

**TSG-RAN Meeting #11
Palm Springs, CA, USA, 13 - 16 March 2001**

RP-010088

Title: Agreed CRs (Release '99) to TS 25.105

Source: TSG-RAN WG4

Agenda item: 5.4.3

Doc-1st-Level	Spec	CR	Subject	Cat	Status-2nd-Level	Version-Current	Version-New
RP-010088	25.105	48	Receiver Blocking requirement for co-existence with GSM/DCS and co-located base stations.	F	agreed	3.5.0	3.6.0
RP-010088	25.105	49	Relationship between Minimum Requirements and Test Tolerances.	F	agreed	3.5.0	3.6.0
RP-010088	25.105	50	Correction of reference to SM.329-8 in TS25.105	F	agreed	3.5.0	3.6.0
RP-010088	25.105	51	BS EVM definition	F	agreed	3.5.0	3.6.0

4.3 Regional requirements

Some requirements in TS 25.105 may only apply in certain regions. Table 4.1 lists all requirements that may be applied differently in different regions.

Table 4.1: List of regional requirements.

Clause number	Requirement	Comments
5.2	Frequency bands	Some bands may be applied regionally.
6.2.1	Base station maximum output power	In certain regions, the minimum requirement for normal conditions may apply also for some conditions outside the range of conditions defined as normal.
6.6.2.1	Spectrum emission mask	The mask specified may be mandatory in certain regions. In other regions this mask may not be applied.
6.6.3.1.1	Spurious emissions (Category A)	These requirements shall be met in cases where Category A limits for spurious emissions, as defined in ITU-R Recommendation SM.329-7 [1], are applied.
6.6.3.1.2	Spurious emissions (Category B)	These requirements shall be met in cases where Category B limits for spurious emissions, as defined in ITU-R Recommendation SM.329-7 [1], are applied.
6.6.3.2.1	Co-existence with GSM900 – Operation in the same geographic area	This requirement may be applied for the protection of GSM 900 MS in geographic areas in which both GSM 900 and UTRA are deployed.
6.6.3.2.2	Co-existence with GSM900 – Co-located base stations	This requirement may be applied for the protection of GSM 900 BTS receivers when GSM 900 BTS and UTRA BS are co-located.
6.6.3.3.1	Co-existence with DCS1800 – Operation in the same geographic area	This requirement may be applied for the protection of DCS 1800 MS in geographic areas in which both DCS 1800 and UTRA are deployed.
6.6.3.3.2	Co-existence with DCS1800 – Co-located base stations	This requirement may be applied for the protection of DCS 1800 BTS receivers when DCS 1800 BTS and UTRA BS are co-located.
6.6.3.4.1	Co-existence with UTRA FDD – Operation in the same geographic area	This requirement may be applied to geographic areas in which both UTRA-TDD and UTRA-FDD are deployed.
6.6.3.4.2	Co-existence with UTRA FDD – Co-located base stations	This requirement may be applied for the protection of UTRA-FDD BS receivers when UTRA-TDD BS and UTRA FDD BS are co-located.
7.5	Blocking characteristic	The requirement is applied according to what frequency bands in Clause 5.2 that are supported by the BS.
<u>7.5.1</u>	<u>Blocking characteristic Co-location with GSM900 and/or DCS 1800</u>	<u>This requirement may be applied for the protection of UTRA TDD BS receivers when UTRA TDD BS and GSM 900/DCS1800 BS are co-located.</u>

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 shall apply at all frequencies as specified in the tables below, using a 1MHz step size.

The static reference performance as specified in clause 7.2.1 should be met with a wanted and an interfering signal coupled to BS antenna input using the following parameters.

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

Center 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)

Center 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)

Center 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

7.5.1 Co-location with GSM900 and/or DCS 1800

This 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 shall apply at all frequencies as specified in the tables below, using a 1MHz step size.

The static reference performance as specified in clause 7.2.1 should be met with a wanted and an interfering signal coupled to BS antenna input using the following parameters.

