RP-020780

Title CRs (R'99 and Rel-4/Rel-5 Category A) to TS 25.133

Source TSG RAN WG4

Agenda Item 7.4.3

RAN4 Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item
R4-021403	25.133	437	1	F	R99	3.11.0	Correction of interruption time in FDD/FDD Hard Handover	TEI
R4-021404	25.133	438	1	Α	Rel-4	4.6.0	Correction of interruption time in FDD/FDD Hard Handover	TEI
R4-021405	25.133	439	1	Α	Rel-5	5.4.0	Correction of interruption time in FDD/FDD Hard Handover	TEI
R4-021443	25.133	476		F	R99	3.11.0	Correction of UE Transmitted Power requirements in case of Compressed Mode gaps	TEI
R4-021444	25.133	488		Α	Rel-4	4.6.0	Correction of UE Transmitted Power requirements in case of Compressed Mode gaps	TEI
R4-021445	25.133	477		Α	Rel-5	5.4.0	Correction of UE Transmitted Power requirements in case of Compressed Mode gaps	TEI
R4-021705	25.133	478	1	F	R99	3.11.0	Correction of Measurement Occasion Patterns for BSIC Reconfirmation	TEI
R4-021706	25.133	489	1	Α	Rel-4	4.6.0	Correction of Measurement Occasion Patterns for BSIC Reconfirmation	TEI
R4-021707	25.133	479	1	Α	Rel-5	5.4.0	Correcction of Measurement Occasion Patterns for BSIC Reconfirmation	TEI
R4-021741	25.133	480	2	F	R99	3.11.0	Required Window size for measurements using IPDL	TEI
R4-021742	25.133	490	2	Α	Rel-4	4.6.0	Required Window size for measurements using IPDL	TEI
R4-021743	25.133	481	2	Α	Rel-5	5.4.0	Required Window size for measurements using IPDL	TEI
R4-021713	25.133	482	1	F	R99	3.11.0	UE Timer accuracy	TEI
R4-021714	25.133	491	1	Α	Rel-4	4.6.0	0 UE Timer accuracy TEI	
R4-021715	25.133	483	1	Α	Rel-5	5.4.0	UE Timer accuracy	TEI
R4-021651	25.133	504		F	R99	3.11.0	Correction of UE parameters for Random Access Test	TEI

RAN4 Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item
R4-021652	25.133	505		Α	Rel-4	4.6.0	Correction of UE parameters for Random Access Test	TEI
R4-021653	25.133	506		Α	Rel-5	5.4.0	Correction of UE parameters for Random Access Test	TEI
R4-021717	25.133	507		F	R99	3.11.0	Corrections to cell reselection test cases	TEI
R4-021718	25.133	508		Α	Rel-4	4.6.0	Corrections to cell reselection test cases	TEI
R4-021719	25.133	509		Α	Rel-5	5.4.0	Corrections to cell reselection test cases	TEI

Proposed change affects: UICC apps#

R4-021403

ME X Radio Access Network Core Network

Rel-6

(Release 6)

	CHANG	E REQ	UE	ST	-		CR-Form-v7
*	25.133 CR 437	≋ rev	1	¥	Current version: 3.	.11.0	¥

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

		· · · <u>—</u>	<u> </u>		<u> </u>
Title:	ж	Correction of interruption time in FDI	D/FDD Hard Handover	r	
Source:	ж	RAN WG4			
Godi Go.	•••	10.11.17.01			
Morte itom codo	مو.	TCI	Do	40. 90	26/11/2002
Work item code:	. њ	ICI	Dat	te: #	20/11/2002
Category:	\mathfrak{H}	F	Releas	se: #	R99
		Use <u>one</u> of the following categories:	Use <u>o</u>	<u>ne</u> of t	he following releases:
		F (correction)	2	((GSM Phase 2)
		A (corresponds to a correction in a	n earlier release) R9	6	(Release 1996)
		B (addition of feature),	R9	7	(Release 1997)
		C (functional modification of feature	e) R9	8	(Release 1998)
		(editorial modification)	´ R9	9	(Release 1999)
		Detailed explanations of the above cated	ories can Re	,	(Release 4)
		he found in 3GPP TR 21 900	Re	,	(Release 5)

In this test case, the delay uncertainty of the TTI of the uplink DCH is not taken into consideration. The timing of CFN between cell1 and cell2 is not always aligned in this test case described in TS25.133 A5.2. If the timing of CFN between cell1 and cell2 isn't aligned, uplink DPCCH may not be able to be transmitted within 70ms (A.5.2.1) or 100ms (A.5.2.2), which is test requirement. For example, when a PC preamble is specified with 0, uplink DPDCH and uplink DPCCH must be transmitted at the same time as to Synchronisation procedure A described in TS25.214 4.3.2.3. In this case, The transmission delay of a maximum TTI of the uplink DCH occurs to align the timing of uplink DPDCH and uplink DPCCH transmission with the maximum uplink TTI boundary of the target cell even if downlink DPCCH synchronisation procedure is completed within 70ms (A.5.2.1) or 100ms (A.5.2.2) from activation time. The transmission delay for a maximum uplink TTI occurs in the same way even if a PC preamble is except for 0. This delay isn't taken into consideration with the interruption time.

There are two ways of the following as an approach for this subject.

- (a) The transmission delay to align the timing of uplink DPDCH and uplink DPCCH transmission with the maximum uplink TTI boundary of the target cell is added to the interruption time.
- (b) The timing of CFN between cell1 and cell2 is aligned so that the UE can transmit uplink DPCCH after 70ms (A.5.2.1) or 100ms (A.5.2.2) from the activation time.

The approach (a) is reasonable for System Simulator used in Terminal Conformance test.

Summary of change: ₩

To add the maximum TTI of the uplink DCH to the interruption time
To define DCH parameter as UL Reference Measurement Channel 12.2 kbps

Consequences if	ж	Even "Good UE" may not pass the test. The UE may not transmit uplink DPDCH
not approved:		at the uplink TTI boundary.

Clauses affected:	策 5.2
	YN
Other specs affected:	 X Other core specifications X Test specifications X O&M Specifications 34.121 8.3.2
Other comments:	# The CR (T1R-020317) will be sent to T1-RF to add the maximum TTI of the uplink DCH to the interruption time.
	Equivalent CRs in other Releases: CR438r1 cat. A to 25.133 v4.6.0, CR439r1 cat. A to 25.133 v5.4.0

How to create CRs using this form:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.2 FDD/FDD Hard Handover

5.2.1 Introduction

The hard handover procedure is initiated from UTRAN with a RRC message that implies a hard handover, see TS 25.331 section 8.3.5.

5.2.2 Requirements

5.2.2.1 Hard handover delay

Procedure delay for all procedures, that can command a hard handover, are specified in TS25.331 section 13.5.2.

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

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

where:

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

5.2.2.2 Interruption time

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

If intra-frequency hard handover is commanded or inter-frequency hard handover is commanded when the UE does not need compressed mode to perform inter-frequency measurements, the interruption time shall be less than T_{interrupt1}

$$T_{interrupt1} = T_{IU} + 40 + 20 * KC + 150 * OC + 10 * F_{max}$$
 ms

where

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

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

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

 \underline{F}_{max} denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH.

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

In the interruption requirement T_{interrupt1} a cell is known if either or both of the following conditions are true:

- the UE has had radio links connected to the cell in the previous (old) active set
- the cell has been measured by the UE during the last 5 seconds and the SFN of the cell has been decoded by the UE.

If inter-frequency hard handover is commanded and the UE needs compressed mode to perform inter-frequency measurements, the interruption time shall be less than $T_{interrupt2}$

$$T_{interrupt2} = T_{IU} + 40 + 50 * KC + 150 * OC + 10 * F_{max} ms$$

In the interruption requirement T_{interrupt2} a cell is known if:

- the cell has been measured by the UE during the last 5 seconds.

The phase reference is the primary CPICH.

The requirements in this section assume that N312 has the smallest possible value i.e. only one insync is required.

NEXT CHANGED SECTION

A.5.2 FDD/FDD Hard Handover

A.5.2.1 Handover to intra-frequency cell

A.5.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the single carrier case reported in section 5.2.2.1.

The test parameters are given in Table A.5.0 and A.5.0A below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1B shall be used, and that CPICH Ec/Io and SFN-CFN observed timed difference shall be reported together with Event 1A. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T3. The RRC procedure delay is defined [16].

Para	meter	Unit	Value	Comment
DCH parameters			DI and UI Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1 and A.2.1
Power Contro	l		On	
Target quality DTCH	value on	BLER	0.01	
Initial	Active cell		Cell 1	
conditions	Neighbourin g cell		Cell 2	
Final condition	Active cell		Cell 2	
Reporting ran	ge	dB	3	Applicable for event 1A and 1B
Hysteresis		dB	0	
W			1	Applicable for event 1A and 1B
Reporting dea threshold	ectivation		0	Applicable for event 1A
Time to Trigge	er	ms	0	
Filter coefficie	Filter coefficient		0	
T1	T1		5	
T2	·	S	5	
T3	·	S	5	

Table A.5.0A: Cell specific test parameters for Handover to intra-frequency cell

Parameter	Unit		Cell 1		Cell 2				
		T1	T2	T3	T1	T2	T3		
CPICH_Ec/lor	dB		-10			-10			
PCCPCH_Ec/lor	dB		-12			-12			
SCH_Ec/lor	dB		-12			-12			
PICH_Ec/lor	dB		-15		-15				
DPCH_Ec/lor	dB	Note1	Note1	Note3	N/A	N/A	Note1		
OCNS		Note2	Note2	Note2	-0.941	-0.941	Note2		
\hat{I}_{or}/I_{oc}	dB	0	6.	97	-Infinity	5.	97		
I_{oc}	dBm/3.84 MHz			-	70				
CPICH_Ec/lo	dB		-13		-Infinity	-1	14		
Propagation Condition				AV	VGN				

Note 1: The DPCH level is controlled by the power control loop

A.5.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 11070 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.2.2 Handover to inter-frequency cell

A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter frequency hard handover delay in CELL_DCH state as specified in section 5.2.2.1.

The test consists of three successive time periods, with a time duration T1, T2 and T3. The test parameters are given in tables A.5.0B and A.5.0C below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 2C shall be used. The CPICH Ec/I0 of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at beginning of T3 with one active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T3. The RRC procedure delay is defined [16].

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I

Note 3: The DPCH may not be power controlled by the power control loop.

Table A.5.0B: General test parameters for Handover to inter-frequency cell

Para	meter	Unit	Value	Comment	
DCH param	eters		DL <u>and UL</u> Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1 and A.2.1	
Power Cont	rol		On		
Target quali	ty value on	BLER	0.01		
Compressed	d mode		A.22 set 1	As specified in TS 25.101 section A.5.	
Initial	Active cell		Cell 1		
conditions	Neighbour cell		Cell 2		
Final conditions	Active cell		Cell 2		
Threshold no frequency	on used	dB	-18	Absolute Ec/I0 threshold for event 2C	
Reporting ra	ange	dB	4	Applicable for event 1A	
Hysteresis		dB	0		
W			1	Applicable for event 1A	
W non-used	frequency		1	Applicable for event 2C	
Reporting de threshold	eactivation		0	Applicable for event 1A	
Time to Trig	ger	ms	0		
Filter coeffic		_	0		
T1		S	5		
T2		S	10		
T3		S	5		

TableA.5.0C: Cell Specific parameters for Handover to inter-frequency cell

Parameter	Unit		Cell 1			Cell 2		
		T1	T2	Т3	T1	T2	T3	
UTRA RF Channel Number		Channel 1		Channel 2				
CPICH_Ec/lor	dB		-10			-10		
PCCPCH_Ec/lor	dB		-12			-12		
SCH_Ec/lor	dB	-12			-12			
PICH_Ec/lor	dB		-15		-15			
DPCH_Ec/lor	dB	Note1	Note 1	Note 3	N/A	N/A	Note1	
OCNS			Note 2		-0.941	-0.941	Note 2	
\hat{I}_{or}/I_{oc}	dB		0		Infinity	-1.8	-1.8	
I_{oc}			-7	70				
CPICH_Ec/lo dB			-13		Infinity -14			
Propagation Condition		AWGN						

Note 1: The DPCH level is controlled by the power control loop

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{\rm or}$

Note 3: The DPCH may not be power controlled by the power control loop.

A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 140100 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

R4-021404

CHANGE REQUEST										
*	25.133	CR <mark>438</mark>	жrev	1	Ħ	Current version:	4.6.0	¥		

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

Proposed change affects: UICC apps# ME Radio Access Network Core Network							
Title:	ж	Correction	on of interruption time	in FDD/FDD Hard H	landover		
Source:	\mathfrak{R}	RAN WO	3 4				
Work item code:	: X	TEI			Date: ૠ	26/11/2002	
Category:	\mathfrak{R}	Α			Release: ₩	Rel-4	
		Use <u>one</u>	of the following categori	es:	Use <u>one</u> of	the following releases:	
		F (0	correction)		2	(GSM Phase 2)	
			corresponds to a correct	ion in an earlier release	e) R96	(Release 1996)	
		B (8	addition of feature),		R97	(Release 1997)	
		C (f	unctional modification o	feature)	R98	(Release 1998)	
		D (6	editorial modification)		R99	(Release 1999)	
		Detailed 6	explanations of the abov	e categories can	Rel-4	(Release 4)	
		be found	in 3GPP TR 21.900.		Rel-5	(Release 5)	
					Rel-6	(Release 6)	

In this test case, the delay uncertainty of the TTI of the uplink DCH is not taken into consideration. The timing of CFN between cell1 and cell2 is not always aligned in this test case described in TS25.133 A5.2. If the timing of CFN between cell1 and cell2 isn't aligned, uplink DPCCH may not be able to be transmitted within 70ms (A.5.2.1) or 100ms (A.5.2.2), which is test requirement. For example, when a PC preamble is specified with 0, uplink DPDCH and uplink DPCCH must be transmitted at the same time as to Synchronisation procedure A described in TS25.214 4.3.2.3. In this case, The transmission delay of a maximum TTI of the uplink DCH occurs to align the timing of uplink DPDCH and uplink DPCCH transmission with the maximum uplink TTI boundary of the target cell even if downlink DPCCH synchronisation procedure is completed within 70ms (A.5.2.1) or 100ms (A.5.2.2) from activation time. The transmission delay for a maximum uplink TTI occurs in the same way even if a PC preamble is except for 0. This delay isn't taken into consideration with the interruption time.

There are two ways of the following as an approach for this subject.

- (a) The transmission delay to align the timing of uplink DPDCH and uplink DPCCH transmission with the maximum uplink TTI boundary of the target cell is added to the interruption time.
- (b) The timing of CFN between cell1 and cell2 is aligned so that the UE can transmit uplink DPCCH after 70ms (A.5.2.1) or 100ms (A.5.2.2) from the activation time.

The approach (a) is reasonable for System Simulator used in Terminal Conformance test.

Summary of change: ₩

To add the maximum TTI of the uplink DCH to the interruption time
To define DCH parameter as UL Reference Measurement Channel 12.2 kbps

Consequences if	ж	Even "Good UE" may not pass this test. The UE may not transmit uplink DPDCH
not approved:		at the uplink TTI boundary.

Clauses affected:	米 5.2 Y N
Other specs affected:	X Other core specifications X Test specifications O&M Specifications
Other comments:	#Equivalent CRs in other Releases: CR437r1 cat. F to 25.133 v3.11.0, CR439r1 cat. A to 25.133 v5.4.0

How to create CRs using this form:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.2 FDD/FDD Hard Handover

5.2.1 Introduction

The hard handover procedure is initiated from UTRAN with a RRC message that implies a hard handover, see TS 25.331 section 8.3.5.

5.2.2 Requirements

5.2.2.1 Hard handover delay

Procedure delay for all procedures, that can command a hard handover, are specified in TS25.331 section 13.5.2.

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

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

where:

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

5.2.2.2 Interruption time

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

If intra-frequency hard handover is commanded or inter-frequency hard handover is commanded when the UE does not need compressed mode to perform inter-frequency measurements, the interruption time shall be less than T_{interrupt1}

$$T_{interrupt1} = T_{IU} + 40 + 20 * KC + 150 * OC + 10 * F_{max}$$
 ms

where

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

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

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

 \underline{F}_{max} denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH.

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

In the interruption requirement T_{interrupt1} a cell is known if either or both of the following conditions are true:

- the UE has had radio links connected to the cell in the previous (old) active set
- the cell has been measured by the UE during the last 5 seconds and the SFN of the cell has been decoded by the UE.

If inter-frequency hard handover is commanded and the UE needs compressed mode to perform inter-frequency measurements, the interruption time shall be less than $T_{interrupt2}$

$$T_{interrupt2} = T_{IU} + 40 + 50 * KC + 150 * OC + 10 * F_{max} ms$$

In the interruption requirement T_{interrupt2} a cell is known if:

- the cell has been measured by the UE during the last 5 seconds.

The phase reference is the primary CPICH.

The requirements in this section assume that N312 has the smallest possible value i.e. only one insync is required.

NEXT CHANGED SECTION

A.5.2 FDD/FDD Hard Handover

A.5.2.1 Handover to intra-frequency cell

A.5.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the single carrier case reported in section 5.2.2.1.

The test parameters are given in Table A.5.0 and A.5.0A below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1B shall be used, and that CPICH Ec/Io and SFN-CFN observed timed difference shall be reported together with Event 1A. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T3. The RRC procedure delay is defined [16].

Parai	meter	Unit	Value	Comment
DCH parameters			DL <u>and UI</u> Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1 and A.2.1
Power Control			On	
Target quality DTCH	value on	BLER	0.01	
Initial	Active cell		Cell 1	
conditions	Neighbourin g cell		Cell 2	
Final condition	Active cell		Cell 2	
Reporting rang	ge	dB	3	Applicable for event 1A and 1B
Hysteresis		dB	0	
W			1	Applicable for event 1A and 1B
Reporting dea threshold	Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigge	Time to Trigger		0	
Filter coefficient			0	
T1		S	5	
T2		S	5	
T3		S	5	

Cell 1 Cell 2 Parameter Unit T1 T3 T1 T3 **T2 T2** CPICH_Ec/lor dB -10 -10 PCCPCH_Ec/lor dB -12 -12 SCH_Ec/lor dB -12 -12 PICH_Ec/lor dB -15 -15 DPCH_Ec/lor Note3 N/A N/A dΒ Note1 Note1 Note1 OCNS Note2 Note2 -0.941 -0.941 Note2 Note2 dB 6.97 5.97 0 -Infinity I_{or}/I_{oc} dBm/ -70 I_{oc} 3.84 MHz CPICH_Ec/lo dB -13 -Infinity -14 Propagation **AWGN**

Table A.5.0A: Cell specific test parameters for Handover to intra-frequency cell

Note 1: The DPCH level is controlled by the power control loop

A.5.2.1.2 Test Requirements

Condition

The UE shall start to transmit the UL DPCCH to Cell 2 less than 11070 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.2.2 Handover to inter-frequency cell

A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter frequency hard handover delay in CELL_DCH state as specified in section 5.2.2.1.

