TSG RAN Meeting #16 **RP-020295**
Marco Island, FL, USA, 4 - 7 June 2002

Title CRs (Rel-4 and Rel-5 Category A) to TS 25.142
Source TSG RAN WG4
Agenda Item 7.4.4

RAN4 Tdoc	Spec	Curr Ver	New Ver	CR	R	Cat	Ph	Title	Acronym
R4-020657	25.142	4.4.0	4.5.0	112		F	Rel-4	The amendment for BS Category B spurious emission band adjacent to allocated bands for LCR-TDD	LCRTDD-RF
R4-020658	25.142	5.0.0	5.1.0	113		A	Rel-5	The amendment for BS Category B spurious emission band adjacent to allocated bands for LCR-TDD	LCRTDD-RF
R4-020992	25.142	4.4.0	4.5.0	117	1	F	Rel-4	Correction of transmit ON/OFF time mask test	LCRTDD-RF
R4-020993	25.142	5.0.0	5.1.0	118	1	A	Rel-5	Correction of transmit ON/OFF time mask test	LCRTDD-RF
R4-020711	25.142	4.4.0	4.5.0	122		F	Rel-4	Correction of power terms and definitions	LCRTDD-RF
R4-020712	25.142	5.0.0	5.1.0	123		A	Rel-5	Correction of power terms and definitions	LCRTDD-RF

3GPP TSG RAN WG4 Meeting #23 **R4-020657**

Gyeongju, Korea 13th -17th May, 2002

CR-Form-v5.1

CHANGE REQUEST

⌘	**25.142**	**CR 112**	⌘ **rev**	**-**	⌘ Current version:	**4.4.0** ⌘

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

Title:	⌘ The amendment for BS Category B spurious emission band adjacent to allocated bands for LCR-TDD		
Source:	⌘ RAN WG4		
Work item code:	⌘ LCRTDD-RF	***Date:*** ⌘	17/5/2002
Category:	⌘ **F** *Use one of the following categories:* ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.	***Release:*** ⌘	Rel-4 *Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change: ⌘	Category B BS spurious emission band adjacent to allocated bands of LCR-TDD is unnecessary stringent.
Summary of change: ⌘	Category B BS spurious emission band adjacent to allocated bands of LCR-TDD is changed.
Consequences if not approved: ⌘	Unnecessary hard requirement for the BS spurious emission Category B requirement which can cause difficulties in HW implementation. Isolated Impact Analysis: Would not affect implementations behaving like indicated in the CR, would affect implementations that do not behave like indicated in the CR.

Clauses affected: ⌘	6.6.3.2.1.2.2	
Other specs affected: ⌘	[ ] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications	
Other comments: ⌘	Equivalent CRs in other Releases: CR113 cat. A to 25.142 v5.0.0	

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6.6.3.2.1.2.2 1,28 Mcps TDD option

The power of any spurious emission shall not exceed the maximum levels given in Table 6.30A.

Table 6.30A: BS Mandatory spurious emissions limits, Category B for 1,28 Mcps TDD

Band	Maximum Level	Measurement Bandwidth	Note
9kHz – 150kHz	-36 dBm	1 kHz	Bandwidth as in ITU SM.329-8, s4.1
150kHz – 30MHz	- 36 dBm	10 kHz	Bandwidth as in ITU SM.329-8, s4.1
30MHz – 1GHz	-36 dBm	100 kHz	Bandwidth as in ITU SM.329-8, s4.1
1GHz ↔ Fc1-19,2 MHz or Fl –~~3,2~~10 MHz *whichever is the higher*	-30 dBm	1 MHz	Bandwidth as in ITU SM.329-8, s4.1
Fc1 – 19,2 MHz or Fl - ~~3,2~~10MHz *whichever is the higher* ↔ Fc1 - 16 MHz or Fl –~~3,2~~10 MHz *whichever is the higher*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc1 - 16 MHz or Fl –~~3,2~~10 MHz *whichever is the higher* ↔ Fc2 + 16 MHz or Fu +~~3,2~~10 MHz *whichever is the lower*	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc2 + 16 MHz or Fu + ~~3,2~~10MHz *whichever is the lower* ↔ Fc2 +19,2 MHz or Fu + ~~3,2~~10MHz *whichever is the lower*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc2 + 19,2 MHz or Fu +~~3,2~~10 MHz *whichever is the lower* ↔ 12,75 GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329-8, s4.1. Upper frequency as in ITU-R SM.329-8, s2.5 table 1

Fc1: Center frequency of emission of the first carrier transmitted by the BS
Fc2: Center frequency of emission of the last carrier transmitted by the BS
Fl : Lower frequency of the band in which TDD operates
Fu : Upper frequency of the band in which TDD operates
The reference for this requirement is TS 25.105 subclause 6.6.3.1.2.1.2.

3GPP TSG RAN WG4 Meeting #23 **R4-020658**

Gyeongju, Korea 13th -17th May, 2002

CR-Form-v5.1

CHANGE REQUEST

⌘	**25.142**	**CR**	**113**	⌘ **rev**	**-**	⌘	Current version:	**5.0.0**	⌘

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

Title:	⌘	The amendment for BS Category B spurious emission band adjacent to allocated bands for LCR-TDD	
Source:	⌘	RAN WG4	
Work item code:	⌘	LCRTDD-RF	***Date:*** ⌘ 17/5/2002
Category:	⌘	**A** *Use one of the following categories:* ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.	***Release:*** ⌘ Rel-5 *Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change:	⌘	Category B BS spurious emission band adjacent to allocated bands of LCR-TDD is unnecessary stringent.
Summary of change:	⌘	Category B BS spurious emission band adjacent to allocated bands of LCR-TDD is changed.
Consequences if not approved:	⌘	Unnecessary hard requirement for the BS spurious emission Category B requirement which can cause difficulties in HW implementation. Isolated Impact Analysis: Would not affect implementations behaving like indicated in the CR, would affect implementations that do not behave like indicated in the CR.

Clauses affected:	⌘	6.6.3.2.1.2.2	
Other specs affected:	⌘	[ ] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications	
Other comments:	⌘	Equivalent CRs in other Releases: CR112 cat. F to 25.142 v4.4.0	

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6.6.3.2.1.2.2 1,28 Mcps TDD option

The power of any spurious emission shall not exceed the maximum levels given in Table 6.30A.

Table 6.30A: BS Mandatory spurious emissions limits, Category B for 1,28 Mcps TDD

Band	Maximum Level	Measurement Bandwidth	Note
9kHz – 150kHz	-36 dBm	1 kHz	Bandwidth as in ITU SM.329-8, s4.1
150kHz – 30MHz	- 36 dBm	10 kHz	Bandwidth as in ITU SM.329-8, s4.1
30MHz – 1GHz	-36 dBm	100 kHz	Bandwidth as in ITU SM.329-8, s4.1
1GHz ↔ Fc1-19,2 MHz or Fl –~~3,2~~10 MHz *whichever is the higher*	-30 dBm	1 MHz	Bandwidth as in ITU SM.329-8, s4.1
Fc1 – 19,2 MHz or Fl - ~~3,2~~10MHz *whichever is the higher* ↔ Fc1 - 16 MHz or Fl –~~3,2~~10 MHz *whichever is the higher*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc1 - 16 MHz or Fl –~~3,2~~10 MHz *whichever is the higher* ↔ Fc2 + 16 MHz or Fu +~~3,2~~10 MHz *whichever is the lower*	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc2 + 16 MHz or Fu + ~~3,2~~10MHz *whichever is the lower* ↔ Fc2 +19,2 MHz or Fu + ~~3,2~~10MHz *whichever is the lower*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc2 + 19,2 MHz or Fu +~~3,2~~10 MHz *whichever is the lower* ↔ 12,75 GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329-8, s4.1. Upper frequency as in ITU-R SM.329-8, s2.5 table 1

Fc1: Center frequency of emission of the first carrier transmitted by the BS
Fc2: Center frequency of emission of the last carrier transmitted by the BS
Fl : Lower frequency of the band in which TDD operates
Fu : Upper frequency of the band in which TDD operates
The reference for this requirement is TS 25.105 subclause 6.6.3.1.2.1.2.

3GPP TSG RAN WG4 Meeting #23 **R4-020992**

Gyeongju, Korea 13th -17th May, 2002

CR-Form-v4

CHANGE REQUEST

⌘	**25.142**	**CR**	**117**	⌘	ev	**1**	⌘	Current version: **4.4.0** ⌘

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

Title:	⌘	Correction of transmit ON/OFF time mask test (1,28 Mcps TDD option)	
Source:	⌘	RAN WG4	
Work item code:	⌘	LCRTDD-RF	***Date:*** ⌘ 17/5/2002
Category:	⌘	**F** *Use one of the following categories:* ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.	***Release:*** ⌘ Rel-4 *Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change:	⌘	Test system uncertainty and test tolerance for the transmit ON/OFF time mask test for the 1,28 Mcps TDD option are still not defined. Wrong reference to a subclause which doesn't exist.
Summary of change:	⌘	Test system uncertainty and test tolerance for the transmit ON/OFF time mask test for the 1,28 Mcps TDD option added. Test requirement corrected to reflect test tolerance. Reference corrected.
Consequences if not approved:	⌘	The test requirement will be ambiguous. Isolated Impact Analysis: Correction of a requirement where the specification was ambiguous or not sufficiently explicit. Would affect conformance testing only, would not affect implementations, BS-UE interoperability or system performance.

