

TSG RAN Meeting #13
Beijing, China, 18-21 September 2001

RP-010617

Title: CRs (R'99 and Rel-4 Category A) to TS 25.105

Source TSG RAN WG4

Agenda item: 8.4.3

RAN4 Tdoc	Spec	CR	Title	Cat	Phase	Curr Ver	New Ver
R4-010868	25.105	66	BS Performance Requirements (3.84Mcps TDD)	F	Rel99	3.7.0	3.8.0
R4-011056	25.105	67	BS Performance Requirements (3.84Mcps TDD)	A	Rel-4	4.1.0	4.2.0
R4-010945	25.105	68	Receiver spurious emissions for co-located base stations	F	Rel99	3.7.0	3.8.0
R4-011057	25.105	69	Receiver spurious emissions for co-located base stations	A	Rel-4	4.1.0	4.2.0
R4-011134	25.105	70	Power and ACLR definition corrections	F	Rel99	3.7.0	3.8.0
R4-011058	25.105	71	Power and ACLR definition corrections.	A	Rel-4	4.1.0	4.2.0
R4-011163	25.105	72	Clarification in Spectrum emission mask section	F	Rel99	3.7.0	3.8.0
R4-011249	25.105	73	Clarification in Spectrum emission mask section	A	Rel-4	4.1.0	4.2.0
R4-011173	25.105	74	PC dynamic range and minimum TP requirements correction.	F	Rel99	3.7.0	3.8.0
R4-011251	25.105	75	PC dynamic range and minimum TP requirements correction.	A	Rel-4	4.1.0	4.2.0
R4-011268	25.105	76	Correction of frequency range for receiver spurious emissions	F	Rel99	3.7.0	3.8.0
R4-011270	25.105	77	Correction of frequency range for receiver spurious emissions	A	Rel-4	4.1.0	4.2.0
R4-011290	25.105	78	Definition of "classical Doppler spectrum"	F	Rel99	3.7.0	3.8.0
R4-011294	25.105	79	Definition of "classical Doppler spectrum"	A	Rel-4	4.1.0	4.2.0
R4-010840	25.105	80	BS Performance Requirements for 12.2 kbps, 64 kbps, 144 kbps and 384 kbps, Case 1, addition of Figure Note for Table 8.4	F	Rel99	3.7.0	3.8.0

CHANGE REQUEST

⌘ **25.105** CR 66 ⌘ ev **-** ⌘ Current version: **3.7.0** ⌘

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

Title:	⌘ BS Performance Requirements		
Source:	⌘ RAN WG4		
Work item code:	⌘	Date:	⌘ 9-13 July 2001
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:	⌘ Rel99 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:	⌘ To refine the values of performance requirements, the values based on average of simulation results provided by three companies (Panasonic, InterDigital and Siemens) are proposed.
Summary of change:	⌘ BS Performance Requirements in Section 8 are changed.
Consequences if not approved:	⌘ The values of BS performance requirements may not be reliable.

Clauses affected:	⌘ 8.2.1.1, 8.3.1.1, 8.3.2.1, 8.3.3.1
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
Other comments:	⌘

How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://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.

8.2 Demodulation in static propagation conditions

8.2.1 Demodulation of DCH

The performance requirement of DCH in static propagation conditions is determined by the maximum Block Error Rate (BLER) allowed when the receiver input signal is at a specified \hat{I}_{or}/I_{oc} limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.2.1.1 Minimum requirement

For the parameters specified in Table 8.2 the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.3. These requirements are applicable for TFCS size 16.

Table 8.2: Parameters in static propagation conditions

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of DPCH _o		6	4	0	0
$\frac{DPCH_o - E_c}{I_{or}}$	dB	-9	-9.5	0	0
I_{oc}	dBm/3.84 MHz	-89			
Cell Parameter*		0,1			
DPCH Channelization Codes*	C(k,Q)	C(1,8)	C(1,4) C(5,16)	C(1,2) C(9,16)	C(1,2)
DPCH _o Channelization Codes*	C(k,Q)	C(i,16) 3 ≤ i ≤ 8	C(i,16) 6 ≤ i ≤ 9	-	-
Information Data Rate	kbps	12.2	64	144	384

*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.

Table 8.3: Performance requirements in AWGN channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER Required E_b/N_0
1	-2.0 -1.8	10^{-2}
2	-0.4 -0.35	10^{-1}
	-0.1 -0.05	10^{-2}
3	-0.2	10^{-1}
	0.1	10^{-2}
4	-0.8 -0.7	10^{-1}
	-0.6 -0.5	10^{-2}

8.3 Demodulation of DCH in multipath fading conditions

8.3.1 Multipath fading Case 1

The performance requirement of DCH in multipath fading Case 1 is determined by the maximum Block Error Rate (BLER) allowed when the receiver input signal is at a specified \hat{I}_{or}/I_{oc} limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.3.1.1 Minimum requirement

For the parameters specified in Table 8.4 the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.5. These requirements are applicable for TFCS size 16.

Table 8.4: Parameters in multipath Case 1 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of DPCH _o		6	4	0	0
$\frac{DPCH_o - E_c}{I_{or}}$	dB	-9	-9.5	0	0
I _{oc}	dBm/3.84 MHz	-89			
Cell Parameter*		0,1			
DPCH Channelization Codes*	C(k,Q)	C(1,8)	C(1,4) C(5,16)	C(1,2) C(9,16)	C(1,2)
DPCH _o Channelization Codes*	C(k,Q)	C(i,16) 3 ≤ i ≤ 8	C(i,16) 6 ≤ i ≤ 9	-	-
Information Data Rate	kbps	12.2	64	144	384

Table 8.5: Performance requirements in multipath Case 1 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	6.56.7	10 ⁻²
2	5.55.3	10 ⁻¹
	9.89.7	10 ⁻²
3	5.5	10 ⁻¹
	9.8	10 ⁻²
4	5.14.8	10 ⁻¹
	9.59.2	10 ⁻²

8.3.2 Multipath fading Case 2

The performance requirement of DCH in multipath fading Case 2 is determined by the maximum Block Error Rate (BLER) allowed when the receiver input signal is at a specified \hat{I}_{or}/I_{oc} limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.3.2.1 Minimum requirement

For the parameters specified in Table 8.6 the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.7. These requirements are applicable for TFCS size 16.

Table 8.6: Parameters in multipath Case 2 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of DPCH _o		2	0	0	0
$\frac{DPCH_o - E_c}{I_{or}}$	dB	-6	0	0	0
I _{oc}	dBm/3.84 MHz	-89			
Cell Parameter*		0,1			
DPCH Channelization Codes*	C(k,Q)	C(1,8)	C(1,4) C(5,16)	C(1,2) C(9,16)	C(1,2)
DPCH _o Channelization Codes*	C(k,Q)	C(i,16) 3 ≤ i ≤ 4	-	-	-
Information Data Rate	kbps	12.2	64	144	384
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.					

Table 8.7: Performance requirements in multipath Case 2 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	-0.40 -2	10^{-2}
2	0.20 -4	10^{-1}
	2.5	10^{-2}
3	3.63 -5	10^{-1}
	6.05 -8	10^{-2}
4	2.8	10^{-1}
	5.25 -4	10^{-2}

8.3.3 Multipath fading Case 3

The performance requirement of DCH in multipath fading Case 3 is determined by the maximum Block Error Rate (BLER) allowed when the receiver input signal is at a specified \hat{I}_{or}/I_{oc} limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.3.3.1 Minimum requirement

For the parameters specified in Table 8.8 the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.9. These requirements are applicable for TFCS size 16.

Table 8.8: Parameters in multipath Case 3 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of DPCH _o		2	0	0	0
$\frac{DPCH_o - E_c}{I_{or}}$	dB	-6	0	0	0
I_{oc}	dBm/3.84 MHz	-89			
Cell Parameter*		0,1			
DPCH Channelization Codes*	C(k,Q)	C(1,8)	C(1,4) C(5,16)	C(1,2) C(9,16)	C(1,2)
DPCH _o Channelization Codes*	C(k,Q)	C(i,16) 3 ≤ i ≤ 4	-	-	-
Information Data Rate	Kbps	12.2	64	144	384

*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.

Table 8.9: Performance requirements in multipath Case 3 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	-0.1	10^{-2}
2	0.8	10^{-1}
	2.7	10^{-2}
	4.2	10^{-3}
3	4.5	10^{-1}
	6.36 -4	10^{-2}
	8.0	10^{-3}
4	3.6	10^{-1}
	5.05 -4	10^{-2}
	6.36 -5	10^{-3}

CR-Form-v4

CHANGE REQUEST

⌘ **25.105 CR 67** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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

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

Title:	⌘ BS Performance Requirements(3.84Mcps TDD)		
Source:	⌘ RAN WG4		
Work item code:	⌘	Date:	⌘ 3-7 September 2001
Category:	⌘ A	Release:	⌘ Rel-4
	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:	⌘ This is Cat.A CR corresponding to R99 CR in R4-01-0868.
Summary of change:	⌘ BS Performance Requirements for 3.84Mcps TDD in Section 8 are changed.
Consequences if not approved:	⌘ The values of BS performance requirements may not be reliable.

