TSG-RAN Meeting #8 *RP-000209*
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	008		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

CHANGE REQUEST

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25.123	CR	008	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN #8	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

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 [ ] UTRAN / Radio [X] Core Network [ ]
(at least one should be marked with an X)

Source: RAN WG4 **Date:** 24/05/2000

Subject: Correction of UTRAN 'Transmitted carrier power' accuracy requirements for TDD

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Update of the Requirements for the measurement UTRAN Transmitted Carrier Power

Clauses affected: 10.2.8

Other specs affected:

Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments: Revision of R4-000360

10.2.8 Transmitted carrier power ~~ratio~~

Requirement	**Accuracy:** ~~40% for 5%<(transmitted carrier power)<=100%~~ ~~+~~+10% in the range ~~5~~10% ≤~~<=~~ TX carrier power ratio ≤~~<=~~ 90% ~~10% in the range 10% < TX carrier power ratio <= 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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25.123	CR	009	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN #8	for approval	X	strategic		*(for SMG use only)*
list expected approval meeting # here ↑		for information		non-strategic		

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: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source: RAN WG4 **Date:** 22/05/00

Subject: Measurement reporting delay

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	
A	Corresponds to a correction in an earlier release		
B	Addition of feature		
C	Functional modification of feature		
D	Editorial modification		

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: update

Clauses affected: 5.1.2.1.1.2

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

(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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25.123	CR	010	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: RAN #8 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	for information		non-strategic		

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: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [ ]

Source: RAN WG4 **Date:** 23/05/00

Subject: Update of UE SIR Measurements performance requirements

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:

Clauses affected: 9/10

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

~~10.1.7~~9.1.1.5SIR

9.1.1.5.1 Absolute accuracy requirements

Table 9-12 *SIR Intra frequency absolute accuracy*

Parameter	Unit	Accuracy
SIR	dB	[±3 dB for –7<SIR<20dB]

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

CHANGE REQUEST

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25.123	CR	011	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN #8	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

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: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: RAN WG4 **Date:** 22/05/00

Subject: UE Transport Channel BLER measurement

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: Introduction of the measurement period for the UE BLER measurement

Clauses affected: 9.1.1.7

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

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).

Requirement	The UE shall report the CRC results

CHANGE REQUEST *Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

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

Reference
<Workitem> (<Shortfilename>.PDF)

Keywords
<keyword[, keyword]>

3GPP

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Contents

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: www.3GPP.org

[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;
$\hat{I}_{or}$	"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)

$\frac{E_c}{I_{or}}$	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
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.
OCNS	Orthogonal Channel Noise Simulator, a mechanism used to simulate the users or control signals on the other orthogonal channels of a Forward link.
$\frac{PCCPCH\_E_c}{I_{or}}$	The ratio of the average transmit energy per PN chip for the PCCPCH to the total transmit power spectral density.
PICH	Paging Indicator Channel
PPM	Parts Per Million
RRM	Radio Resource Management
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)~~
~~$\frac{E_c}{I_{or}}$~~	~~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_{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.~~
~~$\frac{PCCPCH\_E_c}{I_{or}}$~~	~~The ratio of the average transmit energy per PN chip for the PCCPCH to the total 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.

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 ~~utilized~~ utilised in this test. The stored information includes the UTRA RF CHANNEL NUMBER. The active cell in the test does not contain any neighbour cells in its measurement control information.

Table 4.1

Parameter	Unit	Cell 1	
UTRA RF Channel Number		Channel 1	
Timeslot Number		0	8
PCCPCH_Ec/Ior	dB	-3	
SCH_Ec/Ior	dB	-9	-9
SCH_t_{offset}		0	0
PICH_Ec/Ior	dB		-3
OCNS_Ec/Ior	dB	-4.28	-4.28
$\hat{I}_{or}/I_{oc}$	dB	0	0
I_{oc}	dBm/3.84 MHz	-70	-70
PCCPCH RSCP	dBm	-73	
Propagation Condition		AWGN	AWGN
Qmin	dBm	[ ]	[ ]
UE_TXPWR_MAX_RACH	dBm	[ ]	[ ]

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

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

Table 4.2:

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 1		Channel 1		Channel 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_RACH	dBm	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

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

~~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.

Table 4.3

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 1		Channel 1		Channel 1		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
*SCH_*t_{offset}		0	0	0	0	5	5	5	5	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		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]	
Qhyst	dBm	[ ]		[ ]		[ ]		[ ]		[ ]		[ ]	
Treselection		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]	
Qintrasearch	dB	[ ]		[ ]		[ ]		[ ]		[ ]		[ ]	
		Cell 4				Cell 5				Cell 6			
Timeslot		0		8		0		8		0		8	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 1		Channel 1		Channel 1		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
*SCH_*t_{offset}		15	15	15	15	20	20	20	20	25	25	25	25
PICH_Ec/Ior	dB			-3	-3			-3	-3			-3	-3
OCNS	dB	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28	-4.28
$\hat{I}_{or}/I_{oc}$	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP		-74	-74			-74	-74			-74	-74		
Qoffset		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]	
Qhyst	dBm	[ ]		[ ]		[ ]		[ ]		[ ]		[ ]	
Treselection		[ ]		[ ]		[ ]		[ ]		[ ]		[ ]	
Qintrasearch	dB	[ ]		[ ]		[ ]		[ ]		[ ]		[ ]	
I_{oc}	dBm/3.84 MHz	-70											
Propagation Condition		AWGN											

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~~4.3.1.1.3 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].]