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

<u>Center Frequency of Interfering Signal</u>	<u>Interfering Signal Level</u>	<u>Wanted Signal Level</u>	<u>Minimum Offset of Interfering Signal</u>	<u>Type of Interfering Signal</u>
<u>1900 – 1920 MHz, 2010 – 2025 MHz</u>	<u>-40 dBm</u>	<u><REFSENS> + 6 dB</u>	<u>10 MHz</u>	<u>WCDMA signal with one code</u>
<u>1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz</u>	<u>-40 dBm</u>	<u><REFSENS> + 6 dB</u>	<u>10 MHz</u>	<u>WCDMA signal with one code</u>
<u>1920 – 1980 MHz</u>	<u>-40 dBm</u>	<u><REFSENS> + 6 dB</u>	<u>10 MHz</u>	<u>WCDMA signal with one code</u>
<u>1 – 925 MHz, 960 - 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz</u>	<u>-15 dBm</u>	<u><REFSENS> + 6 dB</u>	<u>—</u>	<u>CW carrier</u>
<u>925 – 960 MHz</u>	<u>+2016 dBm</u>	<u><REFSENS> + 6 dB</u>	<u>—</u>	<u>CW carrier</u>

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

<u>Center Frequency of Interfering Signal</u>	<u>Interfering Signal Level</u>	<u>Wanted Signal Level</u>	<u>Minimum Offset of Interfering Signal</u>	<u>Type of Interfering Signal</u>
<u>1900 – 1920 MHz,</u> <u>2010 – 2025 MHz</u>	<u>-40 dBm</u>	<u><REFSENS> + 6 dB</u>	<u>10 MHz</u>	<u>WCDMA signal with one code</u>
<u>1880 – 1900 MHz,</u> <u>1990 – 2010 MHz,</u> <u>2025 – 2045 MHz</u>	<u>-40 dBm</u>	<u><REFSENS> + 6 dB</u>	<u>10 MHz</u>	<u>WCDMA signal with one code</u>
<u>1920 – 1980 MHz</u>	<u>-40 dBm</u>	<u><REFSENS> + 6 dB</u>	<u>10 MHz</u>	<u>WCDMA signal with one code</u>
<u>1 – 1805 MHz,</u> <u>1980 – 1990 MHz,</u> <u>2045 – 12750 MHz</u>	<u>-15 dBm</u>	<u><REFSENS> + 6 dB</u>	<u>=</u>	<u>CW carrier</u>
<u>1805 - 1880</u>	<u>+2016 dBm</u>	<u><REFSENS> + 6 dB</u>	<u>=</u>	<u>CW carrier</u>

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CHANGE REQUEST
 ⌘ **25.105 CR 49** ⌘ rev **-** ⌘ Current version: **3.5.0** ⌘

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

Title:	⌘ Relationship between Minimum Requirements and Test Tolerances.		
Source:	⌘ RAN WG4		
Work item code:	⌘	Date:	⌘ 23-26 Jan2001
Category:	⌘ F	Release:	⌘ R99
Use <u>one</u> of the following categories: F (essential correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <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:	⌘ Clarification between Minimum and Test Requirements must be complete and precise.
Summary of change:	⌘
Consequences if not approved:	⌘ Unprecise requirements leading to misinterpretation.

Clauses affected:	⌘ 4.1
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
Other comments:	⌘

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

4 General

4.1 Test tolerances Relationship between Minimum Requirements and Test Requirements

The Minimum Requirements given in this specification make no allowance for measurement uncertainty. The test specification 25.142 section 5.9.6 defines Test Tolerances. These Test Tolerances are individually calculated for each test. The Test Tolerances are ~~used then added~~ to relax the Minimum Requirements limits in this specification to create Test Requirements limits. The measurement results returned by the Test System are compared -without any modification- against the Test limits Requirements as defined by the shared risk principle.

The Shared Risk principle is defined in ETR 273 Part 1 sub-part 2 section 6.5.

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CHANGE REQUEST

⌘ 25.105 **CR 50** ⌘ rev **-** ⌘ Current version: **3.5.0** ⌘

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

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

Title:	⌘ Correction of reference to SM.329-8 in TS25.105
Source:	⌘ RAN WG4
Work item code:	⌘ Date: ⌘ 2001-02-19
Category:	⌘ F Release: ⌘ R99
<p>Use <u>one</u> of the following categories:</p> <p>F (essential correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>	
<p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)</p>	

Reason for change:	⌘ The spurious emission limits incorporated in the specification were taken from a draft version of SM.329-8 but this version could not be used as a reference until it was published. This version 8 has now been published.
Summary of change:	⌘ References are corrected to point at the relevant parts of SM329-8.
Consequences if not approved:	⌘ Difficulties with regional radio equipment regulation procedures.

