Source: **T1**

Title: **CR's to TS 34.122 v3.1.0 for approval**

Agenda item: **6.1**

Document for: **Approval**

This document contains 7 CRs to TS 34.122 v3.1.0. These CRs have been agreed by T1 and are put forward to TSG T for approval.

CRs due to changes in the core specifications:

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level
34.122	002		R99	Update of 34.122 according to RAN#9-approved CRs to 25.102	F	3.1.0	3.2.0	T1-000256
34.122	003		R99	Update according to former CRs to 25.102	F	3.1.0	3.2.0	T1-000257
34.122	004		R99	editorial corrections for: Global In-Channel TX- Test	D	3.1.0	3.2.0	T1-000259
34.122	005		R99	Handling of measurement uncertainties in UE conformance testing (TDD)	F	3.1.0	3.2.0	T1-000262

CRs on modifications of test specifications (including due to changes of core specifications):

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level
34.122	006		R99	Uplink Power control	F	3.1.0	3.2.0	T1-000258
34.122	007		R99	UE maximum output power multicode	F	3.1.0	3.2.0	T1-000260
34.122	008		R99	Out-of-synchronisation handling of output power	F	3.1.0	3.2.0	T1-000261

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Redondo Beach, USA, 16th-17th November 2000

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CHANGE REQUEST

⌘ **34.122** **CR** 002 ⌘ rev **-** ⌘ Current version: **3.1.0** ⌘

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

Title:	⌘	Update of 34.122 according to RAN#9-approved CRs to 25.102
Source:	⌘	TSG-T1/RF SWG
Work item code:	⌘	***Date:*** ⌘ 2000-11-16
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)*
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R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	Core specs were changed
Summary of change:	⌘	CR 33 introduded a new Test: Performance test for UE power control in downlink CR 34 defined the frequency error measurement period
Consequences if not approved:	⌘	Inconsistency with core specs

Clauses affected:	⌘	7.5 and annex D.2.2 due to CR 33, 5.3 and 5.3.2. due to CR 34
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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.

5.3 UE fFrequency sStability

5.3.1 Definition and applicability

The frequency stability is the difference of the modulated carrier frequency between the RF transmission from the UE and the RF transmission from the BS. The UE shall use the same frequency source for both RF frequency generation and chip clocking.

The requirements of this test apply to all types of UTRA- UE.

5.3.2 Conformance requirements

The UE frequency stability ,observed over a period of one timeslot, shall be within ±0.1 ppm compared to signals received from the BS.

The reference for this requirement is TS 25.102 subclause 6.3.

5.3.3 Test purpose

Reliable frequency stability of the UE's transmitter in certain tolerance limits is prerequisite for connectivity.

This test stresses the ability of the UE's receiver to derive correct frequency information from the received signal for the transmitter.

7.5 Power control in downlink

Power control in the downlink is the ability of the UE receiver to converge to the required link quality set by the network while using minimum downlink power.

7.5.1 Conformance requirements

For the parameters specified in Table 7.5.1.a the average downlink $\hat{I}_{or}/I_{oc}$ power shall not exceed the values specified in Table 7.5.1.b. Downlink power control is ON during the test.

Table 7.5.1.a: Test parameters for downlink power control

Parameter	Unit	Test 1	Test 2
$\frac{DPCH\_E_c}{I_{or}}$	dB	0	[ ]
I_{oc}	dBm/3.84 MHz	-60	
Information Data Rate	kbps	12.2	
Target quality value on DTCH	BLER	0.01	
Propagation condition		Case 4	

Table 7.5.1.b: Requirements for downlink power control

Parameter	Unit	Test 1	Test 2
$\hat{I}_{or}/I_{oc}$	dB	[]	[]
Measured quality on DTCH	BLER	0.01±30%	0.01±30%

D.2 Propagation Conditions

D.2.1 Static propagation condition

The propagation for the static performance measurement is an Additive White Gaussian Noise (AWGN) environment. No fading and multi-paths exist for this propagation model.

D.2.2 Multi-path fading propagation conditions

Table D.2 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum.

Table D.2: Propagation Conditions for Multi path Fading Environments

Case 1, speed 3km/h		Case 2, speed 3 km/h		Case 3, 120 km/h		Case 4, 3 km/h	
Relative Delay [ns]	**Average Power [dB]**	**Relative Delay [ns]**	**Average Power [dB]**	**Relative Delay [ns]**	**Average Power [dB]**	**Relative Delay [ns]**	**Average Power [dB]**
0	0	0	0	0	0	0	0
976	-10	976	0	260	-3	976	0
		12000	0	521	-6		
				781	-9		

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Redondo Beach, USA, 16th-17th November 2000

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CHANGE REQUEST

⌘ **34.122** **CR** 003 ⌘ rev **-** ⌘ Current version: **3.1.0** ⌘

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

Title:	⌘	Update according to former CRs to 25.102
Source:	⌘	TSG-T1/RF SWG
Work item code:	⌘	***Date:*** ⌘ 2000-11-16
Category:	⌘	**F** ***Release:*** ⌘ R99

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B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
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R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	Update according to former CRs to 25.102
Summary of change:	⌘	Figure in D.2.2 Power Classes in H.1
Consequences if not approved:	⌘	Inconsistency with core specs

Clauses affected:	⌘	Annex D.2.2 and Annex H.1
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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D.2 Propagation Conditions

D.2.1 Static propagation condition

The propagation for the static performance measurement is an Additive White Gaussian Noise (AWGN) environment. No fading and multi-paths exist for this propagation model.