~~4.3.1.5~~4.3.1.1.4 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 an UTRAN cell, the UE shall be capable of re-selecting a GSM cell ~~cell in the test case 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.

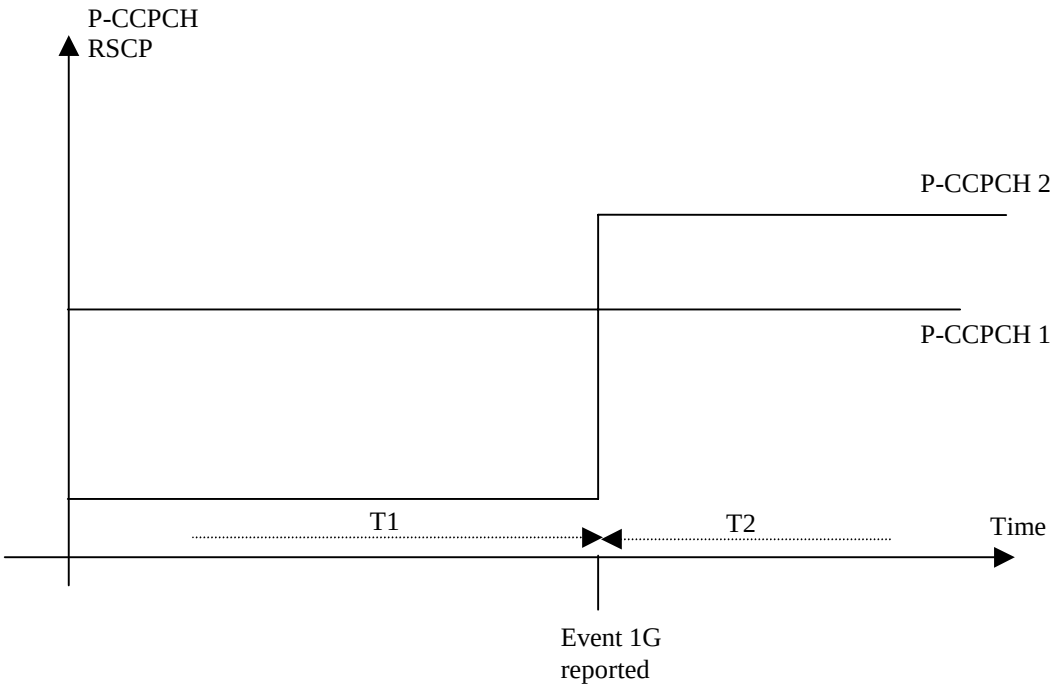

Figure 5-1: Illustration of parameters for handover measurement reporting test case

Table-5-1

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		8		0		8	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1		Channel 1		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-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	-70							
PCCPCH_RSCP	dB	-70	-70			-Infinity	-68		
Absolute Threshold (SIR)	dB	[]							
Hysteresis	dB	[]							
Time to Trigger	msec	[]							
Propagation Condition		AWGN							

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.

Table 5.1

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.

Table 5.2

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		8		n.a		n.a.	
		T1	**T2**	**T1**	**T2**	**T1**		**T2**	
UTRA RF Channel Number		Channel 1				Channel 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}		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	[]				[]			
Time to Trigger	msec	[]				[]			
Propagation Condition		AWGN				AWGN			

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.

Table 5.3

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 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

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.123	CR	013	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: RAN #8 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	for information		non-strategic		

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: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: RAN WG4 **Date:** 24/05/00

Subject: Range and mapping in TS 25.123 (TDD)

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: mapping and range are moved from TS 25.225 to TS 25.123

Clauses affected: 9

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of 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.

9.1~~10~~ 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	Cell 1		Cell 2	
UTRA RF Channel number		Channel 1		Channel 1	
Timeslot		0	8	0	8
P-CCPCH Ec/Ior	dB	-3	-	-3	-
SCH Ec/Ior	dB	-9	-9	-9	-9
PICH Ec/Ior	dB	-	-3	-	-3
DPCH_Ec/Ior	dB	[]	[]	[]	[]
OCNS	dB	[]	[]	[]	[]
Îor/Ioc	dB	[ ]		[ ]	
Ioc	dBm/ 3.84 MHz	-70		-70	
Range 1:Io *Range 2: Io*	dBm	-94..-70 –94..-50		-94..-70 –94..-50	

Propagation condition	-	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 109-1-2 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/Ior	dB	-3	-	-3	-
SCH Ec/Ior	dB	-9	-9	-9	-9
PICH_Ec/Ior	dB	-	-3	-	-3
OCNS	dB	[]	[]	[]	[]
Îor/Ioc	dDB	[ ]		[ ]	
Ioc	dBm/ 3.84 MHz	Note 4		Note 4	
Range 1:Io *Range 2: Io*	dBm	[ ] -94..-70 [ ] -94..-50		[ ] -94..-70 [ ] -94..-50	
Propagation condition	-	AWGN			

Note 1: *P-CCPCH_RSCP1,2* ≥ -[102] dBm.

Note 2: | *P-CCPCH_RSCP1 – PCCPCH_RSCP2* |≤ 20 dB.

Note 3: | *Io – P-CCPCH_Ec/Ior*| ≤ [20] dB.

Note 4: *Ioc* level shall be adjusted according the total signal power *Io* at receiver input and the geometry factor *Îor/Ioc*. ~~*Io – 13.7 dB= Ioc.*~~

~~10.1.1.2 P-CCPCH RSCP~~

~~10.1.1.2.1~~9.1.1.1.1.2 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 10.9-1-3 is present.