Clauses affected:	⌘ 2, 4.3, 6.6.3.1.1 , 6.6.3.1.2										
Other specs affected:	<table border="0"> <tr> <td>⌘ <input type="checkbox"/></td> <td>Other core specifications</td> <td>⌘</td> <td rowspan="3">CR for TS 25.142 in Tdoc R4-010378</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Test specifications</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>O&M Specifications</td> <td></td> </tr> </table>	⌘ <input type="checkbox"/>	Other core specifications	⌘	CR for TS 25.142 in Tdoc R4-010378	<input checked="" type="checkbox"/>	Test specifications		<input type="checkbox"/>	O&M Specifications	
⌘ <input type="checkbox"/>	Other core specifications	⌘	CR for TS 25.142 in Tdoc R4-010378								
<input checked="" type="checkbox"/>	Test specifications										
<input type="checkbox"/>	O&M Specifications										
Other comments:	⌘ update of R4-010199										

2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document in the same Release as the present document.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] ITU-R Recommendation SM.329-~~87~~ "Spurious emissions".

[2] ETSI ETR 273-1-2: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Improvement of radiated methods of measurement (using test sites) and evaluation of the corresponding measurement uncertainties; Part 1: Uncertainties in the measurement of mobile radio equipment characteristics; Sub-part 2: Examples and annexes".

4.3 Regional requirements

Some requirements in TS 25.105 may only apply in certain regions. Table 4.1 lists all requirements that may be applied differently in different regions.

Table 4.1: List of regional requirements.

Clause number	Requirement	Comments
5.2	Frequency bands	Some bands may be applied regionally.
6.2.1	Base station maximum output power	In certain regions, the minimum requirement for normal conditions may apply also for some conditions outside the range of conditions defined as normal.
6.6.2.1	Spectrum emission mask	The mask specified may be mandatory in certain regions. In other regions this mask may not be applied.
6.6.3.1.1	Spurious emissions (Category A)	These requirements shall be met in cases where Category A limits for spurious emissions, as defined in ITU-R Recommendation SM.329-87 [1], are applied.
6.6.3.1.2	Spurious emissions (Category B)	These requirements shall be met in cases where Category B limits for spurious emissions, as defined in ITU-R Recommendation SM.329-87 [1], are applied.
6.6.3.2.1	Co-existence with GSM900 – Operation in the same geographic area	This requirement may be applied for the protection of GSM 900 MS in geographic areas in which both GSM 900 and UTRA are deployed.
6.6.3.2.2	Co-existence with GSM900 – Co-located base stations	This requirement may be applied for the protection of GSM 900 BTS receivers when GSM 900 BTS and UTRA BS are co-located.
6.6.3.3.1	Co-existence with DCS1800 – Operation in the same geographic area	This requirement may be applied for the protection of DCS 1800 MS in geographic areas in which both DCS 1800 and UTRA are deployed.
6.6.3.3.2	Co-existence with DCS1800 – Co-located base stations	This requirement may be applied for the protection of DCS 1800 BTS receivers when DCS 1800 BTS and UTRA BS are co-located.
6.6.3.4.1	Co-existence with UTRA FDD – Operation in the same geographic area	This requirement may be applied to geographic areas in which both UTRA-TDD and UTRA-FDD are deployed.
6.6.3.4.2	Co-existence with UTRA FDD – Co-located base stations	This requirement may be applied for the protection of UTRA-FDD BS receivers when UTRA-TDD BS and UTRA FDD BS are co-located.
7.5	Blocking characteristic	The requirement is applied according to what frequency bands in Clause 5.2 that are supported by the BS.

6.6.3 Spurious emissions

Spurious emissions are emissions which are caused by unwanted transmitter effects such as harmonics emission, parasitic emission, intermodulation products and frequency conversion products, but exclude out of band emissions. This is measured at the base station RF output port.

Unless otherwise stated, all requirements are measured as mean power.

6.6.3.1 Mandatory Requirements

The requirements of either subclause 6.6.3.1.1 or subclause 6.6.3.1.2 shall apply whatever the type of transmitter considered (single carrier or multi-carrier). It applies for all transmission modes foreseen by the manufacturer's.

Either requirement applies at frequencies within the specified frequency ranges which are more than 12.5MHz under the first carrier frequency used or more than 12.5 MHz above the last carrier frequency used.

6.6.3.1.1 Spurious emissions (Category A)

The following requirements shall be met in cases where Category A limits for spurious emissions, as defined in ITU-R Recommendation SM.329-87 [1], are applied.