Clauses affected:	⌘ 8.2.1.1.1, 8.3.1.1.1, 8.3.2.1.1, 8.3.3.1.1		
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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8.2 Demodulation in static propagation conditions

8.2.1 Demodulation of DCH

The performance requirement of DCH in static propagation conditions is determined by the maximum Block Error Rate (BLER) allowed when the receiver input signal is at a specified \hat{I}_{or}/I_{oc} limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.2.1.1 Minimum requirement

8.2.1.1.1 3,84 Mcps TDD Option

For the parameters specified in Table 8.2 the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.3. These requirements are applicable for TFCS size 16.

Table 8.2: Parameters in static propagation conditions

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of DPCH _o		6	4	0	0
$\frac{DPCH_o - E_c}{I_{or}}$	dB	-9	-9.5	0	0
I_{oc}	dBm/3.84 MHz	-89			
Cell Parameter*		0,1			
DPCH Channelization Codes*	C(k,Q)	C(1,8)	C(1,4) C(5,16)	C(1,2) C(9,16)	C(1,2)
DPCH _o Channelization Codes*	C(k,Q)	C(i,16) 3 ≤ i ≤ 8	C(i,16) 6 ≤ i ≤ 9	-	-
Information Data Rate	kbps	12.2	64	144	384
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.					

Table 8.3: Performance requirements in AWGN channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER Required E_b/N_0
1	<u>-2.0</u> -4.8	10^{-2}
2	<u>-0.4</u> -0.35	10^{-1}
	<u>-0.1</u> -0.05	10^{-2}
3	-0.2	10^{-1}
	0.1	10^{-2}
4	<u>-0.8</u> -0.7	10^{-1}
	<u>-0.6</u> -0.5	10^{-2}

8.2.1.1.2 1,28 Mcps TDD Option

For the parameters specified in Table 8.2A the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.3A. These requirements are applicable for TFCS size 16.

Table 8.2A: Parameters in static propagation conditions

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of DPCH _o		4	1	1	0
Spread factor of DPCH _o		8	8	8	-
$\frac{DPCH_o - E_c}{I_{or}}$	dB	-7	-7	-7	0
I_{oc}	dBm/1.28MHz	-91			
Information Data Rate	Kbps	12.2	64	144	384

Table 8.3A: Performance requirements in AWGN channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER Required E _b /N ₀
1	0.6	10 ⁻²
2	-0.9	10 ⁻¹
	-0.4	10 ⁻²
3	-0.3	10 ⁻¹
	-0.1	10 ⁻²
4	0.5	10 ⁻¹
	0.6	10 ⁻²

8.3 Demodulation of DCH in multipath fading conditions

8.3.1 Multipath fading Case 1

The performance requirement of DCH in multipath fading Case 1 is determined by the maximum Block Error Rate (BLER) allowed when the receiver input signal is at a specified \hat{I}_{or}/I_{oc} limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.3.1.1 Minimum requirement

8.3.1.1.1 3,84 Mcps TDD Option

For the parameters specified in Table 8.4 the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.5. These requirements are applicable for TFCS size 16.

Table 8.4: Parameters in multipath Case 1 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of DPCH _o		6	4	0	0
$\frac{DPCH_o - E_c}{I_{or}}$	dB	-9	-9.5	0	0
I_{oc}	dBm/3.84 MHz	-89			
Cell Parameter*		0,1			
DPCH Channelization Codes*	C(k,Q)	C(1,8)	C(1,4) C(5,16)	C(1,2) C(9,16)	C(1,2)
DPCH _o Channelization Codes*	C(k,Q)	C(i,16) 3 ≤ i ≤ 8	C(i,16) 6 ≤ i ≤ 9	-	-
Information Data Rate	kbps	12.2	64	144	384

*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.

Table 8.5: Performance requirements in multipath Case 1 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	6.56-7	10^{-2}
2	5.56-3	10^{-1}
	9.89-7	10^{-2}
3	5.5	10^{-1}
	9.8	10^{-2}
4	5.14-8	10^{-1}
	9.59-2	10^{-2}

8.3.1.1.2 1,28 Mcps TDD Option

For the parameters specified in Table 8.4A the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.5A. These requirements are applicable for TFCS size 16.

Table 8.4A: Parameters in multipath Case 1 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of DPCH _o		4	1	1	0
Spread factor of DPCH _o		8	8	8	-
$\frac{DPCH_o - E_c}{I_{or}}$	DB	-7	-7	-7	0
I_{oc}	dBm/1.28 MHz	-91			
Information Data Rate	Kbps	12.2	64	144	384

Table 8.5A: Performance requirements in multipath Case 1 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	10.4	10^{-2}
2	5.3	10^{-1}
	9.4	10^{-2}
3	5.7	10^{-1}
	10.1	10^{-2}
4	6.0	10^{-1}
	10.0	10^{-2}

8.3.2 Multipath fading Case 2

The performance requirement of DCH in multipath fading Case 2 is determined by the maximum Block Error Rate (BLER) allowed when the receiver input signal is at a specified \hat{I}_{or}/I_{oc} limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.3.2.1 Minimum requirement

8.3.2.1.1 3,84 Mcps TDD Option

For the parameters specified in Table 8.6 the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.7. These requirements are applicable for TFCS size 16.

Table 8.6: Parameters in multipath Case 2 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of DPCH _o		2	0	0	0
$\frac{DPCH_o - E_c}{I_{or}}$	dB	-6	0	0	0
I _{oc}	dBm/3.84 MHz	-89			
Cell Parameter*		0,1			
DPCH Channelization Codes*	C(k,Q)	C(1,8)	C(1,4) C(5,16)	C(1,2) C(9,16)	C(1,2)
DPCH _o Channelization Codes*	C(k,Q)	C(i,16) 3 ≤ i ≤ 4	-	-	-
Information Data Rate	kbps	12.2	64	144	384

*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.

Table 8.7: Performance requirements in multipath Case 2 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	-0.4 0.2	10 ⁻²
2	2.5	10 ⁻¹
3	3.6	10 ⁻²
	6.0	10 ⁻¹
4	2.8	10 ⁻²
	5.2	10 ⁻¹

8.3.2.1.2 1,28 Mcps TDD Option

For the parameters specified in Table 8.6A the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.7A. These requirements are applicable for TFCS size 16.

Table 8.6A: Parameters in multipath Case 2 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of DPCH _o		4	1	1	0
Spread factor of DPCH _o		8	8	8	-
$\frac{DPCH_o - E_c}{I_{or}}$	DB	-7	-7	-7	0
I _{oc}	dBm/1.28 MHz	-91			
Information Data Rate	Kbps	12.2	64	144	384

Table 8.7A: Performance requirements in multipath Case 2 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	6.7	10 ⁻²
2	3.6	10 ⁻¹
	5.9	10 ⁻²
3	4.2	10 ⁻¹
	6.3	10 ⁻²
4	4.6	10 ⁻¹
	6.0	10 ⁻²

8.3.3 Multipath fading Case 3

The performance requirement of DCH in multipath fading Case 3 is determined by the maximum Block Error Rate (BLER) allowed when the receiver input signal is at a specified \hat{I}_{or}/I_{oc} limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.3.3.1 Minimum requirement

8.3.3.1.1 3,84 Mcps TDD Option

For the parameters specified in Table 8.8 the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.9. These requirements are applicable for TFCS size 16.

Table 8.8: Parameters in multipath Case 3 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of DPCH _o		2	0	0	0
$\frac{DPCH_o - E_c}{I_{or}}$	dB	-6	0	0	0
I_{oc}	dBm/3.84 MHz	-89			
Cell Parameter*		0,1			
DPCH Channelization Codes*	C(k,Q)	C(1,8)	C(1,4) C(5,16)	C(1,2) C(9,16)	C(1,2)
DPCH _o Channelization Codes*	C(k,Q)	C(i,16) 3 ≤ i ≤ 4	-	-	-
Information Data Rate	Kbps	12.2	64	144	384

*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.

Table 8.9: Performance requirements in multipath Case 3 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	-0.1	10 ⁻²
2	0.8	10 ⁻¹
	2.7	10 ⁻²
	4.2	10 ⁻³
3	4.5	10 ⁻¹
	6.36-4	10 ⁻²
	8.0	10 ⁻³
4	3.6	10 ⁻¹
	5.05-4	10 ⁻²
	6.36-5	10 ⁻³

8.3.3.1.2 1,28 Mcps TDD Option

For the parameters specified in Table 8.8A the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.9A. These requirements are applicable for TFCS size 16.