The test consists of three successive time periods, with a time duration T1, T2 and T3. The test parameters are given in tables A.5.0B and A.5.0C below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 2C shall be used. The CPICH Ec/I0 of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at beginning of T3 with one active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T3. The RRC procedure delay is defined [16].

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I

Note 3: The DPCH may not be power controlled by the power control loop.

Table A.5.0B: General test parameters for Handover to inter-frequency cell

Para	meter	Unit	Value	Comment
DCH parameters			DL <u>and UL</u> Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1 and A.2.1
Power Conti	rol		On	
Target qualit	ty value on	BLER	0.01	
Compressed	d mode		A.22 set 1	As specified in TS 25.101 section A.5.
Initial	Active cell		Cell 1	
conditions	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Threshold no frequency	on used	dB	-18	Absolute Ec/I0 threshold for event 2C
Reporting ra	inge	dB	4	Applicable for event 1A
Hysteresis		dB	0	
W			1	Applicable for event 1A
W non-used	frequency		1	Applicable for event 2C
Reporting deactivation threshold			0	Applicable for event 1A
Time to Trigger		ms	0	
Filter coefficient		_	0	
T1		S	5	
T2		S	10	
T3		S	5	

Table A.5.0C: Cell Specific parameters for Handover to inter-frequency cell

Parameter	Unit	Cell 1				Cell 2		
		T1	T2	T3	T1	T2	T3	
UTRA RF Channel Number		Channel 1			Channel 2			
CPICH_Ec/lor	dB		-10			-10		
PCCPCH_Ec/lor	dB		-12			-12		
SCH_Ec/lor	dB		-12			-12		
PICH_Ec/lor	dB		-15		-15			
DPCH_Ec/lor	dB	Note 1	Note 1	Note3	N/A	N/A	Note 1	
OCNS			Note 2		-0.941	-0.941	Note 2	
\hat{I}_{or}/I_{oc}	dB		0		Infinity	-1.8	-1.8	
I_{oc}	dBm/3.84 MHz	-7			' 0			
CPICH_Ec/lo	dB	-13			Infinity	-14	-14	
Propagation Condition		AWGN						

Note 1: The DPCH level is controlled by the power control loop

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{\rm or}$

Note 3: The DPCH may not be power controlled by the power control loop.

A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 140100 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

R4-021405

	CHANG	GE REQ	UEST	-		CR-Form-v7
ж	25.133 CR 439	≋ rev	1 #	Current version:	5.4.0	*

For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the **%** symbols.

Proposed chang	je a	affects:	UICC apps೫	ME X Radio Ac	cess Netwo	k Core Network
Title:	ж	Correction	on of interruption time i	n FDD/FDD Hard Ha	ndover	
Source:	\mathfrak{H}	RAN WO	9 4			
Work item code:	:Ж	TEI			Date: ₩	26/11/2002
Category:	\mathfrak{R}	Α			Release: ₩	Rel-5
		Use <u>one</u>	of the following categorie	S.	Use <u>one</u> of	the following releases:
		F (0	correction)		2	(GSM Phase 2)
		A (0	corresponds to a correction	on in an earlier release)	R96	(Release 1996)
		B (8	addition of feature),		R97	(Release 1997)
		C (f	unctional modification of	feature)	R98	(Release 1998)
		D (6	editorial modification)		R99	(Release 1999)
		Detailed of	explanations of the above	categories can	Rel-4	(Release 4)
		be found	in 3GPP TR 21.900.		Rel-5	(Release 5)

Reason for change: #

In this test case, the delay uncertainty of the TTI of the uplink DCH is not taken into consideration. The timing of CFN between cell1 and cell2 is not always aligned in this test case described in TS25.133 A5.2. If the timing of CFN between cell1 and cell2 isn't aligned, uplink DPCCH may not be able to be transmitted within 70ms (A.5.2.1) or 100ms (A.5.2.2), which is test requirement. For example, when a PC preamble is specified with 0, uplink DPDCH and uplink DPCCH must be transmitted at the same time as to Synchronisation procedure A described in TS25.214 4.3.2.3. In this case, The transmission delay of a maximum TTI of the uplink DCH occurs to align the timing of uplink DPDCH and uplink DPCCH transmission with the maximum uplink TTI boundary of the target cell even if downlink DPCCH synchronisation procedure is completed within 70ms (A.5.2.1) or 100ms (A.5.2.2) from activation time. The transmission delay for a maximum uplink TTI occurs in the same way even if a PC preamble is except for 0. This delay isn't taken into consideration with the interruption time.

Rel-6

(Release 6)

There are two ways of the following as an approach for this subject.

- (a) The transmission delay to align the timing of uplink DPDCH and uplink DPCCH transmission with the maximum uplink TTI boundary of the target cell is added to the interruption time.
- (b) The timing of CFN between cell1 and cell2 is aligned so that the UE can transmit uplink DPCCH after 70ms (A.5.2.1) or 100ms (A.5.2.2) from the activation time.

The approach (a) is reasonable for System Simulator used in Terminal Conformance test.

Summary of change: ₩

To add the maximum TTI of the uplink DCH to the interruption time
To define DCH parameter as UL Reference Measurement Channel 12.2 kbps

Consequences if	æ	Even "Good UE" may not pass this test. The UE may not transmit uplink DPDCH
not approved:		at the uplink TTI boundary.

Clauses affected:	¥ 5.2
Other specs affected:	 X X X Test specifications X O&M Specifications 34.121 8.3.2
Other comments:	# Equivalent CRs in other Releases: CR437r1 cat. F to 25.133 v3.11.0, CR438r1 cat. A to 25.133 v4.6.0

How to create CRs using this form:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.2 FDD/FDD Hard Handover

5.2.1 Introduction

The hard handover procedure is initiated from UTRAN with a RRC message that implies a hard handover, see TS 25.331 section 8.3.5.

5.2.2 Requirements

5.2.2.1 Hard handover delay

Procedure delay for all procedures, that can command a hard handover, are specified in TS25.331 section 13.5.2.

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

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

where:

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

5.2.2.2 Interruption time

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

If intra-frequency hard handover is commanded or inter-frequency hard handover is commanded when the UE does not need compressed mode to perform inter-frequency measurements, the interruption time shall be less than T_{interrupt1}

$$T_{interrupt1} = T_{IU} + 40 + 20 * KC + 150 * OC + 10 * F_{max} ms$$

where

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

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

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

 $\underline{F_{max}}$ denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH.

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

In the interruption requirement T_{interrupt1} a cell is known if it has been measured by the UE during the last 5 seconds and the SFN of the cell has been decoded by the UE.

If inter-frequency hard handover is commanded and the UE needs compressed mode to perform inter-frequency measurements, the interruption time shall be less than $T_{interrupt2}$

$$T_{interrupt2} = T_{IU} + 40 + 50 * KC + 150 * OC + 10 * F_{max} ms$$

In the interruption requirement Tinterrupt2 a cell is known if:

- the cell has been measured by the UE during the last 5 seconds.

The phase reference is the primary CPICH.

The requirements in this section assume that N312 has the smallest possible value i.e. only one insync is required.

NEXT CHANGED SECTION

A.5.2 FDD/FDD Hard Handover

A.5.2.1 Handover to intra-frequency cell

A.5.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the single carrier case reported in section 5.2.2.1.

The test parameters are given in Table A.5.0 and A.5.0A below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1B shall be used, and that CPICH Ec/Io and SFN-CFN observed timed difference shall be reported together with Event 1A. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T3. The RRC procedure delay is defined [16].

Table A.5.0: General test parameters for Handover to intra-frequency cell

Pai	rameter	Unit	Value	Comment
DCH parameters			DL and UI Reference	As specified in TS 25.101 section A.3.1
			Measurement Channel 12.2 kbps	and A.2.1
Power Cont			On	
Target quali DTCH	ty value on	BLER	0.01	
Initial	Active cell		Cell 1	
conditions	Neighbouring cell		Cell 2	
Final	Active cell		Cell 2	
condition				
Reporting ra	ange	dB	3	Applicable for event 1A and 1B
Hysteresis		dB	0	
W			1	Applicable for event 1A and 1B
Reporting de	eactivation		0	Applicable for event 1A
threshold				
Time to Trig	Time to Trigger		0	
Filter coefficient			0	
T1		S	5	
T2		S	5	
T3		S	5	

Unit Cell 1 Cell 2 **Parameter** T1 **T3** T1 T3 **T2 T2** CPICH_Ec/lor dΒ -10 -10 PCCPCH_Ec/lo dB -12 SCH_Ec/lor -12 dB -12 PICH_Ec/lor dΒ -15 -15 DPCH Ec/lor dB Note1 Note1 Note3 N/A N/A Note1 **OCNS** Note2 Note2 Note2 -0.941 -0.941 Note2 dB 5.97 0 6.97 -Infinity \hat{I}_{or}/I_{oc} dBm/3.84 -70 I_{oc} MHz CPICH_Ec/lo dΒ -13 -Infinity -14

AWGN

Table A.5.0A: Cell specific test parameters for Handover to intra-frequency cell

Note 1: The DPCH level is controlled by the power control loop

A.5.2.1.2 Test Requirements

Propagation

Condition

The UE shall start to transmit the UL DPCCH to Cell 2 less than 11070 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.2.2 Handover to inter-frequency cell

A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter frequency hard handover delay in CELL_DCH state as specified in section 5.2.2.1.

The test consists of three successive time periods, with a time duration T1, T2 and T3. The test parameters are given in tables A.5.0B and A.5.0C below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 2C shall be used. The CPICH Ec/I0 of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at beginning of T3 with one active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T3. The RRC procedure delay is defined [16].

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I

Note 3: The DPCH may not be power controlled by the power control loop.

Table A.5.0B: General test parameters for Handover to inter-frequency cell

Para	meter	Unit	Value	Comment
DCH parameters			DL <u>and UL</u> Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1 and A.2.1
Power Conti	rol		On	
Target qualit	ty value on	BLER	0.01	
Compressed	d mode		A.22 set 1	As specified in TS 25.101 section A.5.
Initial	Active cell		Cell 1	
conditions	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Threshold no frequency	on used	dB	-18	Absolute Ec/I0 threshold for event 2C
Reporting ra	inge	dB	4	Applicable for event 1A
Hysteresis		dB	0	
W			1	Applicable for event 1A
W non-used	frequency		1	Applicable for event 2C
Reporting de threshold	eactivation		0	Applicable for event 1A
Time to Trigger		ms	0	
Filter coeffic		_	0	
T1		S	5	
T2		S	10	
T3		S	5	

Table A.5.0C: Cell Specific parameters for Handover to inter-frequency cell

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	Т3	T1	T2	Т3
UTRA RF Channel Number			Channel 1		Channel 2		
CPICH_Ec/lor	dB		-10			-10	
PCCPCH_Ec/lor	dB		-12			-12	
SCH_Ec/lor	dB	-12			-12		
PICH_Ec/lor	dB		-15		-15		
DPCH_Ec/lor	dB	Note 1	Note 1	Note3	N/A	N/A	Note 1
OCNS			Note 2		-0.941	-0.941	Note 2
\hat{I}_{or}/I_{oc}	dB		0			-1.8	-1.8
I_{oc}	dBm/3.84 MHz	-7			70		
CPICH_Ec/lo	dB	-13			Intifinty	-14	-14
Propagation Condition				AW	'GN		

Note 1: The DPCH level is controlled by the power control loop

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{\rm or}$

Note 3: The DPCH may not be power controlled by the power control loop.

A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 140100 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

R4-021443

CR-Form-v7

CHANGE REQUEST

			CHANGE	: KEQI	JEST			
*	25.	. <mark>133</mark> CR	476	⊭ rev	ж (Current vers	ion: 3.11.0 ^{\$}	€
	-		_				over the ¥ symb	
Proposed change	e affec	ts: UICC a	apps#	ME X	Radio Acc	cess Networ	k Core Netw	vork
Title:	₩ Coı	rection of U	Transmitted	Power req	uirements	in case of C	ompressed Mode	e gaps
Source:	₩ RA	N WG4						
Work item code:	₩ TEI					Date: ₩	26/11/2002	
Category:	Deta	F (correction) A (correspon B (addition of C (functional D (editorial m	ds to a correction feature), modification of the codification of the above	on in an earl	ier release)	2 R96 R97 R98 R99 Rel-4	R99 the following releas (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5) (Release 6)	ses:
Reason for chang	ge: #	Mode gaps dBm. This averaged v report of or	s, the UE L1 sh value will be the value at the ou	hall report f hen input to itput of L3 f about the l	or the UE the L3 filt ilter, which JE Tx Pow	Transmitted er and will on is wrong ar	n case of Comprol Power a value of cause the drop of nd can prevent the nt 6a: the UE Tx	of –50 the ne
Summary of char	nge: Ж	stating that reported for Isolated Impaffect impler The CR has value of -50 mobile provi	t, instead of reprint those slots. Pact: would not a mentations supply a minor isolate of dBm during codes a lower average.	affect implemented the control of th	nentation be prected fun previous im node gaps. I x power wh	e of –50 dBr ehaving like in ctionality other plementation From a netwo en in compre	ns, which still report ork point of view tho essed mode. This m	would the ose nay
Consequences if not approved:	*	together in t	he same netwo g of the UE Tx es of the avera	rk, dependir <mark>« Power du</mark>	g on the us	e of the UE T	plementations are p x power measuren e will lead to wron prevent the correc	nents.
Clauses affected:	: ¥	9.1.6.1						
		YN						

Clauses affected:	${\mathfrak R}$	9	.1.6	.1		
		Υ	Ν			
Other specs	\mathfrak{H}		X	Other core specifications	\mathfrak{H}	

affected:		X Test specifications X O&M Specifications	
Other comments:	¥		
		Equivalent CRs in other Releases: CR4 to 25.133 v5.4.0	488 cat. A to 25.133 v4.6.0, CR477 cat. A

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- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

9.1.6 UE transmitted power

9.1.6.1 Accuracy requirement

The measurement period in CELL_DCH state is 1 slot.

Table 9.14 UE transmitted power absolute accuracy

D	11.2	Accuracy [dB]		
Parameter	Unit	PUEMAX 24dBm	PUEMAX 21dBm	
UE transmitted power=PUEMAX	dBm	+1/-3	±2	
UE transmitted power=PUEMAX-1	dBm	+1.5/-3.5	±2.5	
UE transmitted power=PUEMAX-2	dBm	+2/-4	±3	
UE transmitted power=PUEMAX-3	dBm	+2.5/-4.5	±3.5	
PUEMAX-10≤UE transmitted power <puemax-3< td=""><td>dBm</td><td>+3/-5</td><td>±4</td></puemax-3<>	dBm	+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 TS 25.101 [3] section 6.2.1.

NOTE 2: UE transmitted power is the reported value.

For each empty slot created by compressed mode, <u>no value shall be reported by the UE L1 for those slots-shall respond</u> with a value of 50 dBm.

9.1.6.2 UE transmitted power measurement report mapping

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

In table 9.15 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.15

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

R4-021445

	· · · · · · · · · · · · · · · · · · ·						
		CHAN	NGE REQ	UEST	-		CR-Form-v7
#	25.133	CR 477	∺ rev	#	Current version:	5.4.0	#

	CHANGE REQUEST
*	25.133 CR 477
	ing this form, see bottom of this page or look at the pop-up text over the % symbols.
Proposed change	ffects: UICC apps第 <mark></mark> ME <mark>_X</mark> Radio Access Network Core Network_
Title: #	Correction of UE Transmitted Power requirements in case of Compressed Mode gap
Source: #	RAN WG4
Work item code: ₩	TEI Date: 26/11/2002
Category:	Release: \$\mathbb{R}\$ Rel-5 Use one of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Cetailed explanations of the above categories can be found in 3GPP TR 21.900. Release: \$\mathbb{R}\$ Rel-5 Use one of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)
Reason for change	In the current version of the specification, it is stated that in case of Compressed Mode gaps, the UE L1 shall report for the UE Transmitted Power a value of -50 dBm. This value will be then input to the L3 filter and will cause the drop of the averaged value at the output of L3 filter, which is wrong and can prevent the report of ordered events about the UE Tx Power (e.g. event 6a: the UE Tx power becomes larger than an absolute threshold).
Summary of chang	Correct the behaviour of UE L1 for empty slots created by compressed mode stating that, instead of responding with a value of –50 dBm, no value shall be reported for those slots. Isolated Impact: would not affect implementation behaving like indicated in the CR, would be compressed mode stating that it is the compressed mode at the compressed mode stating that it is the compressed mode at the compressed mode stating that it is the compressed mode at the compressed
0	affect implementations supported the corrected functionality otherwise. The CR has a minor isolated impact on previous implementations, which still report the value of –50 dBm during compressed mode gaps. From a network point of view those mobile provides a lower averaged UE Tx power when in compressed mode. This may affect the network performance when both previous and new implementations are present together in the same network, depending on the use of the UE Tx power measurements.
Consequences if not approved:	The filtering of the UE Tx Power during Compressed Mode will lead to wrong lower values of the average after the L3 filter, which can prevent the correct reporting of ordered.
Clauses affected:	₩ 9.1.6.1
	YN

Clauses affected:	第 9.1.6.1
	Y N
Other specs	※ X Other core specifications ※ A Description ※ A Description ※ A Description ※ A Description ※ A Description ※ A Description ※ A Description ※ A Description ※ A Description ※ A Description ※ A Description ※ A Descript

affected:		X Test specifications X O&M Specifications	
Other comments:	ж		
		Equivalent CRs in other Releases: CR to 25.133 v4.6.0	476 cat. F to 25.133 v3.11.0, CR488 cat. A

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- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

9.1.6 UE transmitted power

9.1.6.1 Accuracy requirement

The measurement period in CELL_DCH state is 1 slot.

Table 9.14 UE transmitted power absolute accuracy

D	11.2	Accurac	y [dB]
Parameter	Unit	PUEMAX 24dBm	PUEMAX 21dBm
UE transmitted power=PUEMAX	dBm	+1/-3	±2
UE transmitted power=PUEMAX-1	dBm	+1.5/-3.5	±2.5
UE transmitted power=PUEMAX-2	dBm	+2/-4	±3
UE transmitted power=PUEMAX-3	dBm	+2.5/-4.5	±3.5
PUEMAX-10≤UE transmitted power <puemax-3< td=""><td>dBm</td><td>+3/-5</td><td>±4</td></puemax-3<>	dBm	+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 TS 25.101 [3] section 6.2.1.

NOTE 2: UE transmitted power is the reported value.

For each empty slot created by compressed mode, <u>no value shall be reported by</u> the UE L1 <u>for those slots shall respond</u> with a value of 50 dBm.

