TSG-RAN Meeting #12 *RP-010354*
Stockholm, Sweden, 12 - 15 June 2001

Title: **Agreed CRs (Release '99 and Rel-4 category A) to TS 25.133 (2)**

Source: **TSG-RAN WG4**

Agenda item: **8.4.3**

WG4 doc	Status WG4	Spec	CR	Phase	Title	Cat	V old	V new
R4-010721	agreed	25.133	109	R99	TFC selection at maximum output power	F	3.5.0	3.6.0
R4-010771	agreed	25.133	110	Rel-4	TFC selection at maximum output power	A	4.0.0	4.1.0
R4-010735	agreed	25.133	111	R99	Corrections for multiple neighbour test cases	F	3.5.0	3.6.0
R4-010769	agreed	25.133	112	Rel-4	Corrections for multiple neighbour test cases	A	4.0.0	4.1.0
R4-010753	agreed	25.133	113	R99	Corrections for Section 5	F	3.5.0	3.6.0
R4-010767	agreed	25.133	114	Rel-4	Corrections for Section 5	A	4.0.0	4.1.0
R4-010760	agreed	25.133	115	R99	RRC Connection re-establishment	F	3.5.0	3.6.0
R4-010761	agreed	25.133	116	Rel-4	RRC Connection re-establishment	A	4.0.0	4.1.0
R4-010777	agreed	25.133	117	R99	Corrections for Section 9	F	3.5.0	3.6.0
R4-010778	agreed	25.133	118	Rel-4	Corrections for Section 9	A	4.0.0	4.1.0
R4-010638	agreed	25.133	119	R99	Correction for a CPICH_Ec/Io definition	F	3.5.0	3.6.0
R4-010774	agreed	25.133	120	Rel-4	Correction for a CPICH_Ec/Io definition	A	4.0.0	4.1.0
R4-010745	agreed	25.133	121	R99	Detection and measurements of new cells not belonging to monitored set	F	3.5.0	3.6.0
R4-010787	agreed	25.133	122	Rel-4	Detection and measurements of new cells not belonging to monitored set	A	4.0.0	4.1.0

3GPP TSG RAN WG4 Meeting #17 **R4-010721**

Gothenburg, Sweden 21st - 25th May 2001

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CHANGE REQUEST

⌘ **25.133** **CR** **109** ⌘ rev **-** ⌘ Current version: **3.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Requirements for TFC selection at the maximum power
Source:	⌘	RAN WG4
Work item code:	⌘	TEI
Date:	⌘	22-05-2001
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	TFC selection requirements at the maximum UE transmit power are incomplete and not aligned with TS25.321
Summary of change:	⌘	Performance requirements at the maximum UE transmit power are defined.
Consequences if not approved:	⌘	TFC selection requirements in TS25.133 are not aligned with TS25.321.

Clauses affected:	⌘	6.4, 6.4.1 and 6.4.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☒ Test specifications ☐ O&M Specifications
Other comments:	⌘	

6.4 Transport format combination selection in UE

~~Editor's note: WG4 has identified an inconsistency in this section and WG2 TS 25.321. This should be resolved~~

6.4.1 Introduction

When the UE estimates~~reaches~~ that a certain TFC would require more power than the maximum transmit power it~~s~~ shall limit the usage of transport format combinations for the assigned transport format set, according to the functionality specified in section 11.4 in TS25.321. This in order to make it possible for the network operator to maximise the coverage. Transport format combination selection is described in section 11.4 of TS 25.321.

6.4.2 Requirements

The UE shall continuously evaluate based on the *Limited TFC Set* and *Recovered TFC Set* criteria defined below, which TFCs of the given TFC set it can support. The evaluation shall be performed using the estimated UE transmit power of a corresponding TFC. The UE transmit power estimation shall be made using the UE transmitted power measured over the measurement period and the gain factors of the corresponding TFC.

The UE shall consider the *Limited TFC Set* criterion for a TFC to be fulfilled if the estimated UE transmit power of a certain TFC has been evaluated as greater than the Maximum UE transmitter power for at least X measurement periods out of Y successive measurement periods. If the *Limited TFC Set* criterion for a TFC is fulfilled, the UE shall consider that the TFC cannot be supported in TFC selection.

MAC shall request RLC to provide data in formats and sizes, which are suitable for the supportable TFC selected by MAC, within 15 ms from the moment the *Limited TFC Set* criterion has been fulfilled. The UE may change TFC step by step according to the TFC selection rules in [19] towards supportable TFC since data provided by RLC may not be in suitable formats in the first TFC selection(s) after the *Limited TFC Set* criterion has been fulfilled. The UE shall take supportable TFC in use as soon as all data provided by RLC is in the correct format for the new TFC.

The Maximum UE transmitter power is defined as follows

> Maximum UE transmitter power = MIN(Maximum allowed UL TX Power, UE maximum transmit power), and
>
> Maximum allowed UL TX Power is set by UTRAN and defined in [16], and
>
> UE maximum transmit power is defined by the UE power class, and specified in [3].

The UE shall consider the *Recovered TFC Set* criterion for a TFC to be fulfilled if the UE has evaluated for at least Y successive measurement periods that the estimated UE transmit power for that TFC has not been greater than the Maximum UE transmitter power.

A TFC, which fulfilled the *Limited TFC Set* criterion, shall not be considered in the TFC selection until the *Recovered TFC Set* criterion has been fulfilled.

~~In this sub-clause, the UE maximum transmit power is defined as the UE maximum output power, which is defined by the UE power class.~~

~~For each measurement period of the UE transmitted power measurement the UE shall estimate if it has reached its maximum transmit power or not.~~

~~If the UE output power as requested by UTRAN have been larger than the UE maximum transmit power for a period of more than [T1] ms, it shall adapt to the transport format combination corresponding to the next lower bit rate according to the rules in TS 25.321, at the next of the longest uplink TTIs, following [T1+10] ms from when the UE maximum transmit power was reached.~~

~~If the UE has limited the usage of the transport format combination set, according to the above clause, and the UE estimates that it for a period of more than [T2] ms has had sufficient power to support a transport format combination, that has previously been removed, the temporary blocked transport format shall again be considered in the transport format combination selection.~~

3GPP TSG RAN WG4 Meeting #17 **R4-010771**

Gothenburg, Sweden 21st - 25th May 2001

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CHANGE REQUEST

⌘ **25.133** **CR** **110** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Requirements for TFC selection at the maximum power
Source:	⌘	RAN WG4
Work item code:	⌘	TEI
Date:	⌘	22-05-2001
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	TFC selection requirements at the maximum UE transmit power are incomplete and not aligned with TS25.321
Summary of change:	⌘	Performance requirements at the maximum UE transmit power are defined.
Consequences if not approved:	⌘	TFC selection requirements in TS25.133 are not aligned with TS25.321.

Clauses affected:	⌘	6.4, 6.4.1 and 6.4.2
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications
	⌘	
Other comments:	⌘	

6.4 Transport format combination selection in UE

~~Editor's note: WG4 has identified an inconsistency in this section and WG2 TS 25.321. This should be resolved~~

6.4.1 Introduction

When the UE estimates~~reaches~~ that a certain TFC would require more power than the maximum transmit power it~~s~~ shall limit the usage of transport format combinations for the assigned transport format set, according to the functionality specified in section 11.4 in TS25.321. This in order to make it possible for the network operator to maximise the coverage. Transport format combination selection is described in section 11.4 of TS 25.321.

6.4.2 Requirements

The UE shall continuously evaluate based on the *Limited TFC Set* and *Recovered TFC Set* criteria defined below, which TFCs of the given TFC set it can support. The evaluation shall be performed using the estimated UE transmit power of a corresponding TFC. The UE transmit power estimation shall be made using the UE transmitted power measured over the measurement period and the gain factors of the corresponding TFC.

The UE shall consider the *Limited TFC Set* criterion for a TFC to be fulfilled if the estimated UE transmit power of a certain TFC has been evaluated as greater than the Maximum UE transmitter power for at least X measurement periods out of Y successive measurement periods. If the *Limited TFC Set* criterion for a TFC is fulfilled, the UE shall consider that the TFC cannot be supported in TFC selection.

MAC shall request RLC to provide data in formats and sizes, which are suitable for the supportable TFC selected by MAC, within 15 ms from the moment the *Limited TFC Set* criterion has been fulfilled. The UE may change TFC step by step according to the TFC selection rules in [19] towards supportable TFC since data provided by RLC may not be in suitable formats in the first TFC selection(s) after the *Limited TFC Set* criterion has been fulfilled. The UE shall take supportable TFC in use as soon as all data provided by RLC is in the correct format for the new TFC.

The Maximum UE transmitter power is defined as follows

> Maximum UE transmitter power = MIN(Maximum allowed UL TX Power, UE maximum transmit power), and
>
> Maximum allowed UL TX Power is set by UTRAN and defined in [16], and
>
> UE maximum transmit power is defined by the UE power class, and specified in [3].

The UE shall consider the *Recovered TFC Set* criterion for a TFC to be fulfilled if the UE has evaluated for at least Y successive measurement periods that the estimated UE transmit power for that TFC has not been greater than the Maximum UE transmitter power.

A TFC, which fulfilled the *Limited TFC Set* criterion, shall not be considered in the TFC selection until the *Recovered TFC Set* criterion has been fulfilled.

~~In this sub-clause, the UE maximum transmit power is defined as the UE maximum output power, which is defined by the UE power class.~~

~~For each measurement period of the UE transmitted power measurement the UE shall estimate if it has reached its maximum transmit power or not.~~

~~If the UE output power as requested by UTRAN have been larger than the UE maximum transmit power for a period of more than [T1] ms, it shall adapt to the transport format combination corresponding to the next lower bit rate according to the rules in TS 25.321, at the next of the longest uplink TTIs, following [T1+10] ms from when the UE maximum transmit power was reached.~~

~~If the UE has limited the usage of the transport format combination set, according to the above clause, and the UE estimates that it for a period of more than [T2] ms has had sufficient power to support a transport format combination, that has previously been removed, the temporary blocked transport format shall again be considered in the transport format combination selection.~~

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Gothenburg, Sweden 21st - 25th May 2001

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CHANGE REQUEST

⌘ **25.133** **CR** **111** ⌘ rev **-** ⌘ Current version: **3.5.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Revised corrections to multiple neighbour test cases
Source:	⌘	RAN WG4
Work item code:	⌘	TEI
Date:	⌘	23-05-2001
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	The CR corrects errors in the multiple neighbour test cases.
Summary of change:	⌘	1st test case: 1) Event 1A was missing from the first multiple neighbour test case. A clarification that periodical event reporting is not used. 2)The time period T3 is changed to 4.5 s instead of 5 s in order to avoid definition problems caused by the fact that T3 is exactly the same as in the general requirement. 3)The figures in Table A.8-4 are modified in order to avoid allowing unnecessary erroneous events. 4) At the CPICH Ec/Io level of –16.5 dB the measurement accuracy requirement is +/- 3 dB causing erroneous events 1B. The level of Cell3 is changed in order to avoid events 1B. The level of Cell1 is also modified in order to fit all the three cells in the same band during T2. 4) During T1 Cell3 is within the reporting range and 1A should be reported. 5) One erroneous 1C report from Cell3 (after the start of T1 and T4)cannot always be avoided with the current cell levels and corresponding measurement accuracy requirements and thefore two errorneous events 1C for Cell3 may occur. 6) An editorial error is corrected: the event 1C is changed to the event 1A 2nd test case: Without the modifications the test case is not fully aligned with the general measurement accuracy requirements and erroneous reports should be allowed similar way as in the 1st multiple neighbour test case.
Consequences if not approved:	⌘	The test cases are not contradictory with the general measurement accuracy requirements of TS25.133.

Clauses affected:	⌘	A.8.1.2, A.8.1.2.1, A.8.1.2.2, A.8.1.3, A.8.1.3.1 and A.8.1.3.2
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications
	⌘	

Other comments: ⌘

A.8.1.2 Event triggered reporting of multiple neighbours in AWGN propagation condition

A.8.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 8.1.2 and 9.1.

The test parameters are given in Table A.8-3 and A.8-4. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A, 1C and 1B shall be used and the periodical reporting of the events is not applied . The test consists of four successive time periods, with a time duration of T1, T2, T3 and T4 respectively. In the initial condition before the time T1 only Cell1 is active.

Table A.8-3: General test parameters for Event triggered reporting of multiple neighbours in AWGN propagation conditions

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cell		Cell 1	
Reporting range	dB	3	Applicable for event 1A and 1B
Hysteresis	dB	0	
W		1	Applicable for event 1A and 1B
Replacement activation threshold		0	Applicable for event 1C
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	Ms	0	
Filter coefficient		0	
Monitored cell list size		32	
T1	S	10	
T2	S	10	
T3	S	4.5~~5~~	
T4	S	10	

Table A.8-4: Cell specific test parameters for Event triggered reporting of multiple neighbours in AWGN propagation condition

Parameter	Unit	Cell 1				Cell 2				Cell3			
		T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
CPICH_Ec/Ior	dB	-10				-10				-10			
PCCPCH_Ec/Ior	dB	-12				-12				-12			
SCH_Ec/Ior	dB	-12				-12				-12			
PICH_Ec/Ior	dB	-15				-15				-15			
DPCH_Ec/Ior	dB	-17				N/A				N/A			
OCNS_Ec/Ior	dB	-1.049				-0.941				-0.941			
$\hat{I}_{or}/I_{oc}$	dB	6.97	6.937 ,72	5,97	6.127 ,72	-Inf	9.439 ,72	6,97	7.629 ,72	5.97	6.936 ,72	-Inf	5.626 ,72
I_{oc}	dBm/ 3.84 MHz	-85											
CPICH_Ec/Io	dB	-13	-1615 .5	-14	-15.5	-Inf	-13.5	-13	-1413 .5	-14	-16.5	-Inf	-16.5
Propagation Condition	AWGN												

A.8.1.2.2 Test Requirements

The UE shall send one Event 1A triggered measurement report for Cell3, with a measurement reporting delay less than 800 ms from the beginning of time period T1.