Table 8.8A: Parameters in multipath Case 3 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of DPCH _o		4	1	1	0
Spread factor of DPCH _o		8	8	8	-
$\frac{DPCH_o - E_c}{I_{or}}$	DB	-7	-7	-7	0
I_{oc}	dBm/1.28 MHz	-91			
Information Data Rate	Kbps	12.2	64	144	384

Table 8.9A: Performance requirements in multipath Case 3 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	5.6	10^{-2}
2	3.2	10^{-1}
	4.6	10^{-2}
	5.9	10^{-3}
3	3.7	10^{-1}
	4.8	10^{-2}
	5.9	10^{-3}
4	4.2	10^{-1}
	5.1	10^{-2}
	5.9	10^{-3}

CR-Form-v3	
CHANGE REQUEST	
⌘ 25.105 CR 68 ⌘ rev - ⌘ Current version: 3.7.0 ⌘	

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:	⌘	Receiver spurious emission for co-located base stations		
Source:	⌘	RAN WG4		
Work item code:	⌘			
		Date: ⌘ 2001-07-03		
Category:	⌘	F		
		Release: ⌘ Rel99		
		<table style="width: 100%; font-size: small;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Use <u>one</u> of the following categories:</p> <p>F (essential correction)</p> <p>A (corresponds to a correction in an earlier release)</p> <p>B (Addition of feature),</p> <p>C (Functional modification of feature)</p> <p>D (Editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p> </td> <td style="width: 50%; vertical-align: top;"> <p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2)</p> <p>R96 (Release 1996)</p> <p>R97 (Release 1997)</p> <p>R98 (Release 1998)</p> <p>R99 (Release 1999)</p> <p>REL-4 (Release 4)</p> <p>REL-5 (Release 5)</p> </td> </tr> </table>	<p>Use <u>one</u> of the following categories:</p> <p>F (essential correction)</p> <p>A (corresponds to a correction in an earlier release)</p> <p>B (Addition of feature),</p> <p>C (Functional modification of feature)</p> <p>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)</p> <p>R96 (Release 1996)</p> <p>R97 (Release 1997)</p> <p>R98 (Release 1998)</p> <p>R99 (Release 1999)</p> <p>REL-4 (Release 4)</p> <p>REL-5 (Release 5)</p>
<p>Use <u>one</u> of the following categories:</p> <p>F (essential correction)</p> <p>A (corresponds to a correction in an earlier release)</p> <p>B (Addition of feature),</p> <p>C (Functional modification of feature)</p> <p>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)</p> <p>R96 (Release 1996)</p> <p>R97 (Release 1997)</p> <p>R98 (Release 1998)</p> <p>R99 (Release 1999)</p> <p>REL-4 (Release 4)</p> <p>REL-5 (Release 5)</p>			

Reason for change:	⌘	In case of separate RX and TX antenna port the receiver is currently allowed to have more spurious emission than the transmitter in case of co-located base stations.
Summary of change:	⌘	Adding requirements for receiver spurious emission in case of separate RX and TX antenna port. The requirements are in line with the current transmitter requirements for co-located base stations.
Consequences if not approved:	⌘	Reduced performance of the co-located base station caused by receiver spurious emission.

Clauses affected:	⌘	7.7.1
Other specs affected:	⌘	Other core specifications
	<input checked="" type="checkbox"/>	Test specifications
	<input type="checkbox"/>	O&M Specifications
		3GPP TS 25.142
Other comments:	⌘	

How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://www.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

7.7 Spurious emissions

The spurious emissions power is the power of emissions generated or amplified in a receiver that appear at the BS antenna connector. The requirements apply to all BS with separate RX and TX antenna port. The test shall be performed when both TX and RX are on with the TX port terminated.

For all BS with common RX and TX antenna port the transmitter spurious emission as specified in section 6.6.3 is valid.

7.7.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 7.6 : Receiver spurious emission requirements

Band	Maximum level	Measurement Bandwidth	Note
9 kHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1.9 GHz and 1.98 GHz – 2.01 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12.5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the BS.
1.9 GHz – 1.98 GHz and 2.01 GHz – 2.025 GHz	-78 dBm	3.84 MHz	With the exception of frequencies between 12.5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the BS.
2.025 GHz – 12.75 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12.5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the BS.

In addition to the requirements in table 7.6, the co-existence requirements for co-located base stations specified in subclause 6.6.3.2.2, 6.6.3.3.2 and 6.6.3.4.2 may also be applied.

Edinburgh, Great Britain, 3rd - 7th September 2001

CR-Form-v3

CHANGE REQUEST⌘ **25.105 CR 69** ⌘ rev **-** ⌘ Current version: **4.1.0** ⌘For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Receiver spurious emission for co-located base stations
Source:	⌘ RAN WG4
Work item code:	⌘ <input type="text"/> Date: ⌘ 2001-08-16
Category:	⌘ A Release: ⌘ Rel-4
<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:	⌘ In case of separate RX and TX antenna port the receiver is currently allowed to have more spurious emission than the transmitter in case of co-located base stations.
Summary of change:	⌘ Adding requirements for receiver spurious emission in case of separate RX and TX antenna port. The requirements are in line with the current transmitter requirements for co-located base stations.
Consequences if not approved:	⌘ Reduced performance of the co-located base station caused by receiver spurious emission.

Clauses affected:	⌘ 7.7.1.1									
Other specs affected:	<table border="0"> <tr> <td>⌘ <input type="checkbox"/></td> <td>Other core specifications</td> <td>⌘ <input type="text"/></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Test specifications</td> <td>3GPP TS 25.142</td> </tr> <tr> <td><input type="checkbox"/></td> <td>O&M Specifications</td> <td></td> </tr> </table>	⌘ <input type="checkbox"/>	Other core specifications	⌘ <input type="text"/>	<input checked="" type="checkbox"/>	Test specifications	3GPP TS 25.142	<input type="checkbox"/>	O&M Specifications	
⌘ <input type="checkbox"/>	Other core specifications	⌘ <input type="text"/>								
<input checked="" type="checkbox"/>	Test specifications	3GPP TS 25.142								
<input type="checkbox"/>	O&M Specifications									
Other comments:	⌘ <input type="text"/>									

How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://www.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

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

7.7 Spurious emissions

The spurious emissions power is the power of emissions generated or amplified in a receiver that appear at the BS antenna connector. The requirements apply to all BS with separate RX and TX antenna port. The test shall be performed when both TX and RX are on with the TX port terminated.

For all BS with common RX and TX antenna port the transmitter spurious emission as specified in section 6.6.3 is valid.

7.7.1 Minimum Requirement

7.7.1.1 3,84 Mcps TDD Option:

The power of any spurious emission shall not exceed:

Table 7.6: Receiver spurious emission requirements

Band	Maximum level	Measurement Bandwidth	Note
9 kHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1.9 GHz and 1.98 GHz – 2.01 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12.5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the BS.
1.9 GHz – 1.98 GHz and 2.01 GHz – 2.025 GHz	-78 dBm	3.84 MHz	With the exception of frequencies between 12.5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the BS.
2.025 GHz – 12.75 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12.5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the BS.

In addition to the requirements in table 7.6, the co-existence requirements for co-located base stations specified in subclause 6.6.3.2.2, 6.6.3.3.2 and 6.6.3.4.2 may also be applied.

CR-Form-v4

CHANGE REQUEST

⌘ **25.105 CR 70** ⌘ ev **-** ⌘ Current version: **3.7.0** ⌘

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:	⌘ Power and ACLR definition corrections.		
Source:	⌘ RAN WG4		
Work item code:	⌘	Date:	⌘ 3-7/09/2001
Category:	⌘ F	Release:	⌘ Rel99
	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 <u>TR 21.900</u> .		REL-4 (Release 4)
			REL-5 (Release 5)

Reason for change:	⌘ Corrections of power related entities.
Summary of change:	⌘ Definition of maximum output power, average power, deletion of unused terms. Transmit OFF power is defined over 1 chip. Correction of ACLR definition. Correction of power control dynamic range definition.
Consequences if not approved:	⌘ Possible misunderstanding of various power definitions and ACLR definition.

Clauses affected:	⌘ 3.1, 3.3, 6.2, 6.2.1, 6.4.3, 6.4.3.1, 6.4.4, 6.5.1, 6.5.1.1, 6.6.2.2		
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:	⌘		

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.

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the definitions apply.

Power Setting: The value of the control signal, which determines the desired transmitter, output Power. Typically, the power setting would be altered in response to power control commands

Maximum Power Setting: The highest value of the Power control setting which can be used.

Maximum output Power: This refers to the measure of power when averaged over the transmit timeslot at the maximum power setting.

Peak Power: The instantaneous power of the RF envelope which is not expected to be exceeded for [99.9%] of the time.