9.1.6.2 UE transmitted power measurement report mapping

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

In table 9.15 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.15

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

R4-021705

	CHANG	SE REQ	UEST	CR-Form-v7
*	25.133 CR 478	≭ rev	1 **	Current version: 3.11.0 #

*	# 25.133 CR 478 # rev 1 # Current version: 3.11.0					.0 *							
For HELP on t	using	his for	m, see botton	n of this p	age or	look a	at the	pop-u	p text	t over	the #	symbol	ls.
Proposed change affects: UICC apps# ME X Radio Access Network Core Network													
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Title:	Co	rection	of Measuren	nent Occ	asion P	atterr	ns for	BSIC	Reco	nfirm	ation		
Source:	RA	N WG	4										
Work item code: ₩	TE							Da	ite: #	26	/11/200)2	
Category:	<i>Use</i> Deta	F (corr A (corr B (add C (fund D (edit iled exp	the following carection) responds to a criticion of feature; ctional modificational modificational modifications of the 3GPP TR 21.90	correction i), ation of fea on) e above ca	ture)		lease _,	2) RS RS RS RS RS	one of 96 97 98 99 el-4 el-5	the for (GSI) (Rele (Rele (Rele (Rele (Rele	ollowing M Phas ease 19 ease 19 ease 19 ease 4) ease 5)	96) 97) 98)	s:
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Summary of chang	ge:♯	Char	nge the values	in table	8.14.								
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Consequences if not approved:	re-confirm, GSW					or							
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			econfirmation										

GSM cell was not detectable by the UE.

 When values in previous version were pessimistic, UTRAN wrongly anticipated reconfirmation failure too late. One possible side effect was that UTRAN could slow down the re-selection time.

These hereabove faults happen with 100 % probablility when UTRAN configures the UE with the previous (N_TTI;T_meas) combinations.

Clauses affected:	第 8.4.2.5.2.2			
Other specs affected:	Y N X Other core specifications X Test specifications O&M Specifications			
Other comments:	Equivalent CRs in other Releases: CR489r1 cat. A to 25.133 v4.6.0, CR479r1 cat. A to 25.133 v5.4.0			

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8.4.2.5.2.2 BSIC re-confirmation

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

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

For each measurement occasion allocated for GSM BSIC reconfirmation as described in 8.4.2.5, the UE shall attempt to decode the BSIC falling within the measurement occasion duration according to table 8.12. When the UE has to select one out of several possible GSM cells to reconfirm within the possible allocation of measurement occasions, according to 8.4.2.5, priority shall be given to the least recently decoded BSIC.

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

 $T_{\text{re-confirm_GSM}}$ is given for the combinations of T_{meas} and N_{TTI} that are given in table 8.14. The values given in table 8.14 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier. Different values for $T_{\text{re-confirm GSM}}$ might apply when more than one GSM cell is in the BSIC reconfirmation procedure at the same time.

Table 8.14: The worst-case time for reconfirmation of one previously identified GSM cell

T_meas	N_TTI=1 frame	N_TTI=2 frames	N_TTI=4 frames	N_TTI=8 frames
(ms)	T _{re-confirm,GSM} (ms)	T _{re-confirm,GSM} (ms)	T _{re-confirm,GSM} (ms)	T _{re-confirm,GSM} (ms)
80	2880	1280 1600		• 1
120	5040	2400	1	1
160	6400	2880 3200	2560 2240	2560 1600
240	17280	4800	<u>-3840</u>	• 1
320	10880 14080	6400	5120 4480	5120 3200
480	22080	9600	7680 6720	7680 4800
640	26880	12800	10240	10240 6400
960	*	17280	15360 13440	15360 9600
1280	*	20480 33280	20480 17920	20480 12800
1920	*	*	30720 26880	30720 19200
2560				40960
3840				61440

^{*} Note: There are no performance requirements for these combinations of parameters because they result in long reconfirmation time.

R4-021707

	C	CHANGE	REQ	UE	ST	-		CR-Form-v7
*	25.133 CR	479	жrev	1	¥	Current version:	5.4.0	ж

For HELP on using this form, see bottom of this page or look at the pop-up text over the \$\mathbb{R}\$ symbol of the following release the pop-up text over the \$\mathbb{R}\$ symbol of the following release the pop-up text over the pop-up text over the \$\mathbb{R}\$ symbol of the following release the pop-up text over the pop-up text over the \$\mathbb{R}\$ symbol of the following release the pop-up text over the \$\mathbb{R}\$ symbol of the following release the pop-up text over the pop-up t
Title: # Correction of Measurement Occasion Patterns for BSIC Reconfirmation Source: # RAN WG4 Work item code: # TEI
Title: # Correction of Measurement Occasion Patterns for BSIC Reconfirmation Source: # RAN WG4 Work item code: # TEI
Source: # RAN WG4 Work item code: TEI
Work item code: TEI Date: Release: Rel-5 Use one of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) R98 (Release 1998) D (editorial modification) R99 (Release 1999) Detailed explanations of the above categories can Be found in 3GPP TR 21.900. Reason for change: Table 8.14 has some errors. Some of the cells in the table are not applicable after the change of the allowed measurement occasion patterns of Table 8. Summary of change: Change the values in table 8.14. One note is added for N_TTI = 1 and Tmeas = 960 ms, 1280 and 1920 ms. These combinations of parameters result in long reconfirmation time, and for
Category: # A Use one of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) Petalied explanations of the above categories can be found in 3GPP TR 21.900. Reason for change: Table 8.14 has some errors. Some of the cells in the table are not applicable after the change of the allowed measurement occasion patterns of Table 8. Summary of change: Change the values in table 8.14. One note is added for N_TTI = 1 and Tmeas = 960 ms, 1280 and 1920 ms. These combinations of parameters result in long reconfirmation time, and for the composition of the composition of the confirmation time, and for the confirmation time.
Use one of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900. Reason for change: Table 8.14 has some errors. Some of the cells in the table are not applicable after the change of the allowed measurement occasion patterns of Table 8. Summary of change: Change the values in table 8.14. One note is added for N_TTI = 1 and Tmeas = 960 ms, 1280 and 1920 ms. These combinations of parameters result in long reconfirmation time, and for
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One note is added for N_TTI = 1 and Tmeas = 960 ms, 1280 and 1920 ms. These combinations of parameters result in long reconfirmation time, and for
These combinations of parameters result in long reconfirmation time, and for
Isolated Impact: The CR has a minor isolated impact on the BSIC reconfirmation procedures because the time allowed to do a reselection is changed.
Consequences if not approved: The specified values of T _{re-confirm, GSM} for the measurement occasion patterns BSIC Reconfirmation will be erroneous.
 The correction is needed because the system cannot function correctly without this correction. Some (N_TTI;T_meas) combinations are inconsistent with Table 8.10A UE is not able to accept other (N_TTI;T_meas) combinations than inclu in the Table 8.10A. The behaviour of the UE is not specified when confi by other combinations and therefore can be different from one manufact to another. One possible situation is that UTRAN assumes that the UE accept the combination whereas the UE rejects it. The removal of these combinations will clear such situations. When values in previous version were optimistic, UTRAN wrongly antices.

GSM cell was not detectable by the UE.

 When values in previous version were pessimistic, UTRAN wrongly anticipated reconfirmation failure too late. One possible side effect was that UTRAN could slow down the re-selection time.

These hereabove faults happen with 100 % probablility when UTRAN configures the UE with the previous (N_TTI;T_meas) combinations.

Clauses affected:	8.4.2.5.2.2			
Other specs affected:	Y N X Other core specifications Test specifications O&M Specifications			
Other comments:	Equivalent CRs in other Releases: CR478r1 cat. F to 25.133 v3.11.0, CR489r1 cat. A to 25.133 v4.6.0			

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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.4.2.5.2.2 BSIC re-confirmation

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

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

For each measurement occasion allocated for GSM BSIC reconfirmation as described in 8.4.2.5, the UE shall attempt to decode the BSIC falling within the measurement occasion duration according to table 8.12. When the UE has to select one out of several possible GSM cells to reconfirm within the possible allocation of measurement occasions, according to 8.4.2.5, priority shall be given to the least recently decoded BSIC.

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

 $T_{\text{re-confirm_GSM}}$ is given for the combinations of T_{meas} and N_{TTI} that are given in table 8.14. The values given in table 8.14 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier. Different values for $T_{\text{re-confirm GSM}}$ might apply when more than one GSM cell is in the BSIC reconfirmation procedure at the same time.

Table 8.14: The worst-case time for reconfirmation of one previously identified GSM cell

T_meas	N_TTI=1 frame	N_TTI=2 frames	N_TTI=4 frames	N_TTI=8 frames
(ms)	T _{re-confirm,GSM} (ms)	T _{re-confirm,GSM} (ms)	T _{re-confirm,GSM} (ms)	T _{re-confirm,GSM} (ms)
80	2880	1280 1600	<u>-</u>	<u>-</u>
120	5040	2400	-	-
160	6400	2880 3200	2560 2240	2560 1600
240	17280	4800	<u>-3840</u>	- 1
320	10880 14080	6400	5120 4480	5120 3200
480	22080	9600	7680 6720	7680 4800
640	26880	12800	10240	10240 6400
960	*	17280	15360 13440	15360 9600
1280	*	20480 33280	20480 17920	20480 12800
1920	*	*	30720 26880	30720 19200
2560				40960
3840				61440

^{*} Note: There are no performance requirements for these combinations of parameters because they result in long reconfirmation time.

R4-021741

		CHANGE	REQ	UES	ST	CR-Form-v7
*	25.133 CR	480	жrev	2	Current version: 3.1	11.0 ^ж

æ	25.133 CR 480	Current version: 3.11.0 **			
For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the \mathbb{H} symbols.					
Proposed change	affects: UICC apps₩ ME X Radio Ac	cess Network Core Network			
Title: ૠ	Required Window size for measurements using IP	DL			
Source: #	RAN WG4				
Work item code: ₩	TEI	Date: 第 26/11/2002			
Category: #	S F	Release: # R99			
Category.	Use one of the following categories:	Use one of the following releases:			
	F (correction)	2 (GSM Phase 2)			
	A (corresponds to a correction in an earlier release,				
	B (addition of feature),	R97 (Release 1997)			
	C (functional modification of feature)	R98 (Release 1998)			
	D (editorial modification)	R99 (Release 1999)			
	Detailed explanations of the above categories can Rel-4 (Release 4)				
	be found in 3GPP TR 21.900.	Rel-5 (Release 5)			
		Rel-6 (Release 6)			
Reason for change		observed time difference type 2			
	measurements with IPDL are not finalised				
Summary of chang	ge: # 1) Time to detect a new cell through IPDL mea measurement period is defined in CELL_DCH periods with a length of 1 slot are scheduled a 40 and 80 chips	and Cell_FACH states when idle			
	2) Side conditions for accuracy requirements a	are defined.			
3) The test case "A.9.1.5.2 SFN-SFN observed time difference type 2" is corrected. There are now tests both with and without IPDL.					
Isolated Impact Analysis:					
	This CR has an isolated impact on the SFN-SFN type 2 measurement. Since, the CR only corrects the requirements of an optional feature, it does not have any impact on any other requirements or implementations.				
Consequences if not approved:	# There are no measurement requirements or a utilising IPDL. The performance of SFN-SFN assessed.				
0	00 04000 04000 04000				
Clauses affected:	8.1.2.2.2 , 8.4.2.2.2 , 9.1.8.2.2 , A.9.1.5				
Other specs	₩ N Other core specifications ₩				

Clauses affected:	第 8.1.2.2.2, 8.4.2.2.2, 9.1.8.2.2, A.9.1.5				
	Г	ΥN	1		
Other specs	ж	N	Other core specifications	æ	
affected:	•	Y	Test specifications		34.121

	N O&M Specifications
Other comments:	Equivalent CRs in other Releases: CR490r2 cat. A to 25.133 v4.6.0, CR481r2 cat. A to 25.133 v5.4.0

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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request

8 UE Measurements Procedures

8.1 General Measurement Requirements in CELL_DCH State

8.1.1 Introduction

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

8.1.2 Requirements

8.1.2.1 UE Measurement Capability

In CELL_DCH state the UE shall be able to monitor up to

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

Depending on UE capability, the UE shall be able to monitor up to 16 intra frequency cells during IPDL gaps.

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

- provide transmission gap pattern sequences with TGPL1 > 1, and
- provide the patterns within a transmission gap pattern sequence that are identical (i.e., TGPL1 = TGPL2), and
- ensure that with the activation of one or more transmission gap pattern sequences, no more than two frames contain a transmission gap within any window of three consecutive frames, and
- ensure that there is a minimum of 8 slots between the end of the first transmission gap and the beginning of the second transmission gap in case of two successive compressed frames..

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

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

The received CPICH E_c/I_o is defined as

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

and the received SCH E_c/I_o is defined as

$$\left(\frac{SCH_E_c}{I_o}\right)_{in_o dR} = \left(\frac{SCH_E_c}{I_{or}}\right)_{in_o dR} - \frac{I_o}{(\hat{I}_{or})_{in_o dR}}$$

8.1.2.2 FDD intra frequency measurements

During the CELL_DCH state the UE shall continuously measure identified intra frequency cells and search for new intra frequency cells in the monitoring set. In case the network requests the UE to report detected set cells, the UE shall also search for intra frequency cells outside the monitored and active set. Cells, which are neither included in the active set nor in the monitored set, and are identified by the UE belong to the detected set according to TS 25.331. If compressed mode pattern sequences are activated, intra frequency measurements can be performed between the transmission gaps simultaneously for data reception from the active set cell/s.

The performance of intra frequency measurements when IPDL is active has not been studied.

8.1.2.2.1 Identification of a new cell

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

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

A cell shall be considered detectable when

- CPICH Ec/Io \geq -20 dB,
- SCH_Ec/Io ≥ -20 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

When L3 filtering is used an additional delay can be expected.

In case of conflict when a compressed gap sequence is activated the UE may choose to prioritise the SFN decoding.

8.1.2.2.1.1 Identification of a new cell using IPDL gaps

When the UE is supporting IPDL measurements and when idle periods with a length of 1 slot are scheduled the UE physical layer shall be capable to identify a new cell and report SFN-SFN observed time difference type 2 measurement within

where

T_{Measurement Period Intra} = The measurement period for Intra frequency CPICH measurements defined in Section 8.1.2.2.2.

and

T_{IPDL} depends on the Search Window Size given in UE positioning OTDOA neighbour cell info as given in Table 8.X

Table 8.X: T_{IPDL}

Search Window Size	TIPDL
less than or equal to +/- 40 chips	Time over which 4 consecutive IPDL gaps occur
<u>+/- 80 chips</u>	Time over which 8 consecutive IPDL gaps occur

8.1.2.2.2 UE CPICH measurement capability

In the CELL_DCH state the measurement period for intra frequency measurements is 200 ms. When no transmission gap pattern sequence is activated, the UE shall be capable of performing CPICH measurements for 8 identified intrafrequency cells of the monitored set and/or the active set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When one or more transmission gap pattern sequences are activated, the UE shall be capable of performing CPICH measurements for at least $Y_{\text{measurement intra}}$ cells , where $Y_{\text{measurement intra}}$ is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2. If the UE has identified more than $Y_{\text{measurement intra}}$ cells, the UE shall perform measurements of all identified cells but the reporting rate of CPICH measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement intra}} = Floor \left\{ X_{\text{basic measurement FDD}} \cdot \frac{\mathbf{T}_{\text{Intra}}}{\mathbf{T}_{\text{Measurement Period, Intra}}} \right\} \text{ cells}$$

where

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

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

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

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

8.1.2.2.2.1 Capabilities for measurements during IPDL gaps

When idle periods with a length of 1 slot are scheduled, the UE physical layer shall be capable of reporting SFN-SFN observed time difference type 2 measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.8.2.2 with measurement period given by

$$T_{\text{measurement IPDL}} = Max \{ T_{\text{Measurement_Period Intra}}, T_{4 \text{ IPDLs}} \} ms$$

where

T_{Measurement Period Intra} = The measurement period for Intra frequency CPICH measurements defined in Section 8.1.2.2.2.

 $T_{4 \text{ IPDLs}}$ = Time period over which 4 consecutive idle periods occur.

**** NEW SECTION ****

8.4 Measurements in CELL FACH State

8.4.1 Introduction

This section contains requirements on the UE regarding cell reselection and measurement reporting in CELL_FACH state. The requirements for cell re-selection are split in FDD intra frequency, FDD inter frequency, TDD and GSM measurements. The measurements are defined in TS 25.215, the measurement model is defined in TS 25.302 and measurement accuracies are specified in section 9. Control of measurement reporting is specified in TS 25.331. Measurement occasions in CELL_FACH state are described in TS 25.331.

8.4.2 Requirements

8.4.2.1 UE Measurement Capability

In CELL_FACH state, the UE shall be able to monitor up to

- 32 intra frequency FDD cells and
- 32 inter frequency cells, including
 - FDD cells distributed on up to 2 additional FDD carriers and
 - Depending on UE Capability, TDD mode cells, distributed on up to 3 TDD carriers, and
- -___-Depending on UE capability, 32 GSM cells distributed on up to 32 GSM carriers.

Depending on UE capability, the UE shall be able to monitor up to 16 intra frequency cells during IPDL gaps.

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

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

For this three parameters are defined:

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

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

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

The measurement time T_{meas} is then defined as

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

where

- M_REP is the Measurement Occasion cycle length where K is given in table 8.10A. K is the FACH measurement occasion length cofficient as specified in TS25.331
- The FACH Measurement Occasion of N_{TTI} frames will be repeated every N_{TTI} * M_REP frame.
- N_{TTI} is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE.

Table 8.10A: K values for each N_{TTI} value

N _{TTI}	K
1	3,4,5,6
2	2,3,4,5
4	2,3,4
8	1,2,3

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

8.4.2.2 FDD intra frequency measurements

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

The performance of intra frequency measurements when IPDL is active has not been studied.

8.4.2.2.1 Identification of a new cell

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

$$T_{\text{identify, intra}} = Max \left\{ 800, \text{Ceil} \left\{ \frac{T_{\text{basic identify FDD, intra}}}{N_{\text{TTI}} \cdot (M_{\text{REP}} - 1) \cdot 10} \right\} \cdot N_{\text{TTI}} \cdot M_{\text{REP}} \cdot 10 \right\} \text{ ms}$$

where

T_{basic_identify_FDD, intra} is specified in section 8.1.2.2.2,

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

A cell shall be considered detectable when

- CPICH Ec/Io \geq -20 dB,
- SCH_Ec/Io ≥ -20 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

In case of conflict when a measurement occasion is activated the UE may choose to prioritise the SFN decoding

8.4.2.2.1.1 Identification of a new cell using IPDL gaps

When the UE is supporting IPDL measurements and when idle periods with a length of 1 slot are scheduled the UE physical layer shall be capable to identify a new cell and report SFN-SFN observed time difference type 2 measurement within

where

T_{Measurement Period Intra} = The measurement period for Intra frequency CPICH measurements defined in Section 8.1.2.2.2.

and

T_{IPDL} depends on the Search Window Size given in UE positioning OTDOA neighbour cell info as given in Table 8.X

Table 8.X: T_{IPDL}

Search Window Size	<u>T_{IPDL}</u>
less than or equal to +/- 40 chips	Time over which 4 consecutive IPDL gaps occur
<u>+/- 80 chips</u>	Time over which 8 consecutive IPDL gaps occur

8.4.2.2.2 UE CPICH measurement capability

In the CELL_FACH state the measurement period for intra frequency measurements is 200 ms. When no measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for 8 identified intrafrequency cells of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When a measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for the $Y_{measurement\ intra}$ strongest cells , where $Y_{measurement\ intra}$ is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2. If the UE has identified more than $Y_{measurement\ intra}$ cells, the UE shall perform measurements of all identified cells but the reporting rate of CPICH measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement intra}} = Floor \begin{cases} X_{\text{basic measurement FDD}} \cdot \frac{\mathbf{T}_{\text{Measurement_Period Intra}} - Ceil \begin{cases} \frac{\mathbf{T}_{\text{Measurement_Period Intra}}}{N_{TTI} \cdot M_{-}REP \cdot 10 \text{ ms}} \end{cases} \cdot N_{TTI} \cdot 10 \text{ ms} \end{cases}$$
 cells

where

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

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

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

8.4.2.2.2.1 Capabilities for measurements during IPDL gaps.

When idle periods with a length of 1 slot are scheduled UE physical layer shall be capable of reporting SFN-SFN observed time difference type 2 measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.8.2.2 with measurement period given by

$$T_{\text{measurement IPDL}} = Max \{ T_{\text{Measurement_Period Intra}}, T_{\text{4 IPDLs}} \} ms$$

where

 $T_{\text{Measurement Period Intra}}$ = The measurement period for Intra frequency CPICH measurements defined in Section 8.1.2.2.2.

and

 $T_{4 \text{ IPDLs}} = \text{Time period over which 4 consecutive idle periods occur.}$

**** NEW SECTION *****

9.1.8.2 SFN-SFN observed time difference type 2

NOTE: This measurement is for location service purposes to identify time difference between two cells.

It is optional for terminal to support the use of IPDL periods together with SFN-SFN observed time difference type 2. The support of IPDL depends on the supported UE positioning methods.

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

9.1.8.2.1 Intra frequency measurement requirement accuracy without IPDL period active

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2. The measurement period for CELL FACH state can be found in sub clause 8.4.2.2.

The accuracy requirement in table 9.21 is valid under the following conditions:

CPICH_RSCP1,2
$$|_{dBm} \ge -114 dBm$$
.

$$\begin{aligned} & \frac{I_{o}}{\left(\hat{I}_{or}\right)_{in\ dB}} - \frac{CPICH - RSCP2}{I_{or}}\Big|_{in\ dB} \le 20dB \\ & \frac{I_{o}}{\left(\hat{I}_{or}\right)_{in\ dB}} - \frac{\left(\frac{CPICH - E_{c}}{I_{or}}\right)_{in\ dB}}{I_{or}} \le 20dB \end{aligned}$$

Table 9.21

Parameter	Unit	Accuracy [chip]	Conditions lo [dBm/3.84 MHz]
SFN-SFN observed time difference type2	chip	± 0.5	-9450

9.1.8.2.2 Intra frequency measurement requirement accuracy with IPDL period active

This requirement is valid only for UEs supporting IPDL measurements.

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.2.

The accuracy requirement in table 9.22 is valid under the following conditions:

CPICH_RSCP1,2
$$|_{dBm} \ge -114 dBm$$
.

$$\frac{I_{o}}{\left(\hat{I}_{or}\right)_{in\ dB}} - \left(\frac{CPICH - RSCP2}{I_{or}}\right)_{in\ dB} \leq 20dB$$

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

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

Additionally the accuracy requirement in table 9.22 is also valid for neighbour cells for which the following conditions apply to during idle periods provided idle periods have a length of 1 slot:

CPICH RSCPx, $v|_{dBm} \ge -114 dBm$.

$$\underline{I_{o_idle_period}} \left|_{in\ dB} - \left(\frac{CPICH_E_c}{I_{or}}\right)\right|_{in\ dB} \le 20dB_{\bullet}$$

where x and y represent cells measured using idle periods and $I_{o_idle-period}$ is the total received power during the idle period.

NOTE: Additional general conditions are needed for the requirements in table 9.22 to be valid.

Table 9.22

Parameter	Unit	Accuracy [chip]	Conditions lo [dBm/3.84 MHz]	
SFN-SFN observed time difference type 2	chip	± 0.5	-9450	

9.1.8.2.3 Inter frequency measurement requirement accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.3. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.3.

The accuracy requirement in table 9.23 is valid under the following conditions:

CPICH_RSCP1,2 $|_{dBm} \ge -114 dBm$.

| Channel 1_Io| $_{dBm/3.84~MHz}$ -Channel 2_Io| $_{dBm/3.84~MHz}$ | $\leq 20~dB$.

$$\frac{I_o}{\left(\hat{I}_{or}\right)_{in,dR}} - \left(\frac{CPICH_E_c}{I_{or}}\right)_{in,dR} \le 20dB$$

Table 9.23

Parameter	Unit	Accuracy [chip]	Conditions lo [dBm/3.84 MHz]
SFN-SFN observed time difference type 2	chip	±1	-9450

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

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

In table 9.24 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.24

Reported value	Measured quantity value	Unit
T2_SFN-SFN_TIME _00000	SFN-SFN observed time difference type 2 < -1280.0000	chip
T2_SFN-SFN_TIME _00001	-1280.0000 ≤ SFN-SFN observed time difference type 2 < -1279.9375	chip
T2_SFN-SFN_TIME _00002	-1279.9375 ≤ SFN-SFN observed time difference type 2 < -1279.8750	chip
T2_SFN-SFN_TIME _40959	1279.8750 ≤ SFN-SFN observed time difference type 2 < 1279.9375	chip
T2_SFN-SFN_TIME _40960	1279.9375 ≤ SFN-SFN observed time difference type 2 < 1280.0000	chip
T2_SFN-SFN_TIME _40961	1280.0000 ≤ SFN-SFN observed time difference type 2	chip

***** NEW SECTION *****

A.9.1.5.2 SFN-SFN observed time difference type 2 without IPDL period active

A.9.1.5.2.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy <u>without IPDL period active</u> is within the specified limits. This test will verify the requirements in section 9.1.8.2.

During the test the time difference between Cell 1 and 2 can be set to value from -1279.75 to 1280 chips.

In this case all cells are in the same frequency. Table A.9.9 defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.9: SFN-SFN observed time difference type 2 Intra frequency test parameters

Parameter	Unit	Cell 1	Cell 2		
UTRA RF Channel number		Channel 1	Channel 1		
CPICH_Ec/lor	dB	-10	-10		
PCCPCH_Ec/lor	dB	-12	-12		
SCH_Ec/lor	dB	-12	-12		
PICH_Ec/lor	dB	-15	-15		
DPCH_Ec/lor	dB	-15	-15		
OCNS	dB	-1.11	-1.11		
Îor/loc	dB	10.5	10.5		
loc	dBm/ 3.84 MHz	<i>Io -13.7 dB = loc,</i> Note 1	<i>Io -13.7 dB = loc,</i> Note 1		
CPICH Ec/Io, Note 2	<u>dB</u>	<u>-13.2</u>	<u>-13.2</u>		
Range 1:lo	dBm/3.84 MHz	-9470	-9470		
Range 2: Io	UDITI/3.04 IVITZ	-9450	-9450		
Propagation condition	-	AWGN			

NOTE 1: *loc* level shall be adjusted according the total signal power spectral density *lo* at receiver input and the geometry factor *lor/loc*.

NOTE 2: lo and CPICH Ec/lo levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.

When verifying the SFN observed time difference type 2 intra frequency measurement accuracy with IPDL period active the idle period parameters in table A.9.10 shall be used.

Table A.9.10 SFN-SFN observed time difference type 2 idle period test parameters

Parameter Parameter	Unit	Cell 1	Cell 2	
IP_Status	- continuous		continuous	
IP_Spacing	Frames	[10]	[10]	
IP_Lenght	Symbols	10	10	
IP_Offset	frame	NA	NA AH	
Seed	integer	[13]	[4]	
Burst_Start		NA	NA.	
Burst_Length		NA	NA.	
Burst_Freq		NA	NA	

NOTE: The total signal power spectral density Io will change only downwards during BS transmission gap.

A.9.1.5.2.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.8.2

A.9.1.5.3 SFN-SFN observed time difference type 2 with IPDL period active

A.9.1.5.3.1 Test Purpose and Environment

This requirement is valid only for UEs supporting IPDL measurements.

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.8.2.

<u>During the test the time difference between Cell 1 and 2 shall be set according to the assistance data defined in table A.9.Y.</u>

In this case all cells are in the same frequency. Table A.9.X defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.X: SFN-SFN observed time difference type 2 Intra frequency test parameters

<u>Parameter</u>	<u>Unit</u>	Ce	<u>II 1</u>	Ce	<u>ll 2</u>		
Time		No idle	Idle period	No idle	Idle period		
Time		period	in Cell 1	period	in Cell 1		
UTRA RF Channel number		Channel 1	Channel 1	Channel 1	Channel 1		
CPICH_Ec/lor	<u>dB</u>	<u>-10</u>	<u>-10</u>	<u>-10</u>	<u>-10</u>		
PCCPCH_Ec/lor	<u>dB</u>	<u>-12</u>	<u>-12</u>	<u>-12</u>	<u>-12</u>		
SCH_Ec/lor	<u>dB</u>	<u>-12</u>	<u>-12</u>	<u>-12</u>	<u>-12</u>		
PICH Ec/lor	<u>dB</u>	<u>-15</u>	<u>-15</u>	<u>-15</u>	<u>-15</u>		
DPCH_Ec/lor	<u>dB</u>	<u>-15</u>	<u>-15</u>	=	=		
<u>OCNS</u>	<u>dB</u>	<u>-1.11</u>	<u>-1.11</u>	<u>-0.94</u>	<u>-0.94</u>		
<u>Îor/loc</u>	<u>dB</u>	<u>10.5</u>	<u>-24.5</u>	<u>-6</u>	<u>-6</u>		
loc	dBm/ 3.84 MHz		<u>-8</u>	<u>80</u>			
lo, Note 1	dBm/3.84 MHz	<u>-69.04</u>	<u>-79.01</u>	<u>-69.04</u>	<u>-79.01</u>		
CPICH_Ec/lo, Note 1	<u>dB</u>	<u>-10.46</u>	<u>-35.49</u>	<u>-26.96</u>	<u>-16.99</u>		
Propagation condition	- AWGN						
NOTE 1: lo and CPICH Ec/ld	o levels have been ca	Iculated from ot	her parameters	for information	purposes.		
They are is not settable parameters themselves							

When verifying the SFN-SFN observed time difference type 2 intra frequency measurement accuracy with IPDL period active the idle period parameters in table A.9.10 shall be used.

Table A.9.Y SFN-SFN observed time difference type 2 assistance data test parameters

Parameter	<u>Unit</u>	Cell 1
Search Window Size	Chips	<u>80</u>
IP Status	<u>:</u>	<u>Continuous</u>
IP Spacing	<u>Frames</u>	<u>10</u>
IP Lenght	<u>Symbols</u>	<u>10</u>
IP Offset	<u>frame</u>	<u>NA</u>
Seed	<u>integer</u>	<u>13</u>
Burst Start		<u>NA</u>
Burst Length		<u>NA</u>
Burst Freq		<u>NA</u>

NOTE: The total signal power spectral density *Io* will change only downwards during BS transmission gap.

A.9.1.5.3.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.8.2

3GPP TSG RAN WG4 (Radio) Meeting #25 Secaucus, NJ, USA 11 - 15 November, 2002

R4-021743

		CHANGE	REQ	UE	ST	-		CR-Form-v7
*	25.133 CR	481	жrev	2	¥	Current version:	5.4.0	¥

*	25.133 CR 481	жrev 2	業 Current version	5.4.0 [#]
For <u>HELP</u> on us	sing this form, see bottom of th	is page or look a	nt the pop-up text o	ver the % symbols.
Proposed change a	affects: UICC apps第	ME X Radi	o Access Network	Core Network
Title: 第	Required Window size for me	asurements usir	ng IPDL	
Source: #	RAN WG4			
Work item code: ₩	TEI		Date: ₩	26/11/2002
Category: #	A		Release: ₩	Rel-5
Category.	Use one of the following categorie	es:		ne following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction	on in an earlier rel		Release 1996)
	B (addition of feature),C (functional modification of	feature)	•	Release 1997) Release 1998)
	D (editorial modification)	reature)		Release 1999)
	Detailed explanations of the above	e categories can		Release 4)
	be found in 3GPP TR 21.900.	· ·	Rel-5 (I	Release 5)
			Rel-6 (I	Release 6)
Reason for change	: 光 The performance require measurements with IPDI			difference type 2
Summary of chang	e: 第 1) Time to detect a new c measurement period is de periods with a length of 1 40 and 80 chips	efined in CELL_[OCH and Cell_FAC	CH states when idle
	2) Side conditions for acc	uracy requireme	nts are defined.	
	3) The test case "A.9.1.5. corrected. There are now			ce type 2" is
Consequences if not approved:	# There are no measurem utilising IPDL. The performance assessed.			
Clauses affected:	3.1.2.2.2, 8.4.2.2.2, 9.1.8	3.2.2, A.9.1.5		
Other specs affected:	Y N W Other core specific Y Test specifications O&M Specification		34.121	
Other comments:	Equivalent CRs in other	Releases: CR48	30r2 cat. F to 25.13	3 v3.11.0, CR490r2

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8 UE Measurements Procedures

8.1 General Measurement Requirements in CELL_DCH State

8.1.1 Introduction

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

8.1.2 Requirements

8.1.2.1 UE Measurement Capability

In CELL_DCH state the UE shall be able to monitor up to

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

Depending on UE capability, the UE shall be able to monitor up to 16 intra frequency cells during IPDL gaps.

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

- provide transmission gap pattern sequences with TGPL1 > 1, and
- provide the patterns within a transmission gap pattern sequence are identical (i.e., TGPL1 = TGPL2), and
- ensure that with the activation of one or more transmission gap pattern sequences, no more than two frames contain a transmission gap within any window of three consecutive frames, and
- ensure that there is a minimum of 8 slots between the end of the first transmission gap and the beginning of the second transmission gap in case of two successive compressed frames.

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

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

The received CPICH E_c/I_o is defined as

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

and the received SCH E_c/I_o is defined as

$$\left(\frac{SCH_E_c}{I_o}\right)_{in_o dR} = \left(\frac{SCH_E_c}{I_{or}}\right)_{in_o dR} - \frac{I_o}{(\hat{I}_{or})}_{in_o dR}$$

8.1.2.2 FDD intra frequency measurements

During the CELL_DCH state the UE shall continuously measure identified intra frequency cells and search for new intra frequency cells in the monitoring set. In case the network requests the UE to report detected set cells, the UE shall also search for intra frequency cells outside the monitored and active set. Cells, which are neither included in the active set nor in the monitored set, and are identified by the UE belong to the detected set according to TS 25.331. If compressed mode pattern sequences are activated, intra frequency measurements can be performed between the transmission gaps simultaneously for data reception from the active set cell/s.

The performance of intra frequency measurements when IPDL is active has not been studied.

8.1.2.2.1 Identification of a new cell

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

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

A cell shall be considered detectable when

- CPICH Ec/Io \geq -20 dB,
- SCH_Ec/Io ≥ -20 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

In case of conflict when a compressed gap sequence is activated the UE may choose to prioritise the SFN decoding

The UE shall be able to identify a new detectable cell not belonging to the monitored set within

$$T_{identify\ detected\ set} = 30s$$

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

8.1.2.2.1.1 Identification of a new cell using IPDL gaps

When the UE is supporting IPDL measurements and when idle periods with a length of 1 slot are scheduled the UE physical layer shall be capable to identify a new cell and report SFN-SFN observed time difference type 2 measurement within

where

T_{Measurement Period Intra} = The measurement period for Intra frequency CPICH measurements defined in Section 8.1.2.2.2.

and

T_{IPDI} depends on the Search Window Size given in UE positioning OTDOA neighbour cell info as given in Table 8.X

Table 8.X: T_{IPDL}

Search Window Size	TIPDL
less than or equal to +/- 40 chips	Time over which 4 consecutive IPDL gaps occur
<u>+/- 80 chips</u>	Time over which 8 consecutive IPDL gaps occur

8.1.2.2.2 UE CPICH measurement capability

In the CELL_DCH state the measurement period for intra frequency measurements is 200 ms. When no transmission gap pattern sequence is activated, the UE shall be capable of performing CPICH measurements for 8 identified-intra-frequency cells of the monitored set and/or the active set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When one or more transmission gap pattern sequences are activated, the UE shall be capable of performing CPICH measurements for at least $Y_{\text{measurement intra}}$ cells , where $Y_{\text{measurement intra}}$ is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2. If the UE has identified more than $Y_{\text{measurement intra}}$ cells, the UE shall perform measurements of all identified cells but the reporting rate of CPICH measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement intra}} = Floor \left\{ X_{\text{basic measurement FDD}} \cdot \frac{\mathbf{T}_{\text{Intra}}}{\mathbf{T}_{\text{Measurement Period, Intra}}} \right\} \text{ cells}$$

where

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

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

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

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

The UE shall furthermore be capable of performing CPICH measurements for at least 1 detected intra-frequency cell, in the detected set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 10 s. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2.

8.1.2.2.2.1 Capabilities for measurements during IPDL gaps

When idle periods with a length of 1 slot are scheduled, the UE physical layer shall be capable of reporting SFN-SFN observed time difference type 2 measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.8.2.2 with measurement period given by

$$T_{\text{measurement IPDL}} = Max \{ T_{\text{Measurement_Period Intra}}, T_{4 \text{ IPDLs}} \} ms$$

where

 $T_{\text{Measurement Period Intra}}$ = The measurement period for Intra frequency CPICH measurements defined in Section 8.1.2.2.2.

 $T_{4 \text{ IPDLs}}$ = Time period over which 4 consecutive idle periods occur.

***** NEW SECTION *****

8.4 Measurements in CELL FACH State

8.4.1 Introduction

This section contains requirements on the UE regarding cell reselection and measurement reporting in CELL_FACH state. The requirements for cell re-selection are split in FDD intra frequency, FDD inter frequency, TDD and GSM measurements. The measurements are defined in TS 25.215, the measurement model is defined in TS 25.302 and measurement accuracies are specified in section 9. Control of measurement reporting is specified in TS 25.331. Measurement occasions in CELL_FACH state are described in TS 25.331.

8.4.2 Requirements

8.4.2.1 UE Measurement Capability

In CELL_FACH state, the UE shall be able to monitor up to

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

Depending on UE capability, the UE shall be able to monitor up to 16 intra frequency cells during IPDL gaps.

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

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

For this three parameters are defined:

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

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

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

The measurement time T_{meas} is then defined as

$$T_{meas} = [(N_{FDD} + N_{TDD} + N_{GSM}) \cdot N_{TTI} \cdot M_{REP} \cdot 10] \text{ms}$$

where

- M_REP is the Measurement Occasion cycle length where K is given in Table X. K is the FACH measurement occasion length coefficient as specified in TS25.331
- The FACH Measurement Occasion of N_{TTI} frames will be repeated every N_{TTI} * M_REP frame.
- N_{TTI} is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE.

Table 8.10A: K values for each N_{TTI} value

N _{TTI}	K
1	3,4,5,6
2	2,3,4,5
4	2,3,4
8	1,2,3

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

8.4.2.2 FDD intra frequency measurements

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

The performance of intra frequency measurements when IPDL is active has not been studied.

8.4.2.2.1 Identification of a new cell

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

$$T_{\text{identify, intra}} = Max \left\{ 800, \text{Ceil} \left\{ \frac{T_{\text{basic identify FDD, intra}}}{N_{\text{TTI}} \cdot (M_{\text{REP}} - 1) \cdot 10} \right\} \cdot N_{\text{TTI}} \cdot M_{\text{REP}} \cdot 10 \right\} \text{ ms}$$

where

T_{basic_identify_FDD, intra} is specified in section 8.1.2.2.2,

N_{TTI} and M REP is specified in section 8.4.2.1.

A cell shall be considered detectable when

- CPICH Ec/Io \geq -20 dB,
- SCH_Ec/Io ≥ -20 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

In case of conflict when a measurement occasion is activated the UE may choose to prioritise the SFN decoding

8.4.2.2.1.1 Identification of a new cell using IPDL gaps

When the UE is supporting IPDL measurements and when idle periods with a length of 1 slot are scheduled the UE physical layer shall be capable to identify a new cell and report SFN-SFN observed time difference type 2 measurement within

where

T_{Measurement Period Intra} = The measurement period for Intra frequency CPICH measurements defined in Section 8.1.2.2.2.

and

T_{IPDL} depends on the Search Window Size given in UE positioning OTDOA neighbour cell info as given in Table 8.X

Table 8.X: T_{IPDL}

Search Window Size	TIPDL
less than or equal to +/- 40 chips	Time over which 4 consecutive IPDL gaps occur
<u>+/- 80 chips</u>	Time over which 8 consecutive IPDL gaps occur

8.4.2.2.2 UE CPICH measurement capability

In the CELL_FACH state the measurement period for intra frequency measurements is 200 ms. When no measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for 8 identified intrafrequency cells of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When a measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for the $Y_{measurement\ intra}$ strongest cells , where $Y_{measurement\ intra}$ is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2. If the UE has identified more than $Y_{measurement\ intra}$ cells, the UE shall perform measurements of all identified cells but the reporting rate of CPICH measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement intra}} = Floor \begin{cases} X_{\text{basic measurement FDD}} \cdot \frac{\mathbf{T}_{\text{Measurement_Period Intra}} - Ceil \left\{ \frac{\mathbf{T}_{\text{Measurement_Period Intra}}}{N_{TTI} \cdot M _ REP \cdot 10 \text{ ms}} \right\} \cdot N_{TTI} \cdot 10 \text{ ms}} \end{cases}$$
 cells

where

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

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

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

8.4.2.2.2.1 Capabilities for measurements during IPDL gaps.

When idle periods with a length of 1 slot are scheduled UE physical layer shall be capable of reporting SFN-SFN observed time difference type 2 measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.8.2.2 with measurement period given by

$$T_{\text{measurement IPDL}} = Max \{ T_{\text{Measurement_Period Intra}}, T_{\text{4 IPDLs}} \} ms$$

where

T_{Measurement Period Intra} = The measurement period for Intra frequency CPICH measurements defined in Section 8.1.2.2.2.

and

 $T_{4 \text{ IPDLs}}$ = Time period over which 4 consecutive idle periods occur.

**** NEW SECTION ****

9.1.8.2 SFN-SFN observed time difference type 2

NOTE: This measurement is for location service purposes to identify time difference between two cells.

It is optional for terminal to support the use of IPDL periods together with SFN-SFN observed time difference type 2. The support of IPDL depends on the supported UE positioning methods.

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

9.1.8.2.1 Intra frequency measurement requirement accuracy without IPDL period active

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2. The measurement period for CELL FACH state can be found in sub clause 8.4.2.2.

The accuracy requirement in table 9.21 is valid under the following conditions:

CPICH_RSCP1,2 $|_{dBm} \ge -114 dBm$ for Band I,

CPICH_RSCP1,2 $|_{dBm} \ge -112 dBm$ for Band II,

CPICH_RSCP1,2 $|_{dBm} \ge -111 dBm$ for Band III..

$$\frac{I_o}{\left(\hat{I}_{or}\right)_{in\ dB}} - \left(\frac{CPICH_E_c}{I_{or}}\right)_{in\ dB} \le 20dB$$

$$\frac{I_{o}}{\left(\hat{I}_{or}\right)_{in\ dB}} - \left(\frac{P - CCPCH _{E_{c}}}{I_{or}}\right)_{in\ dB}$$

is low enough to ensure successful SFN decoding.

Table 9.21

				Conditions	
			Band I	Band II	Band III
Parameter	Unit	Accuracy [chip]	lo [dBm/3.84 MHz]	lo [dBm/3.84 MHz]	lo [dBm/3.84 MHz]
SFN-SFN observed time difference type2	chip	± 0.5	-9450	-9250	-9150

9.1.8.2.2 Intra frequency measurement requirement accuracy with IPDL period active

This requirement is valid only for UEs supporting IPDL measurements.

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.2.

The accuracy requirement in table 9.22 is valid under the following conditions:

CPICH_RSCP1,2 $|_{dBm} \ge -114 \ dBm$ for Band I,

CPICH_RSCP1,2|_{dBm} ≥ -112 dBm for Band II,

. CPICH_RSCP1,2 $|_{dBm}$ ≥ -111 dBm for Band III.

$$- |CPICH - RSCP1|_{in dBm} - |CPICH - RSCP2|_{in dBm}| \le 20dB$$

$$\frac{I_o}{\left(\hat{I}_{or}\right)_{in\ dB}} - \left(\frac{CPICH_E_c}{I_{or}}\right)_{in\ dB} \le 20dB$$

$$\underbrace{ \begin{bmatrix} I_o \\ (\hat{I}_{or})_{in \ dB} \end{bmatrix}}_{in \ dB} \underbrace{ \begin{bmatrix} P - CCPCH \ _E_c \\ I_{or} \end{bmatrix}}_{in \ dB}_{in \ dB} \underbrace{ \text{is low enough to ensure successful SFN decoding.} }_{in \ dB}$$

Additionally the accuracy requirement in table 9.22 is also valid for neighbour cells for which the following conditions apply to during idle periods provided idle periods have a length of 1 slot:

 $CPICH_RSCPx, y|_{dBm} \ge -114 dBm.$

$$\underline{I_{o_idle_period}}_{(\hat{I}_{or})}\Big|_{in\ dB} - \left(\frac{CPICH_E_c}{I_{or}}\right)_{in\ dB} \le 20dB.$$

where x and y represent cells measured using idle periods and $I_{o_idle-period}$ is the total received power during the idle period.

NOTE: Additional general conditions are needed for the requirements in table 9.22 to be valid.

Table 9.22

			Conditions			
		it Accuracy [chip]	Band I	Band II	Band III	
Parameter	Unit		lo [dBm/3.84 MHz]	lo [dBm/3.84 MHz]	lo [dBm/3.84 MHz]	
SFN-SFN observed time difference type 2	chip	± 0.5	-9450	-9250	-9150	

9.1.8.2.3 Inter frequency measurement requirement accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.3. The measurement period for CELL FACH state can be found in sub clause 8.4.2.3.

The accuracy requirement in table 9.23 is valid under the following conditions:

CPICH_RSCP1,2 $|_{dBm} \ge -114 dBm$ for Band I,

CPICH_RSCP1,2 $|_{dBm}$ ≥ -112 dBm for Band II,

CPICH_RSCP1,2 $|_{dBm} \ge -111 dBm$ for Band III.

$$- |CPICH RSCP1|_{in dBm} - |CPICH RSCP2|_{in dBm} \le 20dB$$

 $\mid Channel\ 1_Io|_{dBm}\ \text{-}Channel\ 2_Io|_{dBm}\ \mid \leq 20\ dB.$

$$\frac{I_o}{\left(\hat{I}_{or}\right)_{in\ dB}}$$
 - $\left(\frac{CPICH_E_c}{I_{or}}\right)_{in\ dB} \le 20dB$

Table 9.23

			Conditions			
		Accuracy [chip]	Band I	Band II	Band III	
Parameter	Unit		lo [dBm/3.84 MHz]	lo [dBm/3.84 MHz]	lo [dBm/3.84 MHz]	
SFN-SFN observed time difference type 2	chip	±1	-9450	-9250	-9150	

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

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

In table 9.24 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.24

Reported value Measured quantity value		Unit
T2_SFN-SFN_TIME _00000	SFN-SFN observed time difference type 2 < -1280.0000	chip
T2_SFN-SFN_TIME _00001	-1280.0000 ≤ SFN-SFN observed time difference type 2 < -1279.9375	chip
T2_SFN-SFN_TIME _00002	-1279.9375 ≤ SFN-SFN observed time difference type 2 < -1279.8750	chip
	· m	
T2_SFN-SFN_TIME _40959	1279.8750 ≤ SFN-SFN observed time difference type 2 < 1279.9375	chip
T2_SFN-SFN_TIME _40960	1279.9375 ≤ SFN-SFN observed time difference type 2 < 1280.0000	chip
T2_SFN-SFN_TIME _40961	1280.0000 ≤ SFN-SFN observed time difference type 2	chip

^{****} NEW SECTION ****

A.9.1.5.2 SFN-SFN observed time difference type 2 without IPDL period active

A.9.1.5.2.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy without IPDL period active is within the specified limits. This test will verify the requirements in section 9.1.8.2.

During the test the time difference between Cell 1 and 2 can be set to value from -1279.75 to 1280 chips.

In this case all cells are in the same frequency. Table A.9.9 defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.9: SFN-SFN observed time difference type 2 Intra frequency test parameters

Parameter	Unit	Cell 1 Cell 2		
UTRA RF Channel number		Channel 1	Channel 1	
CPICH_Ec/lor	DB	-10	-10	
PCCPCH_Ec/lor	DB	-12	-12	
SCH_Ec/lor	DB	-12	-12	
PICH_Ec/lor	dB	-15	-15	
DPCH_Ec/lor	dB	-15	-15	
OCNS	dB	-1.11	-1.11	
Îor/loc	dB	10.5	10.5	
loc	dBm/ 3.84 MHz	lo -13.7 dB = loc, Note 1	<i>Io -13.7 dB = loc,</i> Note 1	
CPICH_Ec/lo, Note 2	<u>dB</u>	<u>-13.2</u>	<u>-13.2</u>	
Range 1:lo	dBm/3.84 MHz	-9470	-9470	
Range 2: Io	UDITI/3.04 IVITIZ	-9450	-9450	
Propagation condition	-	AWGN		

NOTE 1: *loc* level shall be adjusted according the total signal power spectral density *lo* at receiver input and the geometry factor *lor/loc*.

NOTE 2: Io and CPICH Ec/lo levels have been calculated from other parameters for information purposes.

They are not settable parameters themselves.

When verifying the SFN observed time difference type 2 intra frequency measurement accuracy with IPDL period active the idle period parameters in table A.9.10 shall be used.

Table A.9.10: SFN-SFN observed time difference type 2 idle period test parameters

Parameter Parame	Unit	Cell 1	Cell 2
IP_Status	-	continous	continous
IP_Spacing	Frames	[10]	[10]
IP_Lenght	Symbols -	10	10
IP_Offset	frame	NA	NA
Seed	integer	[13]	[4]
Burst_Start		NA	NA
Burst_Length		NA	NA
Burst_Freq		NA	NA

NOTE: The total signal power spectral density Io will change only downwards during BS transmission gap.

A.9.1.5.2.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.8.2.

A.9.1.5.3 SFN-SFN observed time difference type 2 with IPDL period active

A.9.1.5.3.1 Test Purpose and Environment

This requirement is valid only for UEs supporting IPDL measurements.

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.8.2.

During the test the time difference between Cell 1 and 2 shall be set according to the assistance data defined in table A.9.Y.

<u>In this case all cells are in the same frequency. Table A.9.X defines the limits of signal strengths and code powers, where the requirements are applicable.</u>

Table A.9.X: SFN-SFN observed time difference type 2 Intra frequency test parameters

<u>Parameter</u>	<u>Unit</u>	Ce	<u>II 1</u>	Ce	ell 2		
Time		No idle	Idle period	No idle	Idle period		
<u>Time</u>		period	in Cell 1	period	in Cell 1		
UTRA RF Channel number		Channel 1	Channel 1	Channel 1	Channel 1		
CPICH_Ec/lor	<u>dB</u>	<u>-10</u>	<u>-10</u>	<u>-10</u>	<u>-10</u>		
PCCPCH_Ec/lor	<u>dB</u>	<u>-12</u>	<u>-12</u>	<u>-12</u>	<u>-12</u>		
SCH_Ec/lor	<u>dB</u>	<u>-12</u>	<u>-12</u>	<u>-12</u>	<u>-12</u>		
PICH_Ec/lor	<u>dB</u>	<u>-15</u>	<u>-15</u>	<u>-15</u>	<u>-15</u>		
DPCH_Ec/lor	<u>dB</u>	<u>-15</u>	<u>-15</u>	=	_		
<u>OCNS</u>	<u>dB</u>	<u>-1.11</u>	<u>-1.11</u>	<u>-0.94</u>	<u>-0.94</u>		
<u>Îor/loc</u>	<u>dB</u>	<u>10.5</u>	<u>-24.5</u>	<u>-6</u>	<u>-6</u>		
loc	dBm/ 3.84 MHz		<u>-8</u>	<u>80</u>			
lo, Note 1	dBm/3.84 MHz	<u>-69.04</u>	<u>-79.01</u>	<u>-69.04</u>	<u>-79.01</u>		
CPICH Ec/lo, Note 1	<u>dB</u>	<u>-10.46</u>	<u>-35.49</u>	<u>-26.96</u>	<u>-16.99</u>		
Propagation condition	_	AWGN					
NOTE 1: lo and CPICH Ec/ld	NOTE 1: Io and CPICH Ec/lo levels have been calculated from other parameters for information purposes.						
They are is not sett	able parameters then	nselves.					

When verifying the SFN-SFN observed time difference type 2 intra frequency measurement accuracy with IPDL period active the idle period parameters in table A.9.10 shall be used.

Table A.9.Y SFN-SFN observed time difference type 2 assistance data test parameters

<u>Parameter</u>	<u>Unit</u>	Cell 1
Search Window Size	Chips	<u>80</u>
IP_Status	<u>-</u>	<u>Continuous</u>
IP Spacing	<u>Frames</u>	<u>10</u>
IP_Lenght	<u>Symbols</u>	<u>10</u>
IP Offset	<u>frame</u>	<u>NA</u>
Seed	integer	<u>13</u>
Burst Start		<u>NA</u>
Burst Length		<u>NA</u>
Burst Freq		NA

NOTE: The total signal power spectral density *Io* will change only downwards during BS transmission gap.

A.9.1.5.3.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.8.2

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be found in 3GPP TR 21.900.

R4-021713

CHANGE REQUEST								
ж	25.133 CR	482	жrev	1	¥	Current version:	3.11.0	*
Cor W	ELP on voing this form one	hattam of thi		laalı	- 4 4l-		# 4b o 90 o u	ah ala

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

Proposed chang	roposed change affects: UICC apps# ME X Radio Access Network Core Network						
Title:	¥	UE timer accuracy					
		•					
Source:	\mathfrak{H}	RAN WG4					
Work item code:	:Ж	TEI		Date: ₩	26/11/2002		
Category:	\mathfrak{R}	F		Release: ₩	R99		
		Use one of the following categories:		Use <u>one</u> of	the following releases:		
		F (correction)		2	(GSM Phase 2)		
		A (corresponds to a correction in an earlier relative to the correction in the correction of the correction	lease)	R96	(Release 1996)		
		B (addition of feature),		R97	(Release 1997)		
		C (functional modification of feature)		R98	(Release 1998)		
		D (editorial modification)		R99	(Release 1999)		
		Detailed explanations of the above categories can		Rel-4	(Release 4)		

Reason for change: # UE timers are used in different protocol entities to control the UE behaviour. Some examples are (TS 25.331):

 T305: Sets the time for UE periodic transmission of CELL UPDATE and URA UPDATE messages.
 Value range: 5, 10, 30, 60, 120, 360, 720, infinity [minutes]

Rel-5

Rel-6

(Release 5)

(Release 6)

- T314 and T315: Sets the time for how long UE shall attempt to reestablish the RRC Connection, in case of radio link failure.

 Value range T314: 0, 2, 4, 6, 8, 12, 16, 20 [seconds]

 Value range T315: 0,10, 30, 60, 180, 600, 1200, 1800 [seconds]
- T316 and T317: Sets the time for how long UE can be out-of-service in states Cell_PCH/URA_PCH and Cell_FACH.
 Value range T316: 0, 10, 20, 30, 40, 50, infinity [seconds]
 Value range T317: 0,10, 30, 60, 180, 600, 1200, 1800 [seconds]

It is assumed that in a typical UE implementation, the time measurement function is quite accurate, since most UE implementations are expected to provide e.g. a time of day clock feature. However, requirements on UE timer accuracy would facilitate the UTRAN setting of the corresponding timers on the network side. For this purpose, we expect that not so tight accuracy requirements are needed.

Furthermore, for UE conformance test cases in TS 34.123, reference to core specification requirements on UE timer accuracy would facilitate setting of test requirements. Otherwise, the requirements would be implicitly specified by the conformance test cases, which is not a desired situation.

	Therefore if we do not add these requirements there will be:						
	 Problems in setting of UTRAN timers for supervising UE procedures 						
	Problems when setting test requirements in UE conformance tests						
Summary of change.	Requirements on UE timer accuracy have been introduced.						
Consequences if not approved:	Reqirements on UE timer accuracy would be missing.						
Clauses affected:	₩ 8.1.2.2.2, 8.4.2.2.2, 9.1.8.2.2, A.9.1.5						
	YN						
Other specs affected:	* N Other core specifications * N Test specifications						
arrected.	N Test specifications N O&M Specifications						
Other comments:	# Equivalent CRs in other Releases: CR491r1 cat. A to 25.133 v4.6.0, CR483r1						

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

cat. A to 25.133 v5.4.0

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request

7 Timing and Signalling characteristics

7.1 UE Transmit Timing

7.1.1 Introduction

The UE shall have capability to follow the frame timing change of the connected Node B. The uplink DPCCH/DPDCH frame transmission takes place approximately T_0 chips after the reception of the first detected path (in time) of the corresponding downlink DPCCH/DPDCH frame from the reference cell. T_0 is defined in [2]. UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are defined in the following requirements.

7.1.2 Requirements

The UE initial transmission timing error shall be less than or equal to ± 1.5 Chip. The reference point for the UE initial transmit timing control requirement shall be the time when the first detected path (in time) of the corresponding downlink DPCCH/DPDCH frame is received from the reference cell plus T_0 chips. T_0 is defined in [2].

When the UE is not in soft handover, the reference cell shall be the one the UE has in the active set. The cell, which is selected as a reference cell, shall remain as a reference cell even if other cells are added to the active set. In case that the reference cell is removed from the active set the UE shall start adjusting its transmit timing no later than the time when the whole active set update message is available at the UE taking the RRC procedure delay into account.

The UE shall be capable of changing the transmission timing according the received downlink DPCCH/DPDCH frame. The maximum amount of the timing change in one adjustment shall be ¼ Chip.

The minimum adjustment rate shall be 233ns per second. The maximum adjustment rate shall be $\frac{1}{4}$ chip per 200ms. In particular, within any given 800*d ms period, the UE transmit timing shall not change in excess of $+-\frac{1}{4}$ chip from the timing at the beginning of this 800*d ms period, where $0 \le d \le \frac{1}{4}$.

7.2 UE Receive - Transmit Time Difference

7.2.1 Introduction

The UE shall have the capability to be in soft handover with more than one cell. The downlink DPCH frame timing shall take place approximately T_0 chips before the transmission of the uplink DPDCH/DPCCH. The adjustment requirements for the uplink DPDCH/DPCCH timing are specified in 7.1.1. The valid range of the Receive to Transmit time difference at the UE is defined in the following requirements.

7.2.2 Requirements

A UE shall support reception, demodulation and combining of signals of a downlink DPCH when the receive timing is within a window of $T_0+/-148$ chip before the transmit timing where T_0 is defined in [2]. A UE is only required to react to TPC commands with a transmit power adjustment in the immediate next slot if the downlink receive timing of all cells in the active set is within a window of $T_0+/-148$ chip before the uplink transmit timing. If the downlink receive timing of one or more cells in the active set is outside the window of $T_0+/-148$ chip, the UE may also react with a power adjustment one slot later. The receive timing is defined as the first detected path in time.

7.3 UE timer accuracy

7.3.1 Introduction

UE timers are used in different protocol entities to control the UE behaviour.

7.3.2 Requirements

For UE timers T3xx, T_{barred}, Treselection, Penalty time, T_{CRmax}, T_{CrmaxHyst} [16], UE shall comply with the timer accuracies according to Table 7.x.

The requirements are only related to the actual timing measurements internally in the UE. They do not include the following:

- Inaccuracy in the start and stop conditions of a timer (e.g. UE reaction time to detect that start and stop conditions of a timer is fulfilled), or
- Inaccuracies due to restrictions in observability of start and stop conditions of a UE timer (e.g. TTI alignment when UE sends messages at timer expiry).

Timer value [s]	<u>Accuracy</u>				
timer value <4	<u>± 0.1 s</u>				
timer value ≥ 4	± 2.5 %				

Table 7.x

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R4-021715

CHANGE REQUEST								CR-Form-v7
*	25.133 CR	483	≋ rev	1	ж	Current version:	5.4.0	*

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

Proposed chang	je a	affects:	UICC apps#	M	E X Radio Ac	cess Netwo	rk Core Network
Title:	\mathfrak{R}	UE tim	er accuracy				
			•				
Source:	ж	RAN W	/G4				
Work item code:	:ж	TEI				Date: ♯	26/11/2002
Category:	æ	Α				Release: ♯	Rel-5
outogory.	••		of the following categor	ries:			the following releases:
			correction)			2	(GSM Phase 2)
		,	corresponds to a correc	tion in a	n earlier release)	-	(Release 1996)
			addition of feature),			R97	(Release 1997)
			functional modification (of featur	e)	R98	(Release 1998)
			editorial modification)		- /	R99	(Release 1999)
			explanations of the abo	ve cate	gories can	Rel-4	(Release 4)
			in 3GPP TR 21.900.		-	Rel-5	(Release 5)

Reason for change: # UE timers are used in different protocol entities to control the UE behaviour. Some examples are (TS 25.331):

 T305: Sets the time for UE periodic transmission of CELL UPDATE and URA UPDATE messages.
 Value range: 5, 10, 30, 60, 120, 360, 720, infinity [minutes]

Rel-6

(Release 6)

- T314 and T315: Sets the time for how long UE shall attempt to reestablish the RRC Connection, in case of radio link failure.

 Value range T314: 0, 2, 4, 6, 8, 12, 16, 20 [seconds]

 Value range T315: 0,10, 30, 60, 180, 600, 1200, 1800 [seconds]
- T316 and T317: Sets the time for how long UE can be out-of-service in states Cell_PCH/URA_PCH and Cell_FACH.
 Value range T316: 0, 10, 20, 30, 40, 50, infinity [seconds]
 Value range T317: 0,10, 30, 60, 180, 600, 1200, 1800 [seconds]

It is assumed that in a typical UE implementation, the time measurement function is quite accurate, since most UE implementations are expected to provide e.g. a time of day clock feature. However, requirements on UE timer accuracy would facilitate the UTRAN setting of the corresponding timers on the network side. For this purpose, we expect that not so tight accuracy requirements are needed.

Furthermore, for UE conformance test cases in TS 34.123, reference to core specification requirements on UE timer accuracy would facilitate setting of test requirements. Otherwise, the requirements would be implicitly specified by the conformance test cases, which is not a desired situation.

	Therefore if we do not add these requirements there will be:					
	 Problems in setting of UTRAN timers for supervising UE procedures 					
	Problems when setting test requirements in UE conformance tests					
Summary of change: Requirements on UE timer accuracy have been introduced.						
Consequences if not approved:	Reqirements on UE timer accuracy would be missing.					
Clauses affected:	第 8.1.2.2.2, 8.4.2.2.2, 9.1.8.2.2, A.9.1.5					
Other specs affected:	Y N N Other core specifications Test specifications O&M Specifications					
Other comments:	Equivalent CRs in other Releases; CR482r1 cat. F to 25,133 v3,11,0, CR491r1					

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cat. A to 25.133 v4.6.0

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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request

7 Timing and Signalling characteristics

7.1 UE Transmit Timing

7.1.1 Introduction

The UE shall have capability to follow the frame timing change of the connected Node B. The uplink DPCCH/DPDCH frame transmission takes place approximately T_0 chips after the reception of the first detected path (in time) of the corresponding downlink DPCCH/DPDCH frame from the reference cell T_0 is defined in [2]. UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are defined in the following requirements.

7.1.2 Requirements

The UE initial transmission timing error shall be less than or equal to ± 1.5 Chip. The reference point for the UE initial transmit timing control requirement shall be the time when the first detected path (in time) of the corresponding downlink DPCCH/DPDCH frame is received from the reference cell plus T_0 chips. T_0 is defined in [2].

When the UE is not in soft handover, the reference cell shall be the one the UE has in the active set. The cell, which is selected as a reference cell, shall remain as a reference cell even if other cells are added to the active set. In case that the reference cell is removed from the active set the UE shall start adjusting its transmit timing no later than the time when the whole active set update message is available at the UE taking the RRC procedure delay into account.

The UE shall be capable of changing the transmission timing according the received downlink DPCCH/DPDCH frame. The maximum amount of the timing change in one adjustment shall be ¼ Chip.

The minimum adjustment rate shall be 233ns per second. The maximum adjustment rate shall be $\frac{1}{4}$ chip per 200ms. In particular, within any given 800*d ms period, the UE transmit timing shall not change in excess of $\pm d$ chip from the timing at the beginning of this 800*d ms period, where $0 \le d \le 1/4$.

7.2 UE Receive - Transmit Time Difference

7.2.1 Introduction

The UE shall have the capability to be in soft handover with more than one cell. The downlink DPCH frame timing shall take place approximately T_0 chips before the transmission of the uplink DPDCH/DPCCH. The adjustment requirements for the uplink DPDCH/DPCCH timing are specified in 7.1.1. The valid range of the Receive to Transmit time difference at the UE is defined in the following requirements.

7.2.2 Requirements

A UE shall support reception, demodulation and combining of signals of a downlink DPCH when the receive timing is within a window of $T_0+/-148$ chip before the transmit timing where T_0 is defined in [2]. A UE is only required to react to TPC commands with a transmit power adjustment in the immediate next slot if the downlink receive timing of all cells in the active set is within a window of $T_0+/-148$ chip before the uplink transmit timing. If the downlink receive timing of one or more cells in the active set is outside the window of $T_0+/-148$ chip, the UE may also react with a power adjustment one slot later. The receive timing is defined as the first detected path in time.

7.3 UE timer accuracy

7.3.1 Introduction

UE timers are used in different protocol entities to control the UE behaviour.

7.3.2 Requirements

For UE timers T3xx, T_{barred}, Treselection, Penalty time, T_{CRmax}, T_{CrmaxHyst} [16], UE shall comply with the timer accuracies according to Table 7.x.

The requirements are only related to the actual timing measurements internally in the UE. They do not include the <u>following:</u>

- Inaccuracy in the start and stop conditions of a timer (e.g. UE reaction time to detect that start and stop conditions of a timer is fulfilled), or
- Inaccuracies due to restrictions in observability of start and stop conditions of a UE timer (e.g. TTI alignment when UE sends messages at timer expiry).

Timer value [s]	<u>Accuracy</u>
timer value <4	<u>± 0.1 s</u>
timer value ≥4	± 2.5 %

Table 7.x

3GPP TSG RAN WG4 (Radio) Meeting #25 Secaucus, NJ, USA 11 - 15 November, 2002

R4-021444

		CHANGI	E REQ	UES	Т		CR-Form-v7
*	25.133	CR 488	ж rev	ж	Current version:	4.6.0	*

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*	25.	133	CR	488	жr	ev	H	B (Current vers	sion:	4.6.0 [#]	
For HELP on u	sing t	his forn	n, see	bottom	of this pag	ge or	look at	the	pop-up tex	t over th	ne Ж symbols	S.
Proposed change a	affect	's : U	ICC a	pps#	M	1E X	Radio	Ac	cess Netwo	rk	Core Networ	k
Title: Ж	Cor	rection	of UE	Transm	itted Pow	er red	quireme	ents	in case of 0	Compre	ssed Mode g	japs
Source: #	RAI	N WG4										
Work item code: 第	TEI								Date: ₩	26/1	1/2002	
Reason for change	Use of the second secon	F (corred) A (corred) B (addid) C (function D (editod) led expl und in 3 In the Mode dBm. avera report	ection) espondition of tional repriate molecure gaps, This viged via	feature), modification odification ns of the TR 21.900 nt version the UE value will alue at the	on of feature above cate by on of the sp L1 shall re be then in	gories pecific port nput to f L3 t the	cation, for the to the L filter, w UE Tx	it is UE 3 fill Pow	2 R96 R97 R98 R99 Rel-4 Rel-5 Rel-6 stated that Transmitted ter and will h is wrong a	f the following for the follow	owing releases Phase 2) se 1996) se 1997) se 1998) se 1999) se 4) se 5)	sed -50 e
Summary of chang		Correstation report Isolate affect The Covalue of mobile affect togeth	ect the g that ted for ed Impa implen R has of –50 e provide the net er in th	behavio, instead r those s act: would nentations dBm durides a lowe twork perfect same r	our of UE L of respond lots. I not affect is supported solated imp ng compreser averaged formance whetwork, de	impled the constant of the con	mentation previous mode gas Tx power poth previous go on the mode of the mode on the mode of the mode	slot valu on be d fur us im aps. er wh vious	ehaving like nationality oth nplementation From a netwonen in compress and new insee of the UE	indicated nerwise. ns, whice ork point essed maplement Tx powe	ressed mode value shall be d in the CR, wo h still report the t of view those ode. This may tations are pre-	ould eeee
Consequences if not approved:	#	lower	value		average a						the correct	
Clauses affected:	*	9.1.6. Y N	1		acification		ae					

Clauses affected:	第 9.1.6.1	
	YN	
Other specs	業 X Other core specifications	x

affected:		X Test specifications O&M Specifications	
Other comments:	\mathfrak{H}		
		Equivalent CRs in other Releases: CR476 cat. F to 25.133 to 25.133 v5.4.0	v3.11.0, CR477 cat. A

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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

9.1.6 UE transmitted power

9.1.6.1 Accuracy requirement

The measurement period in CELL_DCH state is 1 slot.

Table 9.14 UE transmitted power absolute accuracy

Davometer	Unit	Accuracy [dB]		
Parameter	Unit	PUEMAX 24dBm	PUEMAX 21dBm	
UE transmitted power=PUEMAX	dBm	+1/-3	±2	
UE transmitted power=PUEMAX-1	dBm	+1.5/-3.5	±2.5	
UE transmitted power=PUEMAX-2	dBm	+2/-4	±3	
UE transmitted power=PUEMAX-3	dBm	+2.5/-4.5	±3.5	
PUEMAX-10≤UE transmitted power <puemax-3< td=""><td>dBm</td><td>+3/-5</td><td>±4</td></puemax-3<>	dBm	+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 TS 25.101 [3] section 6.2.1.

NOTE 2: UE transmitted power is the reported value.

For each empty slot created by compressed mode, <u>no value shall be reported by</u> the UE L1 <u>for those slots shall respond</u> with a value of 50 dBm.

9.1.6.2 UE transmitted power measurement report mapping

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

In table 9.15 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.15

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

3GPP TSG RAN WG4 (Radio) Meeting #25 Secaucus, NJ, USA 11 - 15 November, 2002

R4-021706

CHANGE REQUEST							
ж	25.133 CR 489	≋ rev	1	ж	Current version:	4.6.0	ж

	25	0.133 CR 409	#IEV 1	33 Carront voice	4.0.0
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7 61 <u>11221</u> 61	ir dollig	and form, doe bottom or t	The page of loor	tat ino pop ap toxt	over the overymotic.
Proposed chang	ge affec	cts: UICC apps器	ME X Ra	adio Access Netwo	rk Core Network
Title:	ж Со	orrection of Measurement	Occasion Patte	erns for BSIC Recor	nfirmation
Source:	₩ RA	AN WG4			
Work item code:	:# TE	E I		Date: ₩	26/11/2002
Category:	₩ A			Release: ∺	
	Use	e <u>one</u> of the following categor F (correction)	ries:	Use <u>one</u> of 2	the following releases: (GSM Phase 2)
		A (corresponds to a correct	ction in an earlier		(Release 1996)
		B (addition of feature),		R97	(Release 1997)
		C (functional modification of D (editorial modification)	of feature)	R98 R99	(Release 1998) (Release 1999)
	Deta	ailed explanations of the abo	ove categories car		(Release 4)
	be f	ound in 3GPP TR 21.900.	J	Rel-5	(Release 5)
				Rel-6	(Release 6)
Reason for char	nae: #	Table 8.14 has some e	rrors. Some of	the cells in the table	e are not applicable
	.90.	after the change of the			
Summary of cha	ange: ₩	Change the values in ta	able 8.14.		
		One note is added for N			
		These combinations of reason are not specifie	•	sult in long reconfire	mation time, and for that
		· ·			
		Isolated Impact: The CR In procedures because the t			
		procedures because the t	inte anowed to do	o a reserviron is char	igeu.
Consequences in not approved:	if #	The specified values of BSIC Reconfirmation w	f T _{re-confirm. GSM} for vill be erroneous	the measurement s.	occasion patterns for
		- The correction is no	eeded because	the system cannot	function correctly
		without this correct			
					nt with Table 8.10A The
					inations than included
					ecified when configured
		to another. One po			from one manufacturer umes that the UF
		accept the combina			
		combinations will c			
					RAN wrongly anticipated
1		reconfirmation failu	ire too soon. Th	ien UTRAN conclud	ded wrongly that the

GSM cell was not detectable by the UE.

 When values in previous version were pessimistic, UTRAN wrongly anticipated reconfirmation failure too late. One possible side effect was that UTRAN could slow down the re-selection time.

These hereabove faults happen with 100 % probablility when UTRAN configures the UE with the previous (N_TTI;T_meas) combinations.

Clauses affected:	策 8.4.2.5.2.2			
Other specs affected:	X Other core specifications X Test specifications O&M Specifications			
Other comments:	# Equivalent CRs in other Releases: CR478r1 cat. F to 25.133 v3.11.0, CR479r1 cat. A to 25.133 v5.4.0			

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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.4.2.5.2.2 BSIC re-confirmation

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

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

For each measurement occasion allocated for GSM BSIC reconfirmation as described in 8.4.2.5, the UE shall attempt to decode the BSIC falling within the measurement occasion duration according to table 8.12. When the UE has to select one out of several possible GSM cells to reconfirm within the possible allocation of measurement occasions, according to 8.4.2.5, priority shall be given to the least recently decoded BSIC.

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

 $T_{\text{re-confirm_GSM}}$ is given for the combinations of T_{meas} and N_{TTI} that are given in table 8.14. The values given in table 8.14 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier. Different values for $T_{\text{re-confirm GSM}}$ might apply when more than one GSM cell is in the BSIC reconfirmation procedure at the same time.

Table 8.14: The worst-case time for reconfirmation of one previously identified GSM cell

T_meas	N_TTI=1 frame	N_TTI=2 frames	N_TTI=4 frames	N_TTI=8 frames
(ms)	T _{re-confirm,GSM} (ms)	T _{re-confirm,GSM} (ms)	T _{re-confirm,GSM} (ms)	T _{re-confirm,GSM} (ms)
80	2880	1280 1600	<u>-</u>	<u>-</u>
120	5040	2400	-	-
160	6400	2880 3200	2560 2240	2560 1600
240	17280	4800	<u>-3840</u>	- 1
320	10880 14080	6400	5120 4480	5120 3200
480	22080	9600	7680 6720	7680 4800
640	26880	12800	10240	10240 6400
960	*	17280	15360 13440	15360 9600
1280	*	20480 33280	20480 17920	20480 12800
1920	*	*	30720 26880	30720 19200
2560				40960
3840				61440

^{*} Note: There are no performance requirements for these combinations of parameters because they result in long reconfirmation time.

R4-021742

	CHANG	SE REQ	UE	ST	-		CR-Form-v7
*	25.133 CR 490	≋ rev	2	¥	Current version:	4.6.0	¥

ж	25.133 CR 490 # rev 2 #	Current version: 4.6.0 **				
For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the % symbols.						
Proposed change a	affects: UICC apps第 <mark> ME X</mark> Radio A	ccess Network Core Network				
Title: ♯	Required Window size for measurements using II	PDL				
Source: #	RAN WG4					
Work item code: ₩	TEI	Date: 第 26/11/2002				
Category:	Use one of the following categories: F (correction) A (corresponds to a correction in an earlier release B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Release: # Rel-4 Use one of the following releases: 2 (GSM Phase 2) e) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)				
Reason for change	measurements with IPDL are not finalised					
Summary of change: \$\pi\$ 1) Time to detect a new cell through IPDL measurements and the corresponding measurement period is defined in CELL_DCH and Cell_FACH states when idle periods with a length of 1 slot are scheduled and based on Search Window Size 40 and 80 chips 2) Side conditions for accuracy requirements are defined. 3) The test case "A.9.1.5.2 SFN-SFN observed time difference type 2" is corrected. There are now tests both with and without IPDL. Isolated Impact Analysis: This CR has an isolated impact on the SFN-SFN type 2 measurement. Since, the CR only corrects the requirements of an optional feature, it does not have any impact on any other requirements or implementations.						
Consequences if not approved:	# There are no measurement requirements or utilising IPDL. The performance of SFN-SFN assessed.					
Clauses affected:	策 8.1.2.2.2, 8.4.2.2.2, 9.1.8.2.2, A.9.1.5					
Other specs	Y N # N Other core specifications # N Test specifications					

Other comments:

Equivalent CRs in other Releases: CR480r2 cat. F to 25.133 v3.11.0, CR481r2 cat. A to 25.133 v5.4.0

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- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8 UE Measurements Procedures

8.1 General Measurement Requirements in CELL_DCH State

8.1.1 Introduction

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

8.1.2 Requirements

8.1.2.1 UE Measurement Capability

In CELL_DCH state the UE shall be able to monitor up to

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

Depending on UE capability, the UE shall be able to monitor up to 16 intra frequency cells during IPDL gaps.

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

- provide transmission gap pattern sequences with TGPL1 > 1, and
- provide the patterns within a transmission gap pattern sequence are identical (i.e., TGPL1 = TGPL2), and
- ensure that with the activation of one or more transmission gap pattern sequences, no more than two frames contain a transmission gap within any window of three consecutive frames, and
- ensure that there is a minimum of 8 slots between the end of the first transmission gap and the beginning of the second transmission gap in case of two successive compressed frames.

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

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

The received CPICH E_c/I_o is defined as

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

and the received SCH E_c/I_o is defined as

$$\left(\frac{SCH_{-}E_{c}}{I_{o}}\right)_{in,dB} = \left(\frac{SCH_{-}E_{c}}{I_{or}}\right)_{in,dB} - \frac{I_{o}}{(\hat{I}_{or})}_{in,dB}$$

8.1.2.2 FDD intra frequency measurements

During the CELL_DCH state the UE shall continuously measure identified intra frequency cells and search for new intra frequency cells in the monitoring set. In case the network requests the UE to report detected set cells, the UE shall also search for intra frequency cells outside the monitored and active set. Cells, which are neither included in the active set nor in the monitored set, and are identified by the UE belong to the detected set according to TS 25.331. If compressed mode pattern sequences are activated, intra frequency measurements can be performed between the transmission gaps simultaneously for data reception from the active set cell/s.

The performance of intra frequency measurements when IPDL is active has not been studied.

8.1.2.2.1 Identification of a new cell

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

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

A cell shall be considered detectable when

- CPICH Ec/Io \geq -20 dB,
- SCH_Ec/Io ≥ -20 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

In case of conflict when a compressed gap sequence is activated the UE may choose to prioritise the SFN decoding

The UE shall be able to identify a new detectable cell not belonging to the monitored set within

$$T_{identify\ detected\ set} = 30s$$

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

8.1.2.2.1.1 Identification of a new cell using IPDL gaps

When the UE is supporting IPDL measurements and when idle periods with a length of 1 slot are scheduled the UE physical layer shall be capable to identify a new cell and report SFN-SFN observed time difference type 2 measurement within

where

T_{Measurement Period Intra} = The measurement period for Intra frequency CPICH measurements defined in Section 8.1.2.2.2.

and

T_{IPDI}_depends on the Search Window Size given in UE positioning OTDOA neighbour cell info as given in Table 8.X

Table 8.X: T_{IPDL}

Search Window Size	TIPDL
less than or equal to +/- 40 chips	Time over which 4 consecutive IPDL gaps occur
<u>+/- 80 chips</u>	Time over which 8 consecutive IPDL gaps occur

8.1.2.2.2 UE CPICH measurement capability

In the CELL_DCH state the measurement period for intra frequency measurements is 200 ms. When no transmission gap pattern sequence is activated, the UE shall be capable of performing CPICH measurements for 8 identified-intra-frequency cells of the monitored set and/or the active set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When one or more transmission gap pattern sequences are activated, the UE shall be capable of performing CPICH measurements for at least $Y_{\text{measurement intra}}$ cells , where $Y_{\text{measurement intra}}$ is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2. If the UE has identified more than $Y_{\text{measurement intra}}$ cells, the UE shall perform measurements of all identified cells but the reporting rate of CPICH measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement intra}} = Floor \left\{ X_{\text{basic measurement FDD}} \cdot \frac{\mathbf{T}_{\text{Intra}}}{\mathbf{T}_{\text{Measurement Period, Intra}}} \right\} \text{ cells}$$

where

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

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

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

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

The UE shall furthermore be capable of performing CPICH measurements for at least 1 detected intra-frequency cell, in the detected set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 10 s. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2.

8.1.2.2.2.1 Capabilities for measurements during IPDL gaps

When idle periods with a length of 1 slot are scheduled, the UE physical layer shall be capable of reporting SFN-SFN observed time difference type 2 measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.8.2.2 with measurement period given by

$$T_{\text{measurement IPDL}} = Max \{ T_{\text{Measurement_Period Intra}}, T_{4 \text{ IPDLs}} \} ms$$

where

 $T_{\text{Measurement Period Intra}}$ = The measurement period for Intra frequency CPICH measurements defined in Section 8.1.2.2.2.

 $T_{4 \text{ IPDLs}}$ = Time period over which 4 consecutive idle periods occur.

***** NEW SECTION *****

8.4 Measurements in CELL_FACH State

8.4.1 Introduction

This section contains requirements on the UE regarding cell reselection and measurement reporting in CELL_FACH state. The requirements for cell re-selection are split in FDD intra frequency, FDD inter frequency, TDD and GSM measurements. The measurements are defined in TS 25.215, the measurement model is defined in TS 25.302 and measurement accuracies are specified in section 9. Control of measurement reporting is specified in TS 25.331. Measurement occasions in CELL_FACH state are described in TS 25.331.

8.4.2 Requirements

8.4.2.1 UE Measurement Capability

In CELL_FACH state, the UE shall be able to monitor up to

- 32 intra frequency FDD cells and
- 32 inter frequency cells, including
 - FDD cells distributed on up to 2 additional FDD carriers and
 - Depending on UE Capability, TDD mode cells, distributed on up to 3 TDD carriers, and
- -___-Depending on UE capability, 32 GSM cells distributed on up to 32 GSM carriers.

Depending on UE capability, the UE shall be able to monitor up to 16 intra frequency cells during IPDL gaps.

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

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

For this three parameters are defined:

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

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

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

The measurement time T_{meas} is then defined as

$$T_{meas} = [(N_{FDD} + N_{TDD} + N_{GSM}) \cdot N_{TTI} \cdot M_{REP} \cdot 10] \text{ms}$$

where

- M_REP is the Measurement Occasion cycle length where K is given in Table X. K is the FACH measurement occasion length coefficient as specified in TS25.331

- The FACH Measurement Occasion of N_{TTI} frames will be repeated every N_{TTI} * M_REP frame.
- N_{TTI} is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE.

Table 8.10A: K values for each N_{TTI} value

N _{TTI}	K
1	3,4,5,6
2	2,3,4,5
4	2,3,4
8	1,2,3

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

8.4.2.2 FDD intra frequency measurements

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

The performance of intra frequency measurements when IPDL is active has not been studied.

8.4.2.2.1 Identification of a new cell

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

$$T_{\text{identify,intra}} = Max \left\{ 800, \text{Ceil} \left\{ \frac{T_{\text{basic identify FDD,intra}}}{N_{\text{TTI}} \cdot (M_{\text{REP}} - 1) \cdot 10} \right\} \cdot N_{\text{TTI}} \cdot M_{\text{REP}} \cdot 10 \right\} \text{ ms}$$

where

T_{basic_identify_FDD, intra} is specified in section 8.1.2.2.2,

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

A cell shall be considered detectable when

- CPICH Ec/Io \geq -20 dB,
- SCH_Ec/Io ≥ -20 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

In case of conflict when a measurement occasion is activated the UE may choose to prioritise the SFN decoding.

8.4.2.2.1.1 Identification of a new cell using IPDL gaps

When the UE is supporting IPDL measurements and when idle periods with a length of 1 slot are scheduled the UE physical layer shall be capable to identify a new cell and report SFN-SFN observed time difference type 2 measurement within

where

T_{Measurement Period Intra} = The measurement period for Intra frequency CPICH measurements defined in Section 8.1.2.2.2.

and

T_{IPDL} depends on the Search Window Size given in UE positioning OTDOA neighbour cell info as given in Table 8.X

Table 8.X: T_{IPDL}

Search Window Size	TIPDL
less than or equal to +/- 40 chips	Time over which 4 consecutive IPDL gaps occur
<u>+/- 80 chips</u>	Time over which 8 consecutive IPDL gaps occur

8.4.2.2.2 UE CPICH measurement capability

In the CELL_FACH state the measurement period for intra frequency measurements is 200 ms. When no measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for 8 identified intrafrequency cells of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When a measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for the $Y_{measurement\ intra}$ strongest cells , where $Y_{measurement\ intra}$ is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2. If the UE has identified more than $Y_{measurement\ intra}$ cells, the UE shall perform measurements of all identified cells but the reporting rate of CPICH measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement intra}} = Floor \begin{cases} X_{\text{basic measurement FDD}} \cdot \frac{\mathbf{T}_{\text{Measurement_Period Intra}} - Ceil \left\{ \frac{\mathbf{T}_{\text{Measurement_Period Intra}}}{N_{TTI} \cdot M_{-}REP \cdot 10 \text{ ms}} \right\} \cdot N_{TTI} \cdot 10 \text{ ms} \\ \mathbf{T}_{\text{Measurement_Period Intra}} \end{cases}$$
 cells

where

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

T_{Measurement_Period Intra} is specified in section 8.1.2.2.2,

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

8.4.2.2.2.1 Capabilities for measurements during IPDL gaps.

When idle periods with a length of 1 slot are scheduled UE physical layer shall be capable of reporting SFN-SFN observed time difference type 2 measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.8.2.2 with measurement period given by

$$T_{measurement\ IPDL} = Max \{ T_{Measurement_Period\ Intra}, T_{4\ IPDLs} \} ms$$

where

T_{Measurement Period Intra} = The measurement period for Intra frequency CPICH measurements defined in Section 8.1.2.2.2.

and

 $T_{4 \text{ IPDL}_s}$ = Time period over which 4 consecutive idle periods occur.

**** NEW SECTION ****

9.1.8.2 SFN-SFN observed time difference type 2

NOTE: This measurement is for location service purposes to identify time difference between two cells.

It is optional for terminal to support the use of IPDL periods together with SFN-SFN observed time difference type 2. The support of IPDL depends on the supported UE positioning methods.

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

9.1.8.2.1 Intra frequency measurement requirement accuracy without IPDL period active

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.2.

The accuracy requirement in table 9.21 is valid under the following conditions:

CPICH_RSCP1,2 $|_{dBm} \ge -114 dBm$.

$$\begin{aligned} & \frac{I_{o}}{\left(\hat{I}_{or}\right)_{in\ dB}} - \frac{CPICH_{-}RSCP2}{I_{or}}\Big|_{in\ dB} \leq 20dB \\ & \frac{I_{o}}{\left(\hat{I}_{or}\right)_{in\ dB}} - \left(\frac{CPICH_{-}E_{c}}{I_{or}}\right)_{in\ dB} \leq 20dB \\ & \frac{I_{o}}{\left(\hat{I}_{or}\right)_{in\ dB}} - \left(\frac{P - CCPCH_{-}E_{c}}{I_{or}}\right)_{in\ dB} = \frac{1}{100} + \frac{1}$$

Table 9.21

Parameter Unit		Accuracy [chip]	Conditions Io [dBm/3.84 MHz]	
SFN-SFN observed time difference type2	chip	± 0.5	-9450	

9.1.8.2.2 Intra frequency measurement requirement accuracy with IPDL period active

This requirement is valid only for UEs supporting IPDL measurements.

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.2.

The accuracy requirement in table 9.22 is valid under the following conditions:

CPICH_RSCP1,2
$$|_{dBm} \ge -114 dBm$$
.

$$\frac{I_{o}}{\left(\hat{I}_{or}\right)_{in\ dB}} - \left(\frac{CPICH_E_{c}}{I_{or}}\right)_{in\ dB} \leq 20dB$$

$$\frac{I_{o}}{\left(\hat{I}_{or}\right)_{in\ dB}} - \left(\frac{P-CCPCH_E_{c}}{I_{or}}\right)_{in\ dB} \leq 20dB$$

Additionally the accuracy requirement in table 9.22 is also valid for neighbour cells for which the following conditions apply to during idle periods provided idle periods have a length of 1 slot:

 $CPICH_RSCPx, y|_{dBm} \ge -114 dBm.$

$$\underline{I_{o_idle_period}}_{(\hat{I}_{or})} \bigg|_{in\ dB} - \left(\frac{CPICH_E_c}{I_{or}}\right)_{in\ dB} \le 20dB_c$$

where x and y represent cells measured using idle periods and $I_{o idle-period}$ is the total received power during the idle period.

NOTE: Additional general conditions are needed for the requirements in table 9.22 to be valid.

Table 9.22

Parameter	Unit	Accuracy [chip]	Conditions lo [dBm/3.84 MHz]
SFN-SFN observed time difference type 2	chip	± 0.5	-9450

9.1.8.2.3 Inter frequency measurement requirement accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.3. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.3.

The accuracy requirement in table 9.23 is valid under the following conditions:

CPICH_RSCP1,2 $|_{dBm} \ge -114 dBm$.

| Channel 1_ $Io|_{dBm}$ -Channel 2_ $Io|_{dBm}$ | $\leq 20~dB$.

$$\frac{I_o}{\left(\hat{I}_{or}\right)_{in\ dB}}$$
 - $\left(\frac{CPICH_E_c}{I_{or}}\right)_{in\ dB} \le 20dB$

Table 9.23

Parameter	Unit	Accuracy [chip]	Conditions Io [dBm/3.84 MHz]
SFN-SFN observed time difference type 2	chip	± 1	-9450

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

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

In table 9.24 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.24

Reported value	Measured quantity value		
T2_SFN-SFN_TIME _00000	SFN-SFN observed time difference type 2 < -1280.0000	chip	
T2_SFN-SFN_TIME _00001	-1280.0000 ≤ SFN-SFN observed time difference type 2 < -1279.9375	chip	
T2_SFN-SFN_TIME _00002	-1279.9375 ≤ SFN-SFN observed time difference type 2 < -1279.8750	chip	
	111		
T2_SFN-SFN_TIME _40959	1279.8750 ≤ SFN-SFN observed time difference type 2 < 1279.9375	chip	
T2_SFN-SFN_TIME _40960	1279.9375 ≤ SFN-SFN observed time difference type 2 < 1280.0000	chip	
T2_SFN-SFN_TIME _40961	1280.0000 ≤ SFN-SFN observed time difference type 2	chip	

***** NEW SECTION *****

A.9.1.5.2 SFN-SFN observed time difference type 2 without IPDL period active

A.9.1.5.2.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy without IPDL period active is within the specified limits. This test will verify the requirements in section 9.1.8.2.

During the test the time difference between Cell 1 and 2 can be set to value from -1279.75 to 1280 chips.

In this case all cells are in the same frequency. Table A.9.9 defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.9: SFN-SFN observed time difference type 2 Intra frequency test parameters

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 1
CPICH_Ec/lor	dB	-10	-10
PCCPCH_Ec/lor	dB	-12	-12
SCH_Ec/lor	dB	-12	-12
PICH_Ec/lor	dB	-15	-15
DPCH_Ec/lor	dB	-15	-15
OCNS	dB	-1.11	-1.11
Îor/loc	dB	10.5	10.5
loc	dBm/ 3.84 MHz	<i>Io -13.7 dB = loc,</i> Note 1	<i>lo -13.7 dB = loc,</i> Note 1
CPICH_Ec/lo, Note 2	<u>dB</u>	<u>-13.2</u>	<u>-13.2</u>
Range 1:lo		-9470	-9470
Range 2: Io	dBm/3.84 MHz	-9450	-9450
Propagation condition	-	AW	GN

NOTE 1: *loc* level shall be adjusted according the total signal power spectral density *lo* at receiver input and the geometry factor *lor/loc*.

NOTE 2: lo and CPICH Ec/lo levels have been calculated from other parameters for information purposes.

They are not settable parameters themselves.

When verifying the SFN-SFN observed time difference type 2 intra frequency measurement accuracy with IPDL period active the idle period parameters in table A.9.10 shall be used.

Table A.9.10: SFN-SFN observed time difference type 2 idle period test parameters

Parameter Parame	Unit	Cell 1	Cell 2
IP_Status	-	continous	continous
IP_Spacing	Frames	[10]	[10]
IP_Lenght	Symbols -	10	10
IP_Offset	frame	NA	NA
Seed	integer	[13]	[4]
Burst_Start		NA	NA
Burst_Length		NA	NA
Burst_Freq		NA	NA

NOTE: The total signal power spectral density Io will change only downwards during BS transmission gap.

A.9.1.5.2.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.8.2

A.9.1.5.3 SFN-SFN observed time difference type 2 with IPDL period active

A.9.1.5.3.1 Test Purpose and Environment

This requirement is valid only for UEs supporting IPDL measurements.

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.8.2.

During the test the time difference between Cell 1 and 2 shall be set according to the assistance data defined in table A.9.Y.

<u>In this case all cells are in the same frequency. Table A.9.X defines the limits of signal strengths and code powers, where the requirements are applicable.</u>

Table A.9.X: SFN-SFN observed time difference type 2 Intra frequency test parameters

Parameter	<u>Unit</u>	Ce	<u>II 1</u>	Ce	ll 2	
Time		No idle	Idle period	No idle	Idle period	
<u>Time</u>		period	in Cell 1	<u>period</u>	in Cell 1	
UTRA RF Channel number		Channel 1	Channel 1	Channel 1	Channel 1	
CPICH_Ec/lor	<u>dB</u>	<u>-10</u>	<u>-10</u>	<u>-10</u>	<u>-10</u>	
PCCPCH_Ec/lor	<u>dB</u>	<u>-12</u>	<u>-12</u>	<u>-12</u>	<u>-12</u>	
SCH_Ec/lor	<u>dB</u>	<u>-12</u>	<u>-12</u>	<u>-12</u>	<u>-12</u>	
PICH_Ec/lor	<u>dB</u>	<u>-15</u>	<u>-15</u>	<u>-15</u>	<u>-15</u>	
DPCH_Ec/lor	<u>dB</u>	<u>-15</u>	<u>-15</u>	=	_	
<u>OCNS</u>	<u>dB</u>	<u>-1.11</u>	<u>-1.11</u>	<u>-0.94</u>	<u>-0.94</u>	
<u>Îor/loc</u>	<u>dB</u>	<u>10.5</u>	<u>-24.5</u>	<u>-6</u>	<u>-6</u>	
loc	dBm/ 3.84 MHz		<u>-8</u>	<u>80</u>		
lo, Note 1	dBm/3.84 MHz	<u>-69.04</u>	<u>-79.01</u>	<u>-69.04</u>	<u>-79.01</u>	
CPICH_Ec/lo, Note 1	<u>dB</u>	<u>-10.46</u>	<u>-35.49</u>	<u>-26.96</u>	<u>-16.99</u>	
Propagation condition - AWGN						
NOTE 1: lo and CPICH Ec/ld	NOTE 1: Io and CPICH Ec/Io levels have been calculated from other parameters for information purposes.					
They are is not settable parameters themselves.						

When verifying the SFN-SFN observed time difference type 2 intra frequency measurement accuracy with IPDL period active the idle period parameters in table A.9.10 shall be used.

