

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

RP-020291

Title CRs (Rel-4 and Rel-5 Category A) to TS 25.105
Source TSG RAN WG4
Agenda Item 7.4.4

RAN4 Tdoc	Spec	Curr Ver	New Ver	CR	R	Cat	Ph	Title	Acronym
R4-020655	25.105	4.4.0	4.5.0	109		F	Rel-4	The amendment for BS Category B spurious emission band adjacent to allocated bands for LCR-TDD	LCRTDD-RF
R4-020656	25.105	5.0.0	5.1.0	110		A	Rel-5	The amendment for BS Category B spurious emission band adjacent to allocated bands for LCR-TDD	LCRTDD-RF
R4-020698	25.105	4.4.0	4.5.0	114		F	Rel-4	Correction of power terms and definitions	LCRTDD-RF
R4-020699	25.105	5.0.0	5.1.0	115		A	Rel-5	Correction of power terms and definitions	LCRTDD-RF

CHANGE REQUEST

⌘ **25.105 CR 109** ⌘ rev **-** ⌘ Current version: **4.4.0** ⌘

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Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network 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 <u>one</u> 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 <u>one</u> 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. <u>Isolated Impact Analysis:</u> Would not affect implementations behaving like indicated in the CR, would affect implementations that do not behave like indicated in the CR.

Clauses affected:	⌘	6.6.3.1.2.1.2
Other specs affected:	⌘	Other core specifications
	<input checked="" type="checkbox"/>	Test specifications
	<input type="checkbox"/>	O&M Specifications
		25.142
Other comments:	⌘	Equivalent CRs in other Releases: CR110 cat. A to 25.105 v5.0.0

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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.

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6.6.3.1.2.1.2 1,28 Mcps TDD Option

The power of any spurious emission shall not exceed:

Table 6.11A: BS Mandatory spurious emissions limits, Category B

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 FI - 3.2 <u>10</u> MHz <i>whichever is the higher</i>	-30 dBm	1 MHz	Bandwidth as in ITU SM.329-8, s4.1
Fc1 – 19.2 MHz or FI - 3.2 <u>10</u> MHz <i>whichever is the higher</i> ↔ Fc1 - 16 MHz or FI - 3.2 <u>10</u> MHz <i>whichever is the higher</i>	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc1 - 16 MHz or FI - 3.2 <u>10</u> MHz <i>whichever is the higher</i> ↔ Fc2 + 16 MHz or Fu + 3.2 <u>10</u> MHz <i>whichever is the lower</i>	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc2 + 16 MHz or Fu + 3.2 <u>10</u> MHz <i>whichever is the lower</i> ↔ Fc2 +19.2 MHz or Fu + 3.2 <u>10</u> MHz <i>whichever is the lower</i>	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc2 + 19.2 MHz or Fu + 3.2 <u>10</u> MHz <i>whichever is the lower</i> ↔ 12,5 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

FI : Lower frequency of the band in which TDD operates

Fu : Upper frequency of the band in which TDD operates

CR-Form-v5.1

CHANGE REQUEST

⌘ **25.105 CR 110** ⌘ rev **-** ⌘ 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 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	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R96	(Release 1996)
	B (addition of feature),	R97	(Release 1997)
	C (functional modification of feature)	R98	(Release 1998)
	D (editorial modification)	R99	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		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. <u>Isolated Impact Analysis:</u> Would not affect implementations behaving like indicated in the CR, would affect implementations that do not behave like indicated in the CR.

Clauses affected:	⌘ 6.6.3.1.2.1.2		
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications	⌘	
	<input checked="" type="checkbox"/> Test specifications		25.142
	<input type="checkbox"/> O&M Specifications		
Other comments:	⌘ Equivalent CRs in other Releases: CR109 cat. F to 25.105 v4.4.0		

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

6.6.3.1.2.1.2 1,28 Mcps TDD Option

The power of any spurious emission shall not exceed:

Table 6.11A: BS Mandatory spurious emissions limits, Category B

Band	Maximum Level	Measurement Bandwidth	Note
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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 FI - 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 FI - 3.2 10MHz whichever is the higher ↔ Fc1 - 16 MHz or FI - 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 FI - 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 ↔ 12,5 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