Maximum peak power: The peak power observed when operating at a given maximum output power.

Average Power: The average transmitter output power obtained over any specified time interval, including periods with no transmission. *<Editors: This definition would be relevant when considering realistic deployment scenarios where the power control setting may vary.>*

Maximum average power: The average transmitter output power obtained over any specified time interval, including periods with no transmission, when the transmit time slots are at the maximum power setting. *<Editors: The average power at the maximum power setting would also be consistent with defining a long term average power>*

Zero distance: Connected to the antenna connector of the BS using an interconnection of negligible delay

Average Power: The thermal power as measured through a root raised cosine filter with roll-off $\alpha=0.22$ and a bandwidth equal to the chip rate of the radio access mode. The period of measurement shall be a transmit timeslot excluding the guard period unless otherwise stated.

Maximum Output Power: The maximum Output Power of the base station per carrier measured at the antenna connector (i.e. the actual broadband power as would be measured assuming no measurement error) for a specified reference condition. The period of measurement shall be a transmit timeslot excluding the guard period.

Rated Output Power, PRAT: The Output Power that the manufacturer has declared to be available.

3.2 Symbols

(void)

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACIR	Adjacent Channel Interference Ratio
ACLR	Adjacent Channel Leakage power Ratio
ACS	Adjacent Channel Selectivity
BER	Bit Error Rate
BS	Base Station
CW	Continuous wave (unmodulated signal)
DL	Down link (forward link)
DPCH _o	A mechanism used to simulate an individual intracell interferer in the cell with one code and a spreading factor of 16
$\frac{DPCH_o - E_c}{I_{or}}$	The ratio of the average transmit energy per PN chip for the DPCH _o to the total transmit power spectral density of all users in the cell in one timeslot as measured at the BS antenna connector

EIRP	Effective Isotropic Radiated Power
FDD	Frequency Division Duplexing
FER	Frame Error Rate
I_{oc}	The power spectral density of a band limited white noise source (simulating interference from other cells) as measured at the BS antenna connector.
\hat{I}_{or}	The received power spectral density of all users in the cell in one timeslot as measured at the BS antenna connector
PPM	Parts Per Million
<u>P_{out}</u>	<u>Output power.</u>
<u>PRAT</u>	<u>Rated Output power</u>
RSSI	Received Signal Strength Indicator
SIR	Signal to Interference ratio
TDD	Time Division Duplexing
TPC	Transmit Power Control
UE	User Equipment
UL	Up link (reverse link)
UTRA	UMTS Terrestrial Radio Access

---Next Section---

6.2 Base station output power

~~Output power, P_{out} , of the base station is the mean power of one carrier delivered to a load with resistance equal to the nominal load impedance of the transmitter during one slot.~~

~~Rated output power, PRAT, of the base station is the mean power level per carrier over an active timeslot that the manufacturer has declared to be available at the antenna connector. The rated output power of the base station are is defined in section 3.1.~~

6.2.1 Base station maximum output power

~~Maximum output power, P_{max} , of the base station is the mean power level per carrier over an active timeslot measured at the antenna connector for a specified reference condition. The maximum output power of the base station is defined in section 3.1.~~

6.2.1.1 Minimum Requirement

In normal conditions, the base station maximum output power shall remain within +2 dB and -2 dB of the manufacturer's rated output power.

In extreme conditions, the Base station maximum output power shall remain within +2.5 dB and -2.5 dB of the manufacturer's rated 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.

---Next Section---

6.4.3 Power control dynamic range

The power control dynamic range is the difference between the maximum and the minimum ~~transmit~~ output power of one code channel for a specified reference condition

6.4.3.1 Minimum Requirement

Down link (DL) power control dynamic range shall be greater or equal to 30 dB.

6.4.4 Minimum ~~transmit~~ output power

The minimum controlled output power of the BS is when the power ~~control setting~~ is set to a minimum value. ~~This is when the power control indicates a minimum transmit output power is required.~~

6.4.4.1 Minimum Requirement

Down link (DL) minimum ~~transmit~~ output power shall be less or equal to is set to: Maximum output power – 30dB

---Next Section---

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. This parameter is defined as maximum output transmit power within the channel bandwidth when the transmitter is OFF.

6.5.1.1 Minimum Requirement

The requirement of transmit OFF power shall be less better 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.

---Next Section---

6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the average transmitted power centered on the assigned channel frequency to the average power centered on measured in an adjacent channel frequency. In Bboth cases the transmitted and the adjacent channel power is are measured with through a matched a filter that has a (Root Raised Cosine (RRC) filter response and with roll-off $\alpha=0.22$) with a noise power and a bandwidth equal to the chip rate. The requirements shall apply for all configurations of BS (single carrier or multi-carrier), and for all operating modes foreseen by the manufacturer's specification.

---End of changes---

Edinburgh, Great Britain, 3rd - 7th September 2001

CR-Form-v4

CHANGE REQUEST⌘ **25.105 CR 71** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Power and ACLR definition corrections.		
Source:	⌘ RAN WG4		
Work item code:	⌘	Date:	⌘ 3-7/09/2001
Category:	⌘ A	Release:	⌘ Rel-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	R96	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R97	(Release 1996)
	B (addition of feature),	R98	(Release 1997)
	C (functional modification of feature)	R99	(Release 1998)
	D (editorial modification)	REL-4	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <u>TR 21.900</u> .	REL-4	(Release 4)
		REL-5	(Release 5)

Reason for change:	⌘ Corrections of power related entities.
Summary of change:	⌘ Definition of maximum output power, average power, deletion of unused terms. Transmit OFF power is measured over one chip. Correction of ACLR definition. Correction of power control dynamic range definition.
Consequences if not approved:	⌘ Possible misunderstanding of various power definitions and ACLR definition.

Clauses affected:	⌘ 3.1, 3.3, 6.2, 6.2.1, 6.4.4, 6.5.1, 6.5.1.1.1, 6.6.2.2		
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications	⌘	25.142
	<input checked="" type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
Other comments:	⌘ Corresponds to a R99 CR in R4-011134.		

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:

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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.

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the definitions apply.

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Maximum Power Setting: The highest value of the Power control setting which can be used.

Maximum output Power: This refers to the measure of power when averaged over the transmit timeslot at the maximum power setting.

Peak Power: The instantaneous power of the RF envelope which is not expected to be exceeded for [99.9%] of the time.

Maximum peak power: The peak power observed when operating at a given maximum output power.

Average Power: The average transmitter output power obtained over any specified time interval, including periods with no transmission. *<Editors: This definition would be relevant when considering realistic deployment scenarios where the power control setting may vary.>*

Maximum average power: The average transmitter output power obtained over any specified time interval, including periods with no transmission, when the transmit time slots are at the maximum power setting. *<Editors: The average power at the maximum power setting would also be consistent with defining a long term average power>*

Zero distance: Connected to the antenna connector of the BS using an interconnection of negligible delay

Average Power: The thermal power as measured through a root raised cosine filter with roll-off $\alpha=0.22$ and a bandwidth equal to the chip rate of the radio access mode. The period of measurement shall be a transmit timeslot excluding the guard period unless otherwise stated.

Maximum Output Power: The maximum Output Power of the base station per carrier measured at the antenna connector (i.e. the actual broadband power as would be measured assuming no measurement error) for a specified reference condition. The period of measurement shall be a transmit timeslot excluding the guard period.

Rated Output Power, PRAT: The Output Power that the manufacturer has declared to be available.

3.2 Symbols

(void)

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACIR	Adjacent Channel Interference Ratio
ACLR	Adjacent Channel Leakage power Ratio
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DPCH _o	A mechanism used to simulate an individual intracell interferer in the cell with one code and a spreading factor of 16
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EIRP	Effective Isotropic Radiated Power
FDD	Frequency Division Duplexing
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I_{oc}	The power spectral density of a band limited white noise source (simulating interference from other cells) as measured at the BS antenna connector.
\hat{I}_{or}	The received power spectral density of all users in the cell in one timeslot as measured at the BS antenna connector
PPM	Parts Per Million
P_{out}	<u>Output power.</u>
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RSSI	Received Signal Strength Indicator
SIR	Signal to Interference ratio
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TPC	Transmit Power Control
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---Next section ---

6.2 Base station output power

~~Output power, P_{out} , of the base station is the mean power of one carrier delivered to a load with resistance equal to the nominal load impedance of the transmitter during one slot.~~

~~Rated output power, PRAT, of the base station is the mean power level per carrier over an active timeslot that the manufacturer has declared to be available at the antenna connector. The rated output power of the base station areis defined in section 3.1.~~

6.2.1 Base station maximum output power

~~Maximum output power, P_{max} , of the base station is the mean power level per carrier over an active timeslot measured at the antenna connector for a specified reference condition. The maximum output power of the base station is defined in section 3.1.~~

6.2.1.1 Minimum Requirement

In normal conditions, the base station maximum output power shall remain within +2 dB and -2 dB of the manufacturer's rated output power.

