TSG RAN Meeting #22 **RP-030604**
Maui, Hawaii, US, 9 - 12 December 2003

Title **CRs (Rel-6) to TS 25.101, TS 25.104, TS 25.141 for Introduction of UMTS 850 requirements**
Source **TSG RAN WG4**
Agenda Item **8.1.2**

RAN4 Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item
R4-031147	25.101	286	2	B	Rel-6	6.2.0	Introduction of UMTS 850 requirements	RInImp-UMTS850
R4-031122	25.104	207	1	B	Rel-6	6.3.0	Introduction of UMTS 850 requirements	RInImp-UMTS850
R4-031123	25.141	328	1	B	Rel-6	6.3.0	Introduction of UMTS 850 requirements	RInImp-UMTS850

3GPP TSG RAN WG4 (Radio) Meeting #29 **R4-031147**

San Diego, USA 17 - 21 November 2003

CR-Form-v7

CHANGE REQUEST

⌘ **25.101** **CR** **286** ⌘ **rev** **2** ⌘ Current version: **6.2.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Introduction of UMTS 850 requirements
Source:	⌘	RAN WG4
Work item code:	⌘	RInImp-UMTS850
Date:	⌘	26/11/2003
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Introduction of UMTS 850 requirements
Summary of change:	⌘	Re-structure of relevant sections: Spectrum emission mask, Spurious emissions, Blocking characteristics, Intermodulation characteristics, Receiver spurious emissions and Multi-path fading propagation conditions. In multipath propagation conditions, which are used for verifying demodulation performance and RRM test case "Correct reporting of neighbours in fading propagation conditions", all the UE speeds of Band V are scaled to the speeds, which correspond to the same Doppler frequencies as used in Band I.
Consequences if not approved:	⌘	No requirements for UMTS 850 band specified

Clauses affected:	⌘	6.2.1, 6.6.2.1.1, 6.6.3, 7.3.1, 7.6.1, 7.6.2, 7.6.3, 7.8.2, 7.9.1, B.2.2

		Y	N			
Other specs Affected:	⌘	X		Other core specifications	⌘	TS 25.307
		X		Test specifications		TS 34.121
			X	O&M Specifications		

Other comments:	⌘	

How to create CRs using this form:
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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 reques

6 Transmitter characteristics

6.1 General

Unless detailed the transmitter characteristic are specified at the antenna connector of the UE. For UE with integral antenna only, a reference antenna with a gain of 0 dBi is assumed. Transmitter characteristics for UE(s) with multiple antennas/antenna connectors are FFS.

The UE antenna performance has a significant impact on system performance, and minimum requirements on the antenna efficiency are therefore intended to be included in future versions of the present document. It is recognised that different requirements and test methods are likely to be required for the different types of UE.

All the parameters in clause 6 are defined using the UL reference measurement channel (12.2 kbps) specified in subclause A.2.1 and unless stated with the UL power control ON

6.2 Transmit power

6.2.1 UE maximum output power

The following Power Classes define the nominal maximum output power. The nominal power defined is the broadband transmit power of the UE, i.e. the power in a bandwidth of at least (1+α) times the chip rate of the radio access mode. The period of measurement shall be at least one timeslot.

Table 6.1: UE Power Classes

Operating Band	Power Class 1		Power Class 2		Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
Band I	+33	+1/-3	+27	+1/-3	+24	+1/-3	+21	+2/-2
Band II	-	-	-	-	+24	+1/-3	+21	+2/-2
Band III	-	-	-	-	+24	+1/-3	+21	+2/-2
Band V	-	-	-	-	+24	+1/-3	+21	+2/-2

NOTE: The tolerance allowed for the nominal maximum output power applies even for the multi-code transmission mode.

---NEXT MODIFIED SECTION---

6.6 Output RF spectrum emissions

6.6.1 Occupied bandwidth

Occupied bandwidth is a measure of the bandwidth containing 99 % of the total integrated power of the transmitted spectrum, centered on the assigned channel frequency. The occupied channel bandwidth shall be less than 5 MHz based on a chip rate of 3.84 Mcps.

6.6.2 Out of band emission

Out of band emissions are unwanted emissions immediately outside the nominal channel resulting from the modulation process and non-linearity in the transmitter but excluding spurious emissions. This out of band emission limit is specified in terms of a spectrum emission mask and Adjacent Channel Leakage power Ratio.

6.6.2.1 Spectrum emission mask

The spectrum emission mask of the UE applies to frequencies, which are between 2.5 MHz and 12.5 MHz away from the UE centre carrier frequency. The out of channel emission is specified relative to the RRC filtered mean power of the UE carrier.

6.6.2.1.1 Minimum requirement

The power of any UE emission shall not exceed the levels specified in Table 6.10. The absolute requirement is based on a –50 dBm/3.84 MHz minimum power threshold for the UE. This limit is expressed for the narrower measurement bandwidths as –55.8 dBm/1 MHz and –71.1 dBm/30 kHz.

Table 6.10: Spectrum Emission Mask Requirement

Δf in MHz (Note 1)	**Minimum requirement (Note 2) Band I, II, III, V**		**Additional requirements Band II and Band V (Note 3)**	**Measurement bandwidth (Note 6)**
	Relative requirement	**Absolute requirement**		
2.5 - 3.5	$\left\{-35-15\cdot\left(\frac{\Delta f}{MHz}-2.5\right)\right\}dBc$	-71.1 dBm	-15 dBm	30 kHz (Note 4)
3.5 - 7.5	$\left\{-35-1\cdot\left(\frac{\Delta f}{MHz}-3.5\right)\right\}dBc$	-55.8 dBm	-13 dBm	1 MHz (Note 5)
7.5 - 8.5	$\left\{-39-10\cdot\left(\frac{\Delta f}{MHz}-7.5\right)\right\}dBc$	-55.8 dBm	-13 dBm	1 MHz (Note 5)
8.5 - 12.5 MHz	-49 dBc	-55.8 dBm	-13 dBm	1 MHz (Note 5)

Note 1: Δf is the separation between the carrier frequency and the centre of the measurement bandwidth.
Note 2: The minimum requirement for bands I, II, III & ~~III~~ V is calculated from the relative requirement or the absolute requirement, whichever is the higher power.
Note 3: For operation in Band II and Band V only, the minimum requirement is calculated from the minimum requirement calculated in Note 2 or the additional requirement for band II, whichever is the lower power.
Note 4: The first and last measurement position with a 30 kHz filter is at Δf equals to 2.515 MHz and 3.485 MHz.
Note 5: The first and last measurement position with a 1 MHz filter is at Δf equals to 4 MHz and 12 MHz.
Note 6: As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth may be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the RRC filtered mean power centered on the assigned channel frequency to the RRC filtered mean power centered on an adjacent channel frequency.

6.6.2.2.1 Minimum requirement

If the adjacent channel power is greater than –50dBm then the ACLR shall be higher than the value specified in Table 6.11.

Table 6.11: UE ACLR

Power Class	Adjacent channel frequency relative to assigned channel frequency	ACLR limit
3	+ 5 MHz or – 5 MHz	33 dB
3	+ 10 MHz or – 10 MHz	43 dB
4	+ 5 MHz or – 5 MHz	33 dB
4	+ 10 MHz or –10 MHz	43 dB

NOTE 1: The requirement shall still be met in the presence of switching transients.

NOTE 2: The ACLR requirements reflect what can be achieved with present state of the art technology.

NOTE 3: Requirement on the UE shall be reconsidered when the state of the art technology progresses.

6.6.3 Spurious emissions

Spurious emissions are emissions which are caused by unwanted transmitter effects such as harmonics emission, parasitic emission, intermodulation products and frequency conversion products, but exclude out of band emissions.

The frequency boundary and the detailed transitions of the limits between the requirement for out band emissions and spectrum emissions are based on ITU-R Recommendations SM.329-9[2].

6.6.3.1 Minimum requirement

These requirements are only applicable for frequencies, which are greater than 12.5 MHz away from the UE centre carrier frequency.