FI : Lower frequency of the band in which TDD operates

Fu : Upper frequency of the band in which TDD operates

CR-Form-v4

CHANGE REQUEST

⌘ **25.105 CR 114** ⌘ ev **-** ⌘ Current version: **4.4.0** ⌘

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

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

Title:	⌘ Correction of power terms and definitions for 1.28 Mcps TDD option		
Source:	⌘ RAN WG4		
Work item code:	⌘ LCRTDD-RF	Date:	⌘ 17/5/2002
Category:	⌘ F	Release:	⌘ Rel-4
	Use <u>one</u> 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 <u>one</u> 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:	⌘ <ul style="list-style-type: none"> 6.5.1.1.2 Transmit OFF power – requirement corrected 7.2.1.2 Reference sensitivity level - defined as mean power, FER removed 7.3.1.2 Receiver dynamic range - Wanted signal defined as mean power, wanted signal level given as -80 dBm (according formula: REFSENS + 30 dB : -110dBm+30 dB) 7.4.1.2 Adjacent Channel Selectivity (ACS) - Missing "offset" added to Fuw definition. wanted signal level given as -104 dBm (according formula: REFSENS + 6 dB : -110dBm+6 dB) 7.5.0.2, 7.5.1.2 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) 7.6.1.2 Intermodulation characteristics - 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:	⌘	6.5.1.1.2, 7.2.1.2, 7.3.1.2, 7.4.1.2, 7.5.0.2, 7.5.1.2, 7.6.1.2	
Other specs affected:	⌘	<input type="checkbox"/>	Other core specifications
		<input checked="" type="checkbox"/>	Test specifications
		<input type="checkbox"/>	O&M Specifications
Other comments:	⌘	Equivalent CRs in other Releases: CR115 cat. A to 25.105 v5.0.0	

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6.5 Transmit ON/OFF power

6.5.1 Transmit OFF power

Transmit OFF power is defined as the average power measured over one chip when the transmitter is off. The transmit OFF power state is when the BS does not transmit.

6.5.1.1 Minimum Requirement

6.5.1.1.1 3,84 Mcps TDD Option

The requirement of 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 $\alpha=0.22$ and a bandwidth equal to the chip rate.

6.5.1.1.2 1,28 Mcps TDD Option

The requirement of 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 $\alpha=0.22$ and a bandwidth equal to the chip rate.~~

--- next changed section ---

7.2 Reference sensitivity level

The reference sensitivity is the minimum receiver input power measured at the antenna connector at which the FER/BER does not exceed the specific value indicated in section 7.2.1.

7.2.1 Minimum Requirement

7.2.1.1 3,84 Mcps TDD Option

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

Table 7.1: BS reference sensitivity levels

Data rate	BS reference sensitivity level (dBm)	FER/BER
12.2 kbps	-109 dBm	BER shall not exceed 0.001

7.2.1.2 1,28 Mcps TDD Option

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

Table 7.1A: BS reference sensitivity levels

<u>Reference measurement channel</u> Data rate	BS reference sensitivity level (dBm)	FER/BER
12.2 kbps	-110 dBm	BER shall not exceed 0.001

7.3 Dynamic range

Receiver dynamic range is the receiver ability to handle a rise of interference in the reception frequency channel. The receiver shall fulfil a specified BER requirement for a specified sensitivity degradation of the wanted signal in the presence of an interfering AWGN signal in the same reception frequency channel.

7.3.1 Minimum requirement

7.3.1.1 3,84 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in Table 7.2.

Table 7.2: Dynamic Range

Parameter	Level	Unit
Data rate	12.2	kbps
Wanted signal	<REFSENS> + 30 dB	dBm
Interfering AWGN signal	-73	dBm/3.84 MHz

7.3.1.2 1,28 Mcps TDD Option:

The BER shall not exceed 0.001 for the parameters specified in Table 7.2A.

Table 7.2A: Dynamic Range

Parameter	Level	Unit
Reference measurement channel data rate	12.2	kbps
Wanted signal mean power	<REFSENS> + 30 dB -80	dBm
Interfering AWGN signal	-76dBm	dBm/1.28 MHz

7.4 Adjacent Channel Selectivity (ACS)

Adjacent channel selectivity (ACS) is a measure of the receiver ability to receive a wanted signal at its assigned channel frequency in the presence of an adjacent channel signal at a given frequency offset from the center frequency of the assigned channel. ACS is the ratio of the receiver filter attenuation on the assigned channel frequency to the receive filter attenuation on the adjacent channel(s).

7.4.1 Minimum Requirement

7.4.1.1 3,84 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in table 7.3.