In extreme conditions, the Base station maximum output power shall remain within +2.5 dB and -2.5 dB of the manufacturer's rated 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.

---Next section ---

6.4.3 Power control dynamic range

The power control dynamic range is the difference between the maximum and the minimum ~~transmit~~ output power of one code channel for a specified reference condition

6.4.3.1 Minimum Requirement

Down link (DL) power control dynamic range shall be greater or equal to 30 dB

6.4.4 Minimum ~~transmit~~ output power

The minimum controlled output power of the BS is when the power ~~control setting~~ is set to a minimum value. ~~This is when the power control indicates a minimum transmit output power is required.~~

6.4.4.1 Minimum Requirement

Down link (DL) minimum output ~~transmit~~ power shall be less or equal to ~~is set to:~~ Maximum output power – 30dB

---Next section ---

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. This parameter is defined as maximum output transmit power within the channel bandwidth when the transmitter is OFF.

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 better~~ 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 better 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 section ---

6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the average transmitted power centered on the assigned channel frequency to the average power centered measured in an adjacent channel frequency. In both cases the transmitted and the adjacent channel power isare measured withthrough a matched filter that has a (Root Raised Cosine (RRC) filter response with and roll-off $\alpha=0.22$) and a with a noise power bandwidth equal to the chip rate. The requirements shall apply for all configurations of BS (single carrier or multi-carrier), and for all operating modes foreseen by the manufacturer's specification.

The requirement depends on the deployment scenario. Three different deployment scenarios have been defined as given below.

---END---

CHANGE REQUEST

⌘ **25.105 CR 72** ⌘ ev **-** ⌘ Current version: **3.7.0** ⌘

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:	⌘ Clarification in Spectrum emission mask section		
Source:	⌘ RAN WG4		
Work item code:	⌘	Date:	⌘ 03/09/2001
Category:	⌘ F	Release:	⌘ Rel99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	R96 (Release 1996)	2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R97 (Release 1997)	R98 (Release 1998)
	B (addition of feature),	R99 (Release 1999)	REL-4 (Release 4)
	C (functional modification of feature)	REL-5 (Release 5)	
	D (editorial modification)		
	Detailed explanations of the above categories can be found in 3GPP <u>IR 21.900</u> .		

Reason for change:	⌘ Undefined terms (f_offset and Δf) in section 6.6.2.1.
Summary of change:	⌘ Addition of definition of missing terms. Correction of mask boundary equations.
Consequences if not approved:	⌘ Misunderstanding of spectrum emission mask requirements.

Clauses affected:	⌘ 6.6.2.1
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications ⌘
	<input type="checkbox"/> Test specifications
	<input type="checkbox"/> O&M Specifications
Other comments:	⌘

How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://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.

6.6.2 Out of band emission

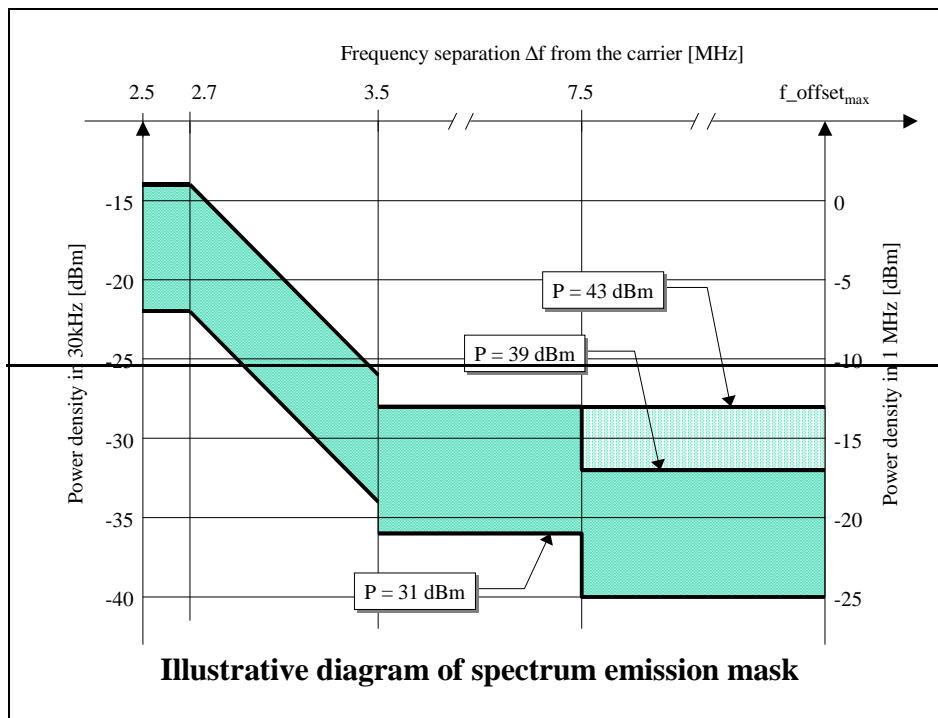
Out of band emissions are unwanted emissions immediately outside the channel bandwidth resulting from the modulation process and non-linearity in the transmitter but excluding spurious emissions. This out of band emission requirement is specified both in terms of a spectrum emission mask and adjacent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

6.6.2.1 Spectrum emission mask

The mask defined in Table 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 $\Delta f = 2.5$ MHz to Δf_{\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 center frequency of the measuring filter.
- $f_{\text{offset}_{\max}}$ is either 12.5 MHz or the offset to the UMTS Tx band edge as defined in section 5.2, whichever is the greater.
- Δf_{\max} is equal to $f_{\text{offset}_{\max}}$ minus half of the bandwidth of the measurement filter.



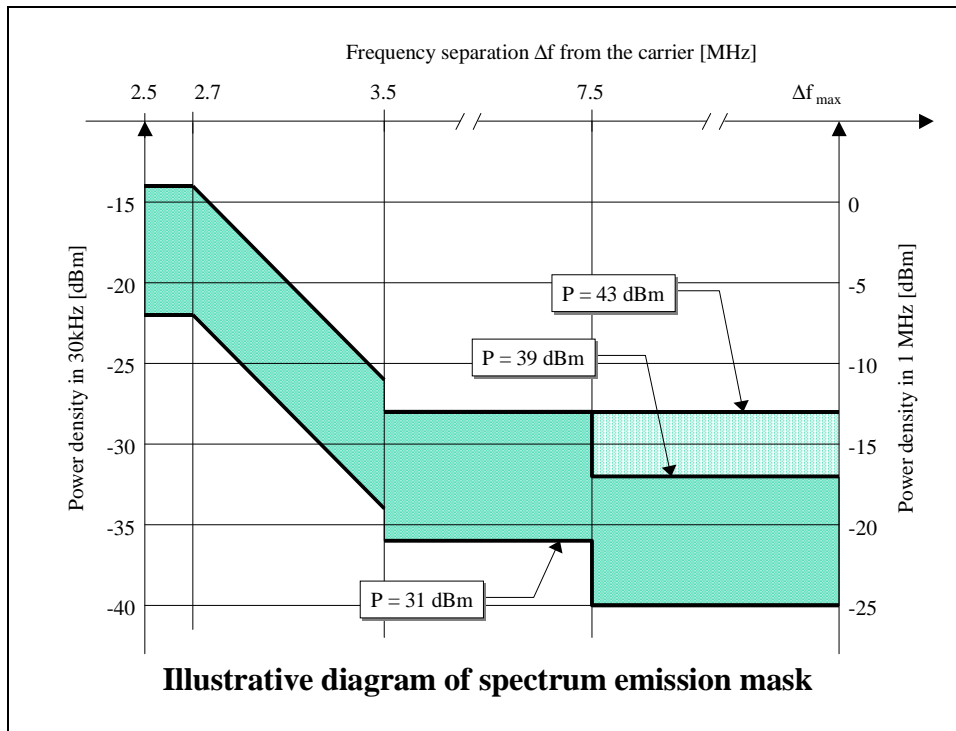


Figure 6.2

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	$2.515\text{MHz} \leq f_{\text{offset}} < 2.715\text{MHz}$	-14 dBm	30 kHz
$2.7 \leq \Delta f < 3.5$ MHz	$2.715\text{MHz} \leq f_{\text{offset}} < 3.515\text{MHz}$	$-14 - 15 \cdot (f_{\text{offset}} - 2.715)$ dBm	30 kHz
(see note)	$3.515\text{MHz} \leq f_{\text{offset}} < 4.0\text{MHz}$	-26 dBm	30 kHz
$3.5 \leq \Delta f$ MHz	$4.0\text{MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	-13 dBm	1 MHz