Clauses affected:	⌘	5.10.2, 5.11.1, 6.5.2.5.1, 6.5.2.5.2, Annex D	
Other specs affected:	⌘	[ ] Other core specifications [ ] Test specifications [ ] O&M Specifications	⌘
Other comments:	⌘	Revision of R4-020706 Equivalent CRs in other Releases: CR118r1 cat. A to 25.142 v5.0.0	

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5.10.2 Measurement of transmitter

Table 5.3: Maximum Test System Uncertainty for transmitter tests

Subclause	Maximum Test System Uncertainty	Derivation of Test System Uncertainty
6.2 Maximum output power	± 0,7 dB	
6.3 Frequency stability	± 12 Hz	
6.4.2 Power control steps	single step: ± 0,1 dB ten steps: ± 0,3 dB	Result is difference between two absolute Code Domain Power measurements on the power controlled DPCH.
6.4.3 Power control dynamic range	± 0,3 dB	
6.4.4 Minimum output power	± 0,7 dB	
6.4.5 Primary CCPCH power	± 0,8 dB	
6.4.6 Differential accuracy of Primary CCPCH power	± 0,1 dB	
6.5.1 Transmit OFF power	± 2,0 dB	
6.5.2 Transmit ON/OFF time mask	3,84 Mcps TDD option: Tx power limit = -79 dBm: ± 2,0 dB Tx power limit = -33 dBm: ± 0,7 dB 1,28 Mcps TDD option: Tx power limit = -82 dBm: ± 2,0 dB Tx power limit = -42 dBm: ± 0,7 dB	
6.6.1 Occupied Bandwidth	± 100 kHz	Accuray = ± 3∗RBW. Assume 30 kHz bandwidth
6.6.2.1 Spectrum emission mask	± 1,5 dB	
6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)	minimum requirement: 5 MHz offset: ± 0,8 dB 10 MHz offset: ± 0,8 dB requirement in case of operation in proximity to TDD BS or FDD BS operating on an adjacent frequency: 5 MHz offset: ± 4 dB 10 MHz offset: ± 4 dB requirement in case of co-siting with TDD BS or FDD BS operating on an adjacent frequency: 5 MHz offset: TBD 10 MHz offset: TBD Note: Impact of measurement period (averaging) and intermod effects in the measurement receiver not yet fully studied.	
6.6.3 Spurious emissions	± 2,0 dB for BS and coexistence bands for results > -60 dBm ± 3,0 dB for results < -60 dBm Outside above range: f ≤ 2,2 GHz: ± 1,5 dB 2,2 GHz < f ≤ 4 GHz: ± 2,0 dB f > 4 GHz: ± 4,0 dB	
6.7 Transmit intermodulation	The value below applies to the setting of the interference signal level only and is unrelated to the measurement uncertainty of the tests (6.6.2.1, 6.6.2.2 and 6.6.3) which have to be carried out in the presence of the interference signal. ± 1 dB	The uncertainty of the interferer has double the effect on the result due to the frequency offset.
6.8.1 Modulation accuracy	± 2,5 % (for single code)	
6.8.2 Peak code domain error	± 1 dB	

--- next changed section ---

5.11.1 Transmitter

Table 5.6: Test Tolerance for transmitter tests

Subclause	Test Tolerance (see NOTE)
6.2 Maximum output power	0,7 dB
6.3 Frequency stability	12 Hz
6.4.2 Power control steps	single step: 0,1 dB ten steps: 0,3 dB
6.4.3 Power control dynamic range	0,3 dB
6.4.4 Minimum output power	0,7 dB
6.4.5 Primary CCPCH power	0,8 dB
6.4.6 Differential accuracy of Primary CCPCH power	± 0,1 dB
6.5.1 Transmit OFF power	2,0 dB
6.5.2 Transmit ON/OFF time mask	3,84 Mcps TDD option: Tx power limit = -79 dBm: 2,0 dB Tx power limit = -33 dBm: 0,7 dB 1,28 Mcps TDD option: Tx power limit = -82 dBm: 2,0 dB Tx power limit = -42 dBm: 0,7 dB
6.6.1 Occupied Bandwidth	0 kHz
6.6.2.1 Spectrum emission mask	1,5 dB
6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)	Minimum requirement: 0,8 dB Operation in proximity: 4 dB Co-siting: TBD
6.6.3 Spurious emissions	0 dB
6.7 Transmit intermodulation	Testing of transmit intermodulation consists of 3 parts: - testing of spectrum emission mask, see 6.6.2.1 - testing of ACLR, see 6.6.2.2 - testing of spurious emissions, see 6.6.3 For each of these parts, the respective Test Tolerances as specified in this table shall apply. Test Tolerance for setting of the interferer power level: 0 dB
6.8.1 Modulation accuracy	0 %
6.8.2 Peak code domain error	1 dB
NOTE: Unless otherwise stated, the Test Tolerances are applied to the DUT Minimum Requirement. See Annex D.	

--- next changed section ---

6.5.2.5 Test Requirements

NOTE: If the Test Requirements below differ from the Minimum Requirements, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

6.5.2.5.1 3,84 Mcps TDD option

Each value of the power measured according to subclause ~~6.5.4.2~~6.5.2.4.2.1 shall be below – 32,3 dBm in the period from 32 chips to 84 chips after the burst and below – 77 dBm in the period where the Tx OFF power specification is applicable.

6.5.2.5.2 1,28 Mcps TDD option

Each value of the power measured according to subclause ~~6.5.4.2~~ 6.5.2.4.2.2 shall be below – 41,3 dBm in the period from 85 chips to 88 chips after the burst and below – 80 dBm in the period where the Tx OFF power specification is applicable. ~~the limits defined in figure 6.1A of subclause 6.5.2.2.~~

--- next changed section ---

Annex D (informative): Derivation of Test Requirements

The Test Requirements in this specification have been calculated by relaxing the Minimum Requirements of the core specification using the Test Tolerances defined in subclause 5.11. When the Test Tolerance is zero, the Test Requirement will be the same as the Minimum Requirement. When the Test Tolerance is non-zero, the Test Requirements will differ from the Minimum Requirements, and the formula used for this relaxation is given in tables D.1 to D.3

Note that a formula for applying Test Tolerances is provided for all tests, even those with a test tolerance of zero. This is necessary in the case that the Test System uncertainty is greater than that allowed in subclause 5.10. In this event, the excess error shall be subtracted from the defined test tolerance in order to generate the correct tightened Test Requirements as defined in subclause 5.12.

For example, a Test System having 0,9 dB accuracy for test 6.2 Maximum output power (which is 0,2 dB above the limit specified in subclause 5.10.2) would subtract 0,2 dB from the Test Tolerance of 0,7 dB defined in subclause 5.11.1. This new test tolerance of 0,5 dB would then be applied to the Minimum Requirement using the formula defined in Table D.1 to give a new range of ±2,5 dB of the manufacturer’s rated output power.

For the case where an excess error of 0.2 dB exists, when applied to a test with a test tolerance of zero, the test tolerance used in the formula would be –0.2 dB.

Table D.1: Derivation of Test Requirements (Transmitter tests)

Test	Minimum Requirement in TS 25.105 (numbering of tables in the column below refers to TS 25.142)	Test Tolerance (TT)	Test Requirement in TS 25.142
6.2 Maximum output power	In normal conditions … within +2 dB and –2 dB of the manufacturer's rated output power In extreme conditions… within +2,5 dB and –2,5 dB of the manufacturer's rated output power	0,7 dB	Formula: Upper limit + TT Lower limit – TT In normal conditions … within +2,7 dB and –2,7 dB of the manufacturer's rated output power In extreme conditions… within +3,2 dB and –3,2 dB of the manufacturer's rated output power
6.3 Frequency stability	Frequency stability = ± 0,05 ppm	12 Hz	Formula: ± (frequency stability +TT) ± (0,05 ppm + 12 Hz)
6.4.2 Power control steps	single step: step size tolerance specified in table 6.3 ten steps: minimum and maximum average rate of change in mean power specified in table 6.3	single step: 0,1 dB ten steps: 0,3 dB	Formula: single step: ± (step size tolerance + TT) ten steps: maximum average rate + TT minimum average rate – TT 0,1 dB and 0,3 dB, respectively, applied as above to table 6.3
6.4.3 Power control dynamic range	range ≥ 30 dB	0,3 dB	Formula: Range – TT range ≥ 29,7 dB
6.4.4 Minimum output power	PRAT – 30 dB	0,7 dB	Formula : PRAT – 30 dB +TT PRAT – 29,3 dB
6.4.5 Primary CCPCH power	PCCPCH power tolerance defined in table 6.8	0,8 dB	Formula: ± (power tolerance + TT) 0,8 dB applied as above to table 6.8
6.4.6 Differential accuracy of Primary CCPCH power	Differential accuracy of PCCPCH power: ≤ ± 0,5 dB	0,1 dB	Formula: ± (PCCPCH tolerance + TT) ± 0,6 dB
6.5.1 Transmit OFF power	Tx OFF power limit < -79 dBm	2,0 dB	Formula: < Tx OFF power limit + TT < - 77 dBm

6.5.2 Transmit ON/OFF time mask	Tx power limit: 3,84 Mcps TDD option: < -33 dBm or –79 dBm, resp. 1,28 Mcps TDD option: < -42 dBm or –82 dBm, resp.	< -33 dBm: 0,7 dB < -79 dBm: 2,0 dB < -42 dBm: 0,7 dB < -82 dBm: 2,0 dB	Formula: < Tx power limit + TT for 3,84 Mcps TDD option: < -32,3 dBm or < - 77 dBm for 1,28 Mcps TDD option: < -41,3 dBm or < -80 dBm
6.6.1 Occupied bandwidth	occupied bandwidth limit = 5 MHz	0 kHz	Formula: Occupied bandwidth limit + TT Occupied bandwidth limit = 5 MHz
6.6.2.1 Spectrum emission mask	Maximum level defined in tables 6.13 to 6.16	1,5 dB	Formula: Maximum level + TT Add 1,5 dB to Maximum level entries in tables 6.13 to 6.16
6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)	minimum requirement: ACLR limit = 45 dB at 5 MHz ACLR limit = 55 dB at 10 MHz requirement in case of operation in proximity to TDD BS or FDD BS operating on an adjacent frequency: ACLR limit = 70 dB at 5 MHz ACLR limit = 70 dB at 10 MHz requirement in case of co-siting with TDD BS or FDD BS operating on an adjacent frequency ACLR limit = - 80 dBm at 5 MHz ACLR limit = - 80 dBm at 10 MHz	min. req. : 0,8 dB operation in proxim.: 4 dB co-siting: TBD	Formula: ACLR limit – TT min. requirement: ACLR limit = 44,2 dB at 5 MHz ACLR limit = 54,2 dB at 10 MHz operation in proximity: ACLR limit = 66 dB at 5 MHz ACLR limit = 66 dB at 10 MHz co-siting: TBD
6.6.3 Spurious emissions	maximum level defined in tables 6.29 to 6.37	0 dB	Formula: Maximum limit + TT add 0 dB to maximum levels in tables 6.29 to 6.37
6.7 Transmit intermodulation (interferer requirements) This tolerance applies to the stimulus and not the measurements defined in 6.6.2.1, 6.6.2.2 and 6.6.3.	Wanted signal level – interferer level = 30 dB	0 dB	Formula: Ratio + TT Wanted signal level – interferer level = 30 + 0 dB
6.8.1 Modulation accuracy	EVM limit = 12,5 %	0 %	Formula: EVM limit + TT EVM limit = 12,5 %
6.8.2 Peak code domain error	PCDE limit = - 28 dB	1 dB	Formula: PCDE limit + TT PCDE limit = - 27 dB

3GPP TSG RAN WG4 Meeting #23 **R4-020993**

Gyeongju, Korea 13th -17th May, 2002

CR-Form-v4

CHANGE REQUEST

⌘ 25.142	CR 118	⌘ ev 1	⌘ Current version: 5.0.0 ⌘

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

Title:	⌘	Correction of transmit ON/OFF time mask test (1,28 Mcps TDD option)		
Source:	⌘	RAN WG4		
Work item code:	⌘	LCRTDD-RF	***Date:*** ⌘	17/5/2002
Category:	⌘	**A**	***Release:*** ⌘	Rel-5
		Use one of the following categories: ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***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 system uncertainty and test tolerance for the transmit ON/OFF time mask test for the 1,28 Mcps TDD option are still not defined. Wrong reference to a subclause which doesn't exist.
Summary of change:	⌘	Test system uncertainty and test tolerance for the transmit ON/OFF time mask test for the 1,28 Mcps TDD option added. Test requirement corrected to reflect test tolerance. Reference corrected.
Consequences if not approved:	⌘	The test requirement will be ambiguous. Isolated Impact Analysis: Correction of a requirement where the specification was ambiguous or not sufficiently explicit. Would affect conformance testing only, would not affect implementations, BS-UE interoperability or system performance.

