TSG-RAN Meeting #9
Hawaii, US, 20 - 22 September 2000

TSGRP#9(00)0396

Title: **Agreed CRs to TS 25.104**

Source: **TSG-RAN WG4**

Agenda item: **5.4.3**

Tdoc Num	TS	CR number	Title	TYPE	Status	Cur_Ver	New_Ver
R4-000571	25.104	49	Correction to 25.104 ch. 6.6.3.6	F	agreed	3.3.0	3.4.0
R4-000626	25.104	50	Corrections to spectrum mask	F	agreed	3.3.0	3.4.0
R4-000693	25.104	52	Tap magnitudes and phases for Birth-Death propagation conditions	F	agreed	3.3.0	3.4.0
R4-000773	25.104	51	Handling of measurement uncertainties in Base station conformance testing (FDD)	F	agreed	3.3.0	3.4.0

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25.104	CR	49		Current Version:	3.3.0

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

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

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

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

Source: RAN WG4   **Date:** Sep 1st 2000

Subject: Correction to 25.104 ch. 6.6.3.6

Work item:

Category: F   Correction   **X**   **Release:**   Phase 2   ☐
                  A   Corresponds to a correction in an earlier release   ☐   Release 96   ☐
(only one category   B   Addition of feature   ☐   Release 97   ☐
shall be marked   C   Functional modification of feature   ☐   Release 98   ☐
with an X)   D   Editorial modification   ☐   Release 99   **X**
                                                                                                     Release 00   ☐

Reason for change: An error in a formula in table 6.16 is corrected.

Clauses affected:

Other specs affected:	Other 3G core specifications	☐	→ List of CRs:	
	Other GSM core specifications	☐	→ List of CRs:	
	MS test specifications	☐	→ List of CRs:	
	BSS test specifications	**X**	→ List of CRs:	
	O&M specifications	☐	→ List of CRs:	

Other comments:

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The power of any spurious emission shall not exceed:

Table 6.15: BS Spurious emissions limits for BS in geographic coverage area of PHS

Band	Maximum Level	Measurement Bandwidth	Note
1893.5 – 1919.6 MHz	-41 dBm	300 kHz	

6.6.3.6 Co-existence with services in adjacent frequency bands

This requirement may be applied for the protection in bands adjacent to 2110-2170 MHz, as defined in sub-clause 5.2(a) and 1930-1990 MHz, as defined in sub-clause 5.2(b) in geographic areas in which both an adjacent band service and UTRA are deployed.

6.6.3.6.1 Minimum requirement

The power of any spurious emission shall not exceed:

Table 6.16: BS spurious emissions limits for protection of adjacent band services

Band (f)	Maximum Level	Measurement Bandwidth	Note
2100-2105 MHz For operation in frequency bands as defined in sub-clause 5.2(a)	$-30 + 3.4 \cdot (f - 2100 \text{ MHz})$ dBm	1 MHz	
2175-2180 MHz For operation in frequency bands as defined in sub-clause 5.2(a)	$-30 + 3.4 \cdot (2180 \text{ MHz} - f)$ dBm	1 MHz	
1920-1925 MHz For operation in frequency bands as defined in sub-clause 5.2(b)	$-30 + 3.4 \cdot (f - 1920\text{~~1930~~} \text{ MHz})$ dBm	1 MHz	
1995-2000 MHz For operation in frequency bands as defined in sub-clause 5.2(b)	$-30 + 3.4 \cdot (2000 \text{ MHz} - f)$ dBm	1 MHz	

6.6.3.7 Co-existence with UTRA-TDD

6.6.3.7.1 Operation in the same geographic area

This requirement may be applied to geographic areas in which both UTRA-TDD and UTRA-FDD are deployed.

6.6.3.7.1.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.17: BS Spurious emissions limits for BS in geographic coverage area of UTRA-TDD

Band	Maximum Level	Measurement Bandwidth	Note
1900 – 1920 MHz	-52 dBm	1 MHz	
2010 – 2025 MHz	-52 dBm	1 MHz	

6.6.3.7.2 Co-located base stations

This requirement may be applied for the protection of UTRA-TDD BS receivers when UTRA-TDD BS and UTRA FDD BS are co-located.