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

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

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

Frequency offset of measurement filter –3dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Maximum level	Measurement bandwidth
$2.5 \leq \Delta f < 2.7$ MHz	$2.515\text{MHz} \leq f_{\text{offset}} < 2.715\text{MHz}$	P - 53 dBm	30 kHz
$2.7 \leq \Delta f < 3.5$ MHz	$2.715\text{MHz} \leq f_{\text{offset}} < 3.515\text{MHz}$	P - 53 - 15·(f_offset - 2.715) dBm	30 kHz
(see note)	$3.515\text{MHz} \leq f_{\text{offset}} < 4.0\text{MHz}$	P - 65 dBm	30 kHz
$3.5 \leq \Delta f < 7.5$ MHz	$4.0\text{MHz} \leq f_{\text{offset}} < 8.0\text{MHz}$	P - 52 dBm	1 MHz
$7.5 \leq \Delta f$ MHz	$8.0\text{MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	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
$2.5 \leq \Delta f < 2.7$ MHz	$2.515\text{MHz} \leq f_{\text{offset}} < 2.715\text{MHz}$	-22 dBm	30 kHz
$2.7 \leq \Delta f < 3.5$ MHz	$2.715\text{MHz} \leq f_{\text{offset}} < 3.515\text{MHz}$	-22 - 15·(f_offset - 2.715) dBm	30 kHz
(see note)	$3.515\text{MHz} \leq f_{\text{offset}} < 4.0\text{MHz}$	-34 dBm	30 kHz
$3.5 \leq \Delta f < 7.5$ MHz	$4.0\text{MHz} \leq f_{\text{offset}} < 8.0\text{MHz}$	-21 dBm	1 MHz
$7.5 \leq \Delta f$ MHz	$8.0\text{MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	-25 dBm	1 MHz

NOTE: This frequency range ensures that the range of values of f_{offset} is continuous.

Edinburgh, Great Britain, 3rd - 7th September 2001

CR-Form-v4

CHANGE REQUEST⌘ **25.105 CR 73** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Clarification in Spectrum emission mask section												
Source:	⌘ RAN WG4												
Work item code:	⌘ <input type="text"/> Date: ⌘ 03/09/2001												
Category:	⌘ A												
Use <u>one</u> of the following categories:													
<table border="0"> <tr> <td>F (correction)</td> <td>R96 (Release 1996)</td> </tr> <tr> <td>A (corresponds to a correction in an earlier release)</td> <td>R97 (Release 1997)</td> </tr> <tr> <td>B (addition of feature),</td> <td>R98 (Release 1998)</td> </tr> <tr> <td>C (functional modification of feature)</td> <td>R99 (Release 1999)</td> </tr> <tr> <td>D (editorial modification)</td> <td>REL-4 (Release 4)</td> </tr> <tr> <td></td> <td>REL-5 (Release 5)</td> </tr> </table>		F (correction)	R96 (Release 1996)	A (corresponds to a correction in an earlier release)	R97 (Release 1997)	B (addition of feature),	R98 (Release 1998)	C (functional modification of feature)	R99 (Release 1999)	D (editorial modification)	REL-4 (Release 4)		REL-5 (Release 5)
F (correction)	R96 (Release 1996)												
A (corresponds to a correction in an earlier release)	R97 (Release 1997)												
B (addition of feature),	R98 (Release 1998)												
C (functional modification of feature)	R99 (Release 1999)												
D (editorial modification)	REL-4 (Release 4)												
	REL-5 (Release 5)												
Detailed explanations of the above categories can be found in 3GPP <u>TR 21.900</u> .													
Release:	⌘ Rel-4												
Use <u>one</u> of the following releases:													

Reason for change:	⌘ Undefined terms (f_offset and Δf) in section.
Summary of change:	⌘ Addition of definition of missing terms. Correction of mask boundary equations.
Consequences if not approved:	⌘ Misunderstanding of spectrum emission mask requirements.

Clauses affected:	⌘ 6.6.2.1.1
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="text"/> <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
Other comments:	⌘ Cat A CR related to R99 Cat F CR tdoc R4-011163

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.

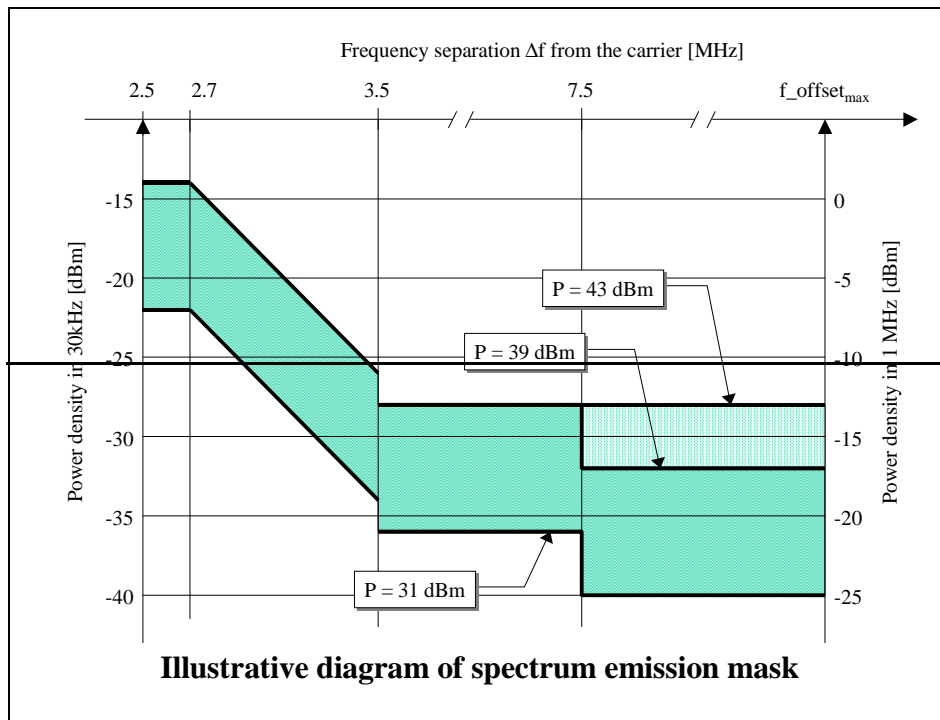
6.6.2.1 Spectrum emission mask

6.6.2.1.1 3,84 Mcps TDD Option

The mask defined in Table 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 $\Delta f = 2.5$ MHz to Δf_{\max} $f_{\text{offset}_{\max}}$ 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 center frequency of the measuring filter.
- $f_{\text{offset}_{\max}}$ is either 12.5 MHz or the offset to the UMTS Tx band edge as defined in section 5.2, whichever is the greater.
- Δf_{\max} is equal to $f_{\text{offset}_{\max}}$ minus half of the bandwidth of the measurement filter.



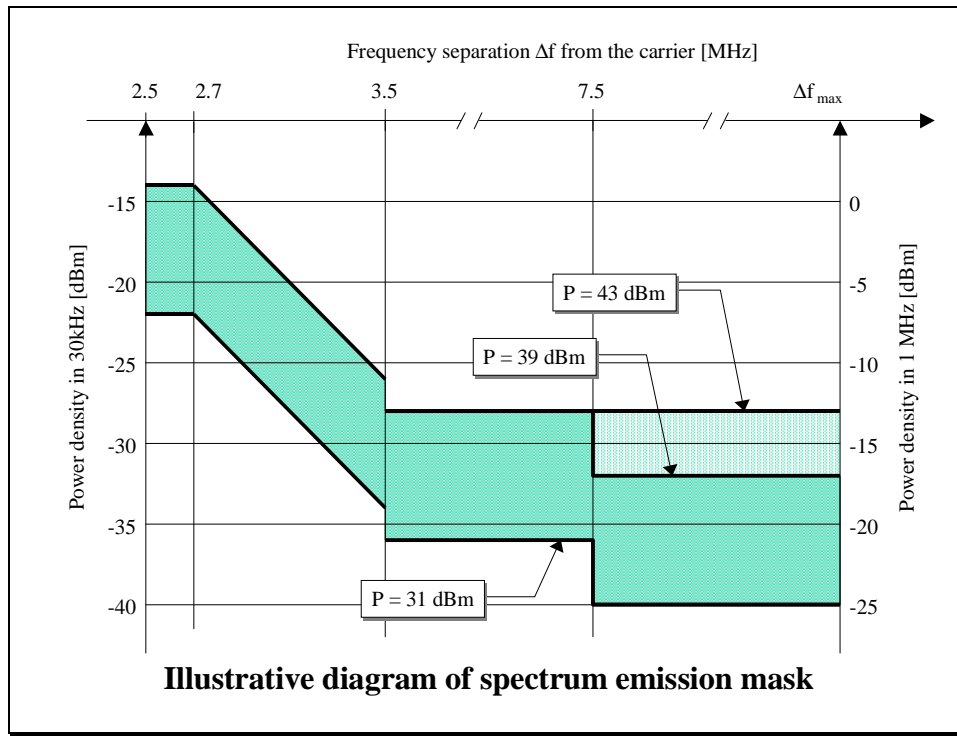


Figure 6.2

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	$2.515\text{MHz} \leq f_{\text{offset}} < 2.715\text{MHz}$	-14 dBm	30 kHz
$2.7 \leq \Delta f < 3.5$ MHz	$2.715\text{MHz} \leq f_{\text{offset}} < 3.515\text{MHz}$	$-14 - 15 \cdot (f_{\text{offset}} - 2.715)$ dBm	30 kHz
(see note)	$3.515\text{MHz} \leq f_{\text{offset}} < 4.0\text{MHz}$	-26 dBm	30 kHz
$3.5 \leq \Delta f$ MHz	$4.0\text{MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	-13 dBm	1 MHz