Table 7.3: Adjacent channel selectivity

Parameter	Level	Unit
Data rate	12.2	kbps
Wanted signal	Reference sensitivity level + 6dB	dBm
Interfering signal	-52	dBm
F _w (Modulated)	5	MHz

7.4.1.2 1,28 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in table 7.3A

Table 7.3A: Adjacent channel selectivity

Parameter	Level	Unit
Reference measurement channel data rate	12.2	kbps
Wanted signal mean power	Reference sensitivity level + 6 dB - 104	dBm
Interfering signal mean power	-55	dBm
Fuw offset (Modulated)	1.6	MHz

7.5 Blocking characteristics

The blocking characteristics is a measure of the receiver ability to receive a wanted signal at its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the adjacent channels. The blocking performance requirement applies to interfering signals with center frequency within the ranges specified in the tables below, using a 1MHz step size.

7.5.0 Minimum requirement

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.

7.5.0.1 3,84 Mcps TDD Option

Table 7.4 (a): Blocking requirements for operating bands defined in 5.2(a)

Centre Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
1900 – 1920 MHz, 2010 – 2025 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1920 – 1980 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1 – 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.4(b) : Blocking requirements for operating bands defined in 5.2(b)

Centre Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
1850 – 1990 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1 – 1830 MHz, 2010 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.4(c) : Blocking requirements for operating bands defined in 5.2(c)

Centre Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
1910 – 1930 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

7.5.0.2 1,28 Mcps TDD Option

Table 7.4A(a): Blocking requirements for operating bands defined in 5.2(a)

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	3.2MHz	Narrow band CDMA signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-40dBm	<REFSENS> + 6 dB -104 dBm	3.2MHz	Narrow band CDMA signal with one code
1920 – 1980 MHz	-40dBm	<REFSENS> + 6 dB -104 dBm	3.2MHz	Narrow band CDMA signal with one code
1 – 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz	-15dBm	<REFSENS> + 6 dB -104 dBm	—	CW carrier

Table 7.4A(b): Blocking requirements for operating bands defined in 5.2(b)

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	-40dBm	<REFSENS> + 6 dB -104 dBm	3.2MHz	Narrow band CDMA signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-40 dBm	<REFSENS> + 6 dB -104 dBm	3.2MHz	Narrow band CDMA signal with one code
1 – 1830 MHz, 2010 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB -104 dBm	—	CW carrier

Table 7.4A(c): Blocking requirements for operating bands defined in 5.2(c)

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	-40dBm	<REFSENS> + 6 dB -104 dBm	3.2MHz	Narrow band CDMA signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-40dBm	<REFSENS> + 6 dB -104 dBm	3.2 MHz	Narrow band CDMA signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB -104 dBm	—	CW carrier

7.5.1 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.

7.5.1.1 3,84 Mcps TDD Option

Table 7.4 (d): Additional blocking requirements for operating bands defined in 5.2(a) when co-located with GSM900

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

Table 7.4 (e): Additional blocking requirements for operating bands defined in 5.2(a) when co-located with DCS1800

Center Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
1805 - 1880	+16 dBm	<REFSENS> + 6 dB	—	CW carrier

7.5.1.2 1,28 Mcps TDD Option

Table 7.4A (d): Additional blocking requirements for operating bands defined in 5.2(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 7.4A (e): Additional blocking requirements for operating bands defined in 5.2(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

7.6 Intermodulation characteristics

Third and higher order mixing of the two interfering RF signals can produce an interfering signal in the band of the desired channel. Intermodulation response rejection is a measure of the capability of the receiver to receive a wanted signal on its assigned channel frequency in the presence of two or more interfering signals which have a specific frequency relationship to the wanted signal.

7.6.1 Minimum requirement

The static reference performance as specified in clause 7.2.1 should be met when the following signals are coupled to BS antenna input.

- A wanted signal at the assigned channel frequency, 6 dB above the static reference level.
- Two interfering signals with the following parameters.

7.6.1.1 3,84 Mcps TDD Option

Table 7.5 : Intermodulation requirement

Interfering Signal Level	Offset	Type of Interfering Signal
- 48 dBm	10 MHz	CW signal
- 48 dBm	20 MHz	WCDMA signal with one code

7.6.1.2 1,28 Mcps TDD Option

Table7.5A: Intermodulation requirement

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 Option signal with one code

--- next changed section ---

B.2.2 1,28 Mcps TDD Option

TableB2 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum, defined as:

$$(CLASS) \quad S(f) \propto 1/(1 - (f / f_D)^2)^{0.5} \quad \text{for } f \in [-f_D, f_D]$$

TableB2: Propagation Conditions for Multi-Path Fading Environments

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

⌘ **25.105 CR 115** ⌘ 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 Core Network