Table 6.12: General spurious emissions requirements

Frequency Bandwidth	Measurement Bandwidth	Minimum requirement
9 kHz ≤ f < 150 kHz	1 kHz	-36 dBm
150 kHz ≤ f < 30 MHz	10 kHz	-36 dBm
30 MHz ≤ f < 1000 MHz	100 kHz	-36 dBm
1 GHz ≤ f < 12.75 GHz	1 MHz	-30 dBm

Table 6.13: Additional spurious emissions requirements

Operating Band	Frequency Bandwidth	Measurement Bandwidth	Minimum requirement
I	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm *
	925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm *
	935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm *
	1805 MHz ≤ f ≤ 1880 MHz	100 kHz	-71 dBm *
	1893.5 MHz <f<1919.6 MHz	300 kHz	-41 dBm
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm
II	1930 MHz ≤ f ≤ 1990 MHz	3.84 MHz	-60 dBm
III	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm *
	925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm *
	935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm *
	1805 MHz ≤ f ≤ 1880 MHz	3.84 MHz	-60 dBm
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm *
V	869 MHz ≤ f ≤ 894 MHz	3.84 MHz	-60 dBm
	1930 MHz ≤ f ≤ 1990 MHz	3.84 MHz	-60 dBm
* The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, up to five measurements with a level up to the applicable requirements defined in Table 6.12 are permitted for each UARFCN used in the measurement			

---NEXT MODIFIED SECTION---

7 Receiver characteristics

---NEXT MODIFIED SECTION---

7.3 Reference sensitivity level

The reference sensitivity level <REFSENS> is the minimum mean power received at the UEantenna port at which the Bit Error Ratio (BER) shall not exceed a specific value.

7.3.1 Minimum requirement

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

Table 7.2: Test parameters for reference sensitivity

Operating Band	Unit	DPCH_Ec <REFSENS>	<REF$\hat{I}_{or}$>
I	dBm/3.84 MHz	-117	-106.7
II	dBm/3.84 MHz	-115	-104.7
III	dBm/3.84 MHz	-114	-103.7
V	dBm/3.84 MHz	-115	-104.7
NOTE 1. For Power class 3 this shall be at the maximum output power NOTE 2. For Power class 4 this shall be at the maximum output power			

---NEXT MODIFIED SECTION---

7.6 Blocking characteristics

The blocking characteristic is a measure of the receiver's ability to receive a wanted signal at its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the spurious response or the adjacent channels, without this unwanted input signal causing a degradation of the performance of the receiver beyond a specified limit. The blocking performance shall apply at all frequencies except those at which a spurious response occur.

7.6.1 Minimum requirement (In-band blocking)

The BER shall not exceed 0.001 for the parameters specified in Table 7.6.

Table 7.6: In-band blocking

Parameter	Unit	Level	
DPCH_Ec	dBm/3.84 MHz	<REFSENS>+3 dB	
$\hat{I}_{or}$	dBm/3.84 MHz	<REF$\hat{I}_{or}$> + 3 dB	
$I_{blocking}$ mean power (modulated)	dBm	-56	-44
F_{uw} offset		=±10 MHz	≤-15 MHz & ≥15 MHz
F_{uw} (Band I operation)	MHz	2102.4≤ f ≤2177.6 (Note 2)	2095≤ f ≤2185
F_{uw} (Band II operation)	MHz	1922.4≤ f ≤1977.6 (Note 2)	1915≤ f ≤2005
F_{uw} (Band III operation)	MHz	1797.4≤ f ≤1887.6 (Note 2)	1790≤ f ≤1895
F_{uw} (Band V operation)	MHz	861.4≤ f ≤901.6 (Note 2)	854≤ f ≤909
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)	

Note 1: $I_{blocking}$ (modulated) consists of the common channels needed for tests as specified in Table C.7 and 16 dedicated data channels as specified in Table C.6.

Note 2: For each carrier frequency the requirement are valid for two frequencies, the carrier frequency +/- 10 MHz.

7.6.2 Minimum requirement (Out of-band blocking)

The BER shall not exceed 0.001 for the parameters specified in Table 7.7. For Table 7.7 up to 24 exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a 1 MHz step size. For these exceptions the requirements of clause 7.7 Spurious response are applicable.

Table 7.7: Out of band blocking

Parameter	Unit	Frequency range 1	Frequency range 2	Frequency range 3
DPCH_Ec	dBm/3.84 MHz	<REFSENS>+3 dB	<REFSENS>+3 dB	<REFSENS>+3 dB
$\hat{I}_{or}$	dBm/3.84 MHz	<REF$\hat{I}_{or}$> + 3 dB	<REF$\hat{I}_{or}$> + 3 dB	<REF$\hat{I}_{or}$> + 3 dB
$I_{blocking}$ (CW)	DBm	-44	-30	-15
F_{uw} (Band I operation)	MHz	2050<f <2095 2185<f <2230	2025 <f <2050 2230 <f <2255	1< f <2025 2255<f<12750
F_{uw} (Band II operation)	MHz	1870<f <1915 2005<f <2050	1845 <f <1870 2050 <f <2075	1< f <1845 2075<f<12750
F_{uw} (Band III operation)	MHz	1745 <f <1790 1895<f <1940	1720 <f < 1745 1940<f < 1965	1< f <1720 1965<f<12750
F_{uw} (Band V operation)	MHz	809< f <854 909< f <954	784< f <809 954< f < 979	1< f <784 979<f<12750
UE transmitted mean power	DBm	20 (for Power class 3) 18 (for Power class 4)		
Band I operation	For 2095<f<2110 MHz and 2170<f<2185 MHz, the appropriate in-band blocking or adjacent channel selectivity in subclause 7.5.1 and subclause 7.6.1 shall be applied.			
Band II operation	For 1915<f<1930 MHz and 1990<f<2005 MHz, the appropriate in-band blocking or adjacent channel selectivity in subclause 7.5.1 and subclause 7.6.2 shall be applied			
Band III operation	For 1790<f<1805 MHz and 1880<f<1895 MHz, the appropriate in-band blocking or adjacent channel selectivity in subclause 7.5.1 and subclause 7.6.2 shall be applied.			
Band V operation	For 854<f<869 MHz and 894<f<909 MHz, the appropriate in-band blocking or adjacent channel selectivity in subclause 7.5.1 and subclause 7.6.1 shall be applied.			

7.6.3 Minimum requirement (Narrow band blocking)

The BER shall not exceed 0.001 for the parameters specified in Table 7.7A. This requirement is measure of a receiver's ability to receive a W-CDMA signal at its assigned channel frequency in the presence of an unwanted narrow band interferer at a frequency, which is less than the nominal channel spacing

Table 7.7A: Narrow band blocking characteristics

Parameter	Unit	Band II and Band V	Band III
DPCH_Ec	dBm/3.84 MHz	<REFSENS> + 10 dB	<REFSENS> + 10 dB
$\hat{I}_{or}$	dBm/3.84 MHz	<REF$\hat{I}_{or}$> + 10 dB	<REF$\hat{I}_{or}$> + 10 dB
$I_{blocking}$ (GMSK)	dBm	-57	-56
F_{uw} (offset)	MHz	2.7	2.8
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)	

NOTE: $I_{blocking}$ (GMSK) is an interfering signal as defined in TS 45.004 [6]

7.7 Spurious response

Spurious response is a measure of the receiver's ability to receive a wanted signal on its assigned channel frequency without exceeding a given degradation due to the presence of an unwanted CW interfering signal at any other frequency at which a response is obtained i.e. for which the out of band blocking limit as specified in subclause 7.6.2 is not met.

7.7.1 Minimum requirement

The BER shall not exceed 0.001 for the parameters specified in Table 7.8.