Clauses affected:	⌘	5.10.2, 5.11.1, 6.5.2.5.1, 6.5.2.5.2, Annex D		
Other specs affected:	⌘	[ ] Other core specifications [ ] Test specifications [ ] O&M Specifications	⌘	
Other comments:	⌘	Revision of R4-020707 Equivalent CRs in other Releases: CR117r1 cat. F to 25.142 v4.4.0		

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5.10.2 Measurement of transmitter

Table 5.3: Maximum Test System Uncertainty for transmitter tests

Subclause	Maximum Test System Uncertainty	Derivation of Test System Uncertainty
6.2 Maximum output power	± 0,7 dB	
6.3 Frequency stability	± 12 Hz	
6.4.2 Power control steps	single step: ± 0,1 dB ten steps: ± 0,3 dB	Result is difference between two absolute Code Domain Power measurements on the power controlled DPCH.
6.4.3 Power control dynamic range	± 0,3 dB	
6.4.4 Minimum output power	± 0,7 dB	
6.4.5 Primary CCPCH power	± 0,8 dB	
6.4.6 Differential accuracy of Primary CCPCH power	± 0,1 dB	
6.5.1 Transmit OFF power	± 2,0 dB	
6.5.2 Transmit ON/OFF time mask	3,84 Mcps TDD option: Tx power limit = -79 dBm: ± 2,0 dB Tx power limit = -33 dBm: ± 0,7 dB 1,28 Mcps TDD option: Tx power limit = -82 dBm: ± 2,0 dB Tx power limit = -42 dBm: ± 0,7 dB	
6.6.1 Occupied Bandwidth	± 100 kHz	Accuray = ± 3∗RBW. Assume 30 kHz bandwidth
6.6.2.1 Spectrum emission mask	± 1,5 dB	
6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)	minimum requirement: 5 MHz offset: ± 0,8 dB 10 MHz offset: ± 0,8 dB requirement in case of operation in proximity to TDD BS or FDD BS operating on an adjacent frequency: 5 MHz offset: ± 4 dB 10 MHz offset: ± 4 dB requirement in case of co-siting with TDD BS or FDD BS operating on an adjacent frequency: 5 MHz offset: TBD 10 MHz offset: TBD Note: Impact of measurement period (averaging) and intermod effects in the measurement receiver not yet fully studied.	
6.6.3 Spurious emissions	± 2,0 dB for BS and coexistence bands for results > -60 dBm ± 3,0 dB for results < -60 dBm Outside above range: f ≤ 2,2 GHz: ± 1,5 dB 2,2 GHz < f ≤ 4 GHz: ± 2,0 dB f > 4 GHz: ± 4,0 dB	
6.7 Transmit intermodulation	The value below applies to the setting of the interference signal level only and is unrelated to the measurement uncertainty of the tests (6.6.2.1, 6.6.2.2 and 6.6.3) which have to be carried out in the presence of the interference signal. ± 1 dB	The uncertainty of the interferer has double the effect on the result due to the frequency offset.
6.8.1 Modulation accuracy	± 2,5 % (for single code)	
6.8.2 Peak code domain error	± 1 dB	

--- next changed section ---

5.11.1 Transmitter

Table 5.6: Test Tolerance for transmitter tests

Subclause	Test Tolerance (see NOTE)
6.2 Maximum output power	0,7 dB
6.3 Frequency stability	12 Hz
6.4.2 Power control steps	single step: 0,1 dB ten steps: 0,3 dB
6.4.3 Power control dynamic range	0,3 dB
6.4.4 Minimum output power	0,7 dB
6.4.5 Primary CCPCH power	0,8 dB
6.4.6 Differential accuracy of Primary CCPCH power	± 0,1 dB
6.5.1 Transmit OFF power	2,0 dB
6.5.2 Transmit ON/OFF time mask	3,84 Mcps TDD option: Tx power limit = -79 dBm: 2,0 dB Tx power limit = -33 dBm: 0,7 dB 1,28 Mcps TDD option: Tx power limit = -82 dBm: 2,0 dB Tx power limit = -42 dBm: 0,7 dB
6.6.1 Occupied Bandwidth	0 kHz
6.6.2.1 Spectrum emission mask	1,5 dB
6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)	Minimum requirement: 0,8 dB Operation in proximity: 4 dB Co-siting: TBD
6.6.3 Spurious emissions	0 dB
6.7 Transmit intermodulation	Testing of transmit intermodulation consists of 3 parts: - testing of spectrum emission mask, see 6.6.2.1 - testing of ACLR, see 6.6.2.2 - testing of spurious emissions, see 6.6.3 For each of these parts, the respective Test Tolerances as specified in this table shall apply. Test Tolerance for setting of the interferer power level: 0 dB
6.8.1 Modulation accuracy	0 %
6.8.2 Peak code domain error	1 dB
NOTE: Unless otherwise stated, the Test Tolerances are applied to the DUT Minimum Requirement. See Annex D.	

--- next changed section ---

6.5.2.5 Test Requirements

NOTE: If the Test Requirements below differ from the Minimum Requirements, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

6.5.2.5.1 3,84 Mcps TDD option

Each value of the power measured according to subclause ~~6.5.4.2~~6.5.2.4.2.1 shall be below – 32,3 dBm in the period from 32 chips to 84 chips after the burst and below – 77 dBm in the period where the Tx OFF power specification is applicable.

6.5.2.5.2 1,28 Mcps TDD option

Each value of the power measured according to subclause ~~6.5.4.2~~ 6.5.2.4.2.2 shall be below – 41,3 dBm in the period from 85 chips to 88 chips after the burst and below – 80 dBm in the period where the Tx OFF power specification is applicable. ~~the limits defined in figure 6.1A of subclause 6.5.2.2.~~

--- next changed section ---

Annex D (informative): Derivation of Test Requirements

The Test Requirements in this specification have been calculated by relaxing the Minimum Requirements of the core specification using the Test Tolerances defined in subclause 5.11. When the Test Tolerance is zero, the Test Requirement will be the same as the Minimum Requirement. When the Test Tolerance is non-zero, the Test Requirements will differ from the Minimum Requirements, and the formula used for this relaxation is given in tables D.1 to D.3

Note that a formula for applying Test Tolerances is provided for all tests, even those with a test tolerance of zero. This is necessary in the case that the Test System uncertainty is greater than that allowed in subclause 5.10. In this event, the excess error shall be subtracted from the defined test tolerance in order to generate the correct tightened Test Requirements as defined in subclause 5.12.

For example, a Test System having 0,9 dB accuracy for test 6.2 Maximum output power (which is 0,2 dB above the limit specified in subclause 5.10.2) would subtract 0,2 dB from the Test Tolerance of 0,7 dB defined in subclause 5.11.1. This new test tolerance of 0,5 dB would then be applied to the Minimum Requirement using the formula defined in Table D.1 to give a new range of ±2,5 dB of the manufacturer's rated output power.

For the case where an excess error of 0.2 dB exists, when applied to a test with a test tolerance of zero, the test tolerance used in the formula would be –0.2 dB.

Table D.1: Derivation of Test Requirements (Transmitter tests)

Test	Minimum Requirement in TS 25.105 (numbering of tables in the column below refers to TS 25.142)	Test Tolerance (TT)	Test Requirement in TS 25.142
6.2 Maximum output power	In normal conditions … within +2 dB and –2 dB of the manufacturer's rated output power In extreme conditions… within +2,5 dB and –2,5 dB of the manufacturer's rated output power	0,7 dB	Formula: Upper limit + TT Lower limit – TT In normal conditions … within +2,7 dB and –2,7 dB of the manufacturer's rated output power In extreme conditions… within +3,2 dB and –3,2 dB of the manufacturer's rated output power
6.3 Frequency stability	Frequency stability = ± 0,05 ppm	12 Hz	Formula: ± (frequency stability +TT) ± (0,05 ppm + 12 Hz)
6.4.2 Power control steps	single step: step size tolerance specified in table 6.3 ten steps: minimum and maximum average rate of change in mean power specified in table 6.3	single step: 0,1 dB ten steps: 0,3 dB	Formula: single step: ± (step size tolerance + TT) ten steps: maximum average rate + TT minimum average rate – TT 0,1 dB and 0,3 dB, respectively, applied as above to table 6.3
6.4.3 Power control dynamic range	range ≥ 30 dB	0,3 dB	Formula: Range – TT range ≥ 29,7 dB
6.4.4 Minimum output power	PRAT – 30 dB	0,7 dB	Formula : PRAT – 30 dB +TT PRAT – 29,3 dB
6.4.5 Primary CCPCH power	PCCPCH power tolerance defined in table 6.8	0,8 dB	Formula: ± (power tolerance + TT) 0,8 dB applied as above to table 6.8
6.4.6 Differential accuracy of Primary CCPCH power	Differential accuracy of PCCPCH power: ≤ ± 0,5 dB	0,1 dB	Formula: ± (PCCPCH tolerance + TT) ± 0,6 dB
6.5.1 Transmit OFF power	Tx OFF power limit < -79 dBm	2,0 dB	Formula: < Tx OFF power limit + TT < - 77 dBm