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

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

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

Frequency offset of measurement filter – 3dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Maximum level	Measurement bandwidth
$2.5 \leq \Delta f < 2.7$ MHz	$2.515\text{MHz} \leq f_{\text{offset}} < 2.715\text{MHz}$	P - 53 dBm	30 kHz
$2.7 \leq \Delta f < 3.5$ MHz	$2.715\text{MHz} \leq f_{\text{offset}} < 3.515\text{MHz}$	P - 53 - 15·(f_offset - 2.715) dBm	30 kHz
(see note)	$3.515\text{MHz} \leq f_{\text{offset}} < 4.0\text{MHz}$	P - 65 dBm	30 kHz
$3.5 \leq \Delta f < 7.5$ MHz	$4.0\text{MHz} \leq f_{\text{offset}} < 8.0\text{MHz}$	P - 52 dBm	1 MHz
$7.5 \leq \Delta f$ MHz	$8.0\text{MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	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
$2.5 \leq \Delta f < 2.7$ MHz	$2.515\text{MHz} \leq f_{\text{offset}} < 2.715\text{MHz}$	-22 dBm	30 kHz
$2.7 \leq \Delta f < 3.5$ MHz	$2.715\text{MHz} \leq f_{\text{offset}} < 3.515\text{MHz}$	-22 - 15·(f_offset - 2.715) dBm	30 kHz
(see note)	$3.515\text{MHz} \leq f_{\text{offset}} < 4.0\text{MHz}$	-34 dBm	30 kHz
$3.5 \leq \Delta f < 7.5$ MHz	$4.0\text{MHz} \leq f_{\text{offset}} < 8.0\text{MHz}$	-21 dBm	1 MHz
$7.5 \leq \Delta f$ MHz	$8.0\text{MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	-25 dBm	1 MHz

NOTE: This frequency range ensures that the range of values of f_{offset} is continuous.

CHANGE REQUEST

⌘ **25.105 CR 74** ⌘ ev **-** ⌘ Current version: **3.7.0** ⌘

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:	⌘ PC dynamic range and minimum TP requirements correction.		
Source:	⌘ RAN WG4		
Work item code:	⌘	Date:	⌘ 3-9-01
Category:	⌘ F	Release:	⌘ Rel99
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:	⌘ Minimum requirements for PC dynamic range and minimum TP
Summary of change:	⌘ Align requirements with 25.142 and specify desired performance
Consequences if not approved:	⌘ The current requirement is unclear and could become a source of confusion.

Clauses affected:	⌘ 6.4.3.1 and 6.4.4.1
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:	⌘

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/](http://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.

6.4.3 Power control dynamic range

The power control dynamic range is the difference between the maximum and the minimum transmit output power for a specified reference condition

6.4.3.1 Minimum Requirement

Down link (DL) power control dynamic range shall be greater than or equal to 30 dB

6.4.4 Minimum transmit power

The minimum controlled output power of the BS is when the power control setting is set to a minimum value. This is when the power control indicates a minimum transmit output power is required.

6.4.4.1 Minimum Requirement

Down link (DL) minimum transmit power shall be lower than or equal to ~~is set to~~ Maximum output power – 30dB

CR-Form-v4	
CHANGE REQUEST	
⌘ 25.105 CR 75 ⌘ ev - ⌘	Current version: 4.1.0 ⌘

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

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

Title:	⌘ PC dynamic range and minimum TP requirements correction.	
Source:	⌘ RAN WG4	
Work item code:	⌘	Date: ⌘ 4 - 9 - 01
Category:	⌘ A	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:	⌘ Minimum requirements for PC dynamic range and minimum TP
Summary of change:	⌘ Align requirements with 25.142 and specify desired performance
Consequences if not approved:	⌘ The current requirement is unclear and could become a source of confusion.

Clauses affected:	⌘ 6.4.3.1 and 6.4.4.1	
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications	⌘
	<input type="checkbox"/> Test specifications	
	<input type="checkbox"/> O&M Specifications	
Other comments:	⌘	

How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://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.

6.4.3 Power control dynamic range

The power control dynamic range is the difference between the maximum and the minimum transmit output power for a specified reference condition

6.4.3.1 Minimum Requirement

Down link (DL) power control dynamic range shall be greater than or equal to —30 dB

6.4.4 Minimum transmit power

The minimum controlled output power of the BS is when the power control setting is set to a minimum value. This is when the power control indicates a minimum transmit output power is required.

6.4.4.1 Minimum Requirement

Down link (DL) minimum transmit power shall be lower than or equal to ~~is set to~~: Maximum output power – 30dB

Edinburgh, Great Britain, 3rd - 7th September 2001

CR-Form-v4

CHANGE REQUEST⌘ **TS 25.105 CR 76** ⌘ ev **-** ⌘ Current version: **3.7.0** ⌘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 frequency range for receiver spurious emissions														
Source:	⌘ RAN WG4														
Work item code:	⌘ <input type="text"/> Date: ⌘ 03/09/2001														
Category:	⌘ F Release: ⌘ Rel99														
Use <u>one</u> of the following categories:															
<table border="0"> <tr> <td>F (correction)</td> <td>2 (GSM Phase 2)</td> </tr> <tr> <td>A (corresponds to a correction in an earlier release)</td> <td>R96 (Release 1996)</td> </tr> <tr> <td>B (addition of feature),</td> <td>R97 (Release 1997)</td> </tr> <tr> <td>C (functional modification of feature)</td> <td>R98 (Release 1998)</td> </tr> <tr> <td>D (editorial modification)</td> <td>R99 (Release 1999)</td> </tr> <tr> <td></td> <td>REL-4 (Release 4)</td> </tr> <tr> <td></td> <td>REL-5 (Release 5)</td> </tr> </table>		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)		REL-4 (Release 4)		REL-5 (Release 5)
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)														
	REL-4 (Release 4)														
	REL-5 (Release 5)														
Detailed explanations of the above categories can be found in 3GPP <u>TR 21.900</u> .															

Reason for change:	⌘ The current frequency range for receiver spurious emission requirements is inconsistent with is proposed in ITU-R M.[UNWANT-MS].
Summary of change:	⌘ The starting frequency for receiver spurious emission requirements is changed from 9kHz to 30MHz as proposed in ITU-R M.[UNWANT-MS].
Consequences if not approved:	⌘ There will be inconsistency with ITU-R recommendation M.[UNWANT]. It will cause further inconsistency with each regulations those follow the recommendation.

Clauses affected:	⌘ 7.7.1
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> <input checked="" type="checkbox"/> Test specifications ⌘ 25.142 <input type="checkbox"/> O&M Specifications
Other comments:	⌘ <input type="text"/>

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.

7.7 Spurious emissions

The spurious emissions power is the power of emissions generated or amplified in a receiver that appear at the BS antenna connector. The requirements apply to all BS with separate RX and TX antenna port. The test shall be performed when both TX and RX are on with the TX port terminated.

For all BS with common RX and TX antenna port the transmitter spurious emission as specified in section 6.6.3 is valid.

7.7.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 7.6 : Receiver spurious emission requirements

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1.9 GHz and 1.98 GHz – 2.01 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12.5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the BS.
1.9 GHz – 1.98 GHz and 2.01 GHz – 2.025 GHz	-78 dBm	3.84 MHz	With the exception of frequencies between 12.5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the BS.
2.025 GHz – 12.75 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12.5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the BS.