Table 7.8: Spurious Response

Parameter	Unit	Level
DPCH_Ec	dBm/3.84 MHz	<REFSENS> +3 dB
$\hat{I}_{or}$	dBm/3.84 MHz	<REF$\hat{I}_{or}$> +3 dB
$I_{blocking}$ (CW)	dBm	-44
F_{uw}	MHz	Spurious response frequencies
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)

7.8 Intermodulation characteristics

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

7.8.1 Minimum requirement

The BER shall not exceed 0.001 for the parameters specified in Table 7.9.

Table 7.9: Receive intermodulation characteristics

Parameter	Unit	Level	
DPCH_Ec	dBm/3.84 MHz	<REFSENS> +3 dB	
$\hat{I}_{or}$	dBm/3.84 MHz	<REF$\hat{I}_{or}$> +3 dB	
I_{ouw1} (CW)	dBm	-46	
I_{ouw2} mean power (modulated)	dBm	-46	
F_{uw1} (offset)	MHz	10	-10
F_{uw2} (offset)	MHz	20	-20
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)	

NOTE: I_{ouw2} (modulated) consists of the common channels needed for tests as specified in Table C.7 and 16 dedicated data channels as specified in Table C.6.

7.8.2 Minimum requirement (Narrow band)

The BER shall not exceed 0.001 for the parameters specified in Table 7.9A.

Table 7.9A: Receive intermodulation characteristics

Parameter	Unit	Band II and Band V		Band III	
DPCH_Ec	dBm/3.84 MHz	<REFSENS>+ 10 dB		<REFSENS>+ 10 dB	
$\hat{I}_{or}$	dBm/3.84 MHz	<REF$\hat{I}_{or}$> + 10 dB		[<REF$\hat{I}_{or}$> +10 dB	
I_{ouw1} (CW)	dBm	-44		-43	
I_{ouw2} (GMSK)	dBm	-44		-43	
F_{uw1} (offset)	MHz	3.5	-3.5	3.6	-3.6
F_{uw2} (offset)	MHz	5.9	-5.9	6.0	-6.0
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)			

NOTE: I_{ouw2} (GMSK) is an interfering signal as defined in TS 45.004 [6].

7.9 Spurious emissions

The spurious emissions power is the power of emissions generated or amplified in a receiver that appear at the UE antenna connector.

7.9.1 Minimum requirement

The power of any narrow band CW spurious emission shall not exceed the maximum level specified in Table 7.10 and Table 7.11

Table 7.10: General receiver spurious emission requirements

Frequency Band	Measurement Bandwidth	Maximum level	Note
30MHz ≤ f < 1GHz	100 kHz	-57 dBm	
1GHz ≤ f ≤ 12.75 GHz	1 MHz	-47 dBm	

Table 7.11: Additional receiver spurious emission requirements

Band	Frequency Band	Measurement Bandwidth	Maximum level	Note
I	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm *	
	925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm *	
	935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm *	
	1805 MHz ≤ f ≤ 1880 MHz	100 kHz	-71 dBm *	
	1920 MHz ≤ f ≤ 1980 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm	UE receive band
II	1850 MHz ≤ f ≤ 1910 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	1930 MHz ≤ f ≤ 1990 MHz	3.84 MHz	-60 dBm	UE receive band
III	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm*	
	925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm*	
	935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm*	
	1710 MHz ≤ f ≤ 1785 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	1805 MHz ≤ f ≤ 1880 MHz	3.84 MHz	-60 dBm	UE receive band
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm	
V	824 MHz ≤ f < 849 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	869 MHz ≤ f < 894 MHz	3.84 MHz	-60 dBm	UE receive band
	1930 MHz ≤ f ≤ 1990 MHz	3.84 MHz	-60 dBm	
*	The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, up to five measurements with a level up to the applicable requirements defined in Table 7.10 are permitted for each UARFCN used in the measurement			

---NEXT MODIFIED SECTION---

Annex B (normative): Propagation conditions

B.1 General

Void

B.2 Propagation Conditions

B.2.1 Static propagation condition

The propagation for the static performance measurement is an Additive White Gaussian Noise (AWGN) environment. No fading and multi-paths exist for this propagation model.

B.2.2 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.

Table B.1: Propagation Conditions for Multi path Fading Environments (Cases 1 to 6)

Case 1, ~~speed 3km/h~~		**Case 2, ~~speed 3 km/h~~**		**Case 3, ~~speed 120 km/h~~**		**Case 4, ~~speed 3 km/h~~**		*** Case 5, ~~speed 50 km/h~~**		**Case 6, ~~speed 250 km/h~~**	
Speed for Band I, II, III 3 km/h		Speed for Band I, II, III 3 km/h		Speed for Band I, II, III 120 km/h		Speed for Band I, II, III 3 km/h		Speed for Band I, II, III 50 km/h		Speed for Band I, II, III 250 km/h	
Speed for Band V 7 km/h		Speed for Band V 7 km/h		** Speed for Band V 282 km/h		Speed for Band V 7 km/h		Speed for Band V 118 km/h		** Speed for Band V 583 km/h	
Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]
0	0	0	0	0	0	0	0	0	0	0	0
976	-10	976	0	260	-3	976	0	976	-10	260	-3
		20000	0	521	-6					521	-6
				781	-9					781	-9

NOTE1: * Case 5 is only used in TS25.133.

NOTE2: ** Speed above 250km/h is applicable to demodulation performance requirements only.

Table B.1A shows propagation conditions that are used for the performance measurements in multi-path environment when UE is informed by higher layer signalling that only DPCCH exists for channel estimation. All taps have classical Doppler spectrum. Taps are normalized to the strongest tap in the beam/sector. The actual power relation between the sector and the beam is determined by the test case.

Table B.1A: Propagation Conditions for Multi path Fading Environments (Case 7)

Case 7, ~~speed 50 km/h~~		
Speed for Band I, II, III 50 km/h		
Speed for Band V 118 km/h		
Relative Delay [ns]	**Average Power [dB]**	
	Sector	**Beam**
0	0.0	-
260	-4.3	-
1040	-6.6	-
4690	-2.0	0.0
7290	-7.0	-0.3
14580	-7.5	-0.9

Table B.1B shows propagation conditions that are used for HSDPA performance measurements in multi-path fading environment.

Table B.1B: Propagation Conditions for Multi-Path Fading Environments for HSDPA Performance Requirements

ITU Pedestrian A ~~Speed 3km/h~~ (PA3)		ITU Pedestrian B ~~Speed 3km/h~~ (PB3)		ITU vehicular A ~~Speed 30km/h~~ (VA30)		ITU vehicular A ~~Speed 120km/h~~ (VA120)	
Speed for Band I, II, III 3 km/h		Speed for Band I, II, III 3 km/h		Speed for Band I, II, III 30 km/h		Speed for Band I, II, III 120 km/h	
Speed for Band V 7 km/h		Speed for Band V 7 km/h		Speed for Band V 71 km/h		* Speed for Band V 282 km/h	
Relative Delay [ns]	**Relative Mean Power [dB]**	**Relative Delay [ns]**	**Relative Mean Power [dB]**	**Relative Delay [ns]**	**Relative Mean Power [dB]**	**Relative Delay [ns]**	**Relative Mean Power [dB]**
0	0	0	0	0	0	0	0
110	-9.7	200	-0.9	310	-1.0	310	-1.0
190	-19.2	800	-4.9	710	-9.0	710	-9.0
410	-22.8	1200	-8.0	1090	-10.0	1090	-10.0
		2300	-7.8	1730	-15.0	1730	-15.0
		3700	-23.9	2510	-20.0	2510	-20.0

~~Note~~NOTE1: The propagation conditions used in simulations were based on the TR 25.890. The effect of re-mapping of channel rays to integer sample locations is FFS.

NOTE2: * Speed above 120km/h is applicable to demodulation performance requirements only.

B.2.3 Moving propagation conditions

The dynamic propagation conditions for the test of the baseband performance are non fading channel models with two taps. The moving propagation condition has two tap, one static, Path0, and one moving, Path1. The time difference between the two paths is according Equation (B.1). The taps have equal strengths and equal phases.