6.6.3.7.2.1 Minimum Requirement

The power of any spurious emission shall not exceed:

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25.104	CR	**50**	Current Version:	3.3.0

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

For submission to: **RAN #9**
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for approval	**X**	strategic		*(for SMG*
for information		non-strategic		*use only)*

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

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

Source:	RAM WG4	**Date:**	2000-09-04

Subject:	Corrections to spectrum mask

Work item:	

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

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

Reason for change:	The level of the spectrum mask for the frequency range [3.515, 4.0MHz[is incorrect for low power base station (discontinuity with the previous frequency range)

Clauses affected:	6.6.2.1

Other specs affected:

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

Other comments:	

6.6.2 Out of band emission

Out of band emissions are unwanted emissions immediately outside the channel bandwidth resulting from the modulation process and non-linearity in the transmitter but excluding spurious emissions. This out of band emission requirement is specified both in terms of a spectrum emission mask and adjacent channel power ratio for the transmitter.

6.6.2.1 Spectrum emission mask

The mask defined in Tables 6.3 to 6.6 below may be mandatory in certain regions. In other regions this mask may not be applied.

For regions where this clause applies, the requirement shall be met by a base station transmitting on a single RF carrier configured in accordance with the manufacturer's specification. Emissions shall not exceed the maximum level specified in tables 6.3 to 6.6 for the appropriate BS maximum output power, in the frequency range from Δf = 2.5 MHz to f_offset_{max} from the carrier frequency, where:

- Δf is the separation between the carrier frequency and the nominal –3dB point of the measuring filter closest to the carrier frequency.

- F_offset is the separation between the carrier frequency and the centre of the measuring filter.

- f_offset_{max} is either 12.5 MHz or the offset to the UMTS Tx band edge as defined in section 5.2, whichever is the greater.
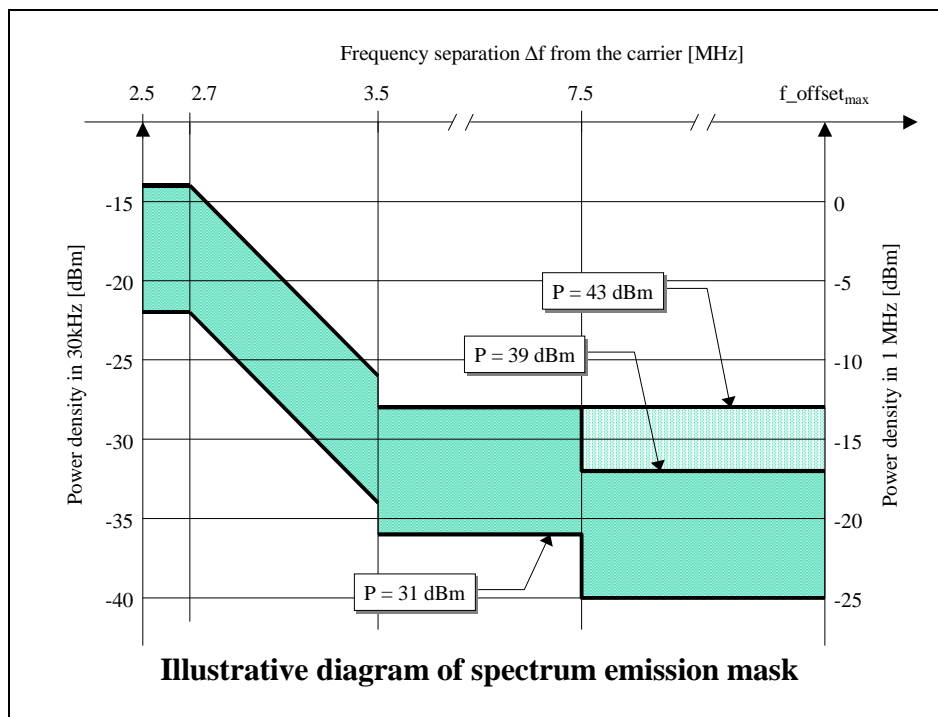