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Table D.2 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum.

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Case 1, speed 3km/h		Case 2, speed 3 km/h		Case 3, 120 km/h	
Relative Delay [ns]	**Average Power [dB]**	**Relative Delay [ns]**	**Average Power [dB]**	**Relative Delay [ns]**	**Average Power [dB]**
0	0	0	0	0	0
976	-10	976	0	260	-3
		12000~~20000~~	0	521	-6
				781	-9

Annex H (normative): Terminal Baseline and Service Implementation Capabilities (TDD)

H.1 Baseline Implementation Capabilities:

Table H.1: Baseline implementation capabilities

Capability TDD	Section	UE*	Comments
Chip rate 3.84 Mcps		M	
Frequency bands: (uplink and downlink)			
1900-1920 MHz		M	
2010-2025 MHz		M	
1850-1910 MHz		M	
1930-1990 MHz		M	
1910-1930 MHz		M	
Other spectrum		O	As Declared
Carrier raster 200 kHz		M	
UE maximum output power	6.2.1.~~4.2.2~~	M	2, 3 ~~At least one power class~~

(* M = mandatory, O = optional)

- The special conformance testing functions and the logical test interface as specified in TS 34.109 [3]. This issue is currently under investigation.
- Uplink reference measurement channel 12.2 kbps (FDD), TS 25.102 [1] subclause A.2.1.
- Downlink reference measurement channel 12.2 kbps (FDD), TS 25.102 [1] subclause A.2.2.

H.2 Service Implementation Capabilities:

- Downlink reference measurement channel 64 kbps (TDD), TS 25.102 subclause A.2.3.
- Downlink reference measurement channel 144 kbps (TDD), TS 25.102 subclause A.2.4.
- Down-link reference measurement channel 384 kbps (TDD), TS 25.102 subclause A.2.5.
- BCH Reference Measurement Channel.

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Redondo Beach, USA, 16th-17th November 2000

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CHANGE REQUEST

⌘ **34.122** **CR** 006 ⌘ rev **-** ⌘ Current version: **3.1.0** ⌘

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

Title:	⌘	Uplink Power control
Source:	⌘	TSG-T1/RF SWG
Work item code:	⌘	***Date:*** ⌘ 2000-11-16
Category:	⌘ **F**	***Release:*** ⌘ R99

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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:	⌘	Harmonisation of nomenclature in TS 25.331 and TS 34.122 Removal of square brackets
Summary of change:	⌘	1) Harmonisation of nomenclature in TS 25.331 and TS 34.122 2) A reference to 25.133 war inroduced 3) After verification of numbers, square brackets were removed 4) Minor editorial corrections
Consequences if not approved:	⌘	Abiguous testing using square brackets

Clauses affected:	⌘	2. and 5.4.1. and 5.4.1.1.4.1.
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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2 References

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

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

[1] 3GPP TS 25.102: "UE Radio transmission and reception (TDD)".

Note: The current version reflects 3G TS 25.102 version 3.2.0.
In addition CRs agreed on RAN4 level (Meeting #13, Turku, Finland, May 2000) are taken into account.

[2] 3G TS 25.123: "Requirements for Support of Radio Resource Management (TDD)".

[3] 3G TS 34.108 "Common Test Environments for User Equipment (UE) Conformance Testing"

[4] 3G TS 34.109: "Logical Test Interface; Special conformance testing functions".

[5] 3G TS 25.224: "Physical Layer Procedures (TDD)".

[6] 3G TR 21.905: "Vocabulary for 3GPP Specifications".

[7] 3G TR 25.990: "Vocabulary".

[8] ITU-R Recommendation SM.328-9: "Spectra and bandwidth of emissions".

[9] 3G TS 25.331: "Radio Resource Control (RRC) Protocol Specification".

5.4 Output Power Dynamics

Power control is used to limit the interference level.

5.4.1 Uplink power control

Uplink power control is the ability of the UE transmitter to sets its output power in accordance with measured downlink path loss, values determined by higher layer signalling and parameter α as defined in TS 25.331 [9] ~~25.224 [5]~~. The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0.22$ and a bandwidth equal to the chip rate.

5.4.1.1 Initial accuracy

5.4.1.1.1 Definition and applicability

Initial Uplink power control is the ability of the UE transmitter to sets its output power in accordance with measured downlink path loss, and signalling values: I_{BTS} and Constant value, received from the BCH and applicable for the PRACH

The requirements and this test apply to all types of UTRA - UEs.

5.4.1.1.2 Conformance requirements

The UE power control, initial accuracy, is given in Table 5.4.1.1.2.

Table 5.4.1.1.2. Initial uplink power control tolerance

Normal conditions	± 9 dB
Extreme conditions	± 12 dB

The reference for this requirement is [1] TS 25.102 clause 6.4.1.1.

5.4.1.1.3 Test purpose

The power of the received signal at the UE and the BCCH information control the power of the transmitted UE signal with the target to transmit at lowest power, acceptable for proper communication.

The test stresses the ability of the receiver to measure the received power over the receiver dynamic range and to derive from this correct transmitter-power

5.4.1.1.4 Method of test

5.4.1.1.4.1 Initial conditions

Connect the SS to the MS antenna connector as shown in Figure A.1.

A call is set up according to the generic call setup procedure [3] using parameters as specified in Table 5.4.1.1.4. The RACH procedure within the call setup is used for the test.

Table 5.4.1.1.4. Test parameters for uplink Power Control

	RX-Upper dynamic end~~range~~	RX-middle	RX-Sensitivity level
SS transmit power	~~[~~-25 dBm/3.84 MHz~~]~~	~~[~~-65 dBm/3.84 MHz~~]~~	~~[~~-105 dBm/3.84 MHz~~]~~
Broadcasted transmit-power CCPCH	~~[~~35 dBm~~]~~	~~[~~35 dBm~~]~~	~~[~~24 dBm~~]~~
Simulated path loss = Broadcasted TX – SS TX Power	~~[~~60 dB~~]~~	~~[~~100 dB~~]~~	~~[~~129 dB~~]~~
I_{BTS} (UL interference)	~~[~~-75dBm~~]~~	~~[~~-100dBm~~]~~	~~[~~-110dBm~~]~~
Constant value	~~[~~-10 dB~~]~~	~~[~~-10 dB~~]~~	~~[~~-10 dB~~]~~
Nominal expected UE TX power	~~[~~-25dBm~~]~~	~~[~~-10dBm~~]~~	~~[~~+9dBm~~]~~ 2)

Note 1: While the SS transmit power shall cover the UE receiver input dynamic range, the logical parameters: broadcasted transmit power, I_{BTS}, and RACH constant value are chosen to achieve a UE TX power, located within the TX output power dynamic range of a class 3 UE.

Note 2: Nominal TX output power 9 dBm allows to check the uplink power control algorithm within the entire tolerance range (9 dBm +-12 dB: 9 dBm +12 dB =21 dBm = max power class 3).

5.4.1.1.4.2 Procedure

1) Set the SS transmit power according to table 5.4.1.1.4.
2) Measure the RACH output power of the UE according to Annex B.
3) Repeat the test for all SS transmit powers and parameters in table 5.4.1.1.4.

5.4.1.1.5 Test requirements

The deviation with respect to the nominal expected UE TX power (table 5.4.1.1.2.) , derived in step 2, shall not exceed the prescribed tolerance in Table 5.4.1.1.2.

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CHANGE REQUEST

⌘ **34.122** **CR** **004** ⌘ rev **-** ⌘ Current version: **3.1.0** ⌘

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

Title:	⌘	editorial corrections for: Global In-Channel TX- Test
Source:	⌘	TSG-T1/RF SWG
Work item code:	⌘	***Date:*** ⌘ 2000-11-16
Category:	⌘ **D**	***Release:*** ⌘ R99

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R96	*(Release 1996)*
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R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	For harmonisation with 25.141: editorial corrections for: Global In-Channel TX-Test
Summary of change:	⌘	Wording in the introduction was changed
Consequences if not approved:	⌘	Annex B1

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

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Annex B (normative): Global In-Channel TX-Test

B.1 General

The global in-channel Tx test enables the measurement of all relevant parameters that describe the in-channel quality of the output signal of the Tx under test in a single measurement process.

~~The objective of this Annex is to list the results that shall be available from the Global In-Channel TX-Test. To aid understanding, an example algorithmic description of the measurement process is provided. It is not intended that this particular method is required. It is however required that any algorithm that is used for In-Channel TX tests should deliver the required results with the required accuracy.~~

The parameters describing the in-channel quality of a transmitter, however, are not necessarily independent. The algorithm chosen for description inside this annex places particular emphasis on the exclusion of all interdependencies among the parameters. Any other algorithm (e.g. having better computational efficiency) may be applied, as long as the results are the same within the accuracy limits.

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Redondo Beach, USA, 16th-17th November 2000

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CHANGE REQUEST

⌘ **34.122** **CR** 007 ⌘ rev **-** ⌘ Current version: **3.1.0** ⌘

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

Title:	⌘	UE maximum output power multicode
Source:	⌘	TSG-T1/RF SWG
Work item code:	⌘	***Date:*** ⌘ 2000-11-16
Category:	⌘ **F**	***Release:*** ⌘ R99

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R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	Missing figures were developed for the test
Summary of change:	⌘	Figures in table 5.2.2.b and an explanatory note added
Consequences if not approved:	⌘	No testing with missing figures

Clauses affected:	⌘	5.2.2.
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	The figures are derived from: Maximum output power single code and UL multicode reference measurement channel (12.2 kbit/s)

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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.

5.2 User Equipment maximum output power

5.2.1 Definition and applicability

The maximum output power and its tolerance are defined according to the Power Class of the UE.

The **output power**, Pout, of the UE is the power when averaged (in the sense of thermal power) over the useful part of the TS at the maximum power control setting delivered in to a load with resistance equal to the nominal load impedance.

The requirements in this test apply to all UTRA – TDD- UEs

Notes copied from TS 25.102 clause 6.2.1 :

1. The maximum output power refers to.....
2. For multi-code operation the maximum output power will be reduced by the difference of peak to average ratio between single and multi-code transmission.
3. The tolerance of the maximum power is below the prescribed value even at the multi-code transmission mode
4. For UE using directive antennas for transmission, a class dependent limit will be placed on the maximum EIRP (Equivalent Isotropic Radiated Power).

5.2.2 Conformance requirements

The error of the UE maximum output power shall not exceed the tolerance shown in Tables 5.2.2 a and b for single and multi-code.

Table 5.2.2.a: Maximum Output Power single code

Power Class	Maximum output power	Tolerance
1		
2	+24 dBm	+1dB /-3dB
3	+21 dBm	+2dB /-2dB
4		

Table 5.2.2.b: Maximum Output Power multi code

Power Class	Maximum output power	Tolerance
1		
2	[21 [1])] dBm	+1dB /-3dB
3	[18 [1])] dBm	+2dB /-2dB
4		

1. Note 1) These figures are not mentioned in 25.102. Instead there is a note, saying:
"For multi-code operation the maximum output power will be reduced by the difference of peak to average ratio between single and multi-code transmission."
The figures are calculated from maximum output power single code (table 5.2.2.a) and UL multicode reference measurement channel (12.2 kbit/s)(annec C.2.2.) containing two code signals with equal level.

The reference for this requirement is 25.102 clause 6.2.

5.2.3 Test purpose

For the following reasons:

Limit interference.

Verify that the maximum output power is achievable.

It is the purpose of the test to verify that the UE's maximum output power is within its tolerance limits under all environmental conditions.

5.2.4 Method of test

5.2.4.1 Initial conditions

1) Connect the SS to the UE antenna connector as shown in Figure A.1.

2) Calls are set up according to the Generic call setup procedure using parameters as specified in tables 5.2.4.a and 5.2.4.b

3) Enter the UE into loopback test mode and start the loopback test.

Table 5.2.4.a: Test parameters for Maximum Output Power single code

Parameter	Value/description
UL Reference measurement channel	12.2kbps, according to annex C.2.1
Uplink Power Control	SS level and signalling values such that UE transmits maximum power.
Data content	real life (sufficient irregular)

Table 5.2.4.b: Test parameters for Maximum Output Power multicode

Parameter	Value/description
Reference measurement channel	Multicode 12.2kbps, according to annex C.2.2
Uplink Power Control	SS level and signalling values such that UE transmits maximum power
Data content	real life (sufficient irregular)

5.2.4.2 Procedure

1) Measure thermal power over the useful part of the burst.

   with a measurement bandwidth of at least 5 MHz.

2) Average over TBD time slots.

3) Run step 1) and 2) for RF channels Low / Mid / High

5.2.5 Test Requirements

The output power, measured in step 2) of subclause 5.2.4.2, shall not exceed the prescribed tolerance in Table 5.2.2 a and b.

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CR-Form-v3

CHANGE REQUEST

⌘ **34.122** **CR** **008** ⌘ rev **-** ⌘ Current version: **3.1.0** ⌘

*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 ☐ Core Network ☐

Title:	⌘	Out-of-synchronisation handling of output power
Source:	⌘	TSG-T1/RF SWG
Work item code:	⌘	***Date:*** ⌘ 2000-11-16
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:	⌘	Test inserted according to core specs
Summary of change:	⌘	Text of core specifications copied with numbering of 34.122
Consequences if not approved:	⌘	Missing Test

Clauses affected:	⌘	Clauses 5.4.5 through 5.4.5.5
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.

5.4.5 Out-of-synchronisation handling of output power

5.4.5.1. Definition and applicability

The UE shall monitor the DPCH quality in order to detect a loss of the signal on Layer 1, as specified in TS 25.224. [5] The thresholds Q_{out} and Q_{in} specify at what DPCH quality levels the UE shall shut its power off and when it may turn its transmitter on, respectively. The thresholds are not defined explicitly, but are defined by the conditions under which the UE shall shut its transmitter off and turn it on, as stated in this clause.

The requirement of this subclause shall apply to all types of UTRA-UE.

5.4.5.21 Conformance rRequirement

The parameters in Table 5.4.5.1 are defined using the DL reference measurement channel (12.2) kbps specified in Annex C where the CRC bits are replaced by data bits, and with static propagation conditions.

Table 5.4.5.1: DCH parameters for test of Out-of-synch handling

Parameter	Unit	Value
$\hat{I}_{or}/I_{oc}$	dB	-1
I_{oc}	dBm/3.84 MHz	-60
$\frac{\Sigma DPCH\_E_c}{I_{or}}$	dB	See figure yy
Information Data Rate	kbps	13
TFCI	-	On

The conditions for when the UE shall shut its transmitter on and when it may turn it on are defined by the parameters in Table 5.4.5.1 together with the DPCH power level as defined in Figure 5.4.5.1.

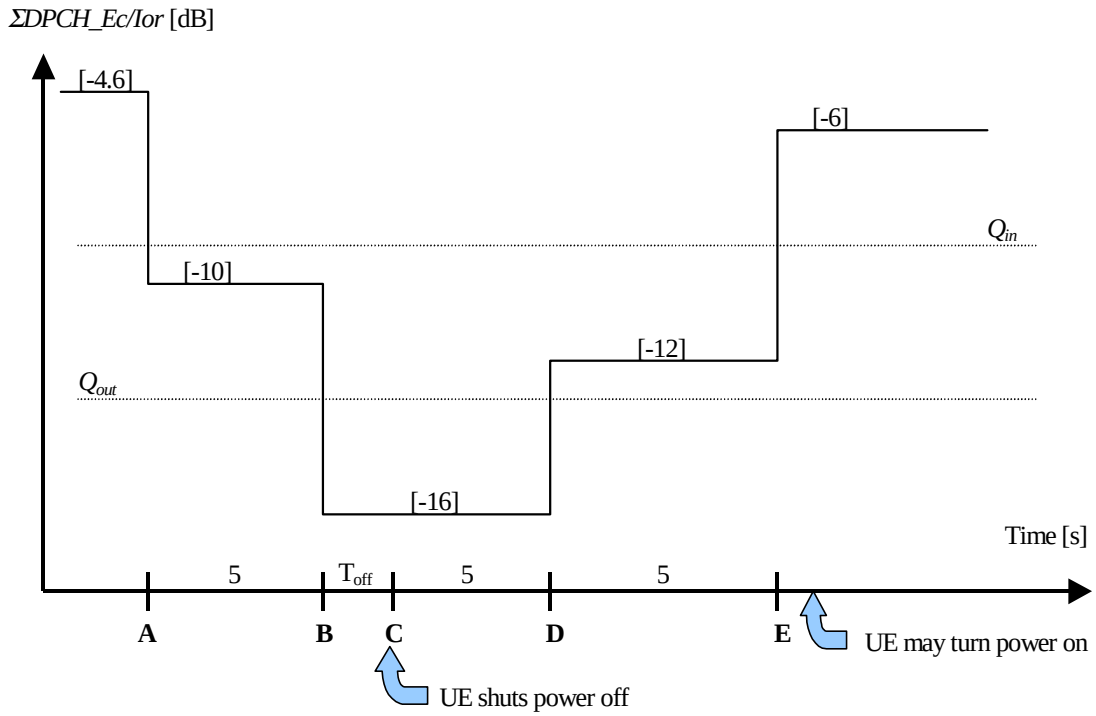

Figure 5.4.5.1: Conditions for out-of-synch handling in the UE. The indicated thresholds Q_{out} andQ_{in} are only informative.

The requirements for the UE are that:

The UE shall not shut its transmitter off before point B.

The UE shall shut its transmitter off before point C, which is Toff = [200] ms after point B

The UE shall not turn its transmitter on between points C and E.

The UE may turn its transmitter on after point E.

The reference for this test is 25.102 clause 6.4.3.

5.4.5.3 Test purpose

To verify that the UE monitors the DPCH quality and turns its transmitter on or off according to DPCH level diagram specified in figure5.4.5.1

5.4.5.4 Method of test

5.4.5.4.1 Initial conditions

1) Connect the SS to the UE antenna connector as shown in Figure A.1.

2) Calls are set up according to the Generic call setup procedure using parameters as specified in table 5.4.5.1

3) Enter the UE into loopback test mode and start the loopback test.

5.4.5.4.2 Procedure

1) Set the SS TX signal quality to $\frac{\Sigma DPCH\_E_c}{I_{or}}$ = -4.6 dB and verify that the UE TX signal is on.

2) Set the SS TX signal quality to $\frac{\Sigma DPCH\_E_c}{I_{or}}$ = -10 dB and verify that the UE TX signal remains on.

3) Set the SS TX signal quality to $\frac{\Sigma DPCH\_E_c}{I_{or}}$ = -16 dB and verify that the UE TX signal turns off [200] ms or earlier with respect to that instant.

4) Set the SS TX signal quality to $\frac{\Sigma DPCH\_E_c}{I_{or}}$ = -12 dB and verify that the UE TX signal remains off.

5) Set the SS TX signal quality to $\frac{\Sigma DPCH\_E_c}{I_{or}}$ = -6 dB and verify that the UE TX signal remains off at least[200] ms with respect to this instant and is switched on [tbd 400] ms with respect to the same instant.

5.4.5.5 Test Requirements

The UE TX on-criterion including tolerance window is derived from the initial conditions.

The UE TX off criterion is defined in clause 5.4.3 of this TS (Transmit off power)

To pass the test, steps 1 through 5 of the procedure must be fulfilled.

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e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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34.122	**CR**	**005**	Current Version:	3.1.0

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

For submission to:	T1 #9	for approval	X	strategic		*(for SMG use only)*
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

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

Source: TSG-T1/RF SWG **Date:** 2000-11-16

Subject: Handling of measurement uncertainties in UE conformance testing (TDD)

Work item:

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

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

Reason for change: Alignment with core specifications (25.102) and with draft ITU/R recommendation on handling of measurement uncertainties for a global circulation of terminals

Clauses affected: Annex F

Other specs affected:

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

Other comments:

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Annex F (normative): ~~Requirements of Test Equipment~~General test conditions and declarations

~~F.1 General~~

~~*[TBD]*~~

~~F.2 Acceptable uncertainty of measurement equipment~~

~~*[TBD]*~~

~~F.3 Interpretation of measurement results~~

~~Compliance with the requirement is determined by comparing the measured value (or derived value from the measured one) with the test limit. The test limit shall be relaxed from the specified limit in the core requirement using the maximum allowed uncertainty for the test equipment as specified in subclause F.2.~~
~~The actual measurement uncertainty of the test equipment for the measurement of each parameter shall be included in the test report.~~
~~The recorded value for the test equipment uncertainty shall be, for each measurement, equal to or lower than the appropriate figure in subclause F.2 of this TS.~~
~~If the test equipment for a test is known to have a measurement uncertainty greater than that specified in subclause F.2, it is still permitted to use this apparatus provided that an adjustment is made to the measured value as follows:~~
~~The initial test limit is derived as above by relaxing the specified limit using the maximum allowed test equipment uncertainty as specified in subclause F.2. Any additional uncertainty in the test equipment over and above that specified in subclause F.2 shall be used to tighten the test limit. This procedure will ensure that test equipment not compliant with subclause F.2 does not increase the chance of passing a device under test where that device would otherwise have failed the test if test equipment compliant with subclause F.2 had been used.~~
The requirements of this clause apply to all tests in the present document, when applicable.
Many of the tests in the present document measure a parameter relative to a value which is not fully specified in the UE specifications. For these tests, the conformance requirement is determined relative to a nominal value specified by the manufacturer.
When specified in a test, the manufacturer shall declare the nominal value of a parameter, or whether an option is supported.
In order to be consistent with industry practise, the shared risk principle should be used for all tests. It may be decided to relax the core specification value by a certain relaxation value (hereby named “Test Tolerance”) that should be evaluated on a case per case basis taking into account different factors such as test equipment uncertainty, mismatch, and criticality for system performance .
In all the relevant subclauses in this clause all Bit Error Ratio (BER), Block Error Ratio (BLER) measurements shall be carried out according to the general rules for statistical testing in annex F.4.

F.1 Acceptable uncertainty of measurement equipment

The maximum acceptable uncertainty of measurement equipment is specified separately for each test, where appropriate. The measurement equipment shall enable the stimulus signals in the test case to be adjusted to within the specified range, and the conformance requirement to be measured with an uncertainty not exceeding the specified values. All ranges and uncertainties are absolute values, and are valid for a confidence level of 95 %, unless otherwise stated.
It should be noted that the stated uncertainties in subclause F.1 apply to the test equipment only and do not include system effects due to mismatch between the DUT and the test equipment.

F.1.1 Transmitter

Subclause 5.2, UE maximum output power:

- UE maximum output power ±[] dB.

Subclause 5.3, Frequency stability:
- carrier frequency ±[] Hz.

Subclause 5.4.1, Uplink power control:
- UE output power ±[] dB.

Subclause 5.4.2, Minimum Transmit Power:
- UE minimum output power ±[] dB.

Subclause 5.4.3, Transmit OFF Power:
- UE minimum output power ±[] dB.

- transmit ON/OFF time ±[] s.

Subclause 5.4.4, Transmit ON/OFF Time mask:
- UE minimum output power ±[] dB.

- transmit ON/OFF time ±[] s.

Subclause 5.4.5, Out-of-synchronisation handling of output power:
- $\frac{DPDCH\_E_c}{I_{or}}$ ±[] dB.

- transmit ON/OFF time ±[] s.

Subclause 5.5.1, Occupied bandwidth:
- occupied channel bandwidth ±[] kHz.

Subclause 5.5.2.1, Spectrum emission mask:
- emission power:

Table F.1: Uncertainty for Spectrum emission mask measurement

Frequency offset from carrier Δf	Uncertainty
2.5 - 3.5 MHz	±[ ] dB
3.5 - 7.5 MHz	±[ ] dB
7.5 - 8.5 MHz	±[ ] dB
8.5 - 12.5 MHz	±[ ] dB

Subclause 5.5.2.2, Adjacent Channel Leakage power Ratio (ACLR):
- ACLR ± 5 MHz (Relative carrier power) ±[] dB;

- ACLR ± 10 MHz (Relative carrier power) ±[] dB.

Subclause 5.5.3, Spurious emissions:
- emission power:

Table F.2: Uncertainty for General spurious emissions requirements

Frequency Bandwidth	Uncertainty
9 kHz ≤ f < 150 kHz	±[ ] dB
150 kHz ≤ f < 30 MHz	±[ ] dB
30 MHz ≤ f < 1000 MHz	±[ ] dB
1 GHz ≤ f < 12.75 GHz	±[ ] dB

Table F.3: Uncertainty for Additional spurious emissions requirements

Frequency Bandwidth	Uncertainty
925 MHz ≤ f ≤ 935 MHz	±[ ] dB
935 MHz < f ≤ 960 MHz	±[ ] dB
1805 MHz ≤ f ≤ 1880 MHz	±[ ] dB

Subclause 5.6, Transmit intermodulation:

Table F.4: Uncertainty for Transmit Intermodulation

CW Signal Frequency Offset from Transmitting Carrier	5MHz	10MHz
Interference CW Signal Level	±[ ] dB	
Intermodulation Product	±[ ] dB	±[ ] dB

Subclause 5.7, Transmit modulation:

- modulation accuracy (EVM) ±[] % RMS.

- peak code domain error ±[] dB.

F.1.2 Receiver

Subclause 6.2, Reference sensitivity level:

- test signal power ±[] dB;

Subclause 6.3, Maximum input level:

- test signal power ±[] dB.

Subclause 6.4, Adjacent Channel Selectivity (ACS):

- test signal power ±[] dB;

- interfering signal power (Relative to the test signal) ±[] dB;

Subclause 6.5, Blocking characteristics:

Table F.5: Uncertainty for In-band blocking characteristics

Parameter	10 MHz offset	15 MHz offset	Unit
DPCH_Ec	±[ ]	±[ ]	dB
$\hat{I}_{or}$	±[ ]	±[ ]	dB
$I_{blocking}$ (modulated)	±[ ]	±[ ]	dB
F_{uw} (offset)	+10 or –10	+15 or –15	MHz

Table F.6: Uncertainty for Out of band blocking characteristics

Parameter	Band 1	Band 2	Band 3	Unit
DPCH_Ec	±[ ]	±[ ]	±[ ]	dB
$\hat{I}_{or}$	±[ ]	±[ ]	±[ ]	dB
$I_{blocking}$ (CW)	±[ ]	±[ ]	±[ ]	dB
Fuw For operation in frequency bands as definded in subclause 4.2(a)	1840 <f <1885 1935 <f <1995 2040 <f <2085	1815 <f <1840 2085 <f 2110	1< f <1815 2110< f <12750	MHz
Fuw For operation in frequency bands as definded in subclause 4.2(b)	1790 < f < 1835 2005 < f < 2050	1765 < f < 1790 2050 < f < 2075	1 < f < 1765 2075 < f < 12750	MHz
Fuw For operation in frequency bands as definded in subclause 4.2(c)	1850 < f < 1895 1945 < f < 1990	1825 < f < 1850 1990 < f < 2015	1 < f < 1825 2015 < f < 12750	MHz

Subclause 6.6, Spurious response:

- test signal power ±[] dB;
- interfering signal power (Relative to the test signal) ±[] dB;

Subclause 6.7, Intermodulation characteristics:

- test signal power ±[] dB;
- interfering signals power ±[] dB;

Subclause 6.8, Spurious emissions:

- emission power:

Table F.7: Uncertainty for Spurious emissions

Frequency Bandwidth	Uncertainty
9 kHz – 1 GHz	±[ ] dB
1 GHz – 1.9 GHz and 1.92 GHz – 2.01 GHz and 2.025 GHz – 2.11 GHz	±[ ] dB
1.9 GHz – 1.92 GHz and 2.01 GHz – 2.025 GHz and 2.11 GHz – 2.170 GHz	±[ ] dB
2.170 GHz – 12.75 GHz	±[ ] dB

F.1.3 Performance requirement

Subclause 7.2, Demodulation in Static Propagation Conditions:

- $\hat{I}_{or}/I_{oc}$ ±[] dB;
- I_{oc} ±[] dB;
- $\frac{\Sigma DPCH\_E_c}{I_{or}}$ ±[] dB.

Subclause 7.3, Demodulation of DCH in Multiplath Fading conditions:

- $\hat{I}_{or}/I_{oc}$ ±[] dB;

- I_{oc} ±[] dB;

- $\frac{\Sigma DPCH\_E_c}{I_{or}}$ ±[] dB.

Subclause 7.4, Base Station Transmit diversity modes:

- $\hat{I}_{or}/I_{oc}$ ±[] dB;

- I_{oc} ±[] dB;

- $\frac{PCCPCH\_E_c}{I_{or}}$ ±[] dB.

F.1.4 Requirements for support of RRM

TBD

F.2 Test tolerances

The following values may be increased only on a test by test basis. The test tolerances should not be increased to take account of commonly known test system errors (such as mismatch, cable loss, etc.).

F.2.1 Transmitter

Subclause 5.2, UE maximum output power:

- UE maximum output power ±[] dB.

Subclause 5.3, Frequency stability:

- carrier frequency ±[] Hz.

Subclause 5.4.1, Uplink power control in the uplink:

- UE output power ±[] dB.

Subclause 5.4.2, Minimum Transmit Power:

- UE minimum output power ±[] dB.

Subclause 5.4.3, Transmit OFF Power:

- UE minimum output power ±[] dB.

- transmit ON/OFF time ±[] s.

Subclause 5.4.4, Transmit ON/OFF Time mask:

- UE minimum output power ±[] dB.

- transmit ON/OFF time ±[] s.

Subclause 5.4.5, Out-of-synchronisation handling of output power:

- transmit ON/OFF time ±[] s.

Subclause 5.5.1, Occupied bandwidth:

- occupied channel bandwidth ±[] kHz.

Subclause 5.5.2.1, Spectrum emission mask:

- emission power:

Table F.8: Tolerance for Spectrum emission mask measurement

Frequency offset from carrier Δf	Tolerance
2.5 - 3.5 MHz	±[ ] dB
3.5 - 7.5 MHz	±[ ] dB
7.5 - 8.5 MHz	±[ ] dB
8.5 – 12.5 MHz	±[ ] dB

Subclause 5.5.2.2, Adjacent Channel Leakage power Ratio (ACLR):

- ACLR ± 5 MHz (Relative carrier power) ±[] dB;

- ACLR ± 10 MHz (Relative carrier power) ±[] dB.

Subclause 5.5.3, Spurious emissions:

- emission power:

Table F.9: Tolerance for General spurious emissions requirements

Frequency Bandwidth	Tolerance
9 kHz ≤ f < 150 kHz	±[0] dB
150 kHz ≤ f < 30 MHz	±[0] dB
30 MHz ≤ f < 1000 MHz	±[0] dB
1 GHz ≤ f < 12.75 GHz	±[0] dB

Table F.10: Tolerance for Additional spurious emissions requirements

Frequency Bandwidth	Tolerance
925 MHz ≤ f ≤ 935 MHz	±[0] dB
935 MHz < f ≤ 960 MHz	±[0] dB
1805 MHz ≤ f ≤ 1880 MHz	±[0] dB

Subclause 5.6, Transmit intermodulation:

Table F.11: Tolerance for Transmit Intermodulation

CW Signal Frequency Offset from Transmitting Carrier	5MHz	10MHz
Intermodulation Product	±[ ] dB	±[ ] dB

Subclause 5.7, Transmit modulation:

- modulation accuracy (EVM) ±[] % RMS.

- peak code domain error ±[] dB.

F.2.2 Receiver

Subclause 6.2, Reference sensitivity level:

- UE BER ±[] %.

Subclause 6.3, maximum input level:

- UE BER ±[] %.

Subclause 6.4, Adjacent Channel Selectivity (ACS):

- UE BER ±[] %.

Subclause 6.5, Blocking characteristics:

- UE BER ±[] %.

Subclause 6.6, Spurious response:

- UE BER ±[] %.

Subclause 6.7, Intermodulation characteristics:

- UE BER ±[] %.

Subclause 6.8, Spurious emissions:

- emission power:

Table F.12: Tolerance for Spurious emissions

Frequency Bandwidth	Uncertainty
9 kHz – 1 GHz	±[0] dB
1 GHz – 1.9 GHz and 1.92 GHz – 2.01 GHz and 2.025 GHz – 2.11 GHz	±[0] dB
1.9 GHz – 1.92 GHz and 2.01 GHz – 2.025 GHz and 2.11 GHz – 2.170 GHz	±[0] dB
2.170 GHz – 12.75 GHz	±[0] dB

F.2.3 Performance requirements

Subclause 7.2, Demodulation in Static Propagation Condition:

- UE BLER ±[] %.

Subclause 7.3, Demodulation of DCH in Multiplath Fading conditions:

- UE BLER ±[] %.

Subclause 7.4, Base Station Transmit diversity modes:

- UE BLER ±[] %.

F.2.4 Requirements for support of RRM

TBD

F.3 Interpretation of measurement results

Compliance with the requirement is determined by comparing the measured value (or derived value from the measured one) with the test limit. The test limit shall be calculated by ~~adding~~relaxing the specified limit in the core requirement using only the test tolerance as specified in subclause F.2 [see section 4.1 in TS25.102] . The actual measurement uncertainty of the test equipment for the measurement of each parameter shall be included in the test report. The recorded value for the test equipment uncertainty shall be, for each measurement, equal to or lower than the appropriate figure in subclause F.1 of the present document.

If the test equipment for a test is known to have a measurement uncertainty greater than that specified in subclause F.1, it is still permitted to use this apparatus provided that an adjustment is made to the measured value as follows.

The initial test limit is derived as above. Any additional uncertainty in the test equipment over and above that specified in subclause F.1 shall be used to tighten the test limit. This procedure will ensure that test equipment not compliant with subclause F.1does not increase the chance of passing a device under test where that device would otherwise have failed the test if test equipment compliant with subclause F.1 had been used.

F.4 General rules for statistical testing

[TBD]