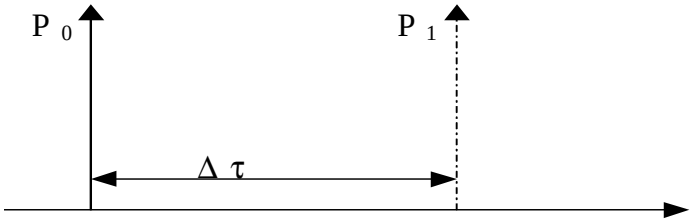


Figure B.1: The moving propagation conditions

$$\Delta\tau = B + \frac{A}{2}\left(1 + \sin(\Delta\omega \cdot t)\right) \quad \text{(B.1)}$$

The parameters in the equation are shown in the following table.

Table B.2

Parameter	Value
A	5 μs
B	1 μs
Δω	$40*10^{-3}$ s^{-1}

B.2.4 Birth-Death propagation conditions

The dynamic propagation conditions for the test of the base band performance is a non fading propagation channel with two taps. The moving propagation condition 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 is shown in Figure B.2.

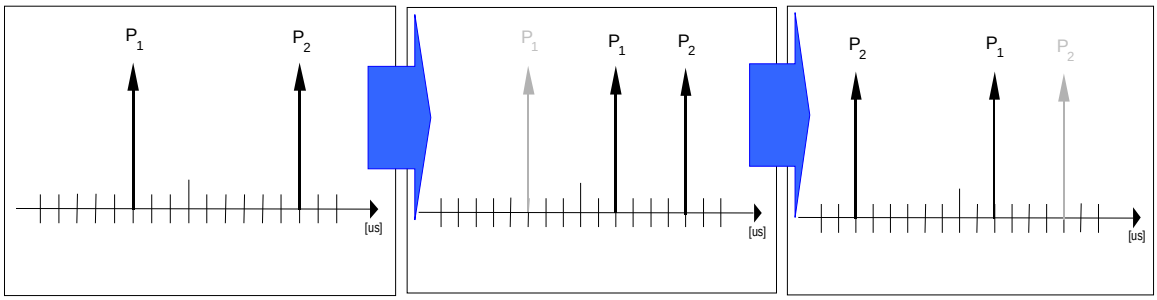


Figure B.2: Birth death propagation sequence

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 and equal phases.
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 Path 2. The magnitudes and the phases of the tap coefficients of Path 1 and Path 2 shall remain unaltered.
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 Path 1. The magnitudes and the phases of the tap coefficients of Path 1 and Path 2 shall remain unaltered.

The sequence in 2) and 3) is repeated.

3GPP TSG RAN WG4 (Radio) Meeting #29 **R4-031122**

San Diego, USA 17 - 21 November 2003

CR-Form-v7

CHANGE REQUEST

⌘ **25.104** **CR** **207** ⌘ **rev** **1** ⌘ Current version: **6.3.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Introduction of UMTS 850 requirements
Source:	⌘	RAN WG4
Work item code:	⌘	RInImp-UMTS850
Date:	⌘	26/11/2003
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Introduction of UMTS 850 requirements
Summary of change:	⌘	Re-structure of relevant sections: Regional requirements, Spectrum emission mask, Spurious emissions, Blocking characteristics, Intermodulation characteristics and Receiver spurious emissions. In multipath propagation conditions, which are used for verifying demodulation performance, all the UE speeds of Band V are scaled to the speeds, which correspond to the same Doppler frequencies as used in Band I.
Consequences if not approved:	⌘	No requirements for UMTS 850 band specified.

Clauses affected:	⌘	4.3; 6.6.2.1; 6.6.3.1.2; 6.6.3.2.1; New 6.6.3.12; New 6.6.3.13; 7.5.1; 7.5.2; 7.6.1; 7.7.1; Annex B.2

		Y	N			
Other specs affected:	⌘	X		Other core specifications	⌘	TS25.307
		X		Test specifications		TS25.141, CR 328
			X	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/specs/CR.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 reques

4.3 Regional requirements

Some requirements in TS 25.104 may only apply in certain regions. Table 4.1 lists all requirements that may be applied differently in different regions.

Table 4.1: List of regional requirements

Clause number	Requirement	Comments
5.2	Frequency bands	Some bands may be applied regionally.
5.2 6.6.3.2 7.7	Frequency bands Protection of the BS receiver of own or different BS Spurious emissions	Band VI specifications are developed for use in Japan. The Band VI frequency ranges specified in clause 5.2 are subject to coming regulatory decisions.
5.3	Tx-Rx Frequency Separation	The requirement is applied according to what frequency bands in Clause 5.2 that are supported by the BS.
5.4	Channel arrangement	The requirement is applied according to what frequency bands in Clause 5.2 that are supported by the BS.
6.2.1	Base station maximum output power	In certain regions, the minimum requirement for normal conditions may apply also for some conditions outside the range of conditions defined as normal.
6.6.2.1	Spectrum emission mask	The mask specified may be mandatory in certain regions. In other regions this mask may not be applied.
6.6.3.1.1	Spurious emissions (Category A)	These requirements shall be met in cases where Category A limits for spurious emissions, as defined in ITU-R Recommendation SM.329-9 [1], are applied.
6.6.3.1.2	Spurious emissions (Category B)	These requirements shall be met in cases where Category B limits for spurious emissions, as defined in ITU-R Recommendation SM.329-9 [1], are applied.
6.6.3.3.1	Co-existence with GSM900 -Operation in the same geographic area	This requirement may be applied for the protection of GSM 900 MS and GSM 900 BTS in geographic areas in which both GSM 900 and UTRA FDD are deployed.
6.6.3.3.2	Co-existence with GSM900 - Co-located base stations	This requirement may be applied for the protection of GSM 900 BTS receivers when GSM 900 BTS and UTRA FDD BS are co-located.
6.6.3.4.1	Co-existence with DCS1800 -Operation in the same geographic area	This requirement may be applied for the protection of DCS 1800 MS and DCS 1800 BTS in geographic areas in which both DCS 1800 and UTRA FDD are deployed.
6.6.3.4.2	Co-existence with DCS1800 - Co-located base stations	This requirement may be applied for the protection of DCS 1800 BTS receivers when DCS 1800 BTS and UTRA FDD BS are co-located.
6.6.3.5	Co-existence with PHS	This requirement may be applied for the protection of PHS in geographic areas in which both PHS and UTRA FDD are deployed.
6.6.3.6	Co-.existence with services in adjacent frequency bands	This requirement may be applied for the protection in bands adjacent to the downlink bands as defined in clause 5.2in geographic areas in which both an adjacent band service and UTRA FDD are deployed.
6.6.3.7.1	Co-existence with UTRA TDD - Operation in the same geographic area	This requirement may be applied to geographic areas in which both UTRA-TDD and UTRA-FDD are deployed.
6.6.3.7.2	Co-existence with UTRA TDD - 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.