Title:	⌘ Correction of power terms and definitions for 1.28 Mcps TDD option		
Source:	⌘ RAN WG4		
Work item code:	⌘ LCRTDD-RF	Date:	⌘ 17/5/2002
Category:	⌘ A	Release:	⌘ Rel-5
	Use <u>one</u> 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 <u>one</u> 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:	⌘ <ul style="list-style-type: none"> 6.5.1.1.2 Transmit OFF power – requirement corrected 7.2.1.2 Reference sensitivity level - defined as mean power, FER removed 7.3.1.2 Receiver dynamic range - Wanted signal defined as mean power, wanted signal level given as -80 dBm (according formula: REFSENS + 30 dB : -110dBm+30 dB) 7.4.1.2 Adjacent Channel Selectivity (ACS) - Missing "offset" added to Fuw definition. wanted signal level given as -104 dBm (according formula: REFSENS + 6 dB : -110dBm+6 dB) 7.5.0.2, 7.5.1.2 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) 7.6.1.2 Intermodulation characteristics - 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:	⌘	6.5.1.1.2, 7.2.1.2, 7.3.1.2, 7.4.1.2, 7.5.0.2, 7.5.1.2, 7.6.1.2			
Other specs affected:	⌘	<input type="checkbox"/>	Other core specifications	⌘	
		<input checked="" type="checkbox"/>	Test specifications		25.142
		<input type="checkbox"/>	O&M Specifications		
Other comments:	⌘	Equivalent CRs in other Releases: CR114 cat. F to 25.105 v4.4.0			

How to create CRs using this form:

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

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

6.5 Transmit ON/OFF power

6.5.1 Transmit OFF power

Transmit OFF power is defined as the average power measured over one chip when the transmitter is off. The transmit OFF power state is when the BS does not transmit.

6.5.1.1 Minimum Requirement

6.5.1.1.1 3,84 Mcps TDD Option

The requirement of 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 $\alpha=0.22$ and a bandwidth equal to the chip rate.

6.5.1.1.2 1,28 Mcps TDD Option

The requirement of 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 $\alpha=0.22$ and a bandwidth equal to the chip rate.~~

--- next changed section ---

7.2 Reference sensitivity level

The reference sensitivity is the minimum receiver input power measured at the antenna connector at which the FER/BER does not exceed the specific value indicated in section 7.2.1.

7.2.1 Minimum Requirement

7.2.1.1 3,84 Mcps TDD Option

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

Table 7.1: BS reference sensitivity levels

Data rate	BS reference sensitivity level (dBm)	FER/BER
12.2 kbps	-109 dBm	BER shall not exceed 0.001

7.2.1.2 1,28 Mcps TDD Option

~~For Using the reference~~ measurement channel specified in Annex A, the reference sensitivity level and performance of the BS shall be as specified in table7.1A

Table7.1A: BS reference sensitivity levels

<u>Reference masurement channel Pdata rate</u>	BS reference sensitivity level (dBm)	FER/BER
12.2 kbps	-110 dBm	BER shall not exceed 0.001

7.3 Dynamic range

Receiver dynamic range is the receiver ability to handle a rise of interference in the reception frequency channel. The receiver shall fulfil a specified BER requirement for a specified sensitivity degradation of the wanted signal in the presence of an interfering AWGN signal in the same reception frequency channel.

7.3.1 Minimum requirement

7.3.1.1 3,84 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in Table 7.2.

Table 7.2: Dynamic Range

Parameter	Level	Unit
Data rate	12.2	kbps
Wanted signal	<REFSENS> + 30 dB	dBm
Interfering AWGN signal	-73	dBm/3.84 MHz

7.3.1.2 1,28 Mcps TDD Option:

The BER shall not exceed 0.001 for the parameters specified in Table 7.2A.

Table 7.2A: Dynamic Range

Parameter	Level	Unit
Reference measurement channel data rate	12.2	kbps
Wanted signal mean power	<REFSENS> + 30 dB -80	dBm
Interfering AWGN signal	-76dBm	dBm/1.28 MHz

7.4 Adjacent Channel Selectivity (ACS)

Adjacent channel selectivity (ACS) is a measure of the receiver ability to receive a wanted signal at its assigned channel frequency in the presence of an adjacent channel signal at a given frequency offset from the center frequency of the assigned channel. ACS is the ratio of the receiver filter attenuation on the assigned channel frequency to the receive filter attenuation on the adjacent channel(s).

7.4.1 Minimum Requirement

7.4.1.1 3,84 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in table 7.3.