6.6.3.1.1.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.10: BS Mandatory spurious emissions limits, Category A

Band	Minimum requirement	Measurement Bandwidth	Note
9kHz – 150kHz	-13 dBm	1 kHz	Bandwidth as in ITU SM.329-87, s4.1
150kHz – 30MHz		10 kHz	Bandwidth as in ITU SM.329-87, s4.1
30MHz – 1GHz		100 kHz	Bandwidth as in ITU SM.329-87, s4.1
1GHz – 12.75 GHz		1 MHz	Upper frequency as in ITU SM.329-87, s2.5 Table 16

6.6.3.1.2 Spurious emissions (Category B)

The following requirements shall be met in cases where Category B limits for spurious emissions, as defined in ITU-R Recommendation SM.329-87 [1], are applied.

6.6.3.1.2.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.11: BS Mandatory spurious emissions limits, Category B

Band	Maximum Level	Measurement Bandwidth	Note
9kHz – 150kHz	-36 dBm	1 kHz	Bandwidth as in ITU SM.329-87, s4.1

150kHz – 30MHz	- 36 dBm	10 kHz	Bandwidth as in ITU SM.329- 87 , s4.1
30MHz – 1GHz	-36 dBm	100 kHz	Bandwidth as in ITU SM.329- 87 , s4.1
1GHz ↔ Fc1-60 MHz or Fl -10 MHz <i>whichever is the higher</i>	-30 dBm	1 MHz	Bandwidth as in ITU SM.329- 87 , s4.1
Fc1 - 60 MHz or Fl -10 MHz <i>whichever is the higher</i> ↔ Fc1 - 50 MHz or Fl -10 MHz <i>whichever is the higher</i>	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329- 87 , s4. 34 <u>and Annex 7</u>
Fc1 - 50 MHz or Fl -10 MHz <i>whichever is the higher</i> ↔ Fc2 + 50 MHz or Fu +10 MHz <i>whichever is the lower</i>	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329- 87 , s4. 34 <u>and Annex 7</u>
Fc2 + 50 MHz or Fu + 10 MHz <i>whichever is the lower</i> ↔ Fc2 + 60 MHz or Fu + 10 MHz <i>whichever is the lower</i>	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329- 87 , s4. 34 <u>and Annex 7</u>
Fc2 + 60 MHz or Fu + 10 MHz <i>whichever is the lower</i> ↔ 12,5 GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329-7, s4.1. Upper frequency as in ITU-R SM.329- 87 , s2.5 <u>Table 16</u>

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

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CHANGE REQUEST⌘ **25.105 CR 51** ⌘ rev **-** ⌘ Current version: **3.5.0** ⌘For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ BS EVM definition
Source:	⌘ RAN WG4
Work item code:	⌘ Date: ⌘ 19 February 2001
Category:	⌘ F Release: ⌘ R99
<p>Use <u>one</u> of the following categories:</p> <p>F (essential correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>	
<p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)</p>	

Reason for change:	⌘ The present definition of EVM is not correct and needs updating.
Summary of change:	⌘ The definition of EVM is updated to exclude errors due to frequency, phase, and amplitude, and to include a matched RRC filter in the measurement.
Consequences if not approved:	⌘ Ambiguity and errors in the EVM definition may lead to non-consistent measurement results.

Clauses affected:	⌘ 6.8.1.1
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
Other comments:	⌘ Revision of R4-010316

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6.8.2 Modulation Accuracy

~~The modulation accuracy is a measure of the difference between the measured waveform and the theoretical modulated waveform (the error vector). It is the square root of the ratio of the mean error vector power to the mean reference signal power expressed as %. The measurement interval is one timeslot. The requirement is valid over the total power dynamic range as specified in section 6.4.3.~~

The Error Vector Magnitude is a measure of the difference between the reference waveform and the measured waveform. This difference is called the error vector. Both waveforms pass through a matched Root Raised Cosine filter with bandwidth 3.84 MHz and roll-off $\alpha = 0.22$. Both waveforms are then further modified by selecting the frequency, absolute phase, absolute amplitude and chip clock timing so as to minimise the error vector. The EVM result is defined as the square root of the ratio of the mean error vector power to the mean reference power expressed as a %. The measurement interval is one timeslot. The requirement is valid over the total power dynamic range as specified in subclause 6.4.3. See Annex C of TS 25.142 for further details.