6.6.3.8.1	Co-existence with UTRA FDD in frequency band I -Operation in the same geographic area	This requirement may be applied for the protection of UTRA FDD UE in frequency band I in geographic areas in which both UTRA FDD in frequency band I and III are deployed.
6.6.3.8.2	Co-existence with UTRA FDDin frequency band I - Co-located base stations	This requirement may be applied for the protection of UTRA FDD BTS receivers in frequency band I when UTRA FDD BS in frequency band I and III are co-located.
6.6.3.9.1	Co-existence with UTRA FDD in frequency band III -Operation in the same geographic area	This requirement may be applied for the protection of UTRA FDD UE in frequency band I in geographic areas in which both UTRA FDD in frequency band I and III are deployed.
6.6.3.9.2	Co-existence with UTRA FDD in frequency band III - Co-located base stations	This requirement may be applied for the protection of UTRA FDD BTS receivers in frequency band I when UTRA FDD BS in frequency band I and III are co-located.
6.6.3.10.1	Co-existence with PCS1900 -Operation in the same geographic area	This requirement may be applied for the protection of PCS 1900 BTS receivers in geographic areas in which both PCS 1900 and UTRA FDD are deployed.
6.6.3.10.2	Co-existence with PCS1900 - Co-located base stations	This requirement may be applied for the protection of PCS 1900 BTS receivers when PCS 1900 BTS and UTRA FDD BS are co-located.
6.6.3.11.1	Co-existence with GSM850 -Operation in the same geographic area	This requirement may be applied for the protection of GSM 850 MS and GSM 850 BTS receivers in geographic areas in which both GSM 850 and UTRA FDD are deployed.
6.6.3.11.2	Co-existence with GSM850 - Co-located base stations	This requirement may be applied for the protection of GSM 850 BTS receivers when GSM 850 BTS and UTRA FDD BS are co-located.
6.6.3.12.1	Co-existence with UTRA FDD in frequency band II -Operation in the same geographic area	This requirement may be applied for the protection of UTRA FDD UE and BS operating in frequency band II in geographic areas in which both UTRA FDD in frequency band II and UTRA FDD in other frequency bands are deployed.
6.6.3.12.2	Co-existence with UTRA FDD in frequency band II Co-located base stations	This requirement may be applied for the protection of UTRA FDD BS receivers operating in frequency band II when UTRA FDD BS operating in frequency band II and UTRA-FDD BS operating in other frequency bands are co-located.
7.4.2	Adjacent Channel Selectivity Co-location with UTRA-TDD	This requirement may be applied for the protection of UTRA-FDD BS receivers when UTRA-FDD BS and UTRA-TDD BS are co-located.
7.5	Blocking characteristic	The requirement is applied according to what frequency bands in Clause 5.2 that are supported by the BS.
7.5.2	Blocking characteristics Co-location with GSM900, DCS 1800, PCS1900 and/or UTRA	This requirement may be applied for the protection of UTRA FDD BS receivers when UTRA FDD BS and GSM 900, DCS1800, PCS1900, GSM850 and/or UTRA BS (operating in different frequency bands) are co-located.
7.5.3	Blocking characteristics Co-location with UTRA TDD	This requirement may be applied for the protection of UTRA FDD BS receivers when UTRA FDD BS and UTRA TDD BS are co-located.
7.6	Intermodulation characteristics	The requirement is applied according to what frequency bands in Clause 5.2 that are supported by the BS.
7.7	Spurious emissions	The requirement is applied according to what frequency bands in Clause 5.2 that are supported by the BS.
	Base station classes*	Only requirements for Wide Area (General Purpose) Base Stations shall be applied as regional requirements in Japan.
	HSDPA*	The portion of HSDPA(High Speed Downlink Packet Access) is not applicable to ARIB standards by the time when ARIB is prepared to transpose.

Note *: Base station classes, HSDPA: These regional requirements should be reviewed to check its necessity every TSG RAN meeting.

4.4 Environmental requirements for the BS equipment

The BS equipment shall fulfil all the requirements in the full range of environmental conditions for the relevant environmental class from the relevant IEC specifications listed below

60 721-3-3 "Stationary use at weather protected locations"

60 721-3-4 "Stationary use at non weather protected locations"

Normally it should be sufficient for all tests to be conducted using normal test conditions except where otherwise stated. For guidance on the use of test conditions to be used in order to show compliance refer to TS 25.141.

---NEXT MODIFIED SECTION---

6.6 Output RF spectrum emissions

6.6.1 Occupied bandwidth

Occupied bandwidth is a measure of the bandwidth containing 99% of the total integrated power for transmitted spectrum and is centered on the assigned channel frequency. The occupied channel bandwidth shall be less than 5 MHz based on a chip rate of 3.84 Mcps.

6.6.2 Out of band emission

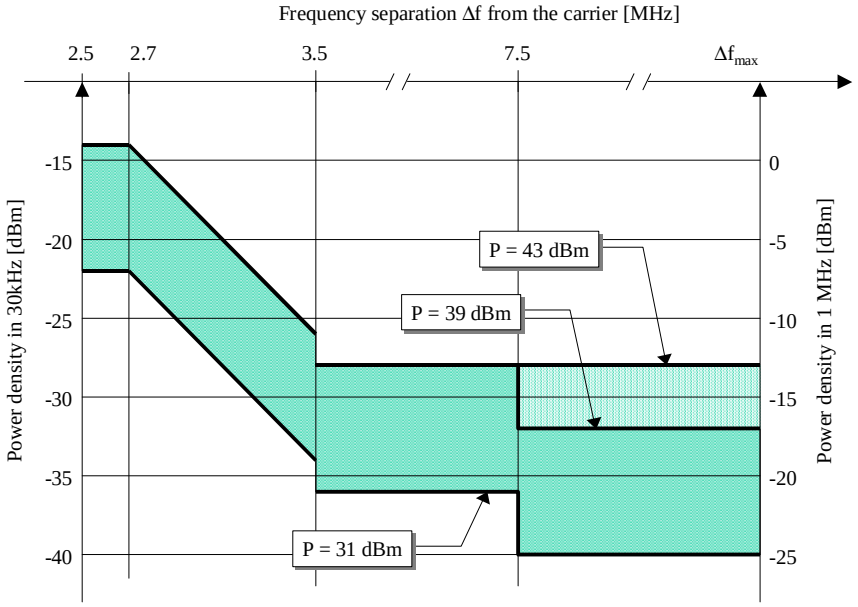
Out of band emissions are unwanted emissions immediately outside the channel bandwidth resulting from the modulation process and non-linearity in the transmitter but excluding spurious emissions. This out of band emission requirement is specified both in terms of a spectrum emission mask and adjacent 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 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 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.
- Δf_{max} is equal to f_offset_{max} minus half of the bandwidth of the measuring filter.



Illustrative diagram of spectrum emission mask

Figure 6.2: Spectrum emission mask

Table 6.3: Spectrum emission mask values, BS maximum output power P ≥ 43 dBm

Frequency offset of measurement filter -3dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Minimum requirement Band I, II, III, V	Additional requirements Band II and V[1]	Measurement bandwidth[2]
2.5 MHz ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	-14 dBm	-15dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	$-14dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	-15dBm	30 kHz
(see note 3)	3.515MHz ≤ f_offset < 4.0MHz	-26 dBm	NA	30 kHz
3.5 MHz ≤ Δf ≤ Δf_{max}	4.0MHz ≤ f_offset < f_offset_{max}	-13 dBm	NA	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	Minimum requirement Band I, II, III, V	Additional requirements Band II and V[1]	Measurement bandwidth[2]
2.5 MHz ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	-14 dBm	-15dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	$-14dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	-15dBm	30 kHz
(see note 3)	3.515MHz ≤ f_offset < 4.0MHz	-26 dBm	NA	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0MHz ≤ f_offset < 8.0MHz	-13 dBm	NA	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0MHz ≤ f_offset < f_offset_{max}	P - 56 dB	NA	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	Minimum requirement Band I, II, III, V	Additional requirements Band II[1] and V	Measurement bandwidth[2]
2.5 MHz ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	P - 53 dB	-15dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	$P - 53dB - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	-15dBm	30 kHz
(see note 3)	3.515MHz ≤ f_offset < 4.0MHz	P - 65 dB	NA	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0MHz ≤ f_offset < 8.0MHz	P - 52 dB	NA	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0MHz ≤ f_offset < f_offset_{max}	P - 56 dB	NA	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	Minimum requirement Band I, II, ~~I~~III, V	Measurement bandwidth[2]
2.5 MHz ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	-22 dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	$-22dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	30 kHz
(see note 3)	3.515MHz ≤ f_offset < 4.0MHz	-34 dBm	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0MHz ≤ f_offset < 8.0MHz	-21 dBm	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0MHz ≤ f_offset < f_offset_{max}	-25 dBm	1 MHz

Notes for Tables 6.3, 6.4, 6.5 & 6.6

NOTE 1 The minimum requirement for operation in band II and V is the lower power of the minimum requirement for band ~~I~~I, II, ~~and~~ III and V and the additional requirement for band II and V.