Table 9-3: *P-CCPCH_RSCP Intra frequency absolute accuracy*

Parameter	Value	Range	Accuracy	
			Normal conditions	Extreme conditions
P-CCPCH_RSCP	dB	1	± 6	± 9
	dB	2	± 8	± 11

~~**Table 10.2 Range 1**~~

~~Parameter~~	~~Value~~	~~Accuracy~~	
		~~Normal conditions~~	~~Extreme conditions~~
~~*P-CCPCH_RSCP*~~	~~dB~~	~~± 6~~	~~± 9~~

~~**Table 10.3 Range 2**~~

~~Parameter~~	~~Value~~	~~Accuracy~~	
		~~Normal conditions~~	~~Extreme conditions~~
~~*P-CCPCH_RSCP*~~	~~dB~~	~~± 8~~	~~± 11~~

~~10.1.1.2.2~~9.1.1.1.1.3 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~~	Accuracy	
		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 ≤ P-CCPCH_RSCP < -114dBm P-CCPCH_RSCP_LEV_02: -114dBm ≤ P-CCPCH_RSCP < -113dBm ... P-CCPCH_RSCP_LEV_89: -27dBm ≤ P-CCPCH_RSCP < -26dBm P-CCPCH_RSCP_LEV_90: -26dBm ≤ P-CCPCH_RSCP < -25dBm P-CCPCH_RSCP_LEV_91: -25dBm ≤ P-CCPCH_RSCP

~~10.1.2~~9.1.1.1.2 ~~COMMON PILOT MEASUREMENTS~~CPICH 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/Ior	dB	-10	-10
PCCPCH_Ec/Ior	dB	-12	-12
SCH_Ec/Ior	dB	-12	-12
PICH_Ec/Ior	dB	-15	-15
DPCH_Ec/Ior	dB	-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 *Range 2: Io*	dBm	-94… 70 -94… 50	-94… 70 -94… 50
Propagation condition	-	AWGN	

Note 1: *CPICH_RSCP1,2* ≥ -114 dBm.

Note 2: | *CPICH_RSCP1 – CPICH_RSCP2* |≤ 20 dB.

Note 3: | *Io – CPICH_Ec/Ior*| ≤ 20 dB.

Note 4: *Ioc* level shall be adjusted according the total signal power *Io* at receiver input and the geometry factor *Îor/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 10.69-5 and notes 1-5 define the limits of signal strengths and code powers, where the requirement is applicable.

Table ~~10.6~~9-5 *CPICH Inter frequency test parameters*

Parameter	Unit	Cell 1		Cell 2
Timeslot Number		0	8	n.a
UTRA RF Channel Number		Channel 1		Channel 2
CPICH_Ec/Ior	dB	n.a.	n.a.	-10
P-CCPCH_Ec/Ior	dB	-3		-12
SCH_Ec/Ior	dB	-9	-9	-12
*SCH_*t_{offset}		0	0	n.a.
PICH_Ec/Ior			-3	-15
DPCH_Ec/Ior	dB	[]	[]	-15
OCNS	dB	-4.28	-4.28	-1.11
$\hat{I}_{or}/I_{oc}$	dB	[]	[]	10.5
I_{oc}	dBm/3.84 MHz	-70		Note 5
Range 1:Io *Range 2: Io*	dBm	-94..-70 -94..-50		-94..-70 -94..-50
Propagation condition	-	AWGN		AWGN

~~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/Ior*~~	~~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*~~ ~~*Range 2: Io*~~	~~dBm~~	~~-94… 70~~ ~~-94… 50~~	~~-94… 70~~ ~~-94… 50~~
~~*Propagation condition*~~	~~-~~	~~AWGN~~	

Note 1: *CPICH_RSCP1,2* ≥ -114 dBm.

Note 2: | *CPICH_RSCP1 – CPICH_RSCP2* | ≤ 20 dB

Note 3: | *Channel 1_Io –Channel 2_Io*| ≤ 20 dB

Note 4: | *Io – CPICH_Ec/Ior*| ≤ 20 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 *Îor/Ioc*. *Io –10.6 dB = Ioc*.

~~10.1.2.3~~9.1.1.1.2.2 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~~	~~Accuracy~~	
		~~Normal condition~~	~~Extreme condition~~
~~*CPICH_RSCP*~~	~~dB~~	~~± 6~~	~~± 9~~

~~Table 10.8 Range 2~~

~~Parameter~~	~~Value~~	~~Accuracy~~	
		~~Normal condition~~	~~Extreme condition~~
~~*CPICH_RSCP*~~	~~dB~~	~~± 8~~	~~± 11~~

~~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~~	
		~~Normal condition~~	~~Extreme condition~~
~~*CPICH_RSCP*~~	~~dB~~	~~± 3~~	~~± 3~~

~~10.1.2.5~~9.1.1.1.2.2.1 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 1and 2 are present.