6.5.2 Transmit ON/OFF time mask	Tx power limit: 3,84 Mcps TDD option: < -33 dBm or –79 dBm, resp. 1,28 Mcps TDD option: < -42 dBm or –82 dBm, resp.	< -33 dBm: 0,7 dB < -79 dBm: 2,0 dB < -42 dBm: 0,7 dB < -82 dBm: 2,0 dB	Formula: < Tx power limit + TT for 3,84 Mcps TDD option: < -32,3 dBm or < - 77 dBm for 1,28 Mcps TDD option: < -41,3 dBm or < -80 dBm
6.6.1 Occupied bandwidth	occupied bandwidth limit = 5 MHz	0 kHz	Formula: Occupied bandwidth limit + TT Occupied bandwidth limit = 5 MHz
6.6.2.1 Spectrum emission mask	Maximum level defined in tables 6.13 to 6.16	1,5 dB	Formula: Maximum level + TT Add 1,5 dB to Maximum level entries in tables 6.13 to 6.16
6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)	minimum requirement: ACLR limit = 45 dB at 5 MHz ACLR limit = 55 dB at 10 MHz requirement in case of operation in proximity to TDD BS or FDD BS operating on an adjacent frequency: ACLR limit = 70 dB at 5 MHz ACLR limit = 70 dB at 10 MHz requirement in case of co-siting with TDD BS or FDD BS operating on an adjacent frequency ACLR limit = - 80 dBm at 5 MHz ACLR limit = - 80 dBm at 10 MHz	min. req. : 0,8 dB operation in proxim.: 4 dB co-siting: TBD	Formula: ACLR limit – TT min. requirement: ACLR limit = 44,2 dB at 5 MHz ACLR limit = 54,2 dB at 10 MHz operation in proximity: ACLR limit = 66 dB at 5 MHz ACLR limit = 66 dB at 10 MHz co-siting: TBD
6.6.3 Spurious emissions	maximum level defined in tables 6.29 to 6.37	0 dB	Formula: Maximum limit + TT add 0 dB to maximum levels in tables 6.29 to 6.37
6.7 Transmit intermodulation (interferer requirements) This tolerance applies to the stimulus and not the measurements defined in 6.6.2.1, 6.6.2.2 and 6.6.3.	Wanted signal level – interferer level = 30 dB	0 dB	Formula: Ratio + TT Wanted signal level – interferer level = 30 + 0 dB
6.8.1 Modulation accuracy	EVM limit = 12,5 %	0 %	Formula: EVM limit + TT EVM limit = 12,5 %
6.8.2 Peak code domain error	PCDE limit = - 28 dB	1 dB	Formula: PCDE limit + TT PCDE limit = - 27 dB

3GPP TSG RAN WG4 Meeting #23 **R4-020711**

Gyeongju, Korea 13th -17th May, 2002

CR-Form-v4

CHANGE REQUEST

⌘	**25.142**	**CR**	**122**	⌘	ev	**-**	⌘	Current version:	**4.4.0**	⌘

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

Title: ⌘	Correction of power terms and definitions - 1.28 Mcps TDD option		
Source: ⌘	RAN WG4		
Work item code: ⌘	LCRTDD-RF	***Date:*** ⌘	17/5/2002
Category: ⌘	**F** *Use one of the following categories:* **F** *(correction)* **A** *(corresponds to a correction in an earlier release)* **B** *(addition of feature),* **C** *(functional modification of feature)* **D** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.	***Release:*** ⌘	Rel-4 *Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change: ⌘	The existing requirements relating to power are incomplete, inconsistent and ambiguous. The proposed changes remove the possibility of misinterpreting the specification.
Summary of change: ⌘	6.4.2 Power control steps - transmitter output power and mean power replaced by code domain power 6.4.3 Power control dynamic range - output power replaced by code domain power 6.4.5 Primary CCPCH power – defined as code domain power, total power replaced by output power 6.5.1 Transmit OFF power - average power replaced by RRC filtered mean power 6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR) – changed to RRC filtered mean power terminology 7.2. Reference sensitivity level - defined as mean power 7.3. Receiver dynamic range - Wanted signal defined as mean power, wanted signal level given as –80 dBm (according formula: REFSENS + 30 dB : -110dBm+30 dB) 7.4 Adjacent Channel Selectivity (ACS) - Wanted and interfering signals defined as mean power, interferer defined as single code to match existing test. Missing “offset” added to Fuw definition. wanted signal level given as –104 dBm (according formula: REFSENS + 6 dB : -110dBm+6 dB)

		7.5 Blocking characteristics - Wanted and interfering signals defined as mean power, wanted signal level given as –104 dBm (according formula: REFSENS + 6 dB : -110dBm+6 dB) 7.6 Intermodulation characteristics - Wanted and interfering signals defined as mean power Annex B.2.2: Average power replaced by relative mean power
Consequences if not approved:	⌘	Existing power specifications are incomplete, inconsistent and ambiguous which will lead to different interpretation of power quantities (e.g. ACLR, P-CCPCH power, Interferer levels etc.). This will lead to inconsistent performance measurement results. Isolated impact statement: Correction of requirements. Correct interpretation of the existing specification will not affect implementations or system performance. However, incorrect interpretation may impact conformance test implementation and conformance test results.

Clauses affected:	⌘	6.4.2.4.2.2, 6.4.2.5.2, 6.4.3.4.2.2, 6.4.5.4.2.2, 6.4.6.4.2.2, 6.5.1.2.2, 6.5.2.4.2.2, 6.6.2.2.4.2.2, 7.2.2.2, 7.2.5.2, 7.3.2.2, 7.3.5.2, 7.4.2.2, 7.4.4.1.2, 7.5.2.2.1, 7.5.2.2.2, 7.6.2.2, Annex B2.2		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	Equivalent CRs in other Releases: CR123 cat. A to 25.142 v5.0.0		

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6.4.2.4.2 Procedure

6.4.2.4.2.1 3,84 Mcps TDD option

(1) Configure the BS transmitter to enable power control steps of size 1 dB.

(2) Set the BS tester to produce a sequence of TPC commands related to the active DPCH. This sequence shall be transmitted to the BS within the odd time slots TS i (receive time slots of the BS) and shall consist of a series of TPC commands with content "Increase Tx power", followed by a series of TPC commands with content "Decrease Tx power". Each of these series should be sufficiently long so that the output power of the active DPCH is controlled to reach its maximum and its minimum, respectively.

(3) Measure the power of the active DPCH over the 2464 active chips of each even time slot TS i (this excludes the guard period) , and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.

(4) Based on the measurement made in step (3), calculate the power control step sizes and the average rate of change per 10 steps.

(5) Configure the BS transmitter to enable power control steps of 2 dB and of 3 dB, respectively, and repeat steps (2) to (4).

6.4.2.4.2.2 1,28 Mcps TDD option

(1) Configure the BS transmitter to enable power control steps of size 1 dB.

(2) Set the BS tester to produce a sequence of TPC commands related to the active DPCH. This sequence shall be transmitted to the BS within the odd time slots TS i (receive time slots of the BS) and shall consist of a series of TPC commands with content "Increase Tx power", followed by a series of TPC commands with content "Decrease Tx power". Each of these series should be sufficiently long so that the ~~output~~ code domain power of the active DPCH is controlled to reach its maximum and its minimum, respectively.

(3) Measure the code domain power of the active DPCH over the 848 active chips of each even time slot TS i (this excludes the guard period) by applying the global in-channel Tx test method described in Annex C.~~, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.~~

(4) Based on the measurement made in step (3), calculate the power control step sizes and the average rate of change per 10 steps.

(5) Configure the BS transmitter to enable power control steps of 2 dB and of 3 dB, respectively, and repeat steps (2) to (4).

6.4.2.5 Test Requirements

NOTE: If the Test Requirements below differ from the Minimum Requirement, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

6.4.2.5.1 3,84 Mcps TDD option

For all measurements, the tolerance of the power control step sizes and the average rate of change per 10 steps shall be within the limits given in Table 6.5.

Table 6.5: Test Requirements for power control step size tolerance

Step size	Single step tolerance	Range of average rate of change in mean power per 10 steps	
		Minimum	maximum

1dB	± 0,6 dB	± 7,7 dB	± 12,3 dB
2dB	± 0,85 dB	± 15,7 dB	± 24,3 dB
3dB	± 1,1 dB	± 23,7 dB	± 36,3 dB

In case, the power control step size is set to 3 dB, the number of power control steps feasible within the power control dynamic range of the BS under test may be less than 10. In this case, the evaluation of the average rate of change in mean power shall be based on the number of power control steps actually feasible, and the permitted range of average rate of change shall be reduced compared to the values given in table 6.51 in proportion to the ratio (number of power control steps actually feasible /10).

EXAMPLE: If the number of power control steps actually feasible is 9, the minimum and maximum value of the range of average rate of change in mean power are given by ±21,3 dB and ±32,7 dB, respectively.

6.4.2.5.2 1,28 Mcps TDD option

For all measurements, the tolerance of the power control step sizes and the average rate of change per 10 steps shall be within the limits given in Table 6.~~3~~5.

In case, the power control step size is set to 3 dB, the number of power control steps feasible within the power control dynamic range of the BS under test may be less than 10. In this case, the evaluation of the average rate of change in ~~mean~~ code domain power shall be based on the number of power control steps actually feasible, and the permitted range of average rate of change shall be reduced compared to the values given in table 6.~~4A~~5 in proportion to the ratio (number of power control steps actually feasible /10).

EXAMPLE: If the number of power control steps actually feasible is 9, the minimum and maximum value of the range of average rate of change in ~~mean~~ code domain power are given by 21,6 dB and 32,4 dB, respectively.

--- next changed section ---

6.4.3.4.2 Procedure

6.4.3.4.2.1 3,84 Mcps TDD option

(1) Configure the BS transmitter to enable power control steps of size 1 dB.

(2) Set the BS tester to produce a sequence of TPC commands related to the active DPCH, with content "Increase Tx power". This sequence shall be sufficiently long so that the output power of the active DPCH is controlled to reach its maximum, and shall be transmitted to the BS within the odd time slots TS i (receive time slots of the BS).

(3) Measure the power of the active DPCH over the 2464 active chips of an even time slot TS i (this excludes the guard period), and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0{,}22$ and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.