NOTE 2 As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

---NEXT MODIFIED SECTION---

Table 6.9B: BS Mandatory spurious emissions limits, operating band III, Category B

Band	Maximum Level	Measurement Bandwidth	Note
9kHz ↔ 150kHz	-36 dBm	1 kHz	Bandwidth as in ITU-R SM.329-9, s4.1
150kHz ↔ 30MHz	- 36 dBm	10 kHz	Bandwidth as in ITU-R SM.329-9, s4.1
30MHz ↔ 1GHz	-36 dBm	100 kHz	Bandwidth as in ITU-R SM.329-9, s4.1
1GHz ↔ Fc1 - 60 MHz or 1795 MHz *whichever is the higher*	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329-9, s4.1
Fc1 - 60 MHz or 1795 MHz *whichever is the higher* ↔ Fc1 - 50 MHz or 1795 MHz *whichever is the higher*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-9, s4.3 and Annex 7
Fc1 - 50 MHz or 1795 MHz *whichever is the higher* ↔ Fc2 + 50 MHz or 1890 MHz *whichever is the lower*	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329-9, s4.3 and Annex 7
Fc2 + 50 MHz or 1890 MHz *whichever is the lower* ↔ Fc2 + 60 MHz or 1890 MHz *whichever is the lower*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-9, s4.3 and Annex 7
Fc2 + 60 MHz or 1890 MHz *whichever is the lower* ↔ 12.75 GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329-9, s4.1. Upper frequency as in ITU-R SM.329-9, s2.5 table 1

Table 6.9C: BS Mandatory spurious emissions limits, operating band V, Category B

Band	Maximum Level	Measurement Bandwidth	Note
9kHz ↔ 150kHz	-36 dBm	1 kHz	Bandwidth as in ITU-R SM.329, s4.1
150kHz ↔ 30MHz	- 36 dBm	10 kHz	Bandwidth as in ITU-R SM.329, s4.1
30MHz ↔ 859 MHz	-36 dBm	100 kHz	Bandwidth as in ITU-R SM.329, s4.1
859 MHz ↔ Fc1 - 20 MHz or 859 MHz *whichever is the higher*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329, s4.3 and Annex 7
Fc1 - 20 MHz or 859 MHz *whichever is the higher* ↔ Fc2 + 20 MHz or 904 MHz *whichever is the lower*	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329, s4.3 and Annex 7
Fc2 + 20 MHz or 904 MHz *whichever is the lower* ↔ 904 MHz	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329, s4.3 and Annex 7
904 MHz ↔ 1 GHz	-36 dBm	100 kHz	Bandwidth as in ITU-R SM.329, s4.1. Upper frequency as in ITU-R SM.329, s4.3 table 3
1GHz ↔ 12.75GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329, s4.1. Upper frequency as in ITU-R SM.329, s2.5 table 1

Fc1: Center frequency of emission of the first carrier transmitted by the BS.

Fc2: Center frequency of emission of the last carrier transmitted by the BS.

6.6.3.2 Protection of the BS receiver of own or different BS

This requirement shall be applied in order to prevent the receivers of the BSs being desensitised by emissions from a BS transmitter.

6.6.3.2.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.10: Wide Area BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
I	1920 - 1980MHz	-96 dBm	100 kHz	
II	1850-1910 MHz	-96 dBm	100 kHz	
III	1710-1785 MHz	-96 dBm	100 kHz	
V	824-849 MHz	-96 dBm	100 kHz	

Table 6.10A: Medium Range BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
I	1920 - 1980MHz	-86 dBm	100 kHz	
II	1850-1910 MHz	-86 dBm	100 kHz	
III	1710-1785 MHz	-86 dBm	100 kHz	
V	824-849 MHz	-86 dBm	100 kHz	

Table 6.10B: Local Area BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
I	1920 - 1980MHz	-82 dBm	100 kHz	
II	1850-1910 MHz	-82 dBm	100 kHz	
III	1710-1785 MHz	-82 dBm	100 kHz	
V	824-849 MHz	-82 dBm	100 kHz	

---NEXT MODIFIED SECTION---

6.6.3.11 Co-existence with GSM850

6.6.3.11.1 Operation in the same geographic area

This requirement may be applied for the protection of GSM 850 MS and GSM 850 BS receiver in geographic areas in which both GSM 850 and UTRA FDD BS are deployed.

6.6.3.11.1.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.23A: BS Spurious emissions limits for BS in geographic coverage area of GSM 850

Band	Maximum Level	Measurement Bandwidth	Note
824 - 849 MHz	-61 dBm	100 kHz	
869 – 894 MHz	-57 dBm	100 kHz	

6.6.3.11.2 Co-located base stations

This requirement may be applied for the protection of GSM850 BS receivers when UTRA FDD BS and GSM850 BS are co-located.

6.6.3.11.2.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.24: BS Spurious emissions limits for BS co-located with GSM850 BS

BS class	Band	Maximum Level	Measurement Bandwidth	Note
Wide Area BS	824 - 849 MHz	-98 dBm	100 kHz	
Medium Range BS	824 - 849 MHz	-91 dBm	100 kHz	
Local Area BS	824 - 849 MHz	-70 dBm	100 kHz	

These values assume a 30 dB coupling loss between transmitter and receiver. If BSs of different classes are co-sited, the coupling loss must be increased by the difference between the corresponding values from the table above.

6.6.3.12 Co-existence with UTRA FDD in frequency band II

6.6.3.12.1 Operation in the same geographic area

This requirement may be applied for the protection of UTRA FDD UE and BS operating in frequency band II in geographic areas in which both UTRA FDD in frequency band II and UTRA FDD in other frequency bands are deployed.

6.6.3.12.1.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.25: BS Spurious emissions limits for BS in geographic coverage area of UTRA FDD UE receiver and BS receiver operating in frequency band II

Band	Maximum Level	Measurement Bandwidth	Note
1930 – 1990 MHz	-52 dBm	1 MHz	This requirement does not apply to UTRA-FDD BS operating in band II
1850 – 1910 MHz	-49 dBm	1 MHz	This requirement does not apply to UTRA-FDD BS operating in band II, since it is already covered by the requirement in sub-clause 6.6.3.2.

6.6.3.12.2 Co-located base stations

This requirement may be applied for the protection of UTRA FDD BS receivers operating in frequency band II when UTRA FDD BS operating in frequency band II and UTRA-FDD BS operating in other frequency bands are co-located.

6.6.3.12.2.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.26: BS Spurious emissions limits for BS co-located with UTRA BS operating in frequency band II

Band	Maximum Level	Measurement Bandwidth	Note
1850 – 1910 MHz	-96 dBm	100 kHz	

---NEXT MODIFIED SECTION---

7.5 Blocking characteristics

The blocking characteristics is a measure of the receiver ability to receive a wanted signal at its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the adjacent channels. The blocking performance requirement applies as specified in the tables 7.4 to 7.5B below, using a 1 MHz step size.