The UE may send one Event 1C triggered measurement report for Cell3 after the beginning of the time period T1.

The UE shall send one Event 1C triggered measurement report for Cell2, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

The UE shall send one Event 1A triggered measurement report for Cell2, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

The UE shall send one Event 1B triggered measurement report for Cell3, with a measurement reporting delay less than 200 ms from the beginning of time period T3.

The UE shall send one Event 1A~~C~~ triggered measurement report for Cell3, with a measurement reporting delay less than 200 ms from the beginning of time period T4.

The UE may send one Event 1C triggered measurement report for Cell2 after the beginning of the time period T4.

The UE may send one Event 1C triggered measurement report for Cell3 after the beginning of the time period T4.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

A.8.1.3 Event triggered reporting of two detectable neighbours in AWGN propagation condition

A.8.1.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 8.1.2 and 9.1.

The test parameters are given in Table A.8-5 and A.8-6. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1B shall be used and the periodical reporting of the events is not applied. The test consists of four successive time periods, with a time duration of T1, T2, T3 and T4 respectively. In the initial condition before the time T1 only Cell1 is active.

Table A.8-5: General test parameters for Event triggered reporting of two detectable neighbours in AWGN propagation condition

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cell		Cell 1	
Reporting range	dB	3	Applicable for event 1A and 1B
Hysteresis	dB	0	
W		1	Applicable for event 1A and 1B
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		32	
T1	s	10	
T2	s	10	
T3	s	10	
T4	s	10	

Table A.8-6: Cell specific test parameters for Event triggered reporting of two detectable neighbours in AWGN propagation condition

Parameter	Unit	Cell 1				Cell 2				Cell3			
		T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
CPICH_Ec/Ior	DB	-10				-10				-10			
PCCPCH_Ec/Ior	DB	-12				-12				-12			
SCH_Ec/Ior	DB	-12				-12				-12			
PICH_Ec/Ior	DB	-15				-15				-15			
DPCH_Ec/Ior	DB	-17				N/A				N/A			
OCNS_Ec/Ior	DB	-1.049				-0.941				-0.941			
$\hat{I}_{or}/I_{oc}$	DB	14.55~~8.36~~	28.51~~11.83~~	14.45	28.51~~7.89~~	-Inf~~3.36~~	27.51~~11.33~~	13.95	21.51~~2.39~~	8.05~~3.36~~	21.51~~6.33~~	13.95	27.51~~6.89~~
I_{oc}	DBm/3.84 MHz	-85											
CPICH_Ec/Io	DB	-112.5	-13~~.5~~	-14.5	-13~~.5~~	-Inf~~17.5~~	-14.0	-15	-2019	-17.5	-2019	-15	-14~~.5~~
Propagation Condition	AWGN												

A.8.1.3.2 Test Requirements

The UE shall send one Event 1A triggered measurement report for Cell2, with a measurement reporting delay less than 8200 ms from the beginning of time period T2.

The UE shall send one Event 1A triggered measurement report for Cell3, with a measurement reporting delay less than 200 ms from the beginning of time period T3.

The UE shall send one Event 1B triggered measurement report for Cell2, with a measurement reporting delay less than 200 ms from the beginning of time period T4.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

3GPP TSG RAN WG4 Meeting #17 **R4-010769**

Gothenburg, Sweden 21st - 25th May 2001

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CHANGE REQUEST

⌘ **25.133** **CR** **112** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Revised corrections to multiple neighbour test cases
Source:	⌘	RAN WG4
Work item code:	⌘	TEI
Date:	⌘	24-05-2001
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	The CR corrects errors in the multiple neighbour test cases.
Summary of change:	⌘	1st test case: 1) Event 1A was missing from the first multiple neighbour test case. A clarification that periodical event reporting is not used. 2)The time period T3 is changed to 4.5 s instead of 5 s in order to avoid definition problems caused by the fact that T3 is exactly the same as in the general requirement. 3)The figures in Table A.8-4 are modified in order to avoid allowing unnecessary erroneous events. 4) At the CPICH Ec/Io level of –16.5 dB the measurement accuracy requirement is +/- 3 dB causing erroneous events 1B. The level of Cell3 is changed in order to avoid events 1B. The level of Cell1 is also modified in order to fit all the three cells in the same band during T2. 4) During T1 Cell3 is within the reporting range and 1A should be reported. 5) One erroneous 1C report from Cell3 (after the start of T1 and T4)cannot always be avoided with the current cell levels and corresponding measurement accuracy requirements and thefore two errorneous events 1C for Cell3 may occur. 6) An editorial error is corrected: the event 1C is changed to the event 1A 2nd test case: Without the modifications the test case is not fully aligned with the general measurement accuracy requirements and erroneous reports should be allowed similar way as in the 1st multiple neighbour test case.
Consequences if not approved:	⌘	The test cases are not contradictory with the general measurement accuracy requirements of TS25.133.

Clauses affected:	⌘	A.8.1.2, A.8.1.2.1, A.8.1.2.2, A.8.1.3, A.8.1.3.1 and A.8.1.3.2
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications
	⌘	

Other comments: ⌘

A.8.1.2 Event triggered reporting of multiple neighbours in AWGN propagation condition

A.8.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 8.1.2 and 9.1.

The test parameters are given in Table A.8.3 and A.8.4. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A, 1C and 1B shall be used and the periodical reporting of the events is not applied. The test consists of four successive time periods, with a time duration of T1, T2, T3 and T4 respectively. In the initial condition before the time T1 only Cell1 is active.

Table A.8.3: General test parameters for Event triggered reporting of multiple neighbours in AWGN propagation conditions

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cell		Cell 1	
Reporting range	dB	3	Applicable for event 1A and 1B
Hysteresis	dB	0	
W		1	Applicable for event 1A and 1B
Replacement activation threshold		0	Applicable for event 1C
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	Ms	0	
Filter coefficient		0	
Monitored cell list size		32	
T1	S	10	
T2	S	10	
T3	S	4.5~~5~~	
T4	S	10	

Table A.8.4: Cell specific test parameters for Event triggered reporting of multiple neighbours in AWGN propagation condition

Parameter	Unit	Cell 1				Cell 2				Cell3			
		T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
CPICH_Ec/Ior	dB	-10				-10				-10			
PCCPCH_Ec/Ior	dB	-12				-12				-12			
SCH_Ec/Ior	dB	-12				-12				-12			
PICH_Ec/Ior	dB	-15				-15				-15			
DPCH_Ec/Ior	dB	-17				N/A				N/A			
OCNS_Ec/Ior	dB	-1.049				-0.941				-0.941			
$\hat{I}_{or}/I_{oc}$	dB	6.97	6.937.72	5.97	6.127.72	-Inf	9.439.72	6.97	7.629.72	5.97	6.936.72	-Inf	5.626.72
I_{oc}	dBm/ 3.84 MHz	-85											
CPICH_Ec/Io	dB	-13	-1615.5	-14	-15.5	-Inf	-13.5	-13	-1413.5	-14	-16.5	-Inf	-16.5
Propagation Condition	AWGN												

A.8.1.2.2 Test Requirements

The UE shall send one Event 1A triggered measurement report for Cell3, with a measurement reporting delay less than 800 ms from the beginning of time period T1.

The UE may send one Event 1C triggered measurement report for Cell3 after the beginning of the time period T1.

The UE shall send one Event 1C triggered measurement report for Cell2, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

The UE shall send one Event 1A triggered measurement report for Cell2, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

The UE shall send one Event 1B triggered measurement report for Cell3, with a measurement reporting delay less than 200 ms from the beginning of time period T3.

The UE shall send one Event 1A~~C~~ triggered measurement report for Cell3, with a measurement reporting delay less than 200 ms from the beginning of time period T4.

The UE may send one Event 1C triggered measurement report for Cell2 after the beginning of the time period T4.

The UE may send one Event 1C triggered measurement report for Cell3 after the beginning of the time period T4.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

A.8.1.3 Event triggered reporting of two detectable neighbours in AWGN propagation condition

A.8.1.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 8.1.2 and 9.1.

The test parameters are given in Table A.8.5 and A.8.6. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1B shall be used and the periodical reporting of the events is not applied. The test consists of four successive time periods, with a time duration of T1, T2, T3 and T4 respectively. In the initial condition before the time T1 only Cell1 is active.

Table A.8.5: General test parameters for Event triggered reporting of two detectable neighbours in AWGN propagation condition

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cell		Cell 1	
Reporting range	dB	3	Applicable for event 1A and 1B
Hysteresis	dB	0	
W		1	Applicable for event 1A and 1B
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		32	
T1	s	10	
T2	s	10	
T3	s	10	
T4	s	10	

Table A.8.6: Cell specific test parameters for Event triggered reporting of two detectable neighbours in AWGN propagation condition

Parameter	Unit	Cell 1				Cell 2				Cell3			
		T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
CPICH_Ec/Ior	dB	-10				-10				-10			
PCCPCH_Ec/Ior	dB	-12				-12				-12			
SCH_Ec/Ior	dB	-12				-12				-12			
PICH_Ec/Ior	dB	-15				-15				-15			
DPCH_Ec/Ior	dB	-17				N/A				N/A			
OCNS_Ec/Ior	dB	-1.049				-0.941				-0.941			
$\hat{I}_{or}/I_{oc}$	dB	14.55 8.36	28.51 11.83	14.45	28.51 7.89	-Inf 3.36	27.51 11.33	13.95	21.51 2.39	8.05 3.36	21.51 6.33	13.95	27.51 6.89
I_{oc}	dBm/3.84 MHz	-85											
CPICH_Ec/Io	dB	-112.5	-13.5	-14.5	-13.5	-Inf 17.5	-14.0	-15	-2019	-17.5	-2019	-15	-14.5
Propagation Condition	AWGN												

A.8.1.3.2 Test Requirements

The UE shall send one Event 1A triggered measurement report for Cell2, with a measurement reporting delay less than 8200 ms from the beginning of time period T2.

The UE shall send one Event 1A triggered measurement report for Cell3, with a measurement reporting delay less than 200 ms from the beginning of time period T3.

The UE shall send one Event 1B triggered measurement report for Cell2, with a measurement reporting delay less than 200 ms from the beginning of time period T4.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

3GPP TSG RAN WG4 Meeting #17 **R4-010753**

Gothenburg, Sweden 21st - 25th May 2001

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CHANGE REQUEST

⌘ **25.133** **CR** **113** ⌘ rev **-** ⌘ Current version: **3.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title: ⌘	Corrections for section 5	
Source: ⌘	RAN WG4	
Work item code: ⌘	TEI	***Date:*** ⌘ 24-05-2001
Category: ⌘	**F**	***Release:*** ⌘ R99

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change: ⌘	- Prior to handover the UE needs to know the SFN of the target cell. Related side conditions are missing in Section 5 of TS25.133. - In the definition of known cell for hard handover, it is no longer taken into account that when inter-frequency hard HO is performed to a known cell, the UE still needs to decode the SFN of the cell, if the UE requires compressed mode for performing inter-frequency measurements.
Summary of change: ⌘	- The definition of known cell is clarified for active set update delay. - Clarifications on the known cell are made to hard HO interruption time - Hard HO interruption time requirement is corrected to cover the case that the UE needs to read the SFN of the target cell after receveing hard HO command.
Consequences if not approved: ⌘	Requirements in TS25.133 are contradictory.

Clauses affected: ⌘	5.1.2.2 and 5.2.2.2		
Other specs affected: ⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications	⌘	
Other comments: ⌘			

5 UTRAN Connected mode mobility

This section contains the requirements on the mobility procedures in UTRAN connected mode such as handover and cell re-selection.

Requirements related to the measurements in support of the execution of the UTRAN connected mode mobility procedures are specified, currently not necessarily for all UTRAN connected mode states, in section 8 .

The radio links the UE shall use are controlled by UTRAN with RRC signalling.

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

The purpose of Cell reselection in CELL_FACH, CELL_PCH and URA_PCH states is that the UE shall select a better cell according to the cell reselection criteria in TS 25.304. CELL_FACH, CELL_PCH and URA_PCH states are described in TS 25.331.

5.1 FDD/FDD Soft Handover

5.1.1 Introduction

Soft handover is a function in which the UE is connected to several UTRAN access points at the same time. Addition and/or release of radio links are controlled by the ACTIVE SET UPDATE procedure.

The soft handover function includes a measurement phase, a decision algorithm in UTRAN and the ACTIVE SET UPDATE procedure.

5.1.2 Requirements

5.1.2.1 Active set dimension

The UE shall be capable of supporting at least 6 radio links in the active set.

5.1.2.2 Active set update delay

The active set update delay is defined as the time from when the UE has received the ACTIVE SET UPDATE message from UTRAN, or at the time stated through the activation time when to perform the active set update, to the time when the UE successfully uses the set of radio links stated in that message for power control.

The active set update delay is depending on the number of known cells referred to in the ACTIVE SET UPDATE message. 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~~, or~~
- 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.

And the phase reference is the primary CPICH.

The active set update delay shall be less than 50+10*KC+100*OC ms, where

KC is the number of known cells in the active set update message.

OC is the number of cells that are not known in the active set update message.

If the UE have radio links in the active set that it can not use for data detection (due to low signal level), the UE shall at least every 150 ms search for the radio link

5.1.2.3 Interruption Time

The UE shall not interrupt the data flow when adding, changing or removing radio links to the active set.

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 11.5.2].

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, ~~T~~the interruption time shall be less than $T_{interrupt1}$

$T_{interrupt1}$ = T_{IU}+40+20*KC+100*OC 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.

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 $T_{interrupt2}$

$T_{interrupt2} = T_{IU}+40+50*KC+150*OC$ 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 definition of a known cell is specified in section 5.1.2.2.~~

5.3 FDD/TDD Handover

5.3.1 Introduction

The purpose of FDD/TDD hard handover is to change the mode between FDD and TDD. The handover procedure is initiated from UTRAN with a RRC message that implies a hard handover, refer to TS25.331.

Compressed mode according to the UE Capability may be used to be able to make any measurements on the other mode.

5.3.2 Requirements

These requirements shall apply only to FDD/TDD UE.

5.3.2.1 Hard handover delay

Procedure delay for all procedures, that can command a hard handover, are specified in [TS25.331 section 11.5].

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

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

where:

$D_{handover}$ equals the RRC procedure delay defined in TS25.331 Section 13.5.2 plus the interruption time stated in section 5.3.2.2 plus the time required for any kind of baseband or RF reconfiguration due to the change of the UTRAN mode.

5.3.2.2 Interruption time

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPDCH and the time the UE starts transmission of the new uplink DPCH. The interruption time shall be less than the value in table 5-3. There is different requirement on the interruption time depending on if the cell is known or not.

The definition of known cell is specified in section 5.1.2.2.

Table 5.1: FDD/TDD interruption time

cell present in the handover command message	Interruption time [ms]	
	Known cell	Unknown cell
1	[100]	[350]

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

The requirement in Table 5.1 for the unknown cell shall apply if the signal quality of the unknown cell is good enough for successful synchronisation with one attempt.

NOTE: One synchronisation attempt can consist of coherent averaging using several frames.

3GPP TSG RAN WG4 Meeting #17 **R4-010767**

Gothenburg, Sweden 21st - 25th May 2001

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CHANGE REQUEST

⌘ **25.133** **CR** **114** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title: ⌘	Corrections for section 5	
Source: ⌘	RAN WG4	
Work item code: ⌘	TEI	***Date:*** ⌘ 24-05-2001
Category: ⌘	**A**	***Release:*** ⌘ REL-4

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change: ⌘	- Prior to handover the UE needs to know the SFN of the target cell. Related side conditions are missing in Section 5 of TS25.133. - In the definition of known cell for hard handover, it is no longer taken into account that when inter-frequency hard HO is performed to a known cell, the UE still needs to decode the SFN of the cell, if the UE requires compressed mode for performing inter-frequency measurements.
Summary of change: ⌘	- The definition of known cell is clarified for active set update delay. - Clarifications on the known cell are made to hard HO interruption time - Hard HO interruption time requirement is corrected to cover the case that the UE needs to read the SFN of the target cell after receveing hard HO command.
Consequences if not approved: ⌘	Requirements in TS25.133 are contradictory.

Clauses affected: ⌘	5.1.2.2 and 5.2.2.2		
Other specs affected: ⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications	⌘	
Other comments: ⌘			

5 UTRAN Connected mode mobility

This section contains the requirements on the mobility procedures in UTRAN connected mode such as handover and cell re-selection.

Requirements related to the measurements in support of the execution of the UTRAN connected mode mobility procedures are specified, currently not necessarily for all UTRAN connected mode states, in section 8 .

The radio links the UE shall use are controlled by UTRAN with RRC signalling.

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

The purpose of Cell reselection in CELL_FACH, CELL_PCH and URA_PCH states is that the UE shall select a better cell according to the cell reselection criteria in TS 25.304. CELL_FACH, CELL_PCH and URA_PCH states are described in TS 25.331.

5.1 FDD/FDD Soft Handover

5.1.1 Introduction

Soft handover is a function in which the UE is connected to several UTRAN access points at the same time. Addition and/or release of radio links are controlled by the ACTIVE SET UPDATE procedure.

The soft handover function includes a measurement phase, a decision algorithm in UTRAN and the ACTIVE SET UPDATE procedure.

5.1.2 Requirements

5.1.2.1 Active set dimension

The UE shall be capable of supporting at least 6 radio links in the active set.

5.1.2.2 Active set update delay

The active set update delay is defined as the time from when the UE has received the ACTIVE SET UPDATE message from UTRAN, or at the time stated through the activation time when to perform the active set update, to the time when the UE successfully uses the set of radio links stated in that message for power control.

The active set update delay is depending on the number of known cells referred to in the ACTIVE SET UPDATE message. 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~~, or~~
- 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.

And the phase reference is the primary CPICH.

The active set update delay shall be less than 50+10*KC+100*OC ms, where

KC is the number of known cells in the active set update message.

OC is the number of cells that are not known in the active set update message.

If the UE have radio links in the active set that it can not use for data detection (due to low signal level), the UE shall at least every 150 ms search for the radio link

5.1.2.3 Interruption Time

The UE shall not interrupt the data flow when adding, changing or removing radio links to the active set.

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 11.5.2].

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, ~~T~~the interruption time shall be less than $T_{interrupt1}$

$T_{interrupt1}$ = T_{IU}+40+20*KC+100*OC 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.

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 $T_{interrupt2}$

$T_{interrupt2} = T_{IU}+40+50*KC+150*OC$ 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 definition of a known cell is specified in section 5.1.2.2.~~

5.3 FDD/TDD Handover

5.3.1 Introduction

The purpose of FDD/TDD hard handover is to change the mode between FDD and TDD. The handover procedure is initiated from UTRAN with a RRC message that implies a hard handover, refer to TS25.331.

Compressed mode according to the UE Capability may be used to be able to make any measurements on the other mode.

5.3.2 Requirements

These requirements shall apply only to FDD/TDD UE.

5.3.2.1 Hard handover delay

Procedure delay for all procedures, that can command a hard handover, are specified in [TS25.331 section 11.5].

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

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

where:

$D_{handover}$ equals the RRC procedure delay defined in TS25.331 Section 13.5.2 plus the interruption time stated in section 5.3.2.2 plus the time required for any kind of baseband or RF reconfiguration due to the change of the UTRAN mode.

5.3.2.2 Interruption time

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPDCH and the time the UE starts transmission of the new uplink DPCH. The interruption time shall be less than the value in table 5-3. There is different requirement on the interruption time depending on if the cell is known or not.

The definition of known cell is specified in section 5.1.2.2.

Table 5.1: FDD/TDD interruption time

cell present in the handover command message	Interruption time [ms]	
	Known cell	Unknown cell
1	[100]	[350]

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

The requirement in Table 5.1 for the unknown cell shall apply if the signal quality of the unknown cell is good enough for successful synchronisation with one attempt.

NOTE: One synchronisation attempt can consist of coherent averaging using several frames.

3GPP TSG RAN WG4 Meeting #17 **R4-010760**

Gothenburg, Sweden 21st - 25th May 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.133** **CR** **115** ⌘ rev **-** ⌘ Current version: **3.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	RRC Connection re-establishment
Source:	⌘	RAN WG4
Work item code:	⌘	TEI
Date:	⌘	2001-05-24
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	The procedure for RRC connection re-establishment has been changed in RAN WG2, see TS 25.331 v3.6.0, therefore the description of the RRC re-establishment needs to be aligned. The term “known cell” is not inline with the description in section 5.1.2.2. An error has been found in the requirement equation taking the system info block scheduling into account to many times..
Summary of change:	⌘	Align RRC Re-establishment procedure with 25.331. Remove the text saying that the target cell shall be selected based on the cell re-selection criteria. Clarification of the term known cell to be consistent with section 5.1.2.2. Change from explicitly stating the necessary SIBs to be received to a more general text. Correction of requirement equation and the corresponding correction to the test case..
Consequences if not approved:	⌘	The requirement for the RRC Re-establishment delay will not be correctly described.

Clauses affected:	⌘	6.1, A.6.1
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

How to create CRs using this form:

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

6.1 RRC Re-establishment

6.1.1 Introduction

RRC connection re-establishment is needed, when a UE in state CELL_DCH loses radio connection due to radio link failure. The ~~RRC connection re-establishment~~ procedure when a radio link failure occurs in CELL_DCH is specified in ~~section 8.5.1 of~~ TS 25.331 ~~and a RRC connection re-establishment sequence is described in section 6.4.8 of TS 25.303~~.

6.1.2 Requirements

The requirements in this section are applicable when the UE performs a RRC Re-establishment to a cell belonging to any of the frequencies present in the previous (old) monitored set.

When the UE is in CELL_DCH state, the UE shall be capable of sending a CELL UPDATE~~RRC CONNECTION RE-ESTABLISHMENT CONNECT~~ message using the cause "radio link failure" within $T_{RE\text{-}ESTABLISH}$ seconds from when the CPHY-Out-Of-Synch primitive indicates lost synchronisation.

The RRC Re-establishment delay requirement ($T_{RE\text{-}ESTABLISH\text{-}REQ}$) is defined as the time between the moment when the CPHY-Out-Of-Synch primitive indicates lost synchronisation, to when the UE starts to send preambles on the PRACH.

$T_{RE\text{-}ESTABLISH\text{-}REQ}$ is depending on whether the target cell ~~(that best fulfil the cell re-selection criteria)~~ is known by the UE or not. 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~~, or~~
- the cell has been measured~~reported~~ by the UE ~~in a measurement report~~ during the last 5 seconds and the SFN of the cell has been decoded by the UE.

And the phase reference is the primary CPICH.

The RRC re-establishment delay shall be less than

$$50+(T_{search}*NF + T_{SI})*NF \text{ ms}$$

where

T_{search} is the time it takes for the UE to search the cell.

T_{search} =100 ms if the target cell is known by the UE, and

T_{search} =800 ms if the target cell is not known by the UE.

~~$T_{SI} = MAX(T_{repSI}(3), T_{repSI}(5), T_{repSI}(6), T_{repSI}(7))$~~

where ~~$T_{repSI}(X)$~~ is the maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell~~frequency of system information block X in the target cell~~ (ms).

NF is the number of different frequencies in the monitored set.

This requirement assumes radio conditions to be sufficient, so that reading of system information can be done without errors.

A.6.1 RRC Re-establishment delay

A.6.1.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

The test parameters are given in table A.6.1 and table A.6.2 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consist of 2 successive time periods, with a time duration of T1 and T2 respectively. At the start of time period T2, the dedicated channel is removed.

Table A.6.1 General test parameters for RRC re-establishment delay, Test 1

Parameter	Unit	Value	Comment
DCH Parameters		DL Reference measurement channel 12.2 kbps	As specified in TS 25.101, section A.3.1
Power Control		On	
Active cell		Cell 1	
N313	Frames	20	
N315	Frames	20	
T313	Seconds	0	
T_{SI}~~rep(3)~~	ms	1280	Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331.
~~Trep(5)~~	~~ms~~	~~1280~~	
~~Trep(6)~~	~~ms~~	~~1280~~	
~~Trep(7)~~	~~ms~~	~~1280~~	
Monitored cell list size		24	Monitored set shall only include intra frequency neighbours.
Cell 2 included in monitored set		Included	
Reporting frequency	Seconds	4	
T1		10	
T2		6	

Table A.6.2 Cell specific parameters for RRC re-establishment delay test, Test 1

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
Cell Frequency	ChNr	1		1	
CPICH_Ec/Ior	dB	-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12	
SCH_Ec/Ior	dB	-12		-12	
PICH_Ec/Ior	dB	-15		-15	
DCH_Ec/Ior	dB	-17	-Inf	Not applicable	
OCNS_Ec/Ior	dB	-1.049	-0.941	-0.941	
$\hat{I}_{or}/I_{oc}$	dB	2,39		4,39	
I_{oc}	dBm/ 3.84 MHz	-70			
CPICH_Ec/Io	dB	-15		-13	
Propagation Condition		AWGN			

Table A.6.3 General test parameters for RRC re-establishment delay, Test 2

Parameter	Unit	Value	Comment
DCH Parameters		DL Reference measurement channel 12.2 kbps	As specified in TS 25.101, section A.3.1
Power Control		On	
Active cell		Cell 1	
N313	Frames	20	
N315	Frames	20	
T313	Seconds	0	
T_{SI}~~rep(3)~~	ms	1280	Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331.
~~Trep(5)~~	~~ms~~	~~1280~~	
~~Trep(6)~~	~~ms~~	~~1280~~	
~~Trep(7)~~	~~ms~~	~~1280~~	
Monitored cell list size		24	Monitored set shall include 2 additional frequencies.
Cell 2 included in monitored set		Not Included	
Reporting frequency	Seconds	4	
T1		10	
T2		6	

Table A.6.4 Cell specific parameters for RRC re-establishment delay test, Test 2

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
Cell Frequency	ChNr	1		2	
CPICH_Ec/Ior	dB	-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12	
SCH_Ec/Ior	dB	-12		-12	
PICH_Ec/Ior	dB	-15		-15	
DCH_Ec/Ior	dB	-17	-Inf	Not applicable	
OCNS_Ec/Ior	dB	-1.049	-0.941	-0.941	
$\hat{I}_{or}/I_{oc}$	dB	-3,35		0,02	
I_{oc}	dBm/ 3.84 MHz	-70			
CPICH_Ec/Io	dB	-15		-13	
Propagation Condition		AWGN			

A.6.1.2 Test Requirements

Test 1

RRC re-establishment delay shall be less than 1630 ms.

Test 2

RRC re-establishment delay shall be less than 3930~~6490~~ ms.