Table ~~10.10~~9-6 ~~Range 2~~ *CPICH_RSCP Inter frequency relative accuracy*

Parameter	Unit~~Value~~	Accuracy	
		Normal condition	Extreme condition

CPICH_RSCP	dB	± 6	± 6

9.1.1.1.2.2.2 Range/mapping

CPICH RSCP is given with a resolution of 1 dB with the range [-115, ..., -25] dBm.			
CPICH RSCP shall be reported in the unit CPICH_RSCP_LEV where:			
CPICH_RSCP_LEV_00:			CPICH_RSCP < -115dBm
CPICH_RSCP_LEV_01:	-115dBm	≤	CPICH_RSCP < -114dBm
CPICH_RSCP_LEV_02:	-114dBm	≤	CPICH_RSCP < -113dBm
...			
CPICH_RSCP_LEV_89:	-27dBm	≤	CPICH_RSCP < -26dBm
CPICH_RSCP_LEV_90:	-26dBm	≤	CPICH_RSCP < -25dBm
CPICH_RSCP_LEV_91:	-25dBm	≤	CPICH_RSCP

~~10.1.3~~9.1.1.1.2.3 CPICH Ec/Io

~~*[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/Io*~~	~~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/Io*~~	~~dB~~	~~± 3~~	~~± 3~~

~~10.1.3.2~~9.1.1.1.2.3.1 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 valus are relative to active cell value. In this test the parameters in table ~~10.2~~9-7 is used. In this test cells 1and 2 are present.

Table ~~10.13~~9-7 ~~Range 2~~CPICH Ec/Io *Inter frequency relative accuracy*

Parameter	Unit~~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 given with a resolution of 1 dB with the range [-24, ..., 0] dB.
CPICH Ec/No shall be reported 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
...
CPICH_Ec/No_23: -2dB ≤ CPICH_Ec/No < -1dB
CPICH_Ec/No_24: -1dB ≤ CPICH_Ec/No < 0dB
CPICH_Ec/No_25: 0dB ≤ CPICH_Ec/No

~~10.1.4~~9.1.1.2 Timeslot ISCP

9.1.1.2.1 Absolute accuracy requirements

Table 9-8: *Timeslot_ISCP Intra frequency absolute accuracy*

Parameter	Value	Range	Accuracy	
			Normal conditions	Extreme conditions
Timeslot_ISCP	dB	1	± 6	± 9
	dB	2	± 8	± 11

9.1.1.2.2 Range/mapping

Timeslot ISCP is given with a resolution of 0.5 dB with the range [-120, ..., -80] dBm.
Timeslot ISCP shall be reported in the unit UTRAN_TS_ISCP_LEV where:
UTRAN_TS_ISCP_LEV_00: Timeslot_ISCP < -120.0dBm
UTRAN_TS_ISCP_LEV_01: -120.0dBm ≤ Timeslot_ISCP < -119.5dBm
UTRAN_TS_ISCP_LEV_02: -119.5dBm ≤ Timeslot_ISCP < -119.0dBm
...
UTRAN_TS_ISCP_LEV_79: -81.0dBm ≤ Timeslot_ISCP < -80.5dBm
UTRAN_TS_ISCP_LEV_80: -80.5dBm ≤ Timeslot_ISCP < -80.0dBm
UTRAN_TS_ISCP_LEV_81: -80.0dBm ≤ Timeslot_ISCP

~~**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.~~

~~10.1.5~~9.1.1.3 UTRA 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	Unit	Cell 1	Cell 2
UTRA RF Channei number	-	Channel 1	Channel 2
Îor/Ioc	dB	-1	-1
Ioc	dBm/ 3.84 MHz	Note 2	Note 2
Range 1: Io *Range 2: Io*	dBm/ 3.84 MHz	-94…-70 -94…-50	-94…-70 -94…-50
Propagation condition	-	AWGN	

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 *Îor/Ioc.*

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	dB	1	± 4	± 7
	dB	2	± 6	± 9

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	Unit	Accuracy	
		Normal condition	Extreme condition
Io	dBm	± 5	± 8

9.1.1.3.4 Range/mapping

UTRA carrier RSSI is given with a resolution of 1 dB with the range [-94, ..., -32] dBm.
UTRA carrier RSSI shall 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 ≤ UTRA_carrier_RSSI < -93dBm
UTRA_carrier_RSSI_LEV_02: -93dBm ≤ UTRA_carrier_RSSI < -92dBm
...
UTRA_carrier_RSSI_LEV_61: -34dBm ≤ UTRA_carrier_RSSI < -33dBm
UTRA_carrier_RSSI_LEV_62: -33dBm ≤ UTRA_carrier_RSSI < -32dBm
UTRA_carrier_RSSI_LEV_63: -32dBm ≤ 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.~~

~~10.1.6~~9.1.1.4 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~~9.1.1.5 SIR

9.1.1.5.1 Absolute accuracy requirements

Table 9-12 *SIR Intra frequency absolute accuracy*

Parameter	Unit	Accuracy	
		Normal conditions	Extreme conditions
SIR	dB	[ ]	[ ]

9.1.1.5.2 Range/mapping

SIR is given with a resolution of 0.5 dB with the range [-11, ..., 20] dB.
SIR shall be reported in the unit UE_SIR where:

UE_SIR_00:			SIR < -11.0dB
UE_SIR_01:	-11.0dB	≤	SIR < -10.5dB
UE_SIR_02:	-10.5dB	≤	SIR < -10.0dB
....			
UE_SIR_61:	19.0dB	≤	SIR < 19.5dB
UE_SIR_62:	19.5dB	≤	SIR < 20.0dB
UE_SIR_63:	20.0dB	≤	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~~

~~10.1.9~~9.1.1.6 Transport channel BLER

Requirement	The UE shall report the CRC results

9.1.1.6.1 Range/mapping

Transport channel BLER is given with a logarithmic resolution of 0.065 with the range [10^-4.03 ... 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 = 0		
BLER_LOG_01:	-∞	< Log10(Transport channel BLER) <	-4.030
BLER_LOG_02:	-4.030	≤ Log10(Transport channel BLER) <	-3.965
BLER_LOG_03:	-3.965	≤ Log10(Transport channel BLER) <	-3.900
...			
BLER_LOG_61:	-0.195	≤ Log10(Transport channel BLER) <	-0.130
BLER_LOG_62:	-0.130	≤ Log10(Transport channel BLER) <	-0.065
BLER_LOG_63:	-0.065	≤ Log10(Transport channel BLER) ≤	0.000

9.1.1.7 SFN-SFN observed time difference

9.1.1.7.1 accuracy requirements

Table 9-13 *SFN-SFN observed time difference accuracy*

Parameter	Unit	Accuracy
SFN-SFN observed time difference	chips 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 ≤ 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 ≤ (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	Unit	Accuracy
Observed time difference to GSM cell	chips 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.

~~10.1.10~~9.1.2.1 UE transmitted power

9.1.2.1.1 Absolute accuracy requirements

Table 9-15 *UE transmitted power absolute accuracy*

Parameter	Unit	Accuracy	
		Normal conditions	Extreme conditions
UE transmitted power	dB	+/-9	+/-12

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
...
UE_TX_POWER_102: 31dBm ≤ UE_transmitted_power < 32dBm
UE_TX_POWER_103: 32dBm ≤ UE_transmitted_power < 33dBm
UE_TX_POWER_104: 33dBm ≤ UE_transmitted_power < 34dBm

~~**Requirement**~~	~~**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~~

~~**Requirement**~~	~~+/-20chips.~~

~~10~~9.2 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**	**Cell 1**

UTRA RF Channel number		Channel 1
Timeslot		[ ]
DPCH Ec/Ior	dB	[ ]
Îor/Ioc	dB	[ ]
Ioc	dBm/ 3.84 MHz	-89
Range: Io	dBm	-105..-74
Propagation condition	-	AWGN

~~10~~9.2.1.~~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
RSCP	dB	+/-6dB	+/-9dB

9.2.1.1.2 Relative accuracy requirements

Table 9-18 *RSCP Intra frequency relative accuracy*

Parameter	Unit	Accuracy
RSCP	dB	+/-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 RSCP_LEV where:

RSCP_LEV_00:			RSCP < -120.0dBm
RSCP_LEV_01:	-120.0dBm	≤	RSCP < -119.5dBm
RSCP_LEV_02:	-119.5dBm	≤	RSCP < -119.0dBm
...			
RSCP_LEV_79:	-81.0dBm	≤	RSCP < -80.5dBm
RSCP_LEV_80:	-80.5dBm	≤	RSCP < -80.0dBm
RSCP_LEV_81:	-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.~~

~~10~~9.2.1.~~2~~.2 Timeslot ISCP

9.2.1.2.1 Absolute accuracy requirements

Table 9-19 *Timeslot ISCP Intra frequency absolute accuracy*

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

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 in the unit UTRAN_TS_ISCP_LEV where: UTRAN_TS_ISCP_LEV_00: Timeslot_ISCP < -120.0dBm UTRAN_TS_ISCP_LEV_01: -120.0dBm ≤ Timeslot_ISCP < -119.5dBm UTRAN_TS_ISCP_LEV_02: -119.5dBm ≤ Timeslot_ISCP < -119.0dBm ... UTRAN_TS_ISCP_LEV_79: -81.0dBm ≤ Timeslot_ISCP < -80.5dBm UTRAN_TS_ISCP_LEV_80: -80.5dBm ≤ Timeslot_ISCP < -80.0dBm UTRAN_TS_ISCP_LEV_81: -80.0dBm ≤ 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~~9.2.1.~~2~~.3 RSSI

9.2.1.3.1 Absolute accuracy requirements

Table 9-20 *RSSI Intra frequency absolute accuracy*

Parameter	Unit	Accuracy
RSSI	dB	+/-4dB

9.2.1.3.2 Range/mapping

RSSI is given with a resolution of 0.1dB with the range [-112, ..., -50] dBm.
RSSI shall be reported in the unit RSSI_LEV, where:

RSSI_LEV_000:			RSSI < -112.0dBm
RSSI_LEV_001:	-112.0dBm	≤	RSSI < –111.9dBm
RSSI_LEV_002:	-111.9dBm	≤	RSSI < –111.8dBm
...			
RSSI_LEV_619:	-50.2dBm	≤	RSSI < –50.1dBm
RSSI_LEV_620:	-50.1dBm	≤	RSSI < –50.0dBm
RSSI_LEV_621:	-50.0dBm	≤	RSSI

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

~~10~~9.2.1.~~2~~.4 SIR

9.2.1.4.1 Absolute accuracy requirements

Table 9-21 *SIR Intra frequency absolute accuracy*

Parameter	Unit	Accuracy
SIR	dB	+/-3dB for 0<SIR<10 dB

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 reported in the unit UTRAN_SIR where: UTRAN_SIR_00: SIR < -11.0dB UTRAN_SIR_01: -11.0dB ≤ SIR < -10.5dB UTRAN_SIR_02: -10.5dB ≤ SIR < -10.0dB .... UTRAN_SIR_61: 19.0dB ≤ SIR < 19.5dB UTRAN_SIR_62: 19.5dB ≤ SIR < 20.0dB UTRAN_SIR_63: 20.0dB ≤ SIR

~~**Requirement**~~	~~**Absolute accuracy:**~~ ~~+/- 3dB for 0<SIR<10 dB~~ ~~when RSSI>= -104dBm.~~

~~10~~9.2.1.~~2~~.5 Physical channel BER

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

~~10~~9.2.1.5.1 Accuracy requirement

Table 9-22 *Physical channel BER Intra frequency accuracy*

Parameter	Unit	Accuracy
BER		+/- 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: BER_LOG_000: Physical channel BER = 0 BER_LOG_001: -∞ < 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 ... 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.~~	

~~10~~9.2.1~~.2~~.6 Transport channel BLER

9.2.1.6.1 Accuracy requirement

Table 9-23 *Transport channel BLER accuracy*

Parameter	Unit	Accuracy
TrpBLER	-	[ ]

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 ... 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 = 0
BLER_LOG_01: -∞ < Log10(Transport channel BLER) < -4.030
BLER_LOG_02: -4.030 ≤ Log10(Transport channel BLER) < -3.965
BLER_LOG_03: -3.965 ≤ Log10(Transport channel BLER) < -3.900
...
BLER_LOG_61: -0.195 ≤ Log10(Transport channel BLER) < -0.130
BLER_LOG_62: -0.130 ≤ Log10(Transport channel BLER) < -0.065
BLER_LOG_63: -0.065 ≤ Log10(Transport channel BLER) ≤ 0.000

~~**Requirement**~~	

~~10~~9.2.1~~.2~~.7 Transport Channel BER

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

~~10~~9.2.1~~.2~~.7.1 Accuracy requirement

Table 9-24 *Transport channel BER accuracy*

Parameter	Unit	Accuracy
TrpBER	-	+/- []% 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: -∞ < Log10(Transport channel BER) < -2.06375 TrCH_BER_LOG_002: -2.06375 ≤ Log10(Transport channel BER) < -2.055625 TrCH_BER_LOG_003: -2.055625 ≤ Log10(Transport channel BER) < -2.0475 ... TrCH_BER_LOG_253: -0.024375 ≤ Log10(Transport channel BER) < -0.01625 TrCH_BER_LOG_254: -0.01625 ≤ Log10(Transport channel BER) < -0.008125 TrCH_BER_LOG_255: -0.008125 ≤ Log10(Transport channel BER) ≤ 0.000

~~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	Unit	Accuracy
RX Timing Deviation	-chips 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 ≤ RX Timing Deviation < ((N+1)* 0.25 –256) chips 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.

~~10.2.8~~9.2.2.1 Transmitted carrier power

9.2.2.1.1 Accuracy requirements

Table 9-26 *Transmitted carrier power accuracy*

Parameter	Unit	Accuracy
Transmitted carrier power	-	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:
UTRAN_TX_POWER_000: Transmitted carrier power = 0%
UTRAN_TX_POWER_001: 0% < Transmitted carrier power ≤ 1%
UTRAN_TX_POWER_002: 1% < Transmitted carrier power ≤ 2%
UTRAN_TX_POWER_003: 2% < Transmitted carrier power ≤ 3%
...
UTRAN_TX_POWER_098: 97% < Transmitted carrier power ≤ 98%
UTRAN_TX_POWER_099: 98% < Transmitted carrier power ≤ 99%
UTRAN_TX_POWER_100: 99% < Transmitted carrier power ≤ 100%

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

~~10.2.9~~9.2.2.2 Transmitted code power

9.2.2.2.1 Absolute accuracy requirements

Table 9-27 *Transmitted code power absolute accuracy*

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

9.2.2.2.2 Relative accuracy requirements

Table 9-28 *Transmitted code power relative accuracy*

Parameter	Unit	Accuracy
Transmitted code power	dB	+/-2dB

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 ≤ CODE_POWER < 46.0dBm UTRAN_TX_CODE_POWER_122: 46.0dBm ≤ CODE_POWER < 46.5dBm

~~**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.~~

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.123	CR	014	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN #8	for approval	X	strategic		*(for SMG use only)*
list expected approval meeting # here ↑		for information		non-strategic		

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: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [ ]

Source: RAN WG4 **Date:** 23/05/00

Subject: Requirement for UE TX Power Measurement

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: This CR proposes requirements for the UE Tx Power measurement.

Clauses affected: 9/10

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments: Revision of R4-000404, R4-000429

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.

~~10.1.10~~9.1.2.1 UE transmitted power

9.1.2.1.1 Absolute accuracy requirements

Table 9-15 *UE transmitted power absolute accuracy*

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

Note 1: User equipment maximum output power, PUEMAX, is the maximum output power level without tolerance defined for the power class of the UE in 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.~~

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.123	CR	015	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN #8	for approval	X	strategic		*(for SMG use only)*
list expected approval meeting # here ↑		for information		non-strategic		

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: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: RAN WG4 **Date:** 22/05/00

Subject: Addition of test parameters to RRM Measurements performance requirements

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:

Clauses affected: 3.3, 9, 10

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

[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;
$\hat{I}_{or}$	"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
$\underline{I_o}$	The total received power spectral density, including signal and interference, as measured at the UE antenna connector.
$\boldsymbol{I_{oc}}$	The power spectral density of a band limited white noise source (simulating interference from other cells) as measured at the UE antenna connector.
$\boldsymbol{I_{or}}$	The total transmit power spectral density of the down link at the base station antenna connector.
$\boldsymbol{\hat{I}_{or}}$	The received power spectral density of the down link as measured at the UE antenna connector.
$\frac{PCCPCH\_E_c}{I_{or}}$	The ratio of the average transmit energy per PN chip for the PCCPCH to the total 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.

9.1~~10~~ 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	Cell 1		Cell 2	
UTRA RF Channel number		Channel 1		Channel 1	
Timeslot		0	8	0	8
P-CCPCH Ec/Ior	dB	-3	-	-3	-
SCH Ec/Ior	dB	-9	-9	-9	-9
PICH Ec/Ior	dB	-	-3	-	-3
DPCH_Ec/Ior	dB	[]	[]	[]	[]
OCNS	dB	[]	[]	[]	[]
Îor/Ioc	dB	[ ]		[ ]	
Ioc	dBm/ 3.84 MHz	-70		-70	
Range 1:Io *Range 2: Io*	dBm	-94..-70 –94..-50		-94..-70 –94..-50	

Propagation condition	-	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 109-1-2 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/Ior	dB	-3	-	-3	-
SCH Ec/Ior	dB	-9	-9	-9	-9
PICH_Ec/Ior	dB	-	-3	-	-3
OCNS	dB	[]	[]	[]	[]
Îor/Ioc	dDB	[ ]		[ ]	
Ioc	dBm/ 3.84 MHz	Note 4		Note 4	
Range 1:Io *Range 2: Io*	dBm	[ ] -94..-70 [ ] -94..-50		[ ] -94..-70 [ ] -94..-50	
Propagation condition	-	AWGN			

Note 1: *P-CCPCH_RSCP1,2* ≥ -[102] dBm.

Note 2: | *P-CCPCH_RSCP1 – PCCPCH_RSCP2* |≤ 20 dB.

Note 3: | *Io – P-CCPCH_Ec/Ior*| ≤ [20] dB.

Note 4: *Ioc* level shall be adjusted according the total signal power *Io* at receiver input and the geometry factor *Îor/Ioc*. ~~*Io – 13.7 dB= Ioc.*~~

~~10.1.1.2 P-CCPCH RSCP~~

~~10.1.1.2.1~~9.1.1.1.1.2 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 10.9-1-3 is present.

Table 9-3: *P-CCPCH_RSCP Intra frequency absolute accuracy*

Parameter	Value	Range	Accuracy	
			Normal conditions	Extreme conditions
P-CCPCH_RSCP	dB	1	± 6	± 9
	dB	2	± 8	± 11

~~**Table 10.2 Range 1**~~

~~Parameter~~	~~Value~~	~~Accuracy~~	
		~~Normal conditions~~	~~Extreme conditions~~
~~*P-CCPCH_RSCP*~~	~~dB~~	~~± 6~~	~~± 9~~

~~**Table 10.3 Range 2**~~

~~Parameter~~	~~Value~~	~~Accuracy~~	
		~~Normal conditions~~	~~Extreme conditions~~
~~*P-CCPCH_RSCP*~~	~~dB~~	~~± 8~~	~~± 11~~

~~10.1.1.2.2~~9.1.1.1.3 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~~	Accuracy	
		Normal conditions	Extreme conditions
P-CCPCH_RSCP	dB	± 3	± 3

~~10.1.2~~9.1.1.1.2 ~~COMMON PILOT MEASUREMENTS~~CPICH Measurements (FDD)

These measurement 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/Ior*~~	~~dB~~	~~-10~~	~~-10~~
~~*PCCPCH_Ec/Ior*~~	~~dB~~	~~-12~~	~~-12~~
~~*SCH_Ec/Ior*~~	~~dB~~	~~-12~~	~~-12~~
~~*PICH_Ec/Ior*~~	~~dB~~	~~-15~~	~~-15~~
~~*DPCH_Ec/Ior*~~	~~dB~~	~~-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 *Range 2: Io*	dBm	-94… 70 -94… 50	-94… 70 -94… 50
Propagation condition	-	AWGN	

Note 1: *CPICH_RSCP1,2* ≥ -114 dBm.

Note 2: | *CPICH_RSCP1 – CPICH_RSCP2* |≤ 20 dB.

Note 3: | *Io – CPICH_Ec/Ior*| ≤ 20 dB.

Note 4: *Ioc* level shall be adjusted according the total signal power *Io* at receiver input and the geometry factor *Îor/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 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 test parameters*

Parameter	Unit	Cell 1		Cell 2
Timeslot Number		0	8	n.a
UTRA RF Channel Number		Channel 1		Channel 2
CPICH_Ec/Ior	dB	n.a.	n.a.	-10
P-CCPCH_Ec/Ior	dB	-3		-12
SCH_Ec/Ior	dB	-9	-9	-12
*SCH_*t_{offset}		0	0	n.a.
PICH_Ec/Ior			-3	-15
DPCH_Ec/Ior	dB	[]	[]	-15
OCNS	dB	-4.28	-4.28	-1.11
$\hat{I}_{or}/I_{oc}$	dB	[]	[]	10.5
I_{oc}	dBm/3.84 MHz	-70		Note 5
Range 1:Io *Range 2: Io*	dBm	-94..-70 -94..-50		-94..-70 -94..-50
Propagation condition	-	AWGN		AWGN

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/Ior	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 *Range 2: Io*	dBm	-94…-70 -94… 50	-94…-70 -94… 50
Propagation condition	-	AWGN	

Note 1: *CPICH_RSCP1,2* ≥ -114 dBm.

Note 2: | *CPICH_RSCP1 – CPICH_RSCP2* | ≤ 20 dB

Note 3: | *Channel 1_Io –Channel 2_Io*| ≤ 20 dB

Note 4: | *Io – CPICH_Ec/Ior*| ≤ 20 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 *Îor/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	Accuracy	
		Normal condition	Extreme condition
CPICH_RSCP	dB	± 6	± 9

Table 10.8 Range 2

Parameter	Value	Accuracy	
		Normal condition	Extreme condition
CPICH_RSCP	dB	± 8	± 11

~~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~~	
		~~Normal condition~~	~~Extreme condition~~
~~*CPICH_RSCP*~~	~~dB~~	~~± 3~~	~~± 3~~

~~10.1.2.5~~9.1.1.1.2.2.1 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 1and 2 are present.

Table ~~10.10~~9-6 ~~Range 2~~ *CPICH_RSCP Inter frequency relative accuracy*

Parameter	Unit~~Value~~	Accuracy	
		Normal condition	Extreme condition
CPICH_RSCP	dB	± 6	± 6

~~10.1.3~~9.1.1.1.2.3 CPICH Ec/Io

~~*[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/Io*~~	~~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/Io	dB	± 3	± 3

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 valus are relative to active cell value. In this test the parameters in table 10.29-7 is used. In this test cells 1and 2 are present.

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

Parameter	UnitValue	Accuracy	
		Normal condition	Extreme condition
CPICH_Ec/Io	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	Accuracy	
			Normal conditions	Extreme conditions
Timeslot_ISCP	dB	1	± 6	± 9
	dB	2	± 8	± 11

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.

Table 9-9 *UTRA carrier RSSI Inter frequency test parameters*

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 2	Note 2
Range 1: Io *Range 2: Io*	dBm/ 3.84 MHz	-94…-70 -94…-50	-94…-70 -94…-50
Propagation condition	-	AWGN	

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 *Îor/Ioc*.

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	dB	1	± 4	± 7
	dB	2	± 6	± 9

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	Unit	Accuracy	
		Normal condition	Extreme condition
Io	dBm	± 5	± 8

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.

10.1.79.1.1.5SIR

9.1.1.5.1 Absolute accuracy requirements

Table 9-12 *SIR Intra frequency absolute accuracy*

Parameter	Unit	Accuracy	
		Normal conditions	Extreme conditions
SIR	dB	[ ]	[ ]

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

~~10.1.9~~9.1.1.6Transport channel BLER

Requirement	The UE shall report the CRC results

9.1.1.7 SFN-SFN observed time difference

9.1.1.7.1 accuracy requirements

Table 9-13 *SFN-SFN observed time difference accuracy*

Parameter	Unit	Accuracy
SFN-SFN observed time difference	chips period	+/-0.5 for both type 1 and 2

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	Unit	Accuracy
Observed time difference to GSM cell	chips period	+/-20

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.

~~10.1.10~~9.1.2.1 UE transmitted power

9.1.2.1.1 Absolute accuracy requirements

Table 9-15 *UE transmitted power absolute accuracy*

Parameter	Unit	Accuracy

		Normal conditions	Extreme conditions
UE transmitted power	dB	+/-9	+/-12

~~**Requirement**~~	~~**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~~

~~**Requirement**~~	~~+/- 20chips.~~

~~10~~9.2 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**	**Cell 1**
UTRA RF Channel number		Channel 1
Timeslot		[ ]
DPCH Ec/Ior	dB	[ ]
Îor/Ioc	dB	[ ]
Ioc	dBm/ 3.84 MHz	-89
Range: Io	dBm	-105..-74
Propagation condition	-	AWGN

~~10~~9.2.1.~~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
RSCP	dB	+/-6dB	+/-9dB

9.2.1.1.2 Relative accuracy requirements

Table 9-18 *RSCP Intra frequency relative accuracy*

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

~~**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.~~

~~10~~9.2.1.~~2~~.2 Timeslot ISCP

9.2.1.2.1 Absolute accuracy requirements

Table 9-19 *Timeslot ISCP Intra frequency absolute accuracy*

Parameter	Unit	Accuracy

		Normal conditions	Extreme conditions
Timeslot ISCP	dB	+/-6dB	+/-9dB

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

109.2.1.2.3 RSSI

9.2.1.3.1 Absolute accuracy requirements

Table 9-20 *RSSI Intra frequency absolute accuracy*

Parameter	Unit	Accuracy
RSSI	dB	+/-4dB

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

109.2.1.2.4 SIR

9.2.1.4.1 Absolute accuracy requirements

Table 9-21 *SIR Intra frequency absolute accuracy*

Parameter	Unit	Accuracy
SIR	dB	+/-3dB for 0<SIR<10 dB

Requirement	**Absolute accuracy:** +/- 3dB for 0<SIR<10 dB 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	Unit	Accuracy
BER		+/- 10% of the absolute BER value

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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	Unit	Accuracy
TrpBLER	-	[ ]

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	Unit	Accuracy

TrpBER	-	+/- []% 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	Unit	Accuracy
RX Timing Deviation	-chips period	+/-0.5

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.

~~10.2.8~~9.2.2.1 Transmitted carrier power

9.2.2.1.1 Accuracy requirements

Table 9-26 *Transmitted carrier power accuracy*

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

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

~~10.2.9~~9.2.2.2Transmitted code power

9.2.2.2.1 Absolute accuracy requirements

Table 9-27 *Transmitted code power absolute accuracy*

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

9.2.2.2.2 Relative accuracy requirements

Table 9-28 *Transmitted code power relative accuracy*

Parameter	Unit	Accuracy
Transmitted code power	dB	+/-2dB

~~**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.~~