7.5.1 Minimum requirement

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

Table 7.4: Blocking performance requirement for Wide Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
I	1920 - 1980 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1900 - 1920 MHz 1980 - 2000 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz -1900 MHz 2000 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
II	1850 - 1910 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1830 - 1850 MHz 1910 - 1930 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz - 1830 MHz 1930 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
III	1710 – 1785 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1690 - 1710 MHz 1785 – 1805 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz - 1690 MHz 1805 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
V	824-849 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	804-824 MHz 849-869 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz – 804 MHz 869 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
Note*: The characteristics of the W-CDMA interference signal are specified in Annex C					

Table 7.4A: Blocking performance requirement for Medium range BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
I	1920 - 1980 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1900 - 1920 MHz 1980 - 2000 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz -1900 MHz 2000 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
II	1850 - 1910 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1830 - 1850 MHz 1910 - 1930 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz - 1830 MHz 1930 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
III	1710 – 1785 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1690 - 1710 MHz 1785 – 1805 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz - 1690 MHz 1805 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
V	824-849 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	804-824 MHz 849-869 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz – 804 MHz 869 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
Note*: The characteristics of the W-CDMA interference signal are specified in Annex C					

Table 7.4B: Blocking performance requirement for Local Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
I	1920 - 1980 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1900 - 1920 MHz 1980 - 2000 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz -1900 MHz 2000 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier
II	1850 - 1910 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1830 - 1850 MHz 1910 - 1930 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz - 1830 MHz 1930 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier
III	1710 – 1785 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1690 - 1710 MHz 1785 – 1805 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz - 1690 MHz 1805 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier
V	824-849 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	804-824 MHz 849-869 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz – 804 MHz 869 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier
Note*: The characteristics of the W-CDMA interference signal are specified in Annex C					

Table 7.5: Blocking performance requirement (narrowband) for Wide Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
II	1850 - 1910 MHz	- 47 dBm	-115 dBm	2.7 MHz	GMSK modulated*
III	1710 – 1785 MHz	- 47 dBm	-115 dBm	2.8 MHz	GMSK modulated*
V	824 – 849 MHz	- 47 dBm	-115 dBm	2.7 MHz	GMSK modulated*
* GMSK modulation as defined in TS 45.004 [5].					

Table 7.5A: Blocking performance requirement (narrowband) for Medium Range BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
II	1850 - 1910 MHz	- 42 dBm	-105 dBm	2.7 MHz	GMSK modulated*
III	1710 – 1785 MHz	- 42 dBm	-105 dBm	2.8 MHz	GMSK modulated*
V	824 – 849 MHz	- 42 dBm	-105 dBm	2.7 MHz	GMSK modulated*
* GMSK modulation as defined in TS 45.004 [5].					

Table 7.5B: Blocking performance requirement (narrowband) for Local Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
II	1850 - 1910 MHz	- 37 dBm	-101 dBm	2.7 MHz	GMSK modulated*
III	1710 – 1785 MHz	- 37 dBm	-101 dBm	2.8 MHz	GMSK modulated*
V	824 – 849 MHz	- 37 dBm	-101 dBm	2.7 MHz	GMSK modulated*
* GMSK modulation as defined in TS 45.004 [5].					

7.5.2 Minimum Requirement – Co-location with GSM900, DCS 1800, PCS1900, GSM850 and/or UTRA FDD

This additional blocking requirement may be applied for the protection of FDD BS receivers when GSM900, PCS1900, GSM850 and/or BS operating in DCS1800 band (UTRA FDD or GSM) are co-located with UTRA FDD BS.

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

Table 7.5A: Blocking performance requirement when co-located with GSM900

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
921 – 960 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.5B: Blocking performance requirement when co-located with BTS operating in DCS1800 band (GSM or UTRA)

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
1805 – 1880 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.5C: Blocking performance requirement for operation when co-located with UTRA BS operating in Frequency band I

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
2110 – 2170 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.5D: Blocking performance requirement for operation when co-located with PCS1900 BTS

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
1930 – 1990 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.5E: Blocking performance requirement for operation when co-located with GSM850 BTS

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
869 – 894 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.5F: Blocking performance requirement for operation when co-located with UTRA BS operating in Frequency band II

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
1930 – 1990 MHz	+16 dBm	-115 dBm	—	CW carrier

7.5.3 Minimum Requirement - Co-location with UTRA-TDD

The current state-of-the-art technology does not allow a single generic solution for co-location with UTRA-TDD on adjacent frequencies for 30dB BS-BS minimum coupling loss.

However, there are certain site-engineering solutions that can be used. These techniques are addressed in TR 25.942 [4].

7.6 Intermodulation characteristics

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

7.6.1 Minimum requirement

The static reference performance as specified in clause 7.2.1 shall be met for a Wide Area BS when the following signals are coupled to BS antenna input:

- A wanted signal at the assigned channel frequency with a mean power of -115 dBm.
- Two interfering signals with the following parameters.

Table 7.6: Intermodulation performance requirement (Wide Area BS)

Operating band	Interfering Signal mean power	Offset	Type of Interfering Signal
I, II, III, V	- 48 dBm	10 MHz	CW signal
	- 48 dBm	20 MHz	WCDMA signal *
Note*: The characteristics of the W-CDMA interference signal are specified in Annex C			

Table 7.6A: Narrowband intermodulation performance requirement (Wide Area BS)

Operating band	Interfering Signal mean power	Offset	Type of Interfering Signal
II, III, V	- 47 dBm	3.5 MHz	CW signal
	- 47 dBm	5.9 MHz	GMSK modulated*
* GMSK as defined in TS45.004			

The static reference performance as specified in clause 7.2.1 shall be met for a Medium Range BS when the following signals are coupled to BS antenna input:

- A wanted signal at the assigned channel frequency with a mean power of -105 dBm.
- Two interfering signals with the following parameters.

Table 7.6B: Intermodulation performance requirement (Medium Range BS)

Operating band	Interfering Signal mean power	Offset	Type of Interfering Signal
I, II, III, V	- 44 dBm	10 MHz	CW signal
	- 44 dBm	20 MHz	WCDMA signal *
Note*: The characteristics of the W-CDMA interference signal are specified in Annex C			

Table 7.6C: Narrowband intermodulation performance requirement (Medium Range BS)

Operating band	Interfering Signal mean power	Offset	Type of Interfering Signal
II, III, V	- 43 dBm	3.5 MHz	CW signal
	- 43 dBm	5.9 MHz	GMSK modulated*
* GMSK as defined in TS45.004			

The static reference performance as specified in clause 7.2.1 shall be met for a Local Area BS when the following signals are coupled to BS antenna input:

- A wanted signal at the assigned channel frequency with a mean power of –101 dBm.
- Two interfering signals with the following parameters.

Table 7.6D: Intermodulation performance requirement (Local Area BS)

Operating band	Interfering Signal mean power	Offset	Type of Interfering Signal
I, II, III, V	-38 dBm	10 MHz	CW signal
	-38 dBm	20 MHz	WCDMA signal *
Note*: The characteristics of the W-CDMA interference signal are specified in Annex C			

Table 7.6E: Narrowband intermodulation performance requirement (Local Area BS)

Operating band	Interfering Signal mean power	Offset	Type of Interfering Signal
II, III, V	-37 dBm	3.5 MHz	CW signal
	-37 dBm	5.9 MHz	GMSK modulated*
* GMSK as defined in TS45.004			

7.7 Spurious emissions

The spurious emissions power is the power of emissions generated or amplified in a receiver that appear at the BS receiver 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 7.7: General spurious emission minimum requirement

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

Table 7.7A: Additional spurious emission requirements

Operating Band	Band	Maximum level	Measurement Bandwidth	Note
I	1900 – 1980 MHz 2010 – 2025 MHz	-78 dBm	3.84 MHz	
II	1850 – 1910 MHz	-78 dBm	3.84 MHz	
III	1710 – 1785 MHz~~z~~	-78 dBm	3.84 MHz	
V	824 – 849 MHz	-78 dBm	3.84 MHz	

In addition to the requirements in tables 7.7 and 7.7A, the co-existence requirements for co-located base stations specified in subclause 6.6.3.3.2, 6.6.3.4.2 , 6.6.3.7.2, 6.6.3.8.2, 6.6.3.9.2, 6.6.3.10.1, ~~and~~ 6.6.3.11.1 and 6.6.3.12.2 may also be applied.

---NEXT MODIFIED SECTION---

Annex B (normative): Propagation conditions

B.1 Static propagation condition

The propagation for the static performance measurement is an Additive White Gaussian Noise (AWGN) environment. No fading or multi-paths exist for this propagation model.