Edinburgh, Great Britain, 3rd - 7th September 2001

CR-Form-v4

CHANGE REQUEST⌘ **TS 25.105 CR 77** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Correction of frequency range for receiver spurious emissions														
Source:	⌘ RAN WG4														
Work item code:	⌘ <input type="text"/> Date: ⌘ 03/09/2001														
Category:	⌘ A Release: ⌘ Rel-4														
Use <u>one</u> of the following categories:															
<table border="0"> <tr> <td>F (correction)</td> <td>2 (GSM Phase 2)</td> </tr> <tr> <td>A (corresponds to a correction in an earlier release)</td> <td>R96 (Release 1996)</td> </tr> <tr> <td>B (addition of feature),</td> <td>R97 (Release 1997)</td> </tr> <tr> <td>C (functional modification of feature)</td> <td>R98 (Release 1998)</td> </tr> <tr> <td>D (editorial modification)</td> <td>R99 (Release 1999)</td> </tr> <tr> <td></td> <td>REL-4 (Release 4)</td> </tr> <tr> <td></td> <td>REL-5 (Release 5)</td> </tr> </table>		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)		REL-4 (Release 4)		REL-5 (Release 5)
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)														
	REL-4 (Release 4)														
	REL-5 (Release 5)														
Detailed explanations of the above categories can be found in 3GPP TR 21.900 .															

Reason for change:	⌘ The current frequency range for receiver spurious emission requirements is inconsistent with is proposed in ITU-R M.[UNWANT-MS].
Summary of change:	⌘ The starting frequency for receiver spurious emission requirements is changed from 9kHz to 30MHz as proposed in ITU-R M.[UNWANT-MS].
Consequences if not approved:	⌘ There will be inconsistency with ITU-R recommendation M.[UNWANT]. It will cause further inconsistency with each regulations those follow the recommendation.

Clauses affected:	⌘ 7.7.1.1
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:	⌘ Corresponding R99 Cat. F CR is R4-011268

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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.

7.7 Spurious emissions

The spurious emissions power is the power of emissions generated or amplified in a receiver that appear at the BS antenna connector. The requirements apply to all BS with separate RX and TX antenna port. The test shall be performed when both TX and RX are on with the TX port terminated.

For all BS with common RX and TX antenna port the transmitter spurious emission as specified in section 6.6.3 is valid.

7.7.1 Minimum Requirement

7.7.1.1 3,84 Mcps TDD Option:

The power of any spurious emission shall not exceed:

Table 7.6: Receiver spurious emission requirements

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1.9 GHz and 1.98 GHz – 2.01 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12.5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the BS.
1.9 GHz – 1.98 GHz and 2.01 GHz – 2.025 GHz	-78 dBm	3.84 MHz	With the exception of frequencies between 12.5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the BS.
2.025 GHz – 12.75 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12.5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the BS.

7.7.1.2 1,28 Mcps TDD Option

The power of any spurious emission shall not exceed:

Table 7.6A: Receiver spurious emission requirements

Band	Maximum level	Measurement Bandwidth	Note
9 kHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1.9 GHz and 1.98 GHz – 2.01 GHz	-47 dBm	1 MHz	With the exception of frequencies between 4MHz below the first carrier frequency and 4MHz above the last carrier frequency used by the BS.
1.9 GHz – 1.98 GHz and 2.01 GHz – 2.025 GHz	-83 dBm	1.28 MHz	With the exception of frequencies between 4MHz below the first carrier frequency and 4MHz above the last carrier frequency used by the BS.
2.025 GHz – 12.75 GHz	-47 dBm	1 MHz	With the exception of frequencies between 4MHz below the first carrier frequency and 4MHz above the last carrier frequency used by the BS.

CHANGE REQUEST

⌘ **25.105 CR 78** ⌘ ev **-** ⌘ Current version: **3.7.0** ⌘

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:	⌘ Definition of "classical Doppler spectrum" in TS 25.105		
Source:	⌘ RAN WG4		
Work item code:	⌘	Date:	⌘ 04 September 2001
Category:	⌘ F	Release:	⌘ Rel99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	R96 (GSM Phase 2)	
	A (corresponds to a correction in an earlier release)	R97 (Release 1996)	
	B (addition of feature),	R98 (Release 1997)	
	C (functional modification of feature)	R99 (Release 1998)	
	D (editorial modification)	REL-4 (Release 1999)	
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	REL-5 (Release 4)	
		REL-5 (Release 5)	

Reason for change:	⌘ Clarification of how the "classical Doppler spectrum" is defined
Summary of change:	⌘ A formula of the classical Doppler spectrum with Rayleigh fading is introduced, as taken by GSM specs
Consequences if not approved:	⌘ There is not a unique definition of "classical Doppler spectrum"

Clauses affected:	⌘ B.2
Other specs affected:	⌘ <input checked="" type="checkbox"/> Other core specifications ⌘ 25.104
	<input checked="" type="checkbox"/> Test specifications ⌘ 25.141, 25.142
	<input type="checkbox"/> O&M Specifications
Other comments:	⌘

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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.

B.2 Multi-path fading propagation conditions

Table B1 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 B.1: Propagation Conditions for Multi path Fading Environments

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

CHANGE REQUEST

⌘ **25.105 CR 79** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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

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

Title:	⌘ Definition of "classical Doppler spectrum" in TS 25.105		
Source:	⌘ RAN WG4		
Work item code:	⌘	Date:	⌘ 04 September 2001
Category:	⌘ A	Release:	⌘ Rel-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	R96 (Release 1996)	2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R97 (Release 1997)	R96 (Release 1996)
	B (addition of feature),	R98 (Release 1998)	R97 (Release 1997)
	C (functional modification of feature)	R99 (Release 1999)	R98 (Release 1998)
	D (editorial modification)	REL-4 (Release 4)	R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	REL-5 (Release 5)	

Reason for change:	⌘ Clarification of how the "classical Doppler spectrum" is defined
Summary of change:	⌘ A formula of the classical Doppler spectrum with Rayleigh fading is introduced, as taken by GSM specs
Consequences if not approved:	⌘ There is not a unique definition of "classical Doppler spectrum"

Clauses affected:	⌘ B.2
Other specs affected:	⌘ <input checked="" type="checkbox"/> Other core specifications ⌘ 25.104
	<input checked="" type="checkbox"/> Test specifications ⌘ 25.141, 25.142
	<input type="checkbox"/> O&M Specifications
Other comments:	⌘

How to create CRs using this form:

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

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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.

B.2 Multi-path fading propagation conditions

B.2.1 3,84 Mcps TDD Option

Table B1 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum, defined as:

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

Table B.1: Propagation Conditions for Multi path Fading Environments

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

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 Power [dB]	Relative Delay [ns]	Average Power [dB]	Relative Delay [ns]	Average Power [dB]
0	0	0	0	0	0
2928	-10	2928	0	781	-3
		12000	0	1563	-6
				2344	-9

CHANGE REQUEST

⌘ **25.105 CR 80** ⌘ ev **-** ⌘ Current version: **3.7.0** ⌘

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 Performance Requirements for 12.2 kbps, 64 kbps, 144 kbps and 384 kbps, Case 1, addition of Figure Note for Table 8.4		
Source:	⌘ RAN WG4		
Work item code:	⌘	Date:	⌘ July 9, 2001
Category:	⌘ F	Release:	⌘ Rel99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	R96 (GSM Phase 2)	
	A (corresponds to a correction in an earlier release)	R97 (Release 1996)	
	B (addition of feature),	R98 (Release 1997)	
	C (functional modification of feature)	R99 (Release 1998)	
	D (editorial modification)	REL-4 (Release 1999)	
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		REL-5 (Release 4)
			REL-5 (Release 5)

Reason for change:	⌘ The note was not included in CR R4-010570.
Summary of change:	⌘ Add note to Table 8.4
Consequences if not approved:	⌘ The table is incomplete without the note, it is currently called out but not present.

Clauses affected:	⌘ 8.3.1
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications ⌘
	<input type="checkbox"/> Test specifications
	<input type="checkbox"/> O&M Specifications
Other comments:	⌘

How to create CRs using this form:

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

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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.

8.3 Demodulation of DCH in multipath fading conditions

8.3.1 Multipath fading Case 1

The performance requirement of DCH in multipath fading Case 1 is determined by the maximum Block Error Rate (BLER) allowed when the receiver input signal is at a specified \hat{I}_{or}/I_{oc} limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.3.1.1 Minimum requirement

For the parameters specified in Table 8.4 the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.5. These requirements are applicable for TFCS size 16.

Table 8.4: Parameters in multipath Case 1 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of DPCH _o		6	4	0	0
$\frac{DPCH_o - E_c}{I_{or}}$	dB	-9	-9.5	0	0
I_{oc}	dBm/3.84 MHz	-89			
Cell Parameter*		0,1			
DPCH Channelization Codes*	C(k,Q)	C(1,8)	C(1,4) C(5,16)	C(1,2) C(9,16)	C(1,2)
DPCH _o Channelization Codes*	C(k,Q)	C(i,16) 3 ≤ i ≤ 8	C(i,16) 6 ≤ i ≤ 9	-	-
Information Data Rate	kbps	12.2	64	144	384

**Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.*

Table 8.5: Performance requirements in multipath Case 1 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	6.7	10^{-2}
2	5.3	10^{-1}
	9.7	10^{-2}
3	5.5	10^{-1}
	9.8	10^{-2}
4	4.8	10^{-1}
	9.2	10^{-2}