Illustrative diagram of spectrum emission mask

Table 6.3: Spectrum emission mask values, BS maximum output power P $\geq$ 43 dBm

Frequency offset of measurement filter – 3dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
2.5 $\leq \Delta f$ < 2.7 MHz	2.515MHz $\leq$ f_offset < 2.715MHz	-14 dBm	30 kHz
2.7 $\leq \Delta f$ < 3.5 MHz	2.715MHz $\leq$ f_offset < 3.515MHz	- 14 - 15·(f_offset- 2.715) dBm	30 kHz
	3.515MHz $\leq$ f_offset < 4.0MHz	-26 dBm	30 kHz
3.5 $\leq \Delta f$ MHz	4.0MHz $\leq$ f_offset < f_offset_max	-13 dBm	1 MHz

Table 6.4: Spectrum emission mask values, BS maximum output power 39 ≤ P < 43 dBm

Frequency offset of measurement filter – 3dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
2.5 ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	-14 dBm	30 kHz
2.7 ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	-14 - 15·(f_offset - 2.715) dBm	30 kHz
(see note)	3.515MHz ≤ f_offset < 4.0MHz	-26 dBm	30 kHz
3.5 ≤ Δf < 7.5 MHz	4.0MHz ≤ f_offset < 8.0MHz	-13 dBm	1 MHz
7.5 ≤ Δf MHz	8.0MHz ≤ f_offset < f_offset$_{max}$	P - 56 dBm	1 MHz

Table 6.5: Spectrum emission mask values, BS maximum output power 31 ≤ P < 39 dBm

Frequency offset of measurement filter – 3dB point,Δf	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
2.5 ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	P - 53 dBm	30 kHz
2.7 ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	P - 53 - 15·(f_offset - 2.715) dBm	30 kHz
(see note)	3.515MHz ≤ f_offset < 4.0MHz	~~-26~~P-65 dBm	30 kHz
3.5 ≤ Δf < 7.5 MHz	4.0MHz ≤ f_offset < 8.0MHz	P - 52 dBm	1 MHz
7.5 ≤ Δf MHz	8.0MHz ≤ f_offset < f_offset$_{max}$	P - 56 dBm	1 MHz

Table 6.6: Spectrum emission mask values, BS maximum output power P < 31 dBm

Frequency offset of measurement filter – 3dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
2.5 ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	-22 dBm	30 kHz
2.7 ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	-22 - 15·(f_offset - 2.715) dBm	30 kHz
(see note)	3.515MHz ≤ f_offset < 4.0MHz	~~-26~~ -34 dBm	30 kHz
3.5 ≤ Δf < 7.5 MHz	4.0MHz ≤ f_offset < 8.0MHz	-21 dBm	1 MHz
7.5 ≤ Δf MHz	8.0MHz ≤ f_offset < f_offset$_{max}$	-25 dBm	1 MHz

NOTE: This frequency range ensures that the range of values of f_offset is continuous.

6.6.2.2   Adjacent Channel Leakage power Ratio (ACLR)

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the transmitted power to the power measured in an adjacent channel. Both the transmitted power and the adjacent channel power are measured through a matched filter (Root Raised Cosine and roll-off 0.22) with a noise power bandwidth equal to the chip rate. The requirements shall apply for all configurations of BS (single carrier or multiple carrier), and for all operating modes foreseen by the manufacturer's specification.

6.6.2.2.1   Minimum requirement

The ACLR shall be higher than the value specified in Table 6.7.

Table 6.7: BS ACLR

BS adjacent channel offset below the first or above the last carrier frequency used	ACLR limit
5 MHz	45 dB
10 MHz	50 dB

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| 25.104 | CR | 51 | Current Version: | 3.3.0 |

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

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

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

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

Source: RAN WG4   **Date:**   2000-09-05

Subject: Handling of measurement uncertainties in Base station conformance testing (FDD)

Work item:

Category: F   Correction   **X**   **Release:**   Phase 2   ☐
             A   Corresponds to a correction in an earlier release   ☐   Release 96   ☐
(only one category   B   Addition of feature   ☐   Release 97   ☐
shall be marked   C   Functional modification of feature   ☐   Release 98   ☐
with an X)   D   Editorial modification   ☐   Release 99   **X**
                                                                              Release 00   ☐