B.2 Multi-path fading propagation conditions

Table B.1 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~~		Case 4~~, 250 km/h~~	
Speed for Band I, II, III 3 km/h		Speed for Band I, II, III 3 km/h		Speed for Band I, II, III 120 km/h		Speed for Band I, II, III 250 km/h	
Speed for Band V 7 km/h		Speed for Band V 7 km/h		Speed for Band V 280 km/h		*Speed for Band V 583 km/h	
Relative Delay [ns]	**Average Power [dB]**	**Relative Delay [ns]**	**Average Power [dB]**	**Relative Delay [ns]**	**Average Power [dB]**	**Relative Delay [ns]**	**Average Power [dB]**
0	0	0	0	0	0	0	0
976	-10	976	0	260	-3	260	-3
		20000	0	521	-6	521	-6
				781	-9	781	-9

NOTE: * Speed above 250km/h is applicable to demodulation performance requirements only.

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CR-Form-v7

CHANGE REQUEST

⌘ **25.141** **CR** **328** ⌘ **rev** **1** ⌘ Current version: **6.3.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Introduction of UMTS 850 requirements
Source:	⌘	RAN WG4
Work item code:	⌘	RInImp-UMTS850
Date:	⌘	26/11/2003
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Introduction of UMTS 850 requirements
Summary of change:	⌘	Re-structure of relevant sections: Regional requirements, Spectrum emission mask, Spurious emissions, Blocking characteristics, Intermodulation characteristics and Receiver spurious emissions. In multipath propagation conditions, which are used for verifying demodulation performance, all the UE speeds of Band V are scaled to the speeds, which correspond to the same Doppler frequencies as used in Band I.
Consequences if not approved:	⌘	No requirements for UMT 850 band specified.

Clauses affected:	⌘	4.7; 6.5.2; 6.5.3; 7.5; 7.6; 7.7; Annex D.2

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
		X	O&M Specifications	

Other comments:	⌘	Linked to CR 207 for TS25.104.

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.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 reques

Table 4.4: List of regional requirements

Subclause number	Requirement	Comments
3.4.1	Frequency bands	Some bands may be applied regionally.
3.4.1 6.5.3.4.3 6.5.3.7.3 7.7	Frequency bands Protection of the BS receiver of own or different BS Protection of the BS receiver of own or different BS Spurious Emissions	Band VI specifications are developed for use in Japan. The Band VI frequency ranges specified in clause 3.4.1 are subject to coming regulatory decisions.
3.4.2	Tx-Rx Frequency Separation	The requirement is applied according to what frequency bands in clause 3.4.1 that are supported by the BS.
3.5	Channel arrangement	The requirement is applied according to what frequency bands in clause 3.4.1 that are supported by the BS.
6.2.1.2	Base station output power	In certain regions, the minimum requirement for normal conditions may apply also for some conditions outside the ranges defined for the Normal test environment in subclause 4.4.1.
6.5.2.1	Spectrum emission mask	The mask specified may be mandatory in certain regions. In other regions this mask may not be applied.
6.5.3.4.1	Spurious emissions (Category A)	These requirements shall be met in cases where Category A limits for spurious emissions, as defined in ITU-R Recommendation SM.329- [4], are applied.
6.5.3.4.2	Spurious emissions (Category B)	These requirements shall be met in cases where Category B limits for spurious emissions, as defined in ITU-R Recommendation SM.329- [4], are applied.
6.5.3.4.4.1	Co-existence with GSM900 – Operation in the same geographic area	This requirement may be applied for the protection of GSM 900 MS and GSM 900 BTS in geographic areas in which both GSM 900 and UTRA FDD are deployed.
6.5.3.4.4.2	Co-existence with GSM900 – Co-located base stations	This requirement may be applied for the protection of GSM 900 BTS receivers when GSM 900 BTS and UTRA FDD BS are co-located.
6.5.3.4.5.1	Co-existence with DCS1800 – Operation in the same geographic area	This requirement may be applied for the protection of DCS 1800 MS and DCS 1800 BTS in geographic areas in which both DCS 1800 and UTRA FDD are deployed.
6.5.3.4.5.2	Co-existence with DCS1800 – Co-located base stations	This requirement may be applied for the protection of DCS 1800 BTS receivers when DCS 1800 BTS and UTRA FDD BS are co-located.
6.5.3.4.6	Co-existence with PHS	This requirement may be applied for the protection of PHS in geographic areas in which both PHS and UTRA FDD are deployed.
6.5.3.4.7	Co-.existence with services in adjacent frequency bands	This requirement may be applied for the protection in bands adjacent to the downlink band as defined in clause 3.4.1 in geographic areas in which both an adjacent band service and UTRA FDD are deployed.
6.5.3.4.8.1	Co-existence with UTRA TDD – Operation in the same geographic area	This requirement may be applied to geographic areas in which both UTRA-TDD and UTRA-FDD are deployed.
6.5.3.4.8.2	Co-existence with UTRA TDD – 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.
6.5.3.4.9.1	Co-existence with UTRA FDD in frequency band I -Operation in the same geographic area	This requirement may be applied for the protection of UTRA FDD UE in frequency band I in geographic areas in which both UTRA FDD in frequency band I and III are deployed.
6.5.3.4.9.2	Co-existence with UTRA FDD in frequency band I - Co-located base stations	This requirement may be applied for the protection of UTRA FDD BTS receivers in frequency band I when UTRA FDD BS in frequency band I and III are co-located.
6.5.3.4.10.1	Co-existence with UTRA FDD in	This requirement may be applied for the protection

	frequency band III -Operation in the same geographic area	of UTRA FDD UE in frequency band III in geographic areas in which both UTRA FDD in frequency band I and III are deployed.
6.5.3.4.10.2	Co-existence with UTRA FDD in frequency band III - Co-located base stations	This requirement may be applied for the protection of UTRA FDD BTS receivers in frequency band III when UTRA FDD BS in frequency band I and III are co-located.
6.5.3.4.11.1	Co-existence with PCS1900 - Operation in the same geographic area	This requirement may be applied for the protection of PCS 1900 BTS receivers in geographic areas in which both PCS 1900 and UTRA FDD are deployed.
6.5.3.4.11.2	Co-existence with PCS1900 - Co-located base stations	This requirement may be applied for the protection of PCS 1900 BTS receivers when PCS 1900 BTS and UTRA FDD BS are co-located.
6.5.3.4.12.1	Co-existence with GSM850 - Operation in the same geographic area	This requirement may be applied for the protection of GSM 850 MS and GSM 850 BTS receivers in geographic areas in which both GSM 850 and UTRA FDD are deployed.
6.5.3.4.12.2	Co-existence with GSM 850 - Co-located base stations	This requirement may be applied for the protection of GSM 850 BTS receivers when GSM 850 BTS and UTRA FDD BS are co-located.
6.5.3.4.13.1	Co-existence with UTRA FDD in frequency band II Operation in the same geographic area	This requirement may be applied for the protection of UTRA FDD UE and BS operating in frequency band II in geographic areas in which both UTRA FDD in frequency band II and UTRA FDD in other frequency bands are deployed.
6.5.3.4.13.2	Co-existence with UTRA FDD in frequency band II Co-located base stations	This requirement may be applied for the protection of UTRA FDD BS receivers operating in frequency band II when UTRA FDD BS operating in frequency band II and UTRA-FDD BS operating in other frequency bands are co-located.
7.5	Blocking characteristic	The requirement is applied according to what frequency bands in clause 3.4.1 that are supported by the BS.
7.5	Blocking characteristics	This requirement may be applied for the protection of UTRA FDD BS receivers when UTRA FDD BS and GSM 900, GSM850, PCS 1900 and BS operating in the /DCS1800 band (GSM or UTRA) are co-located.
7.6	Intermodulation characteristics	The requirement is applied according to what frequency bands in clause 3.4.1 that are supported by the BS.
7.7	Spurious emissions	The requirement is applied according to what frequency bands in clause 3.4.1 that are supported by the BS.
	Base station classes*	Only requirements for Wide Area (General Purpose) Base Stations shall be applied as regional requirements in Japan.
	HSDPA*	The portion of HSDPA(High Speed Downlink Packet Access) is not applicable to ARIB standards by the time when ARIB is prepared to transpose.

Note*: Base Station Classes, HSDPA: These regional requirements should be reviewed to check its necessity every TSG RAN meeting.

---NEXT MODIFIED SