CODE_POWER, where:
UTRAN TX CODE POWER 000 to UTRAN TX POWER 009: reserved
UTRAN TX CODE POWER 010: -10.0dBm ≤ CODE POWER < -9.5dBm
UTRAN_TX_CODE_POWER_011: -9.5dBm ≤ CODE_POWER < -8.5dBm
UTRAN_TX_CODE_POWER_012: -8.5dBm ≤ CODE_POWER < -7.5dBm
UTRAN TX CODE POWER 120: 45.0dBm ≤ CODE POWER < 45.5dBm
UTRAN TX CODE POWER 121: 45.5dBm \leq CODE POWER < 46.0dBm
UTRAN_TX_CODE_POWER_122: 46.0dBm < CODE_POWER < 46.5dBm

Requirement	Absolute accuracy:
	-[+/-3]dB over the full range.
	Kelative accuracy (relative to the maximum transmit power):
	+/ 2dB over the full range.

10.2.10 RX Timing Deviation

Requirement +/ 0.5 chips period

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

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9.1.2 Performance for UE Measurements in Uplink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0.22$ and a bandwidth equal to the chip rate.

10.1.109.1.2.1 UE transmitted power

9.1.2.1.1 Absolute accuracy requirements

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

Table 9-15 UE transmitted power absolute accuracy

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 25.102 'UTRA (UE) TDD; Radio Transmisson and Reception' section 6.2.1 table 6.1.

Note 2: UE transmitted power is the reported value.

Requirement	Absolute accuracy:
	Normal Conditions
	+/ 9dB over the full range.
	Extreme Conditions
	+/-12dB over the full range.

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Other										

- [7] 25.103 RF parameters in support of RRM
- [8] 25.141 Basestation conformance testing (FDD)
- [9] 25.142 Basestation conformance testing (TDD)
- [10] 25.113 Basestation EMC
- [11] 25.942 RF System scenarios
- [12] 25.922 RRM Strategies
- [13] 25.215 Physical Layer Measurements (FDD)
- [14] 25.225 Physical Layer Measurements (TDD)
- [15] 25.302 Services provided by Physical Layer
- [16] 25.331 RRC Protocol Specification
- [17] 25.224 Physical Layer Procedures (TDD)
- [18] 25.304 UE procedures in Idle Mode

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purpose of the present document the following definitions apply.

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

3.2 Symbols

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

Symbol	Explanation
[]	Values included in square bracket must be considered for further studies, because it means that a decision about that value was not taken;
Î _{or}	"RXLEV", see 25.101 or 25.102 section 3.3 and Annex C.

3.3 Abbreviations

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

RRM	Radio Resource Management
ACPR	Adjacent Channel Power Ratio
BS	Base Station
CW	Continuous wave (unmodulated signal)
DL	Down link (forward link)
$\frac{E_c}{I_{or}}$	The ratio of the average transmit energy per PN chip for different fields or physical channels to the total transmit power spectral density.

EIRP	Equivalent Isotropic Radiated Power
FDD	Frequency Division Duplexing
FER	Frame Error Rate
I.	The total received power spectral density, including signal and interference, as
-0	measured at the UE antenna connector.
I _{oc}	The power spectral density of a band limited white noise source (simulating interference
	from other cells) as measured at the UE antenna connector.
I _{or}	The total transmit power spectral density of the down link at the base station antenna
	connector.
\hat{I}_{or}	The received power spectral density of the down link as measured at the UE antenna
	connector.
$PCCPCH_E_c$	The ratio of the average transmit energy per PN chip for the PCCPCH to the total
I	transmit power spectral density.
PPM	Parts Per Million
OCNS	Orthogonal Channel Noise Simulator, a mechanism used to simulate the users or control
	signals on the other orthogonal channels of a Forward link.
PICH	Paging Indicator Channel
RSSI	Received Signal Strength Indicator
SCH	Synchronization Channel consisting of Primary and Secondary synchronization channels
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
RRM	Radio Resource Management
ACPR	Adjacent Channel Power 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 Rate
PPM	Parts Per Million
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.

Whenever a PLMN has been selected the UE shall start to find a suitable cell to camp on, this is 'cell selection'.

When camped on cell the UE regularly searches for a better cell depending on the cell reselection criteria, this is called 'cell reselection'. The procedures for cell selection and reselection are described in 3GPP RAN TS 25.304 'UE procedures in idle mode' and the measurements carried out by the UE are explained in specification 3GPP RAN TS 25.225 'Physical Layer Measurements (TDD)'. The measurements performance requirements are specified in section 11.