Table 7.3: Adjacent channel selectivity

Parameter	Level	Unit
Data rate	12.2	kbps
Wanted signal	Reference sensitivity level + 6dB	dBm
Interfering signal	-52	dBm
F _w (Modulated)	5	MHz

7.4.1.2 1,28 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in table 7.3A

Table 7.3A: Adjacent channel selectivity

Parameter	Level	Unit
Reference measurement channel data rate	12.2	kbps
Wanted signal mean power	Reference sensitivity level + 6 dB - 104	dBm
Interfering signal mean power	-55	dBm
Fuw offset (Modulated)	1.6	MHz

7.5 Blocking characteristics

The blocking characteristics is a measure of the receiver ability to receive a wanted signal at its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the adjacent channels. The blocking performance requirement applies to interfering signals with center frequency within the ranges specified in the tables below, using a 1MHz step size.

7.5.0 Minimum requirement

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.

7.5.0.1 3,84 Mcps TDD Option

Table 7.4 (a): Blocking requirements for operating bands defined in 5.2(a)

Centre Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
1900 – 1920 MHz, 2010 – 2025 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1920 – 1980 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1 – 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.4(b) : Blocking requirements for operating bands defined in 5.2(b)

Centre Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
1850 – 1990 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1 – 1830 MHz, 2010 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.4(c) : Blocking requirements for operating bands defined in 5.2(c)

Centre Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
1910 – 1930 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

7.5.0.2 1,28 Mcps TDD Option

Table 7.4A(a): Blocking requirements for operating bands defined in 5.2(a)

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	3.2MHz	Narrow band CDMA signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-40dBm	<REFSENS> + 6 dB -104 dBm	3.2MHz	Narrow band CDMA signal with one code
1920 – 1980 MHz	-40dBm	<REFSENS> + 6 dB -104 dBm	3.2MHz	Narrow band CDMA signal with one code
1 – 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz	-15dBm	<REFSENS> + 6 dB -104 dBm	—	CW carrier

Table 7.4A(b): Blocking requirements for operating bands defined in 5.2(b)

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	-40dBm	<REFSENS> + 6 dB -104 dBm	3.2MHz	Narrow band CDMA signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-40 dBm	<REFSENS> + 6 dB -104 dBm	3.2MHz	Narrow band CDMA signal with one code
1 – 1830 MHz, 2010 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB -104 dBm	—	CW carrier

Table 7.4A(c): Blocking requirements for operating bands defined in 5.2(c)

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	-40dBm	<REFSENS> + 6 dB -104 dBm	3.2MHz	Narrow band CDMA signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-40dBm	<REFSENS> + 6 dB -104 dBm	3.2 MHz	Narrow band CDMA signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB -104 dBm	—	CW carrier

7.5.1 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.

7.5.1.1 3,84 Mcps TDD Option

Table 7.4 (d): Additional blocking requirements for operating bands defined in 5.2(a) when co-located with GSM900

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

Table 7.4 (e): Additional blocking requirements for operating bands defined in 5.2(a) when co-located with DCS1800

Center Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
1805 - 1880	+16 dBm	<REFSENS> + 6 dB	—	CW carrier

7.5.1.2 1,28 Mcps TDD Option

Table 7.4A (d): Additional blocking requirements for operating bands defined in 5.2(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 7.4A (e): Additional blocking requirements for operating bands defined in 5.2(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

7.6 Intermodulation characteristics

Third and higher order mixing of the two interfering RF signals can produce an interfering signal in the band of the desired channel. Intermodulation response rejection is a measure of the capability of the receiver to receive a wanted signal on its assigned channel frequency in the presence of two or more interfering signals which have a specific frequency relationship to the wanted signal.

7.6.1 Minimum requirement

The static reference performance as specified in clause 7.2.1 should be met when the following signals are coupled to BS antenna input.

- A wanted signal at the assigned channel frequency, 6 dB above the static reference level.
- Two interfering signals with the following parameters.

7.6.1.1 3,84 Mcps TDD Option

Table 7.5 : Intermodulation requirement

Interfering Signal Level	Offset	Type of Interfering Signal
- 48 dBm	10 MHz	CW signal
- 48 dBm	20 MHz	WCDMA signal with one code

7.6.1.2 1,28 Mcps TDD Option

Table7.5A: Intermodulation requirement

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 Option signal with one code

--- next changed section ---

B.2.2 1,28 Mcps TDD Option

TableB2 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum, defined as:

$$(CLASS) \quad S(f) \propto 1/(1 - (f / f_D)^2)^{0.5} \quad \text{for } f \in [-f_D, f_D]$$

TableB2: Propagation Conditions for Multi-Path Fading Environments

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