(4) Set the BS tester to produce a sequence of TPC commands related to the active DPCH, with content "Decrease Tx power". This sequence shall be sufficiently long so that the output power of the active DPCH is controlled to reach its minimum, and shall be transmitted to the BS within the odd time slots TS i (receive time slots of the BS).

(5) Measure the power of the active DPCH over the 2464 active chips of an even time slot TS i (this excludes the guard period), and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0{,}22$ and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.

(6) Determine the power control dynamic range by calculating the difference between the maximum output power measured in step (3) and the minimum output power measured in step (5).

(7) Configure the BS transmitter to enable power control steps of 2 dB and of 3 dB, respectively, and repeat steps (2) to (6).

6.4.3.4.2.2 1,28 Mcps TDD option

(1) Configure the BS transmitter to enable power control steps of size 1 dB.

(2) Set the BS tester to produce a sequence of TPC commands related to the active DPCH, with content "Increase Tx power". This sequence shall be sufficiently long so that the ~~output~~ code domain power of the active DPCH is controlled to reach its maximum, and shall be transmitted to the BS within the receive time slots TS i of the BS.

(3) Measure the code domain power of the active DPCH over the 848 active chips of an receive time slot TS i (this excludes the guard period) by applying the global in-channel Tx test method described in Annex C.~~, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.~~

(4) Set the BS tester to produce a sequence of TPC commands related to the active DPCH, with content "Decrease Tx power". This sequence shall be sufficiently long so that the ~~output~~ code domain power of the active DPCH is controlled to reach its minimum, and shall be transmitted to the BS within the receive time slots TS i of the BS.

(5) Measure the code domain power of the active DPCH over the 848 active chips of a receive time slot TS i (this excludes the guard period) by applying the global in-channel Tx test method described in Annex C.~~, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.~~

(6) Determine the power control dynamic range by calculating the difference between the maximum ~~output~~ code domain power measured in step (3) and the minimum ~~output~~ code domain power measured in step (5).

(7) Configure the BS transmitter to enable power control steps of 2 dB and of 3 dB, respectively, and repeat steps (2) to (6).

--- next changed section ---

6.4.5.4.2 Procedure

6.4.5.4.2.1 3,84 Mcps TDD option

(1) Measure the PCCPCH power in TS 0 and TS 8 by applying the global in-channel Tx test method described in Annex C.

(2) Reduce the base station output power by 2 dB, 5 dB and 13 dB, without changing the relative powers of the PCCPCH and the DPCHs, and repeat step (1) for each output power setting.

6.4.5.4.2.2 1,28 Mcps TDD option

(1) Measure the PCCPCH code domain power in TS 0 by applying the global in-channel Tx test method described in Annex C.

(2) Reduce the base station output power by 2 dB, 5 dB and 13 dB, without changing the relative powers of the PCCPCH and the DPCHs, and repeat step (1) for each output power setting.

--- next changed section ---

6.4.6.4.2 Procedure

6.4.6.4.2.1 3,84 Mcps TDD option

1) Measure the PCCPCH power in TS 0 and TS 8 of consecutive frames by applying the global in-channel Tx test method described in Annex C.

2) Calculate the differential accuracy of the Primary CCPCH power by taking the the difference between the PCCPCH power measurement results of consecutive frames.

6.4.6.4.2.2 1,28 Mcps TDD option

1) Measure the PCCPCH code domain power in TS 0 of consecutive frames by applying the global in-channel Tx test method described in Annex C.
2) Calculate the differential accuracy of the Primary CCPCH power by taking the the difference between the PCCPCH power measurement results of consecutive frames.

--- next changed section ---

6.5.1.2 Minimum Requirements

6.5.1.2.1 3,84 Mcps TDD option

The transmit OFF power shall be less than –79 dBm measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll-off α = 0,22 and a bandwidth equal to the chip rate.

6.5.1.2.2 1,28 Mcps TDD option

The transmit OFF power shall be less than –82 dBm~~ measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll-off α = 0,22 and a bandwidth equal to the chip rate~~.

The normative reference for this requirement is TS 25.105 [1] subclause 6.5.1.

--- next changed section ---

6.5.2.4.2 Procedure

6.5.2.4.2.1 3,84 Mcps TDD option

(1) Measure the power of the BS output signal chipwise (i.e. averaged over time intervals of one chip duration) over the period starting 65 chips before the start of the odd time slots TS i (receive time slots of the BS), and ending 27 chips before the next even time slot (transmit time slot of the BS) starts, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. If the power measuring equipment is based on signal sampling, the sampling theorem shall be met. In this case, the power is determined by calculating the RMS value of the signal samples taken at the measurement filter output over one chip duration.

6.5.2.4.2.2 1,28 Mcps TDD option

(1) Measure the RRC filtered mean power of the BS output signal chipwise (i.e. averaged over time intervals of one chip duration) over the transmit off power period starting 11 chips before the start of the receive time slot TS i = UpPCH, and ending 8 chips before the next transmit time slot TS i=4 starts.~~, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. If the power measuring equipment is based on signal sampling, the sampling theorem shall be met. In this case, the power is determined by calculating the RMS value of the signal samples taken at the measurement filter output over one chip duration.~~

--- next changed section ---

6.6.2.2.4.2 Procedure

6.6.2.2.4.2.1 3,84 Mcps TDD option

1) Measure the average power centered on the lowest assigned channel frequency over the 2464 active chips of the even time slots TS i (this excludes the guard period), and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0{,}22$ and a bandwidth equal to the chip rate.

2) Average over TBD time slots.

3) Measure the average power at the first lower adjacent RF channel (center frequency 5 MHz below the lowest assigned channel frequency of the transmitted signal) over the useful part of the burst within the even time slots TS i (this excludes the guard period), and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0{,}22$ and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken with adherence to the sampling theorem.

4) Average over TBD time slots.

5) Calculate the ACLR by the ratio

ACLR = average acc. to (2) / average interference power acc. to (4).

6) Repeat steps (3), (4) and (5) for the second lower adjacent RF channel (center frequency 10 MHz below the lowest assigned channel frequency of the transmitted signal).

7) In case of a multi-carrier Bs, repeat steps (1) and (2) for the highest assigned channel frequency. Otherwise, use the result obtained in step (2) above for further calculation in step (10).

8) Measure the average power at the first higher adjacent RF channel (center frequency 5 MHz above the highest assigned channel frequency of the transmitted signal) over the useful part of the burst within the even time slots TS i (this excludes the guard period), and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0{,}22$ and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken with adherence to the sampling theorem.

9) Average over TBD time slots.

10) Calculate the ACLR by the ratio

ACLR = average power acc. to (7) / average interference power acc. to (9).

11) Repeat steps (8) to (10) for the second upper adjacent RF channel (center frequency 10 MHz above the highest assigned channel frequency of the transmitted signal).

6.6.2.2.4.2.2 1,28 Mcps TDD option

1) Measure the ~~average~~ RRC filtered mean power centered on the lowest assigned channel frequency over the 848 active chips of the transmit time slots TS i (this excludes the guard period)~~, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate~~.

2) Average over TBD time slots.

3) Measure the ~~average~~ RRC filtered mean power at the first lower adjacent RF channel (center frequency 1,6 MHz below the assigned channel frequency of the transmitted signal) over the useful part of the burst within the transmit time slots TS i (this excludes the guard period)~~, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken with adherence to the sampling theorem~~.

4) Average over TBD time slots.

5) Calculate the ACLR by the ratio:

ACLR = average power acc. to (2) / average interference power acc. to (4).

6) Repeat steps (3), (4) and (5) for the second lower adjacent RF channel (center frequency 3,2 MHz below the lowest assigned channel frequency of the transmitted signal) and also for the first and second upper adjacent RF channel (center frequency 1,6 MHz and 3,2 MHz above the assigned channel frequency of the transmitted signal, respectively).

7) In case of a multi-carrier BS, repeat steps (1) and 2 for the highest assigned channel frequency. Otherwise, use the result obtained in step (2) above for further calculation in step (10).

8) Measure the ~~average~~ RRC filtered mean power at the first higher adjacent RF channel (center frequency 1,6 MHz above the highest assigned channel frequency of the transmitted signal) over the useful part of the burst within the transmit time slots TS i (this excludes the guard period)~~, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken with adherence to the sampling theorem~~.

9) Average over TBD time slots.

10) Calculate the ACLR by the ratio

ACLR = average power acc. to (7) / average interference power acc. to (9).

11) Repeat steps (8) to (10) for the second upper adjacent RF channel (center frequency 3,2 MHz above the highest assigned channel frequency of the transmitted signal).

--- next changed section ---

7.2.2.2 1,28 Mcps option

~~For~~ Using the reference measurement channel specified in Annex A.2.1.2, the reference sensitivity level and performance of the BS shall be as specified in table 7.1A~~ below~~.

Table 7.1A: BS reference sensitivity level~~s~~ (1,28 Mcps option)

Reference measurement channel ~~D~~data rate	BS reference sensitivity level ~~(dBm)~~	BER
12,2 kbps	-110 dBm	BER shall not exceed 0,001

The normative reference for this requirement is TS 25.105 [1] subclause 7.2.1.2.

--- next changed section ---

7.2.5.2 1,28 Mcps TDD option

For any BS Rx port tested, the measured BER at the Test Requirement of the BS reference sensitivity level specified in table 7.2A shall not exceed 0,001.

Table 7.2A: Test Requirement for BS reference sensitivity level for 1,28 Mcps option

Reference measurement channel ~~D~~data rate	BS reference sensitivity level ~~(dBm)~~	BER
12,2 kbps	-109,3 dBm	BER shall not exceed 0,001

--- next changed section ---

7.3.2.2 1,28 Mcps TDD option

The BER shall not exceed 0,001 for the parameters specified in table 7.3A.

Table 7.3A: Dynamic Range for 1,28 Mcps TDD

Parameter	Level	Unit
Reference measurement channel ~~D~~data rate	12,2	kbit/s
Wanted signal mean power	~~<REFSENS> + 30 dB~~ –80	dBm
Interfering AWGN signal	-76	dBm/1,28 MHz

The normative reference for this requirement is TS 25.105 [1] subclause 7.3.1.2.

--- next changed section ---

7.3.5.2 1,28 Mcps TDD option

For any BS Rx port tested, the measured BER shall not exceed 0,001 for the parameters specified in table 7.4A.

Table 7.4A: Test Requirements for Dynamic Range for 1,28 Mcps TDD option

Parameter	Level	Unit
Reference measurement channel ~~D~~data rate	12,2	kbit/s
Wanted signal mean power	~~<REFSENS> + 31,2 dB~~ –79,8	dBm
Interfering AWGN signal	-76	dBm/1,28 MHz

--- next changed section ---

7.4.2.2 1,28 Mcps TDD option

The BER, measured on the wanted signal in the presence of an interfering signal, shall not exceed 0,001 for the parameters specified in table 7.5A.

Table 7.5A: Parameters of the wanted signal and the interfering signal for ACS testing for 1,28 Mcps TDD

Parameter	Level	Unit
Reference measurement channel ~~D~~data rate	12,2	kbit/s
Wanted signal mean power	~~Reference sensitivity level + 6 Db~~ –104	dBm
Interfering signal mean power	-55	dBm
Fuw (modulated)	1,6	MHz
NOTE: Fuw is the frequency offset of the unwanted interfering signal from the assigned channel frequency of the wanted signal.		

The normative reference for this requirement is TS 25.105 [1] subclause 7.4.1.2.

--- next changed section ---

7.4.4.1.2 1,28 Mcps TDD option

(1) Connect an UE simulator operating at the assigned channel frequency of the wanted signal and a signal generator used to produce the interfering signal in the adjacent channel to the antenna connector of one Rx port.

(2) Terminate or disable any other Rx port not under test.

(3) Start transmission from the BS tester to the BS using the UL reference measurement channel (12.2 kbps) defined in Annex A.2.1. The level of the UE simulator signal measured at the BS antenna connector shall be adjusted to the value specified in table 7.5A.

(4) Set the signal generator to produce an interfering signal that is equivalent to a continuous wideband CDMA signal with one code of chip frequency 1,28 Mchip/s, filtered by an RRC transmit pulse-shaping filter with roll-off α = 0,22. The mean power level of the interfering signal measured at the BS antenna connector shall be adjusted to the value specified in table 7.5A.

--- next changed section ---

7.5.2.2 1,28 Mcps TDD option

7.5.2.2.1 General requirements

The static reference performance as specified in clause 7.2 shall be met with a wanted and an interfering signal coupled to the BS antenna input using the parameters specified in tables 7.6A,7.7A or 7.8A, respectively.

Table 7.6A: Blocking requirements for operating bands defined in subclause 4.2 a) for 1,28 Mcps TDD

Center frequency of interfering signal	Interfering signal ~~level~~ mean power	Wanted signal ~~level~~ mean power	Minimum offset of interfering signal	Type of interfering signal
1900 – 1920 MHz, 2010 – 2025 MHz	-40 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	3.2 MHz	1,28 Mcps TDD signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-40 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	3.2 MHz	1,28 Mcps TDD signal with one code
1920 – 1980 MHz	-40 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	3.2 MHz	1,28 Mcps TDD signal with one code
1 - 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz	-15 dBm	~~<REFSENS> + 6 dB~~	—	CW carrier

Table 7.7A: Blocking requirements for operating bands defined in subclause 4.2 b)for 1,28 Mcps TDD

Center frequency of interfering signal	Interfering signal ~~level~~ mean power	Wanted signal ~~level~~ mean power	Minimum offset of interfering signal	Type of interfering signal
1850 – 1990 MHz	-40 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	3.2 MHz	1,28 Mcps TDD signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-40 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	3.2 MHz	1,28 Mcps TDD signal with one code
1 – 1830 MHz, 2010 – 12750 MHz	-15 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	—	CW carrier

Table 7.8A: Blocking requirements for operating bands defined in subclause 4.2 c)for 1,28 Mcps TDD

Center frequency of interfering signal	Interfering signal ~~level~~ mean power	Wanted signal ~~level~~ mean power	Minimum offset of interfering signal	Type of interfering signal
1910 – 1930 MHz	-40 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	3.2 MHz	1,28 Mcps TDD signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-40 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	3.2 MHz	1,28 Mcps TDD signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	—	CW carrier

The normative reference for this requirement is TS 25.105 [1] subclause 7.5.0.2.

7.5.2.2.2 Co-location with GSM900 and/or DCS 1800

This additional blocking requirement may be applied for the protection of TDD BS receivers when GSM900 and/or DCS1800 BTS are co-located with UTRA TDD BS.

The blocking performance requirement applies to interfering signals with center frequency within the ranges specified in the tables below, using a 1MHz step size.

In case this additional blocking requirement is applied, the static reference performance as specified in clause 7.2.1 shall be met with a wanted and an interfering signal coupled to BS antenna input using the following parameters.

Table 7.9A: Additional blocking requirements for operating bands defined in 4.2(a) when co-located with GSM900

Centre Frequency of Interfering Signal	Interfering Signal ~~Level~~ mean power	Wanted Signal ~~Level~~ mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
921 – 960 MHz	+16 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	—	CW carrier

Table 7.10A: Additional blocking requirements for operating bands defined in 4.2(a) when co-located with DCS1800

Center Frequency of Interfering Signal	Interfering Signal ~~Level~~ mean power	Wanted Signal ~~Level~~ mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
1805 – 1880 MHz	+16 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	—	CW carrier

The normative reference for this requirement is TS 25.105 [1] subclause 7.5.1.2.

--- next changed section ---

7.6.2.2 1,28 Mcps TDD option

The static reference performance as specified in clause 7.2 should be met when the following signals are coupled to the BS antenna input.

- A wanted signal at the assigned channel frequency, with mean power 6 dB above the static reference level.
- Two interfering signals with the parameters specified in table 7.11A.

Table 7.11A: Parameters of the interfering signals for intermodulation characteristics testing for 1,28 Mcps TDD

Interfering Signal ~~Level~~ mean power	Offset	Type of Interfering Signal
- 48 dBm	3,2 MHz	CW signal
- 48 dBm	6,4 MHz	1,28 Mcps TDD signal with one code

The normative reference for this requirement is TS 25.105 [1] subclause 7.6.1.2.

--- next changed section ---

B.2.2 1,28 Mcps TDD option

Table B2.2 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum, defined as:

(CLASS) $$S(f) \propto 1/(1-(f/f_D)^2)^{0.5}$$ for f ∈ $-f_d, f_d$.

Table B2: Propagation Conditions for Multi path Fading Environments for 1,28 Mcps TDD

Case 1, speed 3km/h		Case 2, speed 3km/h		Case 3, speed 120km/h	
Relative Delay [ns]	~~Average~~ Relative Mean Power [dB]	Relative Delay [ns]	~~Average~~ Relative Mean Power [dB]	Relative Delay [ns]	~~Average~~ Relative Mean Power [dB]
0	0	0	0	0	0
2928	-10	2928	0	781	-3
		12000	0	1563	-6
				2344	-9

CR-Form-v4

CHANGE REQUEST

⌘ **25.142 CR 123** ⌘ ev **-** ⌘ Current version: **5.0.0** ⌘

*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 [X] Core Network [ ]

Title: ⌘	Correction of power terms and definitions - 1.28 Mcps TDD option		
Source: ⌘	RAN WG4		
Work item code: ⌘	LCRTDD-RF	***Date:*** ⌘	17/5/2002
Category: ⌘	**A** *Use one of the following categories:* **F** *(correction)* **A** *(corresponds to a correction in an earlier release)* **B** *(addition of feature),* **C** *(functional modification of feature)* **D** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.	***Release:*** ⌘	Rel-5 *Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change: ⌘	The existing requirements relating to power are incomplete, inconsistent and ambiguous. The proposed changes remove the possibility of misinterpreting the specification.
Summary of change: ⌘	6.4.2 Power control steps - transmitter output power and mean power replaced by code domain power 6.4.3 Power control dynamic range - output power replaced by code domain power 6.4.5 Primary CCPCH power – defined as code domain power, total power replaced by output power 6.5.1 Transmit OFF power - average power replaced by RRC filtered mean power 6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR) – changed to RRC filtered mean power terminology 7.2. Reference sensitivity level - defined as mean power 7.3. Receiver dynamic range - Wanted signal defined as mean power, wanted signal level given as –80 dBm (according formula: REFSENS + 30 dB : -110dBm+30 dB) 7.4 Adjacent Channel Selectivity (ACS) - Wanted and interfering signals defined as mean power, interferer defined as single code to match existing test. Missing “offset” added to Fuw definition. wanted signal level given as –104 dBm (according formula: REFSENS + 6 dB : -110dBm+6 dB)

		7.5 Blocking characteristics - Wanted and interfering signals defined as mean power, wanted signal level given as –104 dBm (according formula: REFSENS + 6 dB : -110dBm+6 dB) 7.6 Intermodulation characteristics - Wanted and interfering signals defined as mean power Annex B.2.2: Average power replaced by relative mean power
Consequences if not approved:	⌘	Existing power specifications are incomplete, inconsistent and ambiguous which will lead to different interpretation of power quantities (e.g. ACLR, P-CCPCH power, Interferer levels etc.). This will lead to inconsistent performance measurement results. Isolated impact statement: Correction of requirements. Correct interpretation of the existing specification will not affect implementations or system performance. However, incorrect interpretation may impact conformance test implementation and conformance test results.

Clauses affected:	⌘	6.4.2.4.2.2, 6.4.2.5.2, 6.4.3.4.2.2, 6.4.5.4.2.2, 6.4.6.4.2.2, 6.5.1.2.2, 6.5.2.4.2.2, 6.6.2.2.4.2.2, 7.2.2.2, 7.2.5.2, 7.3.2.2, 7.3.5.2, 7.4.2.2, 7.4.4.1.2, 7.5.2.2.1, 7.5.2.2.2, 7.6.2.2, Annex B2.2	
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications	
Other comments:	⌘	Equivalent CRs in other Releases: CR122 cat. F to 25.142 v4.4.0	

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2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

6.4.2.4.2 Procedure

6.4.2.4.2.1 3,84 Mcps TDD option

(1) Configure the BS transmitter to enable power control steps of size 1 dB.

(2) Set the BS tester to produce a sequence of TPC commands related to the active DPCH. This sequence shall be transmitted to the BS within the odd time slots TS i (receive time slots of the BS) and shall consist of a series of TPC commands with content "Increase Tx power", followed by a series of TPC commands with content "Decrease Tx power". Each of these series should be sufficiently long so that the output power of the active DPCH is controlled to reach its maximum and its minimum, respectively.

(3) Measure the power of the active DPCH over the 2464 active chips of each even time slot TS i (this excludes the guard period) , and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.

(4) Based on the measurement made in step (3), calculate the power control step sizes and the average rate of change per 10 steps.

(5) Configure the BS transmitter to enable power control steps of 2 dB and of 3 dB, respectively, and repeat steps (2) to (4).

6.4.2.4.2.2 1,28 Mcps TDD option

(1) Configure the BS transmitter to enable power control steps of size 1 dB.

(2) Set the BS tester to produce a sequence of TPC commands related to the active DPCH. This sequence shall be transmitted to the BS within the odd time slots TS i (receive time slots of the BS) and shall consist of a series of TPC commands with content "Increase Tx power", followed by a series of TPC commands with content "Decrease Tx power". Each of these series should be sufficiently long so that the ~~output~~ code domain power of the active DPCH is controlled to reach its maximum and its minimum, respectively.

(3) Measure the code domain power of the active DPCH over the 848 active chips of each even time slot TS i (this excludes the guard period) by applying the global in-channel Tx test method described in Annex C. ~~, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.~~

(4) Based on the measurement made in step (3), calculate the power control step sizes and the average rate of change per 10 steps.

(5) Configure the BS transmitter to enable power control steps of 2 dB and of 3 dB, respectively, and repeat steps (2) to (4).

6.4.2.5 Test Requirements

NOTE: If the Test Requirements below differ from the Minimum Requirement, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

6.4.2.5.1 3,84 Mcps TDD option

For all measurements, the tolerance of the power control step sizes and the average rate of change per 10 steps shall be within the limits given in Table 6.5.

Table 6.5: Test Requirements for power control step size tolerance

Step size	Single step tolerance	Range of average rate of change in mean power per 10 steps	
		Minimum	maximum

1dB	± 0,6 dB	± 7,7 dB	± 12,3 dB
2dB	± 0,85 dB	± 15,7 dB	± 24,3 dB
3dB	± 1,1 dB	± 23,7 dB	± 36,3 dB

In case, the power control step size is set to 3 dB, the number of power control steps feasible within the power control dynamic range of the BS under test may be less than 10. In this case, the evaluation of the average rate of change in mean power shall be based on the number of power control steps actually feasible, and the permitted range of average rate of change shall be reduced compared to the values given in table 6.51 in proportion to the ratio (number of power control steps actually feasible /10).

EXAMPLE: If the number of power control steps actually feasible is 9, the minimum and maximum value of the range of average rate of change in mean power are given by ±21,3 dB and ±32,7 dB, respectively.

6.4.2.5.2 1,28 Mcps TDD option

For all measurements, the tolerance of the power control step sizes and the average rate of change per 10 steps shall be within the limits given in Table 6.~~3~~5.

In case, the power control step size is set to 3 dB, the number of power control steps feasible within the power control dynamic range of the BS under test may be less than 10. In this case, the evaluation of the average rate of change in ~~mean~~ code domain power shall be based on the number of power control steps actually feasible, and the permitted range of average rate of change shall be reduced compared to the values given in table 6.~~4A~~5 in proportion to the ratio (number of power control steps actually feasible /10).

EXAMPLE: If the number of power control steps actually feasible is 9, the minimum and maximum value of the range of average rate of change in ~~mean~~ code domain power are given by 21,6 dB and 32,4 dB, respectively.

--- next changed section ---

6.4.3.4.2 Procedure

6.4.3.4.2.1 3,84 Mcps TDD option

(1) Configure the BS transmitter to enable power control steps of size 1 dB.

(2) Set the BS tester to produce a sequence of TPC commands related to the active DPCH, with content "Increase Tx power". This sequence shall be sufficiently long so that the output power of the active DPCH is controlled to reach its maximum, and shall be transmitted to the BS within the odd time slots TS i (receive time slots of the BS).

(3) Measure the power of the active DPCH over the 2464 active chips of an even time slot TS i (this excludes the guard period), and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.

(4) Set the BS tester to produce a sequence of TPC commands related to the active DPCH, with content "Decrease Tx power". This sequence shall be sufficiently long so that the output power of the active DPCH is controlled to reach its minimum, and shall be transmitted to the BS within the odd time slots TS i (receive time slots of the BS).

(5) Measure the power of the active DPCH over the 2464 active chips of an even time slot TS i (this excludes the guard period), and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.

(6) Determine the power control dynamic range by calculating the difference between the maximum output power measured in step (3) and the minimum output power measured in step (5).

(7) Configure the BS transmitter to enable power control steps of 2 dB and of 3 dB, respectively, and repeat steps (2) to (6).

6.4.3.4.2.2 1,28 Mcps TDD option

(1) Configure the BS transmitter to enable power control steps of size 1 dB.

(2) Set the BS tester to produce a sequence of TPC commands related to the active DPCH, with content "Increase Tx power". This sequence shall be sufficiently long so that the ~~output~~ code domain power of the active DPCH is controlled to reach its maximum, and shall be transmitted to the BS within the receive time slots TS i of the BS.

(3) Measure the code domain power of the active DPCH over the 848 active chips of an receive time slot TS i (this excludes the guard period) by applying the global in-channel Tx test method described in Annex C.~~, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.~~

(4) Set the BS tester to produce a sequence of TPC commands related to the active DPCH, with content "Decrease Tx power". This sequence shall be sufficiently long so that the ~~output~~ code domain power of the active DPCH is controlled to reach its minimum, and shall be transmitted to the BS within the receive time slots TS i of the BS.

(5) Measure the code domain power of the active DPCH over the 848 active chips of a receive time slot TS i (this excludes the guard period) by applying the global in-channel Tx test method described in Annex C.~~, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.~~

(6) Determine the power control dynamic range by calculating the difference between the maximum ~~output~~ code domain power measured in step (3) and the minimum ~~output~~ code domain power measured in step (5).

(7) Configure the BS transmitter to enable power control steps of 2 dB and of 3 dB, respectively, and repeat steps (2) to (6).

--- next changed section ---

6.4.5.4.2 Procedure

6.4.5.4.2.1 3,84 Mcps TDD option

(1) Measure the PCCPCH power in TS 0 and TS 8 by applying the global in-channel Tx test method described in Annex C.

(2) Reduce the base station output power by 2 dB, 5 dB and 13 dB, without changing the relative powers of the PCCPCH and the DPCHs, and repeat step (1) for each output power setting.

6.4.5.4.2.2 1,28 Mcps TDD option

(1) Measure the PCCPCH code domain power in TS 0 by applying the global in-channel Tx test method described in Annex C.

(2) Reduce the base station output power by 2 dB, 5 dB and 13 dB, without changing the relative powers of the PCCPCH and the DPCHs, and repeat step (1) for each output power setting.

--- next changed section ---

6.4.6.4.2 Procedure

6.4.6.4.2.1 3,84 Mcps TDD option

1) Measure the PCCPCH power in TS 0 and TS 8 of consecutive frames by applying the global in-channel Tx test method described in Annex C.

2) Calculate the differential accuracy of the Primary CCPCH power by taking the the difference between the PCCPCH power measurement results of consecutive frames.

6.4.6.4.2.2 1,28 Mcps TDD option

1) Measure the PCCPCH code domain power in TS 0 of consecutive frames by applying the global in-channel Tx test method described in Annex C.

2) Calculate the differential accuracy of the Primary CCPCH power by taking the the difference between the PCCPCH power measurement results of consecutive frames.

--- next changed section ---

6.5.1.2 Minimum Requirements

6.5.1.2.1 3,84 Mcps TDD option

The transmit OFF power shall be less than –79 dBm measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll-off α = 0,22 and a bandwidth equal to the chip rate.

6.5.1.2.2 1,28 Mcps TDD option

The transmit OFF power shall be less than –82 dBm~~ measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll-off α = 0,22 and a bandwidth equal to the chip rate~~.

The normative reference for this requirement is TS 25.105 [1] subclause 6.5.1.

--- next changed section ---

6.5.2.4.2 Procedure

6.5.2.4.2.1 3,84 Mcps TDD option

(1) Measure the power of the BS output signal chipwise (i.e. averaged over time intervals of one chip duration) over the period starting 65 chips before the start of the odd time slots TS i (receive time slots of the BS), and ending 27 chips before the next even time slot (transmit time slot of the BS) starts, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. If the power measuring equipment is based on signal sampling, the sampling theorem shall be met. In this case, the power is determined by calculating the RMS value of the signal samples taken at the measurement filter output over one chip duration.

6.5.2.4.2.2 1,28 Mcps TDD option

(1) Measure the RRC filtered mean power of the BS output signal chipwise (i.e. averaged over time intervals of one chip duration) over the transmit off power period starting 11 chips before the start of the receive time slot TS i = UpPCH, and ending 8 chips before the next transmit time slot TS i=4 starts.~~, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. If the power measuring equipment is based on signal sampling, the sampling theorem shall be met. In this case, the power is determined by calculating the RMS value of the signal samples taken at the measurement filter output over one chip duration.~~

--- next changed section ---

6.6.2.2.4.2 Procedure

6.6.2.2.4.2.1 3,84 Mcps TDD option

1) Measure the average power centered on the lowest assigned channel frequency over the 2464 active chips of the even time slots TS i (this excludes the guard period), and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0{,}22$ and a bandwidth equal to the chip rate.

2) Average over TBD time slots.

3) Measure the average power at the first lower adjacent RF channel (center frequency 5 MHz below the lowest assigned channel frequency of the transmitted signal) over the useful part of the burst within the even time slots TS i (this excludes the guard period), and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0{,}22$ and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken with adherence to the sampling theorem.

4) Average over TBD time slots.

5) Calculate the ACLR by the ratio

ACLR = average acc. to (2) / average interference power acc. to (4).

6) Repeat steps (3), (4) and (5) for the second lower adjacent RF channel (center frequency 10 MHz below the lowest assigned channel frequency of the transmitted signal).

7) In case of a multi-carrier Bs, repeat steps (1) and (2) for the highest assigned channel frequency. Otherwise, use the result obtained in step (2) above for further calculation in step (10).

8) Measure the average power at the first higher adjacent RF channel (center frequency 5 MHz above the highest assigned channel frequency of the transmitted signal) over the useful part of the burst within the even time slots TS i (this excludes the guard period), and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0{,}22$ and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken with adherence to the sampling theorem.

9) Average over TBD time slots.

10) Calculate the ACLR by the ratio

ACLR = average power acc. to (7) / average interference power acc. to (9).

11) Repeat steps (8) to (10) for the second upper adjacent RF channel (center frequency 10 MHz above the highest assigned channel frequency of the transmitted signal).

6.6.2.2.4.2.2 1,28 Mcps TDD option

1) Measure the ~~average~~ RRC filtered mean power centered on the lowest assigned channel frequency over the 848 active chips of the transmit time slots TS i (this excludes the guard period)~~, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate~~.

2) Average over TBD time slots.

3) Measure the ~~average~~ RRC filtered mean power at the first lower adjacent RF channel (center frequency 1,6 MHz below the assigned channel frequency of the transmitted signal) over the useful part of the burst within the transmit time slots TS i (this excludes the guard period)~~, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken with adherence to the sampling theorem~~.

4) Average over TBD time slots.

5) Calculate the ACLR by the ratio:

ACLR = average power acc. to (2) / average interference power acc. to (4).

6) Repeat steps (3), (4) and (5) for the second lower adjacent RF channel (center frequency 3,2 MHz below the lowest assigned channel frequency of the transmitted signal) and also for the first and second upper adjacent RF channel (center frequency 1,6 MHz and 3,2 MHz above the assigned channel frequency of the transmitted signal, respectively).

7) In case of a multi-carrier BS, repeat steps (1) and 2 for the highest assigned channel frequency. Otherwise, use the result obtained in step (2) above for further calculation in step (10).

8) Measure the ~~average~~ RRC filtered mean power at the first higher adjacent RF channel (center frequency 1,6 MHz above the highest assigned channel frequency of the transmitted signal) over the useful part of the burst within the transmit time slots TS i (this excludes the guard period)~~, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken with adherence to the sampling theorem~~.

9) Average over TBD time slots.

10) Calculate the ACLR by the ratio

ACLR = average power acc. to (7) / average interference power acc. to (9).

11) Repeat steps (8) to (10) for the second upper adjacent RF channel (center frequency 3,2 MHz above the highest assigned channel frequency of the transmitted signal).

--- next changed section ---

7.2.2.2 1,28 Mcps option

~~For~~ Using the reference measurement channel specified in Annex A.2.1.2, the reference sensitivity level and performance of the BS shall be as specified in table 7.1A~~ below~~.

Table 7.1A: BS reference sensitivity level~~s~~ (1,28 Mcps option)

Reference measurement channel ~~D~~data rate	BS reference sensitivity level ~~(dBm)~~	BER
12,2 kbps	-110 dBm	BER shall not exceed 0,001

The normative reference for this requirement is TS 25.105 [1] subclause 7.2.1.2.

--- next changed section ---

7.2.5.2 1,28 Mcps TDD option

For any BS Rx port tested, the measured BER at the Test Requirement of the BS reference sensitivity level specified in table 7.2A shall not exceed 0,001.

Table 7.2A: Test Requirement for BS reference sensitivity level for 1,28 Mcps option

Reference measurement channel ~~D~~data rate	BS reference sensitivity level ~~(dBm)~~	BER
12,2 kbps	-109,3 dBm	BER shall not exceed 0,001

--- next changed section ---

7.3.2.2 1,28 Mcps TDD option

The BER shall not exceed 0,001 for the parameters specified in table 7.3A.

Table 7.3A: Dynamic Range for 1,28 Mcps TDD

Parameter	Level	Unit
Reference measurement channel ~~D~~data rate	12,2	kbit/s
Wanted signal mean power	~~<REFSENS> + 30 dB~~ –80	dBm
Interfering AWGN signal	-76	dBm/1,28 MHz

The normative reference for this requirement is TS 25.105 [1] subclause 7.3.1.2.

--- next changed section ---

7.3.5.2 1,28 Mcps TDD option

For any BS Rx port tested, the measured BER shall not exceed 0,001 for the parameters specified in table 7.4A.

Table 7.4A: Test Requirements for Dynamic Range for 1,28 Mcps TDD option

Parameter	Level	Unit
Reference measurement channel ~~D~~data rate	12,2	kbit/s
Wanted signal mean power	~~<REFSENS> + 31,2 dB~~ –79,8	dBm
Interfering AWGN signal	-76	dBm/1,28 MHz

--- next changed section ---

7.4.2.2 1,28 Mcps TDD option

The BER, measured on the wanted signal in the presence of an interfering signal, shall not exceed 0,001 for the parameters specified in table 7.5A.

Table 7.5A: Parameters of the wanted signal and the interfering signal for ACS testing for 1,28 Mcps TDD

Parameter	Level	Unit
Reference measurement channel ~~D~~data rate	12,2	kbit/s
Wanted signal mean power	~~Reference sensitivity level + 6 Db~~ –104	dBm
Interfering signal mean power	-55	dBm
Fuw (modulated)	1,6	MHz
NOTE: Fuw is the frequency offset of the unwanted interfering signal from the assigned channel frequency of the wanted signal.		

The normative reference for this requirement is TS 25.105 [1] subclause 7.4.1.2.

--- next changed section ---

7.4.4.1.2 1,28 Mcps TDD option

(1) Connect an UE simulator operating at the assigned channel frequency of the wanted signal and a signal generator used to produce the interfering signal in the adjacent channel to the antenna connector of one Rx port.

(2) Terminate or disable any other Rx port not under test.

(3) Start transmission from the BS tester to the BS using the UL reference measurement channel (12.2 kbps) defined in Annex A.2.1. The level of the UE simulator signal measured at the BS antenna connector shall be adjusted to the value specified in table 7.5A.

(4) Set the signal generator to produce an interfering signal that is equivalent to a continuous wideband CDMA signal with one code of chip frequency 1,28 Mchip/s, filtered by an RRC transmit pulse-shaping filter with roll-off α = 0,22. The mean power level of the interfering signal measured at the BS antenna connector shall be adjusted to the value specified in table 7.5A.

--- next changed section ---

7.5.2.2 1,28 Mcps TDD option

7.5.2.2.1 General requirements

The static reference performance as specified in clause 7.2 shall be met with a wanted and an interfering signal coupled to the BS antenna input using the parameters specified in tables 7.6A,7.7A or 7.8A, respectively.

Table 7.6A: Blocking requirements for operating bands defined in subclause 4.2 a) for 1,28 Mcps TDD

Center frequency of interfering signal	Interfering signal ~~level~~ mean power	Wanted signal ~~level~~ mean power	Minimum offset of interfering signal	Type of interfering signal
1900 – 1920 MHz, 2010 – 2025 MHz	-40 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	3.2 MHz	1,28 Mcps TDD signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-40 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	3.2 MHz	1,28 Mcps TDD signal with one code
1920 – 1980 MHz	-40 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	3.2 MHz	1,28 Mcps TDD signal with one code
1 - 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz	-15 dBm	~~<REFSENS> + 6 dB~~	—	CW carrier

Table 7.7A: Blocking requirements for operating bands defined in subclause 4.2 b)for 1,28 Mcps TDD

Center frequency of interfering signal	Interfering signal ~~level~~ mean power	Wanted signal ~~level~~ mean power	Minimum offset of interfering signal	Type of interfering signal
1850 – 1990 MHz	-40 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	3.2 MHz	1,28 Mcps TDD signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-40 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	3.2 MHz	1,28 Mcps TDD signal with one code
1 – 1830 MHz, 2010 – 12750 MHz	-15 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	—	CW carrier

Table 7.8A: Blocking requirements for operating bands defined in subclause 4.2 c)for 1,28 Mcps TDD

Center frequency of interfering signal	Interfering signal ~~level~~ mean power	Wanted signal ~~level~~ mean power	Minimum offset of interfering signal	Type of interfering signal
1910 – 1930 MHz	-40 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	3.2 MHz	1,28 Mcps TDD signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-40 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	3.2 MHz	1,28 Mcps TDD signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	—	CW carrier

The normative reference for this requirement is TS 25.105 [1] subclause 7.5.0.2.

7.5.2.2.2 Co-location with GSM900 and/or DCS 1800

This additional blocking requirement may be applied for the protection of TDD BS receivers when GSM900 and/or DCS1800 BTS are co-located with UTRA TDD BS.

The blocking performance requirement applies to interfering signals with center frequency within the ranges specified in the tables below, using a 1MHz step size.

In case this additional blocking requirement is applied, the static reference performance as specified in clause 7.2.1 shall be met with a wanted and an interfering signal coupled to BS antenna input using the following parameters.

Table 7.9A: Additional blocking requirements for operating bands defined in 4.2(a) when co-located with GSM900

Centre Frequency of Interfering Signal	Interfering Signal ~~Level~~ mean power	Wanted Signal ~~Level~~ mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
921 – 960 MHz	+16 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	—	CW carrier

Table 7.10A: Additional blocking requirements for operating bands defined in 4.2(a) when co-located with DCS1800

Center Frequency of Interfering Signal	Interfering Signal ~~Level~~ mean power	Wanted Signal ~~Level~~ mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
1805 – 1880 MHz	+16 dBm	~~<REFSENS> + 6 dB~~ –104 dBm	—	CW carrier

The normative reference for this requirement is TS 25.105 [1] subclause 7.5.1.2.

--- next changed section ---

7.6.2.2 1,28 Mcps TDD option

The static reference performance as specified in clause 7.2 should be met when the following signals are coupled to the BS antenna input.

- A wanted signal at the assigned channel frequency, with mean power 6 dB above the static reference level.
- Two interfering signals with the parameters specified in table 7.11A.

Table 7.11A: Parameters of the interfering signals for intermodulation characteristics testing for 1,28 Mcps TDD

Interfering Signal ~~Level~~ mean power	Offset	Type of Interfering Signal
- 48 dBm	3,2 MHz	CW signal
- 48 dBm	6,4 MHz	1,28 Mcps TDD signal with one code

The normative reference for this requirement is TS 25.105 [1] subclause 7.6.1.2.

--- next changed section ---

B.2.2 1,28 Mcps TDD option

Table B2.2 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum, defined as:

(CLASS) $$S(f) \propto 1/(1-(f/f_D)^2)^{0.5}$$ for $f \in -f_d, f_d$.

Table B2: Propagation Conditions for Multi path Fading Environments for 1,28 Mcps TDD

Case 1, speed 3km/h		Case 2, speed 3km/h		Case 3, speed 120km/h	
Relative Delay [ns]	~~Average~~ Relative Mean Power [dB]	Relative Delay [ns]	~~Average~~ Relative Mean Power [dB]	Relative Delay [ns]	~~Average~~ Relative Mean Power [dB]
0	0	0	0	0	0
2928	-10	2928	0	781	-3
		12000	0	1563	-6
				2344	-9