3GPP TSG RAN WG4 Meeting #17 **R4-010761**

Gothenburg, Sweden 21st - 25th May 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.133** **CR** **116** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	RRC Connection re-establishment
Source:	⌘	RAN WG4
Work item code:	⌘	TEI
Date:	⌘	2001-05-24
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	The procedure for RRC connection re-establishment has been changed in RAN WG2, see TS 25.331 v3.6.0, therefore the description of the RRC re-establishment needs to be aligned. The term “known cell” is not inline with the description in section 5.1.2.2. An error has been found in the requirement equation taking the system info block scheduling into account to many times.
Summary of change:	⌘	Align RRC Re-establishment procedure with 25.331. Remove the text saying that the target cell shall be selected based on the cell re-selection criteria. Clarification of the term known cell to be consistent with section 5.1.2.2. Change from explicitly stating the necessary SIBs to be received to a more general text. Correction of requirement equation and the corresponding correction to the test case.
Consequences if not approved:	⌘	The requirement for the RRC Re-establishment delay will not be correctly described.

Clauses affected:	⌘	6.1, A.6.1
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	Corresponding R99 CR in R4-010760

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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.

6.1 RRC Re-establishment

6.1.1 Introduction

RRC connection re-establishment is needed, when a UE in state CELL_DCH loses radio connection due to radio link failure. The ~~RRC connection re-establishment~~ procedure when a radio link failure occurs in CELL_DCH is specified in ~~section 8.5.1 of~~ TS 25.331 ~~and a RRC connection re-establishment sequence is described in section 6.4.8 of TS 25.303~~.

6.1.2 Requirements

The requirements in this section are applicable when the UE performs a RRC Re-establishment to a cell belonging to any of the frequencies present in the previous (old) monitored set.

When the UE is in CELL_DCH state, the UE shall be capable of sending a CELL UPDATE~~RRC CONNECTION RE-ESTABLISHMENT CONNECT~~ message using the cause "radio link failure" within $T_{RE\text{-}ESTABLISH}$ seconds from when the CPHY-Out-Of-Synch primitive indicates lost synchronisation.

The RRC Re-establishment delay requirement ($T_{RE\text{-}ESTABLISH\text{-}REQ}$) is defined as the time between the moment when the CPHY-Out-Of-Synch primitive indicates lost synchronisation, to when the UE starts to send preambles on the PRACH.

$T_{RE\text{-}ESTABLISH\text{-}REQ}$ is depending on whether the target cell ~~(that best fulfil the cell re-selection criteria)~~ is known by the UE or not. 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~~, or~~
- the cell has been measured~~reported~~ by the UE ~~in a measurement report~~ during the last 5 seconds and the SFN of the cell has been decoded by the UE.

And the phase reference is the primary CPICH.

The RRC re-establishment delay shall be less than

$$50+(T_{search}*NF + T_{SI})*NF \text{ ms}$$

where

T_{search} is the time it takes for the UE to search the cell.

T_{search} = 100 ms if the target cell is known by the UE, and

T_{search} = 800 ms if the target cell is not known by the UE.

~~T_{SI} = MAX($T_{rep}(3)$, $T_{rep}(5)$, $T_{rep}(6)$, $T_{rep}(7)$)~~

where

$T_{repSI}(X)$ is the maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell~~frequency of system information block *X* in the target cell~~ (ms).

NF is the number of different frequencies in the monitored set.

This requirement assumes radio conditions to be sufficient, so that reading of system information can be done without errors.

A.6.1 RRC Re-establishment delay

A.6.1.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

The test parameters are given in table A.6.1 and table A.6.2 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consist of 2 successive time periods, with a time duration of T1 and T2 respectively. At the start of time period T2, the dedicated channel is removed.

Table A.6.1 General test parameters for RRC re-establishment delay, Test 1

Parameter	Unit	Value	Comment
DCH Parameters		DL Reference measurement channel 12.2 kbps	As specified in TS 25.101, section A.3.1
Power Control		On	
Active cell		Cell 1	
N313	Frames	20	
N315	Frames	20	
T313	Seconds	0	
T_{SI}~~rep(3)~~	ms	1280	Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331.
~~Trep(5)~~	~~ms~~	~~1280~~	
~~Trep(6)~~	~~ms~~	~~1280~~	
~~Trep(7)~~	~~ms~~	~~1280~~	
Monitored cell list size		24	Monitored set shall only include intra frequency neighbours.
Cell 2 included in monitored set		Included	
Reporting frequency	Seconds	4	
T1		10	
T2		6	

Table A.6.2 Cell specific parameters for RRC re-establishment delay test, Test 1

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
Cell Frequency	ChNr	1		1	
CPICH_Ec/Ior	dB	-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12	
SCH_Ec/Ior	dB	-12		-12	
PICH_Ec/Ior	dB	-15		-15	
DCH_Ec/Ior	dB	-17	-Inf	Not applicable	
OCNS_Ec/Ior	dB	-1.049	-0.941	-0.941	
$\hat{I}_{or}/I_{oc}$	dB	2,39		4,39	
I_{oc}	dBm/ 3.84 MHz	-70			
CPICH_Ec/Io	dB	-15		-13	
Propagation Condition		AWGN			

Table A.6.3 General test parameters for RRC re-establishment delay, Test 2

Parameter	Unit	Value	Comment
DCH Parameters		DL Reference measurement channel 12.2 kbps	As specified in TS 25.101, section A.3.1
Power Control		On	
Active cell		Cell 1	
N313	Frames	20	
N315	Frames	20	
T313	Seconds	0	
T_{SI}~~rep(3)~~	ms	1280	Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331.
~~Trep(5)~~	~~ms~~	~~1280~~	
~~Trep(6)~~	~~ms~~	~~1280~~	
~~Trep(7)~~	~~ms~~	~~1280~~	
Monitored cell list size		24	Monitored set shall include 2 additional frequencies.
Cell 2 included in monitored set		Not Included	
Reporting frequency	Seconds	4	
T1		10	
T2		6	

Table A.6.4 Cell specific parameters for RRC re-establishment delay test, Test 2

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
Cell Frequency	ChNr	1		2	
CPICH_Ec/Ior	dB	-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12	
SCH_Ec/Ior	dB	-12		-12	
PICH_Ec/Ior	dB	-15		-15	
DCH_Ec/Ior	dB	-17	-Inf	Not applicable	
OCNS_Ec/Ior	dB	-1.049	-0.941	-0.941	
$\hat{I}_{or}/I_{oc}$	dB	-3,35		0,02	
I_{oc}	dBm/ 3.84 MHz	-70			
CPICH_Ec/Io	dB	-15		-13	
Propagation Condition		AWGN			

A.6.1.2 Test Requirements

Test 1

RRC re-establishment delay shall be less than 1630 ms.

Test 2

RRC re-establishment delay shall be less than 3930~~6490~~ ms.

3GPP TSG RAN WG4 Meeting #17 **R4-010777**

Gothenburg, Sweden 21st - 25th May 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.133** **CR** **117** ⌘ rev **-** ⌘ Current version: **3.5.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Corrections for section 9
Source:	⌘	RAN WG4
Work item code:	⌘	TEI
Date:	⌘	2001-05-24
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change: ⌘
- In TS 25.133 section 9.1 references for measurement periods in CELL_DCH are wrong, measurement periods for CELL_FACH are missing and some of the notes are no longer valid.
- Section 9 contains incomplete side conditions.
- dB and dBm are mixed in some of the equations
- The naming of LCS measurements is incorrect.

Summary of change: ⌘
- Removal of notes in section 9.1

- Removal of remaining SCH side conditions

- Reference to section 8 is added for measurement period in CELL_DCH and CELL_FACH for CPICH related measurements, TDD and GSM measurements, i.e. CPICH RSCP, CPICH Ec/Io, UTRA Carrier RSSI, GSM carrier RSSI, SFN-CFN observed time difference, SFN-SFN observed time difference type 1 & 2, P-CCPCH RSCP.

- Side conditions on P-CCPCH Ec/Io levels are included into the requirements, where SFN decoding from P-CCPCH is required.

- Clarification of GSM carrier RSSI measurement requirements in CELL_FACH.

- Specifying the measurement period for Observed time difference to GSM cell equal to the maximum time between two successive BSIC re-confirmations, as the timing to the GSM cell will only be measured when the BSIC is decoded.

- Correction of reference in section 9.1.5 Transport channel BLER.

- Clarification that it is the use of IPDL together with SFN-SFN type 2 that is optional and dependent on the supported UE positioning method.

- Changing the term LCS to “UE positioning” in Section 9

		- Editorial corrections of equations (dB, dBm)
Consequences if not approved:	⌘	The requirements for some of the measurements in Section 9 of 25.133 will be unclear and incorrect.

Clauses affected:	⌘	9.1 and 9.2.10		
Other specs affected:	⌘	☐ Other core specifications X Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

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2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

9 Measurements Performance Requirements

One of the key services provided by the physical layer is the measurement of various quantities which are used to trigger or perform a multitude of functions. Both the UE and the UTRAN are required to perform a variety of measurements. The physical layer measurement model and a complete list of measurements is specified in TS 25.302 "Services Provided by Physical Layer". The physical layer measurements for FDD are described and defined in TS25.215 "Physical layer - Measurements (FDD)". In this clause for each measurement the relevant requirements on the measurement period, reporting range, granularity and performance in terms of accuracy are specified.

The accuracy requirements in this clause are applicable for AWGN radio propagation conditions.

9.1 Measurement Performance for UE

The requirements in this clause are applicable for a UE:

- in state CELL_DCH and state CELL_FACH.
- performing measurements according to section 8.
- that is synchronised to the cell that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is referred to as point B in the measurement model described in TS25.302.

The accuracy requirements in this clause are valid for the reported measurement result after layer 1 filtering. The accuracy requirements are verified from the measurement report at point D in the measurement model having the layer 3 filtering disabled.

~~Note: The synchronisation channel side condition for the requirements in this section to apply needs to be further clarified.~~

Note: It needs to be clarified how the accuracy requirements shall be handled when the UE is measuring on cells using IPDL.

~~Note: Currently the measurement periods for UE measurements in CELL_FACH state are missing. This needs to be clarified when the requirements in section 8.3 Measurements in CELL_FACH State are completed.~~

~~Note: The measurement period for the measurement Observed time difference to GSM cell needs to be clarified when the requirements for that measurement is completed in section 8.~~

9.1.1 CPICH RSCP

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

9.1.1.1 Intra frequency measurements accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2~~1~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.2.

9.1.1.1.1 Absolute accuracy requirement

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

- $CPICH\_RSCP1|_{dBm} \geq -114$ dBm.

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

Table 9.1: CPICH_RSCP Intra frequency absolute accuracy

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

9.1.1.1.2 Relative accuracy requirement

The relative accuracy of CPICH RSCP is defined as the CPICH RSCP measured from one cell compared to the CPICH RSCP measured from another cell on the same frequency

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

- CPICH_RSCP1,2|dBm ≥ -114 dBm.

~~$|CPICH\_RSCP1|_{in\ dB} - CPICH\_RSCP2|_{in\ dB}| \leq 20dB$~~

- $|CPICH\_RSCP1|_{in\ dBm} - CPICH\_RSCP2|_{in\ dBm}| \leq 20dB$

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

Table 9.2: CPICH_RSCP Intra frequency relative accuracy

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

9.1.1.2 Inter frequency measurement accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.3~~2~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.3.

9.1.1.2.1 Relative accuracy requirement

The relative accuracy of CPICH RSCP in inter frequency case is defined as the CPICH RSCP measured from one cell compared to the CPICH RSCP measured from another cell on a different frequency.

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

- CPICH_RSCP1,2|dBm ≥ -114 dBm.

~~$|CPICH\_RSCP1|_{in\ dB} - CPICH\_RSCP2|_{in\ dB}| \leq 20dB$~~

- $|CPICH\_RSCP1|_{in\ dBm} - CPICH\_RSCP2|_{in\ dBm}| \leq 20dB$

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

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

Table 9.3: CPICH_RSCP Inter frequency relative accuracy

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

9.1.1.3 CPICH RSCP measurement report mapping

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

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

Table 9.4

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

9.1.2 CPICH Ec/Io

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

9.1.2.1 Intra frequency measurements accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2~~1~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.2.

9.1.2.1.1 Absolute accuracy requirement

The accuracy requirements in table 9.5 are valid under the following conditions:

- CPICH_RSCP1$|_{dBm}$ ≥ -114 dBm.

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

Table 9.5: CPICH_Ec/Io Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	dB	± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-94...-50

9.1.2.1.2 Relative accuracy requirement

The relative accuracy of CPICH Ec/Io is defined as the CPICH Ec/Io measured from one cell compared to the CPICH Ec/Io measured from another cell on the same frequency.

The accuracy requirements in table 9.6 are valid under the following conditions:

- CPICH_RSCP1,2|dBm ≥ -114 dBm.

- ~~$\left|CPICH\_RSCP1\right|_{in\ dB} - CPICH\_RSCP2\Big|_{in\ dB}\Big| \le 20dB$~~

- $\left|CPICH\_RSCP1\right|_{in\ dBm} - CPICH\_RSCP2\Big|_{in\ dBm}\Big| \le 20dB$

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

Table 9.6: CPICH_Ec/Io Intra frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	dB	± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-94...-50

9.1.2.2 Inter frequency measurement accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.3~~2~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.3.

9.1.2.2.1 Absolute accuracy requirement

The accuracy requirements in table 9.7 are valid under the following conditions:

- CPICH_RSCP1|dBm ≥ -114 dBm.