Table A.9.Y SFN-SFN observed time difference type 2 assistance data test parameters

<u>Parameter</u>	<u>Unit</u>	Cell 1
Search Window Size	Chips	<u>80</u>
IP_Status	<u>:</u>	<u>Continuous</u>
IP Spacing	<u>Frames</u>	<u>10</u>
IP_Lenght	<u>Symbols</u>	<u>10</u>
IP Offset	<u>frame</u>	<u>NA</u>
Seed	<u>integer</u>	<u>13</u>
Burst Start		<u>NA</u>
Burst Length		<u>NA</u>
Burst Freq		<u>NA</u>

NOTE: The total signal power spectral density *Io* will change only downwards during BS transmission gap.

A.9.1.5.3.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.8.2

R4-021714

CHANGE REQUEST									
ж	25.133 CR	491	жrev	1	¥	Current version:	4.6.0	ж	
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For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the **%** symbols.

Proposed chang	je a	ffects: UICC apps業 ME	Radio Access Networ	k Core Network
Title:	¥	UE timer accuracy		
		·		
Source:	\mathfrak{R}	RAN WG4		
Work item code:	;₩	TEI	Date: ₩	26/11/2002
Category:	\mathfrak{R}	A	Release: ₩	
		Use <u>one</u> of the following categories:	· · · · · · · · · · · · · · · · · · ·	the following releases:
		F (correction)	2	(GSM Phase 2)
		A (corresponds to a correction in an	earlier release) R96	(Release 1996)
		B (addition of feature),	R97	(Release 1997)
		C (functional modification of feature)) R98	(Release 1998)
		D (editorial modification)	R99	(Release 1999)
		Detailed explanations of the above categor	ories can Rel-4	(Release 4)
		be found in 3GPP TR 21.900.	Rel-5	(Release 5)

Reason for change: # UE timers are used in different protocol entities to control the UE behaviour. Some examples are (TS 25.331):

 T305: Sets the time for UE periodic transmission of CELL UPDATE and URA UPDATE messages.
 Value range: 5, 10, 30, 60, 120, 360, 720, infinity [minutes]

Rel-6

(Release 6)

- T314 and T315: Sets the time for how long UE shall attempt to reestablish the RRC Connection, in case of radio link failure.

 Value range T314: 0, 2, 4, 6, 8, 12, 16, 20 [seconds]

 Value range T315: 0,10, 30, 60, 180, 600, 1200, 1800 [seconds]
- T316 and T317: Sets the time for how long UE can be out-of-service in states Cell_PCH/URA_PCH and Cell_FACH.
 Value range T316: 0, 10, 20, 30, 40, 50, infinity [seconds]
 Value range T317: 0,10, 30, 60, 180, 600, 1200, 1800 [seconds]

It is assumed that in a typical UE implementation, the time measurement function is quite accurate, since most UE implementations are expected to provide e.g. a time of day clock feature. However, requirements on UE timer accuracy would facilitate the UTRAN setting of the corresponding timers on the network side. For this purpose, we expect that not so tight accuracy requirements are needed.

Furthermore, for UE conformance test cases in TS 34.123, reference to core specification requirements on UE timer accuracy would facilitate setting of test requirements. Otherwise, the requirements would be implicitly specified by the conformance test cases, which is not a desired situation.

	Therefore if we do not add these requirements there will be:				
	 Problems in setting of UTRAN timers for supervising UE procedures 				
	Problems when setting test requirements in UE conformance tests				
Summary of change.	Requirements on UE timer accuracy have been introduced.				
Consequences if not approved:	Reqirements on UE timer accuracy would be missing.				
Clauses affected:	第 8.1.2.2.2, 8.4.2.2.2, 9.1.8.2.2, A.9.1.5				
	YN				
Other specs					
affected:	N Test specifications				
	N O&M Specifications				
Other comments:	X				
	Equivalent CRs in other Releases: CR482r1 cat. F to 25.133 v3.11.0, CR483				

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

cat. A to 25.133 v5.4.0

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request

7 Timing and Signalling characteristics

7.1 UE Transmit Timing

7.1.1 Introduction

The UE shall have capability to follow the frame timing change of the connected Node B. The uplink DPCCH/DPDCH frame transmission takes place approximately T_0 chips after the reception of the first detected path (in time) of the corresponding downlink DPCCH/DPDCH frame from the reference cell T_0 is defined in [2]. UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are defined in the following requirements.

7.1.2 Requirements

The UE initial transmission timing error shall be less than or equal to ± 1.5 Chip. The reference point for the UE initial transmit timing control requirement shall be the time when the first detected path (in time) of the corresponding downlink DPCCH/DPDCH frame is received from the reference cell plus T_0 chips. T_0 is defined in [2].

When the UE is not in soft handover, the reference cell shall be the one the UE has in the active set. The cell, which is selected as a reference cell, shall remain as a reference cell even if other cells are added to the active set. In case that the reference cell is removed from the active set the UE shall start adjusting its transmit timing no later than the time when the whole active set update message is available at the UE taking the RRC procedure delay into account.

The UE shall be capable of changing the transmission timing according the received downlink DPCCH/DPDCH frame. The maximum amount of the timing change in one adjustment shall be ¼ Chip.

The minimum adjustment rate shall be 233ns per second. The maximum adjustment rate shall be $\frac{1}{4}$ chip per 200ms. In particular, within any given 800*d ms period, the UE transmit timing shall not change in excess of $\pm d$ chip from the timing at the beginning of this 800*d ms period, where $0 \le d \le 1/4$.

7.2 UE Receive - Transmit Time Difference

7.2.1 Introduction

The UE shall have the capability to be in soft handover with more than one cell. The downlink DPCH frame timing shall take place approximately T_0 chips before the transmission of the uplink DPDCH/DPCCH. The adjustment requirements for the uplink DPDCH/DPCCH timing are specified in 7.1.1. The valid range of the Receive to Transmit time difference at the UE is defined in the following requirements.

7.2.2 Requirements

A UE shall support reception, demodulation and combining of signals of a downlink DPCH when the receive timing is within a window of $T_0+/-148$ chip before the transmit timing where T_0 is defined in [2]. A UE is only required to react to TPC commands with a transmit power adjustment in the immediate next slot if the downlink receive timing of all cells in the active set is within a window of $T_0+/-148$ chip before the uplink transmit timing. If the downlink receive timing of one or more cells in the active set is outside the window of $T_0+/-148$ chip, the UE may also react with a power adjustment one slot later. The receive timing is defined as the first detected path in time.

7.3 UE timer accuracy

7.3.1 Introduction

UE timers are used in different protocol entities to control the UE behaviour.

7.3.2 Requirements

For UE timers T3xx, T_{barred}, Treselection, Penalty time, T_{CRmax}, T_{CrmaxHyst} [16], UE shall comply with the timer accuracies according to Table 7.x.

The requirements are only related to the actual timing measurements internally in the UE. They do not include the following:

- Inaccuracy in the start and stop conditions of a timer (e.g. UE reaction time to detect that start and stop conditions of a timer is fulfilled), or
- Inaccuracies due to restrictions in observability of start and stop conditions of a UE timer (e.g. TTI alignment when UE sends messages at timer expiry).

Timer value [s]	<u>Accuracy</u>
timer value <4	<u>± 0.1 s</u>
timer value ≥4	± 2.5 %

Table 7.x

R4-021651

	•	CHANGE	REQ	UEST	-	CR-Form-v7
*	25.133 CR	504	жrev	*	Current version: 3.11.0) #

*	25.133 CR 504 # rev # C	urrent version: 3.11.0 #
For HELP on us	ing this form, see bottom of this page or look at the p	op-up text over the % symbols.
Proposed change a	ffects: UICC apps器 ME X Radio Acce	ess Network Core Network
Title: 第	Correction of UE parameter for Randam Access test	
Source: #	RAN WG4	
Work item code: ₩	TEI	Date : ₩ 26/11/2002
Category: #	F	elease: 第 R99
,		Use <u>one</u> of the following releases:
	F (correction)A (corresponds to a correction in an earlier release)	2 (GSM Phase 2) R96 (Release 1996)
	B (addition of feature),	R97 (Release 1990)
	C (functional modification of feature)	R98 (Release 1998)
	D (editorial modification)	R99 (Release 1999)
	Detailed explanations of the above categories can	Rel-4 (Release 4)
	pe found in 3GPP TR 21.900.	Rel-5 (Release 5) Rel-6 (Release 6)
		Rei-0 (Reiease 0)
Reason for change	In the test of correct hehaviour when Time-out, power may reach 0dBm limit defined by "Maxim parameter before completing the preamble cycle perform this test properly according to the current statement of the current statement	num allowed UL TX power" e. It would be very difficult to
Summary of change	Maximum allowed UL TX power is changed from	m 0 dBm to 21dBm in table A.6.6.
	Isolated Impact Analysis: This CR only corrects the value of parameter for it does not have any impact on any other require	
Consequences if not approved:	A good UE may fail the test when transmit powers sending prescribed number of preambles.	er reaches the limit before
01	90 A C C	
Clauses affected:		
Other specs affected:	Y N X Other core specifications Test specifications O&M Specifications 34.121	
Other comments:	# Equivalent CRs in other Releases: CR505 cat. to 25 133 v5 4 0	A to 25.133 v4.6.0, CR506 cat. A

Other specs affected:	¥	Y N X X	Other core specifications Test specifications O&M Specifications	æ	34.121
Other comments:	#		valent CRs in other Releases: C .133 v5.4.0	R5	505 cat. A to 25.133 v4.6.0, CR506 cat. A

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

A.6.2 Random Access

A.6.2.1 Test Purpose and Environment

The purpose of these tests are to verify that the behaviour of the random access procedure is according to the requirements and that the PRACH power settings are within specified limits. This tests will verify the requirements in section 6.3.2.

Table A.6.5: RF Parameters for Random Access test

Parameter	Unit	Cell 1
UTRA RF Channel Number		Channel 1
CPICH_Ec/lor	dB	-10
PCCPCH_Ec/lor	dB	-12
SCH_Ec/lor	dB	-12
Number of other transmitted Acquisition Indicators	-	0
AICH_Ec/lor	dB	-10
PICH_Ec/lor	dB	-15
OCNS_Ec/lor when an AI is not transmitted	dB	-0.941
OCNS_Ec/lor when an AI is transmitted	dB	-1.516
\hat{I}_{or}/I_{oc}	dB	0
I_{oc}	dBm/3.84 MHz	-70
CPICH_Ec/lo	dB	-13
Propagation Condition		AWGN

The test parameters "System Information Block (SIB) type 5 (ASC #0)" defined in section 6.1 of TS34.108, shall be used in all random access tests. Crucial parameters for the test requirements are repeated in Table A.6.6 and A.6.7 and these overrule the parameters defined in SIB type 5.

Table A.6.6: UE parameters for Random Access test

Parameter	Unit	Value
Access Service Class		
(ASC#0)		
	01	1
- Persistence value		
Maximum number of preamble		2
ramping cycles (M _{max}).		
Maximum number of		12
preambles in one preamble		
ramping cycle		
(Preamble Retrans Max)		
The backoff time T _{B01}	ms	N/A
N _{B01min=} N _{B01max}	#TTI	10
Dower step when no	dB	3
Power step when no acquisition indicator is	uБ	3
received		
(Power offset P0)		
Power offset between the last	dB	0
transmitted preamble and the	\(\begin{align*} \text{VD} \\ \	
control part of the message		
(Power offset P p-m)		
Maximum allowed UL TX	dBm	0 21
power		

Table A.6.7: UTRAN parameters for Random Access test

Parameter	Unit	Value
Primary CPICH DL TX power	dBm	-8
UL interference	dBm	-102
SIR in open loop power	dB	0
control (Constant value)		
AICH Power Offset	dB	0

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

Proposed change affects: UICC apps# ME X Radio Access Network Core Network								
Title:	#	Correct	ion of UE parame	eter for Ran	dam Access tes	st		
Source:	æ	RAN V	VG4					
Work item code.	:₩	TEI				Date: ♯	26/11/2002	
Category:	H	Α				Release: #	Rel-4	
,	I	F (A (B (C (D (Detailed	of the following ca correction) (corresponds to a ca (addition of feature) (functional modificational modificational modifications) explanations of the din 3GPP TR 21.96	correction in a), ation of featur on) e above cate	re)	2	f the following releases: (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5) (Release 6)	
Reason for char	ige:	р	ower may reach	0dBm limit o	defined by "Max	cimum allow	able that UE transmit ed UL TX power"	

Reason for change: #	In the test of correct hehaviour when Time-out, it is probable that UE transmit power may reach 0dBm limit defined by "Maximum allowed UL TX power" parameter before completing the preamble cycle. It would be very difficult to perform this test properly according to the current parameters.
Summary of change: 第	Maximum allowed UL TX power is changed from 0 dBm to 21dBm in table A.6.6.
Consequences if # not approved:	A good UE may fail the test when transmit power reaches the limit before sending prescribed number of preambles.

Clauses affected:	ж A.6.6
Other specs affected:	Y N X Other core specifications Test specifications O&M Specifications 34.121
Other comments:	# Equivalent CRs in other Releases: CR504 cat. F to 25.133 v3.11.0, CR506 cat. A to 25.133 v5.4.0

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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

A.6.2 Random Access

A.6.2.1 Test Purpose and Environment

The purpose of these tests are to verify that the behaviour of the random access procedure is according to the requirements and that the PRACH power settings are within specified limits. This tests will verify the requirements in section 6.3.2.

Table A.6.5: RF Parameters for Random Access test

Parameter	Unit	Cell 1
UTRA RF Channel Number		Channel 1
CPICH_Ec/lor	dB	-10
PCCPCH_Ec/lor	dB	-12
SCH_Ec/lor	dB	-12
Number of other transmitted Acquisition Indicators	-	0
AICH_Ec/lor	dB	-10
PICH_Ec/lor	dB	-15
OCNS_Ec/lor when an AI is not transmitted	dB	-0.941
OCNS_Ec/lor when an AI is transmitted	dB	-1.516
\hat{I}_{or}/I_{oc}	dB	0
I_{oc}	dBm/3.84 MHz	-70
CPICH_Ec/lo	dB	-13
Propagation Condition		AWGN

The test parameters "System Information Block (SIB) type 5 (ASC #0)" defined in section 6.1 of TS34.108, shall be used in all random access tests. Crucial parameters for the test requirements are repeated in Table A.6.6 and A.6.7 and these overrule the parameters defined in SIB type 5.

Table A.6.6: UE parameters for Random Access test

Parameter	Unit	Value
Access Service Class		
(ASC#0)		
	01	1
- Persistence value		
Maximum number of preamble		2
ramping cycles (M _{max}).		
Maximum number of		12
preambles in one preamble		
ramping cycle		
(Preamble Retrans Max)		
The backoff time T _{B01}	ms	N/A
N _{B01min=} N _{B01max}	#TTI	10
Power step when no	dB	3
acquisition indicator is		
received		
(Power offset P0)		
Power offset between the last	dB	0
transmitted preamble and the		
control part of the message		
(Power offset P p-m)		
Maximum allowed UL TX	dBm	0 21
power		

Table A.6.7: UTRAN parameters for Random Access test

Parameter	Unit	Value
Primary CPICH DL TX power	dBm	-8
UL interference	dBm	-102
SIR in open loop power	dB	0
control (Constant value)		
AICH Power Offset	dB	0

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ж	25	5.133	CR	506	жrev	¥	Current vers	sion:	5.4.0	ж
For <u>HELP</u>	on using	this for	m, see	e bottom of this	s page or lo	ook at th	e pop-up text	over	the ¥ syn	nbols.
Proposed change affects: UICC apps# ME X Radio Access Network Core Network										
Title:	₩ Coi	rection	of UE	parameter for	Randam A	ccess te	est			
Source:	¥ R/	AN WG	4							
Work item cod	le:ঋ TE	ΕI					Date: ♯	26/	11/2002	
Category:	Det	F (corr A (corr B (add C (fun D (edit ailed exp	rection) respon lition of ctional torial m blanatic	owing categories ds to a correction feature), modification of to odification) ons of the above TR 21.900.	n in an earlie eature)		Release: ₩ Use <u>one</u> of 2 e) R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	the for (GSN (Relea (Relea (Relea (Relea (Relea (Relea		ases:
Reason for ch	ange: ೫	powe para	er may meter	of correct heha reach 0dBm I before comple s test properly	mit defined ting the pre	l by "Ma amble o	ximum allowe cycle. It would	ed UL I be v	. TX power	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Summary of c	hange: ₩	Maxi	mum a	allowed UL TX	power is ch	hanged	from 0 dBm t	o 21d	IBm in tabl	e A.6.6.

Reason for change: #	In the test of correct hehaviour when Time-out, it is probable that UE transmit power may reach 0dBm limit defined by "Maximum allowed UL TX power" parameter before completing the preamble cycle. It would be very difficult to perform this test properly according to the current parameters.
Summary of change: 第	Maximum allowed UL TX power is changed from 0 dBm to 21dBm in table A.6.6.
Consequences if # not approved:	A good UE may fail the test when transmit power reaches the limit before sending prescribed number of preambles.

Clauses affected:	# A.6.6
Other specs affected:	 X O&M Specifications 34.121 34.121
Other comments:	# Equivalent CRs in other Releases: CR504 cat. F to 25.133 v3.11.0, CR505 cat. A to 25.133 v4.6.0

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A.6.2 Random Access

A.6.2.1 Test Purpose and Environment

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SCH_Ec/lor	dB	-12
Number of other transmitted Acquisition Indicators	-	0
AICH_Ec/lor	dB	-10
PICH_Ec/lor	dB	-15
OCNS_Ec/lor when an AI is not transmitted	dB	-0.941
OCNS_Ec/lor when an AI is transmitted	dB	-1.516
\hat{I}_{or}/I_{oc}	dB	0
I_{oc}	dBm/3.84 MHz	-70
CPICH_Ec/lo	dB	-13
Propagation Condition		AWGN

The test parameters "System Information Block (SIB) type 5 (ASC #0)" defined in section 6.1 of TS34.108, shall be used in all random access tests. Crucial parameters for the test requirements are repeated in Table A.6.6 and A.6.7 and these overrule the parameters defined in SIB type 5.

Table A.6.6: UE parameters for Random Access test

Parameter	Unit	Value
Access Service Class		
(ASC#0)		
	01	1
- Persistence value		
Maximum number of preamble		2
ramping cycles (M _{max}).		
Maximum number of		12
preambles in one preamble		
ramping cycle		
(Preamble Retrans Max)		
The backoff time T _{B01}	ms	N/A
N _{B01min=} N _{B01max}	#TTI	10
Dower step when no	dB	3
Power step when no acquisition indicator is	uБ	3
received		
(Power offset P0)		
Power offset between the last	dB	0
transmitted preamble and the	\(\begin{align*} \text{VD} \\ \	
control part of the message		
(Power offset P p-m)		
Maximum allowed UL TX	dBm	0 21
power		

Table A.6.7: UTRAN parameters for Random Access test

Parameter	Unit	Value
Primary CPICH DL TX power	dBm	-8
UL interference	dBm	-102
SIR in open loop power	dB	0
control (Constant value)		
AICH Power Offset	dB	0