Reason for change: Alignment with draft ITU/R recommendation on handling of measurement uncertainties for a global circulation of terminals

Clauses affected: 4.1

Other specs affected:

Other 3G core specifications	☐	→ List of CRs:
Other GSM core specifications	☐	→ List of CRs:
MS test specifications	☐	→ List of CRs:
BSS test specifications	**X**	→ List of CRs:
O&M specifications	☐	→ List of CRs:

Other comments:

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4.1 ~~Measurement uncertainty~~Test tolerances

The requirements given in this specification make no allowance for measurement uncertainty. ~~Where the measurement uncertainty can be determined,~~ The test specification 25.141 section 4 defines test tolerances. These test tolerances are individually calculated for each test. The test tolerances are then added to the limits in this specification to create test limits. The measurement results are compared against the test limits as defined by the shared risk principle. ~~the test limit shall be relaxed from the value given in this specification. See section 4 of 25.141. Where the measurement uncertainty cannot reasonably be determined, the "Shared Risk" principle is applied, i.e. the test limit is not relaxed.~~

The Shared Risk principle is defined in ETR ~~028~~273 Part 1 sub-part 2 section 6.5.

CHANGE REQUEST

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25.104	CR	52	Current Version:	3.3.0

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

For submission to:	RAN#9	For approval	X	Strategic		(for SMG
List expected approval meeting # here ↑		For information		non-strategic		use only)

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

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

Source:	RAN WG4		**Date:**	2000-09-05

Subject:	Tap magnitudes and phases for Birth-Death propagation conditions

Work item:	

Category:
(only one category Shall be marked With an X)

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

Reason for change:	Finalise propagation conditions for the FDD mode.

Clauses affected:	Annex B

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

Other comments:	

Annex B (normative):
Propagation conditions

B.4 Birth-Death propagation conditions

The dynamic propagation conditions for the test of the baseband performance is a non-fading propagation channel with two taps. The moving propagation conditions has two taps, Path1 and Path2 which alternate between 'birth' and 'death'. The positions the paths appear are randomly selected with an equal probability rate and are shown in Figure B.2.
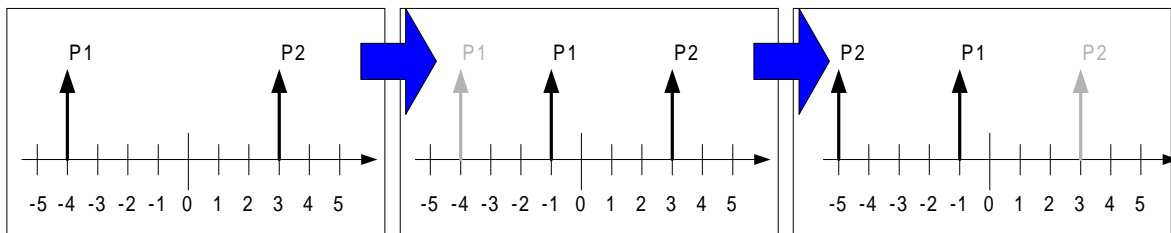

Figure B.2: Birth death propagation sequence

NOTE 1: Two paths, Path1 and Path2 are randomly selected from the group [-5, -4, -3, -2, -1, 0 ,1, 2, 3, 4, 5] μs. The paths have equal magnitudes strengths and equal phases.

NOTE 2: After 191 ms, Path1 vanishes and reappears immediately at a new location randomly selected from the group [-5, -4, -3, -2, -1, 0 ,1, 2, 3, 4, 5] μs but excludes the point Path2. The magnitudes and the phases of the tap coefficients of Path 1 and Path 2 shall remain unaltered.

NOTE 3: After an additional 191 ms, Path2 vanishes and reappears immediately at a new location randomly selected from the group [-5, -4, -3, -2, -1, 0 ,1, 2, 3, 4, 5] μs but excludes the point Path1. The magnitudes and the phases of the tap coefficients of Path 1 and Path 2 shall remain unaltered.

NOTE 4: The sequence in 2) and 3) is repeated.