9 Measurements Performance Requirements

One of the key services provided by the physical layer is the measurement of various quantities which are used to trigger or perform a multitude of functions. Both the UE and the UTRAN are required to perform a variety of measurements. The complete list of measurements is specified in TSG RAN WG2 S25.302 "Services Provided by Physical Layer". The physical layer measurements for TDD are described and defined in TSG RAN WG1 TS25.225 "Physical layer – Measurements (TDD)". In this section for TDD, per each measurement the relevant requirements on performance in terms of accuracy are reported.

Unless explicitly stated,

- Reported measurements shall be within defined range in 90 % of the cases.
- Measurement channel is 12.2 kbps as defined in TS 25.102 annex A, section 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 B.
- All requirements are defined when UE is in a CELL_DCH or CELL_FACH stage. The difference between modes are the reporting delay. Some of the measurements are not requested to be reported in both stages.
- Cell 1 is the active cell, if not otherwise stated.-
- Single task reporting.
- Power control is active.

9.140 Measurements Performance for UE

9.1.1 Performance for UE Measurements in Downlink (RX)

If not otherwise stated, the test parameters in table 9-1 should be applied for UE RX measurements requirements in this section.

Table 9-1 Intra frequency test parameters for UE RX Measurements

Parameter	Unit	<u>Cell 1</u>		<u>Cell 2</u>	
UTRA RF Channel number		Channel 1		Chan	<u>nel 1</u>
<u>Timeslot</u>		<u>0</u>	<u>8</u>	<u>0</u>	<u>8</u>
<u>P-CCPCH Ec/Ior</u>	<u>dB</u>	<u>-3</u>	Ξ	<u>-3</u>	Ξ
<u>SCH Ec/Ior</u>	<u>dB</u>	<u>-9</u>	<u>-9</u>	<u>-9</u>	<u>-9</u>
<u>PICH Ec/Ior</u>	<u>dB</u>	Ξ	<u>-3</u>	Ξ	<u>-3</u>
<u>DPCH_Ec/lor</u>	<u>dB</u>	[]	[]	[]	Π
<u>OCNS</u>	<u>dB</u>	Π	П	Π	П
<u> Îor/Ioc</u>	<u>dB</u>	Ц		Ĺ	
<u>Ioc</u>	<u>dBm/ 3.84 MHz</u>	<u>-70</u>		<u>-70</u>	
<u>Range 1:Io</u>	dBm	<u>-9470</u>		<u>-9470</u>	
<u>Range 2: Io</u>		<u> </u>		<u>-9450</u>	

Propagation condition	Ξ	AWGN	AWGN

109.1.1.1 PRIMARY COMMON CONTROL PHYSICAL CHANNEL MEASUREMENTS

These measurements consider *P-CCPCH RSCP* measurements for TDD cells and CPICH RSCP and CPICH Ec/Io measurements for FDD cells respectively. The corresponding measurements are necessary for UEs supporting the individual mode(s) only.

9.1.1.1.1 P-CCPCH RSCP (TDD)

109.1.1.1.1.1 Intra frequency test parameters

In this case all cells are in the same frequency. The table $\frac{109-1-2}{2}$ and notes 1-4 define the limits of signal strengths and code powers, where the requirement is applicable.

Table 10.9-12 P-CCPCH RSCP intra	frequency test parameters

Parameter	Unit	Cell 1		Cell 2	
UTRA RF Channel number		Channel 1		Channel 1	
Timeslot		0	8	0	8
P-CCPCH Ec/lor	dB	-3	-	-3	-
SCH Ec/lor	dB	-9	-9	-9	-9
PICH_Ec/Ior	dB	-	-3	-	-3
OCNS	dB	[]	[]	[]	[]
Îor/Ioc	<u>d</u> ₽B	[]		[]
Ioc	dBm/ 3.84 MHz	Note 4		Not	te 4
Range 1:Io	dBm	[] -9470		[] -94	<u>470</u>
Range 2: Io	[-]9450		450	[] -9450	
Propagation condition	-	AWGN			

Note 1: P- $CCPCH_RSCP1, 2 \ge -[102]$ dBm.

Note 2: / *P*-*CCPCH_RSCP1* − *PCCPCH_RSCP2* /≤ 20 dB.

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

Note 4: *loc* level shall be adjusted according the total signal power *lo* at receiver input and the geometry factor $\hat{lor/loc}$. $\frac{Io - 13.7 dB = Ioc}{D}$.

10.1.1.2 P-CCPCH RSCP

10.1.1.2.19.1.1.1.1.2 Absolute accuracy requirements

The absolute accuracy of P-CCPCH RSCP is defined as measured one code power after de-spreading. In this test only Cell 1 in table $\frac{10.9-1-3}{10}$ is present.

Table 9-3: P-CCPCH_RSCP Intra frequency absolute accuracy								
Parameter		Value		Range		Acc	uracy	
<u>r tranicor</u>				Itungo	N	ormal conditions	Ext	reme conditions
P-CCPCH RSCP		<u>dB</u>		<u>1</u>		<u>± 6</u>		<u>±9</u>
		dB		<u>2</u>		<u>± 8</u>		<u>± 11</u>
Table 10.2 Range 1								
Parameter	Value			Accuracy				
i analieter		v urue		ormal condition	ns	Extreme conditi	ons	
P-CCPCH_RSCP		d₿	±6		±6 ±9			
	Ta	ble 10.3 R	ange	<u>+2</u>				
Parameter		Value	Accuracy					
		N		ormal condition	ns	Extreme conditi	ons	
P-CCPCH_RSCP		dB		<u>± 8</u>		±11		

10.1.1.2.29.1.1.1.1.3 Relative accuracy requirements

The relative accuracy of P-CCPCH 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 10.9-4 Range 2 P-CCPCH_RSCP Intra frequency relative accuracy

Parameter	Unit Value	Acc	uracy
		Normal conditions	Extreme conditions
P-CCPCH_RSCP	dB	± 3	± 3

10.1.29.1.1.1.2

COMMON PILOT MEASUREMENTSCPICH Measurements (FDD)

These measurement consider CPICH RSCP and CPICH Ec/lo measurements. Only necessary for UEs supporting FDD.

10.1.2.1 Intra frequency test parameters

In this case all cells are in the same frequency. The table 10.5 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/lor	dB	-12	-12
PICH_Ec/lor	dB	-15	-15
DPCH_Ec/Ior	dB	<u>-15</u>	-15

Table 10.5

OCNS	dB	-1.11	-1.11
Îor/Ioc	dB	10.5	10.5
loc	dBm/ 3.84 MHz	Note 4	Note 4
Range 1:10	dBm	-94 70	-94 70
Range 2: Io		-94 50	-94 50
Propagation condition	-	AW	' GN

Note 1: $CPICH_RSCP1, 2 \ge 114 \text{ dBm}.$

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 $\hat{I}or/Ioc$. *Io* -13.7 dB = *Ioc*.

<u>10.1.2.29.1.1.1.2.1</u> 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 $\frac{10.69-5}{10.69-5}$ and notes 1-5 define the limits of signal strengths and code powers, where the requirement is applicable.

Parameter	<u>Unit</u>	<u>Ce</u>	<u>ll 1</u>	<u>Cell 2</u>
<u>Timeslot Number</u>		<u>0</u>	<u>8</u>	<u>n.a</u>
<u>UTRA RF Channel</u> <u>Number</u>		Chan	inel 1	Channel 2
<u>CPICH_Ec/Ior</u>	dB	<u>n.a.</u>	<u>n.a.</u>	-10
<u>P-CCPCH Ec/lor</u>	<u>dB</u>	<u>-3</u>		<u>-12</u>
<u>SCH Ec/Ior</u>	<u>dB</u>	<u>-9</u>	<u>-9</u>	<u>-12</u>
<u>SCH_t_{offset}</u>		<u>0</u>	<u>0</u>	<u>n.a.</u>
<u>PICH_Ec/Ior</u>			<u>-3</u>	<u>-15</u>
<u>DPCH_Ec/Ior</u>	<u>dB</u>	<u>[]</u>	<u>[]</u>	<u>-15</u>
<u>OCNS</u>	<u>dB</u>	<u>-4.28</u>	<u>-4.28</u>	<u>-1.11</u>
\hat{I}_{or}/I_{oc}	<u>dB</u>	П	П	<u>10.5</u>
Ioc	<u>dBm/3.</u> <u>84</u> <u>MHz</u>	70		<u>Note 5</u>
Range 1:10	dBm	<u>-9470</u>		<u>-9470</u>
Range 2: Io	<u></u>	<u>-9450</u>		<u>-9450</u>
<u>Propagation</u> <u>condition</u>	=	<u>AWGN</u>		AWGN

Table 10.69-5 CPICH Inter frequency test parameters

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	d₿	-15	-15	
	dB	-1.11	-1.11	
Î or/Ioc	dB	10.1	10.1	
loc	dBm/ 3.84 MHz	Note 5	Note 5	
Range 1:10	dBm	-9470	-9470	
Range 2: Io		-94 50	-94 50	
Propagation condition	-	AWGN		

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

10.1.2.39.1.1.1.2.2 CPICH RSCP

[Informative note: This measurement is for handover-evaluation, DL open loop power control, UL open loop power control and for the calculation of pathloss.]

10.1.2.4 Intra frequency measurements accuracy

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

10.1.2.4.1 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 10-1 is present.

		0		
Parameter	Value	Accuracy		
		Normal condition	Extreme condition	
CPICH_RSCP	d₿	±6	±9	

Table 10.8 Range 2

Table 10.7 Range 1

Parameter	Value	Acc	uracy
		Normal condition	Extreme condition
CPICH_RSCP	d₿	<u>±8</u>	±11

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.

10.1.2.4.2 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 10.9 Range 2				
Parameter	Value	Acc	uracy	
		Normal condition	Extreme condition	
CPICH_RSCP	dB	<u>±3</u>	<u>±3</u>	

10.1.2.59.1.1.1.2.2.1 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 10-2 is used. In this test cells 1 and 2 are present.

Table 10.109-6 Range 2 CPICH_RSCP Inter frequency relative accuracy

Parameter	<u>Unit</u> Value	Accuracy	
		Normal condition	Extreme condition
CPICH_RSCP	dB	± 6	± 6

10.1.3<u>9.1.1.1.2.3</u> CPICH Ec/lo

[Informative note: This measurement is for Cell selection/re selection and for handover evaluation.]

10.1.3.1 Intra frequency measurements accuracy

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

10.1.3.1.1 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 10 1 is present.

Table 10.11 Range 2

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

10.1.3.1.2 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 10 1 are present.

Table 10.12 Range 2

Parameter	Value	Accuracy	
		Normal condition	Extreme condition
CPICH_Ec/lo	d₿	<u>±3</u>	<u>±3</u>

10.1.3.29.1.1.1.2.3.1 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 values are relative to active cell value. In this test the parameters in table $\frac{10 \cdot 29 \cdot 7}{10 \cdot 29 \cdot 7}$ is used. In this test cells 1 and 2 are present.

Table 10.139-7 Range 2 CPICH Ec/Io Inter frequency relative accuracy

Parameter	<u>Unit</u> Value	Accuracy	
		Normal condition	Extreme condition
CPICH_Ec/lo	dB	± 6	± 6

10.1.49.1.1.2Timeslot ISCP

9.1.1.2.1 Absolute accuracy requirements

Table 9-8: Timeslot_ISCP Intra frequency absolute accuracy

Parameter	Value Range		<u>Accuracy</u>	
			Normal conditions	Extreme conditions
Timeslot ISCP	<u>dB</u>	<u>1</u>	<u>± 6</u>	<u>± 9</u>
	<u>dB</u>	<u>2</u>	<u>± 8</u>	<u>± 11</u>

Requirement	Absolute accuracy:
	Normal Conditions
	→/ 6dB for levels below -70dBm;
	-+/ 8dB-over the full range
	Valid for UTRA carrier RSSI >= 94dBm.
	Extreme Conditions
	-+/ 9dB for levels below -70dBm;
	-+/-11dB-over the full range
	Valid for UTRA carrier RSSI >= 94dBm.

10.1.59.1.1.3UTRA carrier RSSI

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

9.1.1.3.1 Test parameters for requirement

The table 9-9 and notes 1,2 define the limits of signal strengths, where the requirement is applicable.

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

Table 9-9 UTRA carrier 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 <u>*Îor/Ioc*</u>.

9.1.1.3.2 Absolute accuracy requirement

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

Table 9-10: UTRA carrier RSSI Inter frequency absolute accuracy

Parameter	Value	Range	Accuracy	
			Normal conditions	Extreme conditions
UTRA Carrier RSSI	<u>dB</u>	<u>1</u>	<u>± 4</u>	<u>± 7</u>
	<u>dB</u>	<u>2</u>	<u>± 6</u>	<u>± 9</u>

9.1.1.3.3 Relative accuracy requirement

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 9-9 are used.

Table 9-11 UTRA carrier RSSI Inter frequency relative accuracy

Parameter_	<u>Unit</u>	Accuracy	
		Normal condition	Extreme condition
<u>Io</u>	<u>dBm</u>	<u>± 5</u>	<u>± 8</u>

Requirement	Absolute accuracy:
	Normal Conditions
	+/ 4dB for levels below 70dBm
	Valid for levels > -94dBm.
	Extreme Conditions
	+/ 7dB for levels below 70dBm
	Valid for levels > 94dBm.
	Relative accuracy (between measurements on two carriers):
	-+/ 5dB over the full range
	Valid when the minimum level > -94 dBm and the difference < 20 dB.

10.1.69.1.1.4GSM carrier RSSI

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

Only necessary for UEs supporting GSM.

The accuracy requirement is specified in GSM 05.08.

Requirement	According to the definition of RXLEV in GSM 05.08.

10.1.7<u>9.1.1.5</u>SIR

9.1.1.5.1 Absolute accuracy requirements

Table 9-12 SIR Intra frequency absolute accuracy

Parameter	<u>Unit</u>	Accuracy	
		Normal conditions	Extreme conditions
SIR	<u>dB</u>		

Requirement

for []<[]dB

Absolute accuracy:

when UTRA carrier RSSI>= 94dBm

10.1.8 Physical channel BER

|--|

10.1.99.1.1.6 Transport channel BLER

Requireme	The UE shall report	t the CRC resu	lts		
9.1.1.7	SFN-SFN observed	time differ	ence		
3.1.1.7.1 accuracy requirements					
	<u>Table 9-13</u>	<u>8 SFN-SFN ob</u>	served time difference accuracy		
	Parameter	<u>Unit</u>	Accuracy		

9.1.1.8	Observed time difference to GSM cell	

chips

period

Only necessary for UEs supporting GSM.

9.1.1.8.1 accuracy requirements

SFN-SFN observed time

<u>difference</u>

Table 9-14 Observed time difference to GSM cell accuracy

 \pm +/-0.5 for both type 1 and 2

Parameter	<u>Unit</u>	Accuracy
<u>Observed time difference to</u> <u>GSM cell</u>	<u>chips</u> period	<u>+/-20</u>

9.1.2 Performance for UE Measurements in Uplink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0.22$ and a bandwidth equal to the chip rate.

10.1.109.1.2.1 UE transmitted power

Table 9-15 UE transmitted power absolute accuracy

Accuracy

Parameter	<u>Unit</u>	

			Normal conditions	Extreme conditions		
UE transmitted power		<u>dB</u>	<u>+/-9</u>	<u>+/-12</u>		
Requirement	nt Absolute accuracy:					
	Normal Conditions					
	-+/ 9dB over the full range.					
	Extreme Conditions					
	-+/-12dB over the full range.					

10.1.11 SFN-SFN observed time difference

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

10.1.12 Observed time difference to GSM cell

+/ 20chips.

109.2 __Measurements Performance for UTRAN

9.2.1 Performance for UTRAN Measurements in Uplink (RX)

If not otherwise stated, the test parameters in table 9-16 should be applied for UE RX measurements requirements in this section.

Table 9-16 Intra frequency test parameters for UTRAN RX Measurements

Parameter	Unit	<u>Cell 1</u>
UTRA RF Channel number		Channel 1
<u>Timeslot</u>		Ц
<u>DPCH Ec/Ior</u>	<u>dB</u>	Ĺ
<u> Îor/Ioc</u>	<u>dB</u>	
<u>Ioc</u>	<u>dBm/ 3.84 MHz</u>	<u>-89</u>
<u>Range: Io</u>	<u>dBm</u>	<u>-10574</u>
Propagation condition	=	AWGN

10<u>9.2.1</u>.2.1 RSCP

9.2.1.1.1 Absolute accuracy requirements

Table 9-17 RSCP Intra frequency absolute accuracy						
Parameter	Unit	Accuracy				
		Normal conditions	Extreme conditions			
<u>RSCP</u>	dB	<u>+/-6dB</u>	<u>+/-9dB</u>			

9.2.1.1.2 Relative accuracy requirements

Table 9-18 RS	CP Intra	frequency	relative	accuracy
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Parameter	<u>Unit</u>	<u>Accuracy</u>
<u>RSCP</u>	<u>dB</u>	+/-3dB for intra-frequency

Requirement	Absolute accuracy:
	Normal Conditions
	-+/-6dB for levels below70dBm;
	-+/-8dB over the full range
	Valid for RSSI >= 94dBm
	Extreme Conditions
	+/-9dB for levels below 70dBm;
	-+/-11dB over the full range
	Valid for RSSI >= -94dBm
	Relative accuracy:
	-+/ 3dB for intra frequency
	Valid when the minimum level > 95 10log10(SF)dBm, the difference in signal level < 20dB and RSSI>= 94dBm.

109.2.1.2.2 Timeslot ISCP

9.2.1.2.1 Absolute accuracy requirements

Table 9-19 Timeslot ISCH	' Intra fr	requency a	ibsolute (accuracy
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Parameter Unit Accuracy	
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		Normal conditions	Extreme conditions
<u>Timeslot ISCP</u>	<u>dB</u>	<u>+/-6dB</u>	<u>+/-9dB</u>

Requirement	Absolute accuracy:
	Normal Conditions
	+/-6dB for levels below-70dBm;
	+/-8dB-over the full range
	Extreme Conditions
	+/ 9dB for levels below 70dBm;
	-+/-11dB over the full range

10<u>9.2.1</u>.2.3 RSSI

9.2.1.3.1 Absolute accuracy requirements

Table 9-20 RSSI Intra frequency absolute accuracy

Parameter	<u>Unit</u>	Accuracy
<u>RSSI</u>	<u>dB</u>	+/-4dB

Requirement	Absolute accuracy:
	-+/-4dB over the full range.

10<u>9.2.1</u>.2.4 SIR

9.2.1.4.1 Absolute accuracy requirements

Table 9-21 SIR Intra frequency absolute accuracy

Parameter	<u>Unit</u>	Accuracy
<u>SIR</u>	<u>dB</u>	+/-3dB for 0 <sir<10 db<="" td=""></sir<10>

Requirement	Absolute accuracy:
	+/-3dB for 0 <sir<10 db<="" th=""></sir<10>
	when $RSSI >= -104 dBm$.

109.2.1-2.5 Physical channel BER

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

40<u>9.2</u>.1.5.1 Accuracy requirement

Table 9-22 Physical channel BER Intra frequency accuracy

Parameter	<u>Unit</u>	Accuracy
<u>BER</u>		+/- 10% of the absolute BER value

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

109.2.1-2.6 Transport channel BLER

9.2.1.6.1 Accuracy requirement

Table 9-23 Transport channel BLER accuracy

Parameter	<u>Unit</u>	Accuracy
<u>TrpBLER</u>	=	Ц

109.2.1-2.7 Transport Channel BER

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

109.2.1.2.7.1 Accuracy requirement

Table 9-24 Transport channel BER accuracy

Parameter	<u>Unit</u>	Accuracy

Requirement

<u>TrpBER</u>	Ξ	+/- []% of the absolute BER value

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

9.2.1.8 RX Timing Deviation

9.2.1.8.1 Accuracy requirements

Table 9-25 RX Timing Deviation accuracy

Parameter	<u>Unit</u>	Accuracy
<u>RX Timing Deviation</u>	<u>-chips</u> period	<u>+/-0.5</u>

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

9.2.2 Performance for UTRAN Measurements in Downlink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0.22$ and a bandwidth equal to the chip rate.

10.2.89.2.2.1 Transmitted carrier power

9.2.2.1.1 Accuracy requirements

Table 9-26 Transmitted carrier power accuracy

Parameter	<u>Unit</u>	Accuracy
Transmitted carrier power	=	40% for 5%<(transmitted carrier power)<=100%

Requirement	-Accuracy:
	40% for 5% <(transmitted carrier power) <= 100%

10.2.99.2.2.2 Transmitted code power

9.2.2.2.1 Absolute accuracy requirements

Table 9-27 Transmitted code power absolute accuracy

Parameter	<u>Unit</u>	Accuracy
Transmitted code power	<u>dB</u>	[+/-3]dB

9.2.2.2.2 Relative accuracy requirements

Table 9-28 Transmitted code power relative accuracy

Parameter	<u>Unit</u>	Accuracy
Transmitted code power	<u>dB</u>	<u>+/-2dB</u>

accuracy.
over the full range.
accuracy (relative to the maximum transmit power):
over the full range.
3

10.2.10 RX Timing Deviation

Requirement

+/ 0.5 chips period

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