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

Table 9.7: CPICH_Ec/Io Inter frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	dB	± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-94...-50

9.1.2.2.2 Relative accuracy requirement

The relative accuracy of CPICH Ec/Io in the inter frequency case is defined as the CPICH Ec/Io measured from one cell compared to the CPICH Ec/Io measured from another cell on a different frequency

The accuracy requirements in table 9.8 are valid under the following conditions:

- CPICH_RSCP1,2|dBm ≥ -114 dBm.

~~$|CPICH\_RSCP1|_{in\ dB} - |CPICH\_RSCP2|_{in\ dB} \le 20dB$~~

- $|CPICH\_RSCP1|_{in\ dBm} - CPICH\_RSCP2|_{in\ dBm}| \le 20dB$

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

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

Table 9.8: CPICH_Ec/Io Inter frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	dB	± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-94...-50

9.1.2.3 CPICH Ec/Io measurement report mapping

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

In table 9.9 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.9

Reported value	Measured quantity value	Unit
CPICH_Ec/No _00	CPICH Ec/Io < -24	dB
CPICH_Ec/No _01	-24 ≤ CPICH Ec/Io < -23.5	dB
CPICH_Ec/No _02	-23.5 ≤ CPICH Ec/Io < -23	dB
…	…	…
CPICH_Ec/No _47	-1 ≤ CPICH Ec/Io < -0.5	dB
CPICH_Ec/No _48	-0.5 ≤ CPICH Ec/Io < 0	dB
CPICH_Ec/No _49	0 ≤ CPICH Ec/Io	dB

9.1.3 UTRA Carrier RSSI

NOTE: This measurement is for Inter-frequency handover evaluation.

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2~~1~~ for intra frequency measurements and in sub clause 8.1.2.3~~2~~ for inter frequency measurements. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.2 for intra frequency measurements and in sub clause 8.4.2.3 for inter frequency measurements.

9.1.3.1 Absolute accuracy requirement

Table 9.10: Io Inter frequency absolute accuracy

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

9.1.3.2 Relative accuracy requirement

The relative accuracy requirement is defined as the UTRAN RSSI measured from one frequency compared to the UTRAN RSSI measured from another frequency.

The accuracy requirements in table 9.11 are valid under the following conditions:

- | Channel 1_Io|$_{dBm}$ -Channel 2_Io|$_{dBm}$ | < 20 dB.

Table 9.11: Io Inter frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
Io	dBm	± 7	± 11	-94...-70

9.1.3.3 UTRA Carrier RSSI measurement report mapping

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

In table 9.12 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.12

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

9.1.4 GSM carrier RSSI

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

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

The measurement period for CELL_DCH state can be found in section 8.1.2.5~~4~~. The measurement period for CELL_FACH state can be found in section 8.4.2.5.

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

If the UE, in CELL_DCH state, needs compressed mode to perform GSM measurements, the GSM measurement procedure and measurement accuracy requirement ~~is~~ stated in section 8.1.2.5~~4~~ shall apply.

If the UE, in CELL_FACH state, does not need measurement occasions to perform GSM measurements, the measurement accuracy requirements for RXLEV in TS 05.08 shall apply.

If the UE, in CELL_FACH state, needs measurement occasions to perform GSM measurements, the GSM measurement procedure and measurement accuracy requirement stated in section 8.4.2.5 shall apply.

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

9.1.5 Transport channel BLER

9.1.5.1 BLER measurement requirement

Transport channel BLER value shall be calculated from a window with the size equal to the IE rReporting interval as specified in section 10.3.7.5378 Periodical reporting criteria in TS 25.331.

9.1.5.2 Transport channel BLER measurement report mapping

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

In table 9.13 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.13

Reported value	Measured quantity value	Unit
BLER_LOG _00	Transport channel BLER = 0	-
BLER_LOG _01	-∞ < Log10(Transport channel BLER) < -4.03	-
BLER_LOG _02	-4.03 ≤ Log10(Transport channel BLER) < -3.965	-
BLER_LOG _03	-3.965 ≤ Log10(Transport channel BLER) < -3.9	-
…	…	…
BLER_LOG _61	-0.195 ≤ Log10(Transport channel BLER) < -0.13	-
BLER_LOG _62	-0.13 ≤ Log10(Transport channel BLER) < -0.065	-
BLER_LOG _63	-0.065 ≤ Log10(Transport channel BLER) ≤ 0	-

9.1.6 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

Parameter	Unit	Accuracy [dB]	
		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	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, the UE L1 shall respond 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

9.1.7 SFN-CFN observed time difference

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

9.1.7.1 Intra frequency measurement requirement

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2~~1~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.2.

The accuracy requirement in table 9.16 is valid under the following conditions:

- CPICH_RSCP1,2|dBm ≥ -114 dBm.

- ~~$\left|CPICH\_RSCP1|_{in\ dB} - CPICH\_RSCP2|_{in\ dB}\right| \le 20dB$~~

- $\left|CPICH\_RSCP1|_{in\ dBm} - CPICH\_RSCP2|_{in\ dBm}\right| \le 20dB$

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

- $\left.\frac{I_o}{\hat{I}_{or}}\right|_{in\ dB} - \left(\frac{P-CCPCH\_E_c}{I_{or}}\right)_{in\ dB}$ is low enough to ensure successful SFN decoding.

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

Table 9.16

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

9.1.7.2 Inter frequency measurement requirement

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.3~~2~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.3.

The accuracy requirement in table 9.17 is valid under the following conditions:

- CPICH_RSCP1,2|dBm ≥ -114 dBm.

~~$|CPICH\_RSCP1|_{in\ dB} - CPICH\_RSCP2|_{in\ dB}| \le 20dB$~~

- $|CPICH\_RSCP1|_{in\ dBm} - CPICH\_RSCP2|_{in\ dBm}| \le 20dB$

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

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

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

Table 9.17

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

9.1.7.3 SFN-CFN observed time difference measurement report mapping

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

In table 9.18 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.18

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

9.1.8 SFN-SFN observed time difference

9.1.8.1 SFN-SFN observed time difference type 1

NOTE: This measurement is for identifying time difference between two cells.

9.1.8.1.1 Measurement requirement

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2~~1~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.2.

The accuracy requirement in table 9.19 is valid under the following conditions:

- CPICH_RSCP1,2|dBm ≥ -114 dBm.

~~$|CPICH\_RSCP1|_{in\ dB} - CPICH\_RSCP2|_{in\ dB}| \le 20dB$~~

- $|CPICH\_RSCP1|_{in\ dBm} - CPICH\_RSCP2|_{in\ dBm}| \le 20dB$

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

- $\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{P-CCPCH\_E_c}{I_{or}}\right)_{in\ dB}$ is low enough to ensure successful SFN decoding.

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

Table 9.19

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm]
SFN-SFN observed time difference type1	chip	± 1	-94...-50

9.1.8.1.2 SFN-SFN observed time difference type 1 measurement report mapping

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

In table 9.20 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.20

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

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 ~~a subset of~~ UE positioning~~LCS~~ 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~~1~~. 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 ≥ -114 dBm.

- ~~$\left|CPICH\_RSCP1|_{in\ dB} - CPICH\_RSCP2|_{in\ dB}\right| \le 20dB$~~

- $\left|CPICH\_RSCP1|_{in\ dBm} - CPICH\_RSCP2|_{in\ dBm}\right| \le 20dB$

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

- $\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{P-CCPCH\_E_c}{I_{or}}\right)_{in\ dB}$ is low enough to ensure successful SFN decoding.

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

Table 9.21

Parameter	Unit	Accuracy [chip]	Conditions Io [dBm]
SFN-SFN observed time difference type2	chip	± 0.5	-94...-50

9.1.8.2.2 Intra frequency measurement requirement accuracy with IPDL period active

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2~~1~~. 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 ≥ -114 dBm.

~~$\left|CPICH\_RSCP1\right|_{in\ dB} - CPICH\_RSCP2\left|_{in\ dB}\right| \le 20dB$~~

- $\left|CPICH\_RSCP1\right|_{in\ dBm} - CPICH\_RSCP2\left|_{in\ dBm}\right| \le 20dB$

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

- $\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{P-CCPCH\_E_c}{I_{or}}\right)_{in\ dB}$ is low enough to ensure successful SFN decoding.

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

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

Table 9.22

Parameter	Unit	Accuracy [chip]	Conditions Io [dBm]
SFN-SFN observed time difference type 2	chip	± 0.5	-94...-50

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~~2~~. 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 ≥ -114 dBm.

~~$\left|CPICH\_RSCP1\right|_{in\ dB} - CPICH\_RSCP2\left|_{in\ dB}\right| \le 20dB$~~

- $\left|CPICH\_RSCP1\right|_{in\ dBm} - CPICH\_RSCP2\left|_{in\ dBm}\right| \le 20dB$

- | Channel 1_Io|$_{dBm}$ -Channel 2_Io|$_{dBm}$| ≤ 20 dB.

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

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

Table 9.23

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm]
SFN-SFN observed time difference type 2	chip	± 1	-94...-50

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

9.1.9 UE Rx-Tx time difference

9.1.9.1 UE Rx-Tx time difference type 1

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

The measurement period in CELL_DCH state is [100 ms]

9.1.9.1.1 Measurement requirement

Table 9.25

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm]
UE RX-TX time difference	chip	± 1.5	-94...-50

9.1.9.1.2 UE Rx-Tx time difference type 1 measurement report mapping

The reporting range is for *UE Rx-Tx time difference type 1* is from 768 ... 1280 chip.

In table 9.26 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.26

Reported value	Measured quantity value	Unit
RX-TX_TIME _0000	UE Rx-Tx Time difference type 1< 768.000	chip
RX-TX_TIME _0001	768.000 ≤ UE Rx-Tx Time difference type 1< 768.0625	chip
RX-TX_TIME _0002	768.0625 ≤ UE Rx-Tx Time difference type 1< 768.1250	chip
RX-TX_TIME _0003	768.1250 ≤ UE Rx-Tx Time difference type 1< 768.1875	chip
…	…	…
RX-TX_TIME _8190	1279.8125 ≤ UE Rx-Tx Time difference type 1< 1279.8750	chip
RX-TX_TIME _8191	1279.8750 ≤ UE Rx-Tx Time difference type 1< 1279.9375	chip
RX-TX_TIME _8192	1279.9375 ≤ UE Rx-Tx Time difference type 1< 1280.0000	chip
RX-TX_TIME _8193	1280.0000 ≤ UE Rx-Tx Time difference type 1	chip

9.1.9.2 UE Rx-Tx time difference type 2

Note: This measurement is used for UE positioning~~LCS~~ purposes.

It is optional for a terminal to support a subset of UE positioning~~LCS~~ methods. This measurement represents an instantaneous value that is time stamped as defined in the IE description in TS 25.331 [16].

9.1.9.2.1 Measurement requirement

Table 9.27

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm]
UE RX-TX time difference	chip	± TBD	-94...-50

9.1.9.2.2 UE Rx-Tx time difference type 2 measurement report mapping

The reporting range is for *UE Rx-Tx time difference type2* is from 768 ... 1280 chip.

In table 9.28 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.28

Reported value	Measured quantity value	Unit
RX-TX_TIME _0000	UE Rx-Tx Time difference type 2 < 768.000	chip
RX-TX_TIME _0001	768.000 ≤ UE Rx-Tx Time difference type 2 < 768.0625	chip
RX-TX_TIME _0002	768.0625 ≤ UE Rx-Tx Time difference type 2 < 768.1250	chip
RX-TX_TIME _0003	768.1250 ≤ UE Rx-Tx Time difference type 2 < 768.1875	chip
…	…	…
RX-TX_TIME _8190	1279.8125 ≤ UE Rx-Tx Time difference type 2 < 1279.8750	chip
RX-TX_TIME _8191	1279.8750 ≤ UE Rx-Tx Time difference type 2 < 1279.9375	chip
RX-TX_TIME _8192	1279.9375 ≤ UE Rx-Tx Time difference type 2 < 1280.0000	chip
RX-TX_TIME _8193	1280.0000 ≤ UE Rx-Tx Time difference type 2	chip

9.1.10 Observed time difference to GSM cell

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

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

9.1.10.1 Measurement requirement

The measurement period for CELL_DCH state is equal to the maximum time between two successive BSIC re-confirmations for one particular GSM cell according to sub clause 8.1.2.5.2. The measurement period for CELL_FACH state is equal to the maximum time between two successive BSIC re-confirmations according to sub clause 8.4.2.5.2.

NOTE: The conditions for which the accuracy requirement in table 9.29 is valid are FFS.

Table 9.29

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

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

9.1.10.2 Observed time difference to GSM cell measurement report mapping

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

In table 9.30 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.30

Reported value	Measured quantity value	Unit
GSM_TIME _0000	0 ≤ Observed time difference to GSM cell < 1x3060/(4096x13)	ms
GSM_TIME _0001	1x3060/(4096x13) ≤ Observed time difference to GSM cell < 2x3060/(4096x13)	ms
GSM_TIME _0002	2x3060/(4096x13)≤ Observed time difference to GSM cell < 3x3060/(4096x13)	ms
GSM_TIME _0003	3x3060/(4096x13) ≤ Observed time difference to GSM cell < 4x3060/(4096x13)	ms
…	…	…
GSM_TIME _4093	4093x3060/(4096x13) ≤ Observed time difference to GSM cell < 4094x3060/(4096x13)	ms
GSM_TIME _4094	4094x3060/(4096x13) ≤ Observed time difference to GSM cell < 4095x3060/(4096x13)	ms
GSM_TIME _4095	4095x3060/(4096x13) ≤ Observed time difference to GSM cell < 3060/13	ms

9.1.11 P-CCPCH RSCP

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

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

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.~~43~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.4.

9.1.11.1 Absolute accuracy requirements

The accuracy requirement in table 9.31is valid under the following conditions:

P-CCPCH_RSCP ≥ -102 dBm.

| Io - P-CCPCH_Ec/Ior| ≤ [20] dB.

Table 9.31: P-CCPCH_RSCP Inter frequency absolute accuracy

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

9.1.11.2 P-CCPCH RSCP measurement report mapping

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

In table 9.32 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.32

Reported value	Measured quantity value	Unit
PCCPCH_RSCP_LEV _00	PCCPCH RSCP< -115	dBm
PCCPCH_RSCP_LEV _01	-115 ≤ PCCPCH RSCP< -114	dBm
PCCPCH_RSCP_LEV _02	-114 ≤ PCCPCH RSCP< -113	dBm
PCCPCH_RSCP_LEV _03	-113 ≤ PCCPCH RSCP< -112	dBm
…	…	…
PCCPCH_RSCP_LEV _89	-27 ≤ PCCPCH RSCP< -26	dBm
PCCPCH_RSCP_LEV _90	-26 ≤ PCCPCH RSCP< -25	dBm
PCCPCH_RSCP_LEV _91	-25 ≤ PCCPCH RSCP	dBm

9.1.12 UE GPS Timing of Cell Frames for UE positioning~~LCS~~

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

Table 9.33

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

9.1.12.1 UE GPS timing of Cell Frames for UE positioning~~LCS~~ measurement report mapping

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

In table 9.34 the mapping of measured quantity is defined.

Table 9.34

Reported value	Measured quantity value	Unit

GPS_TIME_00000000000000	UE GPS timing of Cell Frames for UE positioning~~LCS~~ < 0.0625	chip
GPS_TIME_00000000000001	0.0625 ≤ UE GPS timing of Cell Frames for ~~LCS~~UE positioning < 0.1250	chip
GPS_TIME_00000000000002	0.1250 ≤ UE GPS timing of Cell Frames for ~~LCS~~UE positioning < 0.1875	chip
...	...	...
GPS_TIME_37109759999997	2319359999999.8125 ≤ UE GPS timing of Cell Frames for ~~LCS~~UE positioning < 2319359999999.8750	chip
GPS_TIME_37109759999998	2319359999999.8750 ≤ UE GPS timing of Cell Frames for ~~LCS~~UE positioning < 2319359999999.9375	chip
GPS_TIME_37109759999999	2319359999999.9375 ≤ UE GPS timing of Cell Frames for ~~LCS~~UE positioning < 2319360000000.0000	chip

9.2.10 UTRAN GPS Timing of Cell Frames for UE positioning~~LCS~~

Table 9.53

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

9.2.10.1 UTRAN GPS timing of Cell Frames for UE positioning~~LCS~~ measurement report mapping

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

In table 9.54 the mapping of measured quantity is defined.

Table 9.54

Reported value	Measured quantity value	Unit
GPS_TIME_00000000000000	UTRAN GPS timing of Cell Frames for ~~LCS~~UE positioning < 0.0625	chip
GPS_TIME_00000000000001	0.0625 ≤ UTRAN GPS timing of Cell Frames for ~~LCS~~UE positioning < 0.1250	chip
GPS_TIME_00000000000002	0.1250 ≤ UTRAN GPS timing of Cell Frames for ~~LCS~~UE positioning < 0.1875	chip
…	…	…
GPS_TIME_37109759999997	2319359999999.8125 ≤ UTRAN GPS timing of Cell Frames for ~~LCS~~UE positioning < 2319359999999.8750	chip
GPS_TIME_37109759999998	2319359999999.8750 ≤ UTRAN GPS timing of Cell Frames for ~~LCS~~UE positioning < 2319359999999.9375	chip
GPS_TIME_37109759999999	2319359999999.9375 ≤ UTRAN GPS timing of Cell Frames for ~~LCS~~UE positioning < 2319360000000.0000	chip

3GPP TSG RAN WG4 Meeting #17 **R4-010778**

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CR-Form-v3

CHANGE REQUEST

⌘ **25.133** **CR** **118** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘ Corrections for section 9		
Source:	⌘ RAN WG4		
Work item code:	⌘ TEI	***Date:*** ⌘	2001-05-24
Category:	⌘ **A**	***Release:*** ⌘	REL-4

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘
- In TS 25.133 section 9.1 references for measurement periods in CELL_DCH are wrong, measurement periods for CELL_FACH are missing and some of the notes are no longer valid.
- Section 9 contains incomplete side conditions.
- dB and dBm are mixed in some of the equations
- The naming of LCS measurements is incorrect.

Summary of change: ⌘
- Removal of notes in section 9.1

- Removal of remaining SCH side conditions

- Reference to section 8 is added for measurement period in CELL_DCH and CELL_FACH for CPICH related measurements, TDD and GSM measurements, i.e. CPICH RSCP, CPICH Ec/Io, UTRA Carrier RSSI, GSM carrier RSSI, SFN-CFN observed time difference, SFN-SFN observed time difference type 1 & 2, P-CCPCH RSCP.

- Side conditions on P-CCPCH Ec/Io levels are included into the requirements, where SFN decoding from P-CCPCH is required.

- Clarification of GSM carrier RSSI measurement requirements in CELL_FACH.

- Specifying the measurement period for Observed time difference to GSM cell equal to the maximum time between two successive BSIC re-confirmations, as the timing to the GSM cell will only be measured when the BSIC is decoded.

- Correction of reference in section 9.1.5 Transport channel BLER.

- Clarification that it is the use of IPDL together with SFN-SFN type 2 that is optional and dependent on the supported UE positioning method.

- Changing the term LCS to “UE positioning” in Section 9

		- Editorial corrections of equations (dB, dBm)
Consequences if not approved:	⌘	The requirements for some of the measurements in Section 9 of 25.133 will be unclear and incorrect.

Clauses affected:	⌘	9.1 and 9.2.10		
Other specs affected:	⌘	[ ] Other core specifications [X] Test specifications [ ] O&M Specifications	⌘	
Other comments:	⌘	Corresponding R99 CR in R4-010777		

How to create CRs using this form:

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

9 Measurements Performance Requirements

One of the key services provided by the physical layer is the measurement of various quantities which are used to trigger or perform a multitude of functions. Both the UE and the UTRAN are required to perform a variety of measurements. The physical layer measurement model and a complete list of measurements is specified in TS 25.302 "Services Provided by Physical Layer". The physical layer measurements for FDD are described and defined in TS25.215 “Physical layer - Measurements (FDD)”. In this clause for each measurement the relevant requirements on the measurement period, reporting range, granularity and performance in terms of accuracy are specified.

The accuracy requirements in this clause are applicable for AWGN radio propagation conditions.

9.1 Measurement Performance for UE

The requirements in this clause are applicable for a UE:

- in state CELL_DCH and state CELL_FACH.
- performing measurements according to section 8.
- that is synchronised to the cell that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is referred to as point B in the measurement model described in TS25.302.

The accuracy requirements in this clause are valid for the reported measurement result after layer 1 filtering. The accuracy requirements are verified from the measurement report at point D in the measurement model having the layer 3 filtering disabled.

~~Note: The synchronisation channel side condition for the requirements in this section to apply needs to be further clarified.~~

Note: It needs to be clarified how the accuracy requirements shall be handled when the UE is measuring on cells using IPDL.

~~Note: Currently the measurement periods for UE measurements in CELL_FACH state are missing. This needs to be clarified when the requirements in section 8.3 Measurements in CELL_FACH State are completed.~~

~~Note: The measurement period for the measurement Observed time difference to GSM cell needs to be clarified when the requirements for that measurement is completed in section 8.~~

9.1.1 CPICH RSCP

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

9.1.1.1 Intra frequency measurements accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2~~1~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.2.

9.1.1.1.1 Absolute accuracy requirement

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

- CPICH_RSCP1$|_{dBm}$ ≥ -114 dBm.

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

Table 9.1: CPICH_RSCP Intra frequency absolute accuracy

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

9.1.1.1.2 Relative accuracy requirement

The relative accuracy of CPICH RSCP is defined as the CPICH RSCP measured from one cell compared to the CPICH RSCP measured from another cell on the same frequency

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

- CPICH_RSCP1,2|dBm ≥ -114 dBm.
- ~~$\left|CPICH\_RSCP1\right|_{in\ dB} - CPICH\_RSCP2\left|_{in\ dB}\right| \leq 20dB$~~
- $\left|CPICH\_RSCP1\right|_{in\ dBm} - CPICH\_RSCP2\left|_{in\ dBm}\right| \leq 20dB$
- $\left|\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} \leq 20dB$

Table 9.2: CPICH_RSCP Intra frequency relative accuracy

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

9.1.1.2 Inter frequency measurement accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.3~~2~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.3.

9.1.1.2.1 Relative accuracy requirement

The relative accuracy of CPICH RSCP in inter frequency case is defined as the CPICH RSCP measured from one cell compared to the CPICH RSCP measured from another cell on a different frequency.

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

- *CPICH_RSCP1,2*|dBm ≥ -114 dBm.
- ~~$\left|CPICH\_RSCP1\right|_{in\ dB} - CPICH\_RSCP2\left|_{in\ dB}\right| \leq 20dB$~~
- $\left|CPICH\_RSCP1\right|_{in\ dBm} - CPICH\_RSCP2\left|_{in\ dBm}\right| \leq 20dB$
- | *Channel 1_Io*|dBm -*Channel 2_Io*|dBm| ≤ 20 dB.

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

Table 9.3: CPICH_RSCP Inter frequency relative accuracy

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

9.1.1.3 CPICH RSCP measurement report mapping

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

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

Table 9.4

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

9.1.2 CPICH Ec/Io

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

9.1.2.1 Intra frequency measurements accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2~~1~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.2.

9.1.2.1.1 Absolute accuracy requirement

The accuracy requirements in table 9.5 are valid under the following conditions:

- *CPICH_RSCP1*$|_{dBm}$ ≥ -114 dBm.
- $\left|\frac{I_o}{\hat{I}_{or}}\right|_{in\ dB} - \left|\frac{CPICH\_E_c}{I_{or}}\right|_{in\ dB} \leq 20dB$

Table 9.5: CPICH_Ec/Io Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	dB	± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-94...-50

9.1.2.1.2 Relative accuracy requirement

The relative accuracy of CPICH Ec/Io is defined as the CPICH Ec/Io measured from one cell compared to the CPICH Ec/Io measured from another cell on the same frequency.

The accuracy requirements in table 9.6 are valid under the following conditions:

- CPICH_RSCP1,2|dBm ≥ -114 dBm.
- ~~$\left|CPICH\_RSCP1\right|_{in\ dB} - CPICH\_RSCP2\left|_{in\ dB}\right| \le 20dB$~~
- $\left|CPICH\_RSCP1\right|_{in\ dBm} - CPICH\_RSCP2\left|_{in\ dBm}\right| \le 20dB$
- $\left(\frac{I_o}{\hat{I}_{or}}\right)\Big|_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)\Big|_{in\ dB} \le 20dB$

Table 9.6: CPICH_Ec/Io Intra frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	dB	± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-94...-50

9.1.2.2 Inter frequency measurement accuracy

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.3~~2~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.3.

9.1.2.2.1 Absolute accuracy requirement

The accuracy requirements in table 9.7 are valid under the following conditions:

- *CPICH_RSCP1*|dBm ≥ -114 dBm.
- $\left(\frac{I_o}{\hat{I}_{or}}\right)\Big|_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)\Big|_{in\ dB} \le 20dB$

Table 9.7: CPICH_Ec/Io Inter frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	DB	± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-94...-50

9.1.2.2.2 Relative accuracy requirement

The relative accuracy of CPICH Ec/Io in the inter frequency case is defined as the CPICH Ec/Io measured from one cell compared to the CPICH Ec/Io measured from another cell on a different frequency

The accuracy requirements in table 9.8 are valid under the following conditions:

- *CPICH_RSCP1,2*|dBm ≥ -114 dBm.

- ~~$|CPICH\_RSCP1|_{in\ dB} - CPICH\_RSCP2|_{in\ dB}| \le 20dB$~~
- $|CPICH\_RSCP1|_{in\ dBm} - CPICH\_RSCP2|_{in\ dBm}| \le 20dB$
- | *Channel 1_Io*|dBm -*Channel 2_Io*|dBm| ≤ 20 dB.
- $\left|\frac{I_o}{\hat{I}_{or}}\right|_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} \le 20dB$

Table 9.8: CPICH_Ec/Io Inter frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	DB	± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-94...-50

9.1.2.3 CPICH Ec/Io measurement report mapping

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

In table 9.9 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.9

Reported value	Measured quantity value	Unit
CPICH_Ec/No _00	CPICH Ec/Io < -24	dB
CPICH_Ec/No _01	-24 ≤ CPICH Ec/Io < -23.5	dB
CPICH_Ec/No _02	-23.5 ≤ CPICH Ec/Io < -23	dB
…	…	…
CPICH_Ec/No _47	-1 ≤ CPICH Ec/Io < -0.5	dB
CPICH_Ec/No _48	-0.5 ≤ CPICH Ec/Io < 0	dB
CPICH_Ec/No _49	0 ≤ CPICH Ec/Io	dB

9.1.3 UTRA Carrier RSSI

NOTE: This measurement is for Inter-frequency handover evaluation.

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2~~1~~ for intra frequency measurements and in sub clause 8.1.2.3~~2~~ for inter frequency measurements. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.2 for intra frequency measurements and in sub clause 8.4.2.3 for inter frequency measurements.

9.1.3.1 Absolute accuracy requirement

Table 9.10: Io Inter frequency absolute accuracy

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

9.1.3.2 Relative accuracy requirement

The relative accuracy requirement is defined as the UTRAN RSSI measured from one frequency compared to the UTRAN RSSI measured from another frequency.

The accuracy requirements in table 9.11 are valid under the following conditions:

- | Channel 1_Io|$_{dBm}$ -Channel 2_Io|$_{dBm}$ | < 20 dB.

Table 9.11: Io Inter frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
Io	dBm	± 7	± 11	-94...-70

9.1.3.3 UTRA Carrier RSSI measurement report mapping

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

In table 9.12 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.12

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

9.1.4 GSM carrier RSSI

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

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

The measurement period for CELL_DCH state can be found in section 8.1.2.5~~4~~. The measurement period for CELL_FACH state can be found in section 8.4.2.5.

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

If the UE, in CELL_DCH state, needs compressed mode to perform GSM measurements, the GSM measurement procedure and measurement accuracy requirement ~~is~~ stated in section 8.1.2.5~~4~~ shall apply.

If the UE, in CELL_FACH state, does not need measurement occasions to perform GSM measurements, the measurement accuracy requirements for RXLEV in TS 05.08 shall apply.

If the UE, in CELL_FACH state, needs measurement occasions to perform GSM measurements, the GSM measurement procedure and measurement accuracy requirement stated in section 8.4.2.5 shall apply.

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

9.1.5 Transport channel BLER

9.1.5.1 BLER measurement requirement

Transport channel BLER value shall be calculated from a window with the size equal to the IE ~~r~~Reporting interval as specified in section 10.3.7.5~~3~~78 Periodical reporting criteria in TS 25.331.

9.1.5.2 Transport channel BLER measurement report mapping

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

In table 9.13 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.13

Reported value	Measured quantity value	Unit
BLER_LOG _00	Transport channel BLER = 0	-
BLER_LOG _01	-∞ < Log10(Transport channel BLER) < -4.03	-
BLER_LOG _02	-4.03 ≤ Log10(Transport channel BLER) < -3.965	-
BLER_LOG _03	-3.965 ≤ Log10(Transport channel BLER) < -3.9	-
…	…	…
BLER_LOG _61	-0.195 ≤ Log10(Transport channel BLER) < -0.13	-
BLER_LOG _62	-0.13 ≤ Log10(Transport channel BLER) < -0.065	-
BLER_LOG _63	-0.065 ≤ Log10(Transport channel BLER) ≤ 0	-

9.1.6 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

Parameter	Unit	Accuracy [dB]	
		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	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, the UE L1 shall respond 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

9.1.7 SFN-CFN observed time difference

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

9.1.7.1 Intra frequency measurement requirement

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2~~1~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.2.

The accuracy requirement in table 9.16 is valid under the following conditions:

- CPICH_RSCP1,2|dBm ≥ -114 dBm.
- ~~$\left|CPICH\_RSCP1\right|_{in\ dB} - CPICH\_RSCP2\left|_{in\ dB}\right| \le 20dB$~~
- $\left|CPICH\_RSCP1\right|_{in\ dBm} - CPICH\_RSCP2\left|_{in\ dBm}\right| \le 20dB$
- $\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} \le 20dB$
- $\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{P-CCPCH\_E_c}{I_{or}}\right)_{in\ dB}$ is low enough to ensure successful SFN decoding.
- ~~$\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{SCH\_E_c}{I_{or}}\right)_{in\ dB} \le XdB$~~

Table 9.16

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

9.1.7.2 Inter frequency measurement requirement

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.3~~2~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.3.

The accuracy requirement in table 9.17 is valid under the following conditions:

- CPICH_RSCP1,2|dBm ≥ -114 dBm.
- ~~$|CPICH\_RSCP1|_{in\ dB} - CPICH\_RSCP2|_{in\ dB}| \le 20dB$~~
- $|CPICH\_RSCP1|_{in\ dBm} - CPICH\_RSCP2|_{in\ dBm}| \le 20dB$
- | Channel 1_Io|dBm -Channel 2_Io|dBm| ≤ 20 dB.
- $\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} \le 20dB$
- ~~$\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{SCH\_E_c}{I_{or}}\right)_{in\ dB} \le XdB$~~

Table 9.17

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

9.1.7.3 SFN-CFN observed time difference measurement report mapping

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

In table 9.18 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.18

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

9.1.8 SFN-SFN observed time difference

9.1.8.1 SFN-SFN observed time difference type 1

NOTE: This measurement is for identifying time difference between two cells.

9.1.8.1.1 Measurement requirement

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2~~1~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.2.

The accuracy requirement in table 9.19 is valid under the following conditions:

- CPICH_RSCP1,2$|_{dBm}$ ≥ -114 dBm.
- ~~$|CPICH\_RSCP1|_{in\ dB} - CPICH\_RSCP2|_{in\ dB}| \le 20dB$~~
- $|CPICH\_RSCP1|_{in\ dBm} - CPICH\_RSCP2|_{in\ dBm}| \le 20dB$
- $\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} \le 20dB$
- $\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{P-CCPCH\_E_c}{I_{or}}\right)_{in\ dB}$ is low enough to ensure successful SFN decoding.
- ~~$\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{SCH\_E_c}{I_{or}}\right)_{in\ dB} \le XdB$~~

Table 9.19

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm]
SFN-SFN observed time difference type1	chip	± 1	-94...-50

9.1.8.1.2 SFN-SFN observed time difference type 1 measurement report mapping

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

In table 9.20 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.20

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

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 ~~a subset of~~ UE positioning~~LCS~~ 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~~1~~. 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 ≥ -114 dBm.
- ~~$\left|CPICH\_RSCP1\right|_{in\ dB} - CPICH\_RSCP2\left|_{in\ dB}\right| \le 20dB$~~
- $\left|CPICH\_RSCP1\right|_{in\ dBm} - CPICH\_RSCP2\left|_{in\ dBm}\right| \le 20dB$
- $\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} \le 20dB$
- $\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{P-CCPCH\_E_c}{I_{or}}\right)_{in\ dB}$ is low enough to ensure successful SFN decoding.
- ~~$\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{SCH\_E_c}{I_{or}}\right)_{in\ dB} \le XdB$~~

Table 9.21

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm]
SFN-SFN observed time difference type2	chip	± 0.5	-94...-50

9.1.8.2.2 Intra frequency measurement requirement accuracy with IPDL period active

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.2~~1~~. 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 ≥ -114 dBm.
- ~~$\left|CPICH\_RSCP1\right|_{in\ dB} - CPICH\_RSCP2\left|_{in\ dB}\right| \le 20dB$~~
- $\left|CPICH\_RSCP1\right|_{in\ dBm} - CPICH\_RSCP2\left|_{in\ dBm}\right| \le 20dB$
- $\left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} \le 20dB$

- $\left.\frac{I_o}{\hat{I}_{or}}\right|_{in\ dB} - \left(\frac{P-CCPCH\_E_c}{I_{or}}\right)_{in\ dB}$ is low enough to ensure successful SFN decoding.

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

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

Table 9.22

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm]
SFN-SFN observed time difference type 2	chip	± 0.5	-94...-50

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~~2~~. 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$|_{dBm}$ ≥ -114 dBm.

- ~~$\left|CPICH\_RSCP1\right|_{in\ dB} - CPICH\_RSCP2\left|_{in\ dB}\right| \le 20dB$~~

- $\left|CPICH\_RSCP1\right|_{in\ dBm} - CPICH\_RSCP2\left|_{in\ dBm}\right| \le 20dB$

- | Channel 1_Io$|_{dBm}$ -Channel 2_Io$|_{dBm}$| ≤ 20 dB.

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

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

Table 9.23

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm]
SFN-SFN observed time difference type 2	chip	± 1	-94...-50

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

9.1.9 UE Rx-Tx time difference

9.1.9.1 UE Rx-Tx time difference type 1

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

The measurement period in CELL_DCH state is [100 ms]

9.1.9.1.1 Measurement requirement

Table 9.25

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm]
UE RX-TX time difference	chip	± 1.5	-94...-50

9.1.9.1.2 UE Rx-Tx time difference type 1 measurement report mapping

The reporting range is for *UE Rx-Tx time difference type 1* is from 768 ... 1280 chip.

In table 9.26 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.26

Reported value	Measured quantity value	Unit
RX-TX_TIME _0000	UE Rx-Tx Time difference type 1< 768.000	chip
RX-TX_TIME _0001	768.000 ≤ UE Rx-Tx Time difference type 1< 768.0625	chip
RX-TX_TIME _0002	768.0625 ≤ UE Rx-Tx Time difference type 1< 768.1250	chip
RX-TX_TIME _0003	768.1250 ≤ UE Rx-Tx Time difference type 1< 768.1875	chip
…	…	…
RX-TX_TIME _8190	1279.8125 ≤ UE Rx-Tx Time difference type 1< 1279.8750	chip
RX-TX_TIME _8191	1279.8750 ≤ UE Rx-Tx Time difference type 1< 1279.9375	chip
RX-TX_TIME _8192	1279.9375 ≤ UE Rx-Tx Time difference type 1< 1280.0000	chip
RX-TX_TIME _8193	1280.0000 ≤ UE Rx-Tx Time difference type 1	chip

9.1.9.2 UE Rx-Tx time difference type 2

Note: This measurement is used for UE positioning~~LCS~~ purposes.

It is optional for a terminal to support a subset of UE positioning~~LCS~~ methods. This measurement represents an instantaneous value that is time stamped as defined in the IE description in TS 25.331 [16].

9.1.9.2.1 Measurement requirement

Table 9.27

Parameter	Unit	Accuracy [chip]	Conditions
			Io [dBm]
UE RX-TX time difference	chip	± TBD	-94...-50

9.1.9.2.2 UE Rx-Tx time difference type 2 measurement report mapping

The reporting range is for *UE Rx-Tx time difference type2* is from 768 ... 1280 chip.

In table 9.28 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.28

Reported value	Measured quantity value	Unit
RX-TX_TIME _0000	UE Rx-Tx Time difference type 2 < 768.000	chip
RX-TX_TIME _0001	768.000 ≤ UE Rx-Tx Time difference type 2 < 768.0625	chip
RX-TX_TIME _0002	768.0625 ≤ UE Rx-Tx Time difference type 2 < 768.1250	chip
RX-TX_TIME _0003	768.1250 ≤ UE Rx-Tx Time difference type 2 < 768.1875	chip
…	…	…
RX-TX_TIME _8190	1279.8125 ≤ UE Rx-Tx Time difference type 2 < 1279.8750	chip
RX-TX_TIME _8191	1279.8750 ≤ UE Rx-Tx Time difference type 2 < 1279.9375	chip
RX-TX_TIME _8192	1279.9375 ≤ UE Rx-Tx Time difference type 2 < 1280.0000	chip
RX-TX_TIME _8193	1280.0000 ≤ UE Rx-Tx Time difference type 2	chip

9.1.10 Observed time difference to GSM cell

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

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

9.1.10.1 Measurement requirement

The measurement period for CELL_DCH state is equal to the maximum time between two successive BSIC re-confirmations for one particular GSM cell according to sub clause 8.1.2.5.2. The measurement period for CELL_FACH state is equal to the maximum time between two successive BSIC re-confirmations according to sub clause 8.4.2.5.2.

NOTE: The conditions for which the accuracy requirement in table 9.29 is valid are FFS.

Table 9.29

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

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

9.1.10.2 Observed time difference to GSM cell measurement report mapping

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

In table 9.30 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.30

Reported value	Measured quantity value	Unit
GSM_TIME _0000	0 ≤ Observed time difference to GSM cell < 1x3060/(4096x13)	ms
GSM_TIME _0001	1x3060/(4096x13) ≤ Observed time difference to GSM cell < 2x3060/(4096x13)	ms
GSM_TIME _0002	2x3060/(4096x13)≤ Observed time difference to GSM cell < 3x3060/(4096x13)	ms
GSM_TIME _0003	3x3060/(4096x13) ≤ Observed time difference to GSM cell < 4x3060/(4096x13)	ms
…	…	…
GSM_TIME _4093	4093x3060/(4096x13) ≤ Observed time difference to GSM cell < 4094x3060/(4096x13)	ms
GSM_TIME _4094	4094x3060/(4096x13) ≤ Observed time difference to GSM cell < 4095x3060/(4096x13)	ms
GSM_TIME _4095	4095x3060/(4096x13) ≤ Observed time difference to GSM cell < 3060/13	ms

9.1.11 P-CCPCH RSCP

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

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

The measurement period for CELL_DCH state can be found in sub clause 8.1.2.~~43~~. The measurement period for CELL_FACH state can be found in sub clause 8.4.2.4.

9.1.11.1 Absolute accuracy requirements

The accuracy requirement in table 9.31is valid under the following conditions:

- P-CCPCH_RSCP ≥ -102 dBm.
- | Io - P-CCPCH_Ec/Ior| ≤ [20] dB.

Table 9.31: P-CCPCH_RSCP Inter frequency absolute accuracy

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

9.1.11.2 P-CCPCH RSCP measurement report mapping

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

In table 9.32 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.32

Reported value	Measured quantity value	Unit
PCCPCH_RSCP_LEV _00	PCCPCH RSCP< -115	dBm
PCCPCH_RSCP_LEV _01	-115 ≤ PCCPCH RSCP< -114	dBm
PCCPCH_RSCP_LEV _02	-114 ≤ PCCPCH RSCP< -113	dBm
PCCPCH_RSCP_LEV _03	-113 ≤ PCCPCH RSCP< -112	dBm
…	…	…
PCCPCH_RSCP_LEV _89	-27 ≤ PCCPCH RSCP< -26	dBm
PCCPCH_RSCP_LEV _90	-26 ≤ PCCPCH RSCP< -25	dBm
PCCPCH_RSCP_LEV _91	-25 ≤ PCCPCH RSCP	dBm

9.1.12 UE GPS Timing of Cell Frames for UE positioning~~LCS~~

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

Table 9.33

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

9.1.12.1 UE GPS timing of Cell Frames for UE positioning~~LCS~~ measurement report mapping

The reporting range is for UE GPS timing of Cell Frames for UE positioning~~LCS~~ is from 0 ... 2322432000000 chip.

In table 9.34 the mapping of measured quantity is defined.

Table 9.34

Reported value	Measured quantity value	Unit
GPS_TIME_00000000000000	UE GPS timing of Cell Frames for UE positioning~~LCS~~ < 0.0625	chip
GPS_TIME_00000000000001	0.0625 ≤ UE GPS timing of Cell Frames for UE positioning~~LCS~~ < 0.1250	chip
GPS_TIME_00000000000002	0.1250 ≤ UE GPS timing of Cell Frames for UE positioning~~LCS~~ < 0.1875	chip
...	...	...
GPS_TIME_37158911999997	2322431999999.8125 ≤ UE GPS timing of Cell Frames for UE positioning~~LCS~~ < 2322431999999.8750	chip
GPS_TIME_37158911999998	2322431999999.8750 ≤ UE GPS timing of Cell Frames for UE positioning~~LCS~~ < 2322431999999.9375	chip
GPS_TIME_37158911999999	2322431999999.9375 ≤ UE GPS timing of Cell Frames for UE positioning~~LCS~~ < 2322432000000.0000	chip

9.2.10 UTRAN GPS Timing of Cell Frames for UE positioning~~LCS~~

NOTE: This measurement is used for UE positioning~~LCS~~ purposes.

The measurement period shall be [1] second.

9.2.10.1 Accuracy requirement

Three accuracy classes are defined for the UTRAN GPS Timing of Cell Frames for UE positioning~~LCS~~ measurement, i.e. accuracy class A, B and C. The implemented accuracy class depends on the UE positioning~~LCS~~ methods that are supported.

Table 9.53

Parameter	Unit	Accuracy [chip]	Conditions
UTRAN GPS Timing of Cell Frames for UE positioning~~LCS~~	chip	Accuracy Class A: +/- [20000] chip Accuracy Class B: +/- [20] chip Accuracy Class C: +/- [X] chip	Over the full range

9.2.10.2 UTRAN GPS timing of Cell Frames for UE positioning~~LCS~~ measurement report mapping

The reporting range is for UTRAN GPS timing of Cell Frames for UE positioning~~LCS~~ is from 0 ... 2322432000000 chip.

In table 9.54 the mapping of measured quantity is defined.

Table 9.54

Reported value	Measured quantity value	Unit
GPS_TIME_00000000000000	UTRAN GPS timing of Cell Frames for UE positioning~~LCS~~ < 0.0625	chip
GPS_TIME_00000000000001	0.0625 ≤ UTRAN GPS timing of Cell Frames for UE positioning~~LCS~~ < 0.1250	chip
GPS_TIME_00000000000002	0.1250 ≤ UTRAN GPS timing of Cell Frames for UE positioning~~LCS~~ < 0.1875	chip
…	…	…
GPS_TIME_37158911999997	2322431999999.8125 ≤ UTRAN GPS timing of Cell Frames for UE positioning~~LCS~~ < 2322431999999.8750	chip
GPS_TIME_37158911999998	2322431999999.8750 ≤ UTRAN GPS timing of Cell Frames for UE positioning~~LCS~~ < 2322431999999.9375	chip
GPS_TIME_37158911999999	2322431999999.9375 ≤ UTRAN GPS timing of Cell Frames for UE positioning~~LCS~~ < 2322432000000.0000	chip

3GPP TSG RAN WG4 Meeting #17 **R4-010638**

Gothenburg, Sweden 21st - 25th May 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.133** **CR** **119** ⌘ rev **-** ⌘ Current version: **3.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction for a CPICH_Ec/Io definition
Source:	⌘	RAN WG4
Work item code:	⌘	TEI
Date:	⌘	4 May 2001
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	There is an obvious error in definition of CPICH_Ec/Io since Io was defined to be transmit power spectral density although it should be received power spectral density. Also a reference point for a measurement was missing.
Summary of change:	⌘	The word “transmit” has been replaced with “received” in definition of CPICH_Ec/Io. Reference point has been defined to be UE antenna connector.
Consequences if not approved:	⌘	There exist inconsistent definitions for CPICH_Ec/Io in 25.133

Clauses affected:	⌘	3.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

3 Definitions, symbols and abbreviations

3.1 Definitions

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

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

Node B: A logical node responsible for radio transmission / reception in one or more cells to/from the User Equipment. Terminates the Iub interface towards the RNC

3.2 Symbols

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

[…]	Values included in square bracket must be considered for further studies, because it means that a decision about that value was not taken.
CPICH_Ec	Average energy per PN chip for the CPICH
CPICH_Ec/Ior	The ratio of the transmit energy per PN chip of the CPICH to the total transmit power spectral density at the Node B antenna connector.
CPICH_Ec/Io	The ratio of the received energy per PN chip for the CPICH to the total received~~transmit~~ power spectral density at the UE antenna connector.
DPCH_Ec/Ior	The ratio of the transmit energy per PN chip of the DPCH to the total transmit power spectral density at the Node B antenna connector.
Ec	Average energy per PN chip.
Io	The total received power density, including signal and interference, as measured at the UE antenna connector.
Ioc	The power spectral density of a band limited noise source (simulating interference from cells, which are not defined in a test procedure) as measured at the UE antenna connector.
Ior	The total transmit power spectral density of the downlink at the Node B antenna connector.
Îor	The received power spectral density of the downlink as measured at the UE antenna connector.
OCNS_Ec/Ior	The ratio of the transmit energy per PN chip of the OCNS to the total transmit power spectral density at the Node B antenna connector.
PCCPCH_Ec/Ior	The ratio of the transmit energy per PN chip of the PCCPCH to the total transmit power spectral density at the Node B antenna connector.
PENALTY_TIME	Defined in TS 25.304, subclause 5.2.6.1.5
PICH_Ec/Ior	The ratio of the transmit energy per PN chip of the PICH to the total transmit power spectral density at the Node B antenna connector.
Qhyst	Defined in TS 25.304, subclause 5.2.6.1.5
$Qoffset_{s,n}$	Defined in TS 25.304, subclause 5.2.6.1.5
Qqualmin	Defined in TS 25.304, subclause 5.2.6.1.5
Qrxlevmin	Defined in TS 25.304, subclause 5.2.6.1.5
SCH_Ec/Ior	The ratio of the transmit energy per PN chip of the SCH to the total transmit power spectral density at the Node B antenna connector.
Sintersearch	Defined in TS 25.304, subclause 5.2.6.1.5
Sintrasearch	Defined in TS 25.304, subclause 5.2.6.1.5
SsearchRAT	Defined in TS 25.304, subclause 5.2.6.1.5
T1	Time period 1
T2	Time period 2
TEMP_OFFSET	Defined in TS 25.304, subclause 5.2.6.1.5
$T_{RE\text{-}ESTABLISH\text{-}REQ}$	The RRC Re-establishment delay requirement, the time between the moment when erroneous CRCs are applied, to when the UE starts to send preambles on the PRACH.
Treselection	Defined in TS 25.304, subclause 5.2.6.1.5
UE_TXPWR_MAX_RACH	Defined in TS 25.304, subclause 5.2.3.1.2.

3GPP TSG RAN WG4 Meeting #17 **R4-010774**

Gothenburg, Sweden 21st - 25th May 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.133** **CR** **120** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction for a CPICH_Ec/Io definition
Source:	⌘	RAN WG4
Work item code:	⌘	TEI
Date:	⌘	24 May 2001
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
- ***F*** *(essential correction)*
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Îor	The received power spectral density of the downlink as measured at the UE antenna connector.
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PCCPCH_Ec/Ior	The ratio of the transmit energy per PN chip of the PCCPCH to the total transmit power spectral density at the Node B antenna connector.
PENALTY_TIME	Defined in TS 25.304, subclause 5.2.6.1.5
PICH_Ec/Ior	The ratio of the transmit energy per PN chip of the PICH to the total transmit power spectral density at the Node B antenna connector.
Qhyst	Defined in TS 25.304, subclause 5.2.6.1.5
$Qoffset_{s,n}$	Defined in TS 25.304, subclause 5.2.6.1.5
Qqualmin	Defined in TS 25.304, subclause 5.2.6.1.5
Qrxlevmin	Defined in TS 25.304, subclause 5.2.6.1.5
SCH_Ec/Ior	The ratio of the transmit energy per PN chip of the SCH to the total transmit power spectral density at the Node B antenna connector.
Sintersearch	Defined in TS 25.304, subclause 5.2.6.1.5
Sintrasearch	Defined in TS 25.304, subclause 5.2.6.1.5
SsearchRAT	Defined in TS 25.304, subclause 5.2.6.1.5
T1	Time period 1
T2	Time period 2
TEMP_OFFSET	Defined in TS 25.304, subclause 5.2.6.1.5
$T_{RE\text{-}ESTABLISH\text{-}REQ}$	The RRC Re-establishment delay requirement, the time between the moment when erroneous CRCs are applied, to when the UE starts to send preambles on the PRACH.
Treselection	Defined in TS 25.304, subclause 5.2.6.1.5
UE_TXPWR_MAX_RACH	Defined in TS 25.304, subclause 5.2.3.1.2.

3GPP TSG RAN WG4 Meeting #17 **R4-010745**

Gothenburg, Sweden 21st - 25th May 2001

CR-Form-v4

CHANGE REQUEST

⌘ **25.133** **CR** **121** ⌘ ev **-** ⌘ Current version: **3.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	**Detection and measurements of new cells not belonging to monitored set**
Source:	⌘	RAN WG4
Work item code:	⌘	TEI
Date:	⌘	2001-05-24
Category:	⌘	**F**
Release:	⌘	R99

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.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	The wording of the requirements for measuring on the detected set in 25.331 is unclear.
Summary of change:	⌘	Clarify the requirements on measurements of cell within the detected set.
Consequences if not approved:	⌘	It will not be clear that it is required by the UE to measure cells in detected set.

Clauses affected:	⌘	8.1.2.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

How to create CRs using this form:

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://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.

8.1.2.2 FDD intra frequency measurements

During the CELL_DCH state the UE shall continuously measure detected intra frequency cells and search for new intra frequency cells in the monitoring set. In case the network requests the UE to report unlisted cells, the UE shall also search for intra frequency cells outside the monitored set. Cells, which are neither included in the active set nor in the monitored set, and are detected 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.

8.1.2.2.1 Identification of a new cell

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

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

when CPICH Ec/Io ≥ -20 dB, SCH_Ec/Io ≥ -20 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.

8.1.2.2.2 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 detected intra-frequency cells, in 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 one or more transmission gap pattern sequences are activated, the UE shall be capable of performing CPICH measurements for at least $Y_{measurement\ intra}$ cells , where $Y_{measurement\ intra}$ is defined in the following equation. The detectable cells, in the monitored set, that were not measured during that measurement period, shall be measured in the following measurement periods. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2.

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

$X_{basic\ measurement\ FDD}$ = 8 (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.

8.1.2.2.3 Periodic Reporting

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

8.1.2.2.4 Event-triggered Periodic Reporting

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

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.2.3 Event Triggered Reporting.

8.1.2.2.5 Event Triggered Reporting

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

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

Editors Note: The test cases in section A.8 will need revisions to reflect the general requirements.

The event triggered measurement reporting delay, on cells belonging to monitored set , measured without L3 filtering, shall be less than the above defined $T_{identify\ intra}$. . defined in Section 8.1.2.2.1

If a cell, belonging to monitored set, which the UE has detected and measured at least once over the measurement period, becomes undetectable for a period < 5 seconds and then the cell becomes detectable again and triggers an event, the measurement reporting delay shall be less than $T_{Measurement\_Period\ Intra}$ ms provided the timing to that cell has not changed more than +/-32 chips and L3 filtering has not been used. When L3 filtering is used an additional delay can be expected.

If a cell belonging to monitored set has been detectable at least for the time period $T_{identify\_intra}$ and then enters the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement\_Period\ Intra}$ when the L3 filter has not been used.

3GPP TSG RAN WG4 Meeting #17 **R4-010787**

Gothenburg, Sweden 21st - 25th May 2001

CR-Form-v4

CHANGE REQUEST

⌘ **25.133** **CR** **122** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	**Detection and measurements of new cells not belonging to monitored set**
Source:	⌘	RAN WG4
Work item code:	⌘	TEI
Date:	⌘	2001-05-30
Category:	⌘	**A**
Release:	⌘	REL-4

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)*
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Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	The wording of the requirements for measuring on the detected set in 25.331 is unclear.
Summary of change:	⌘	Clarify the requirements on measurements of cell within the detected set.
Consequences if not approved:	⌘	It will not be clear that it is required by the UE to measure cells in detected set.
Clauses affected:	⌘	8.1.2.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	Corresponds to R99 CR in R4-010745.

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$X_{basic\ measurement\ FDD}$= 8 (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.

8.1.2.2.3 Periodic Reporting

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

8.1.2.2.4 Event-triggered Periodic Reporting

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

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.2.3 Event Triggered Reporting.

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Editors Note: The test cases in section A.8 will need revisions to reflect the general requirements.

The event triggered measurement reporting delay, on cells belonging to monitored set , measured without L3 filtering, shall be less than the above defined $T_{identify\ intra}$. . defined in Section 8.1.2.2.1

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If a cell belonging to monitored set has been detectable at least for the time period $T_{identify\_intra}$ and then enters the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement\_Period\ Intra}$ when the L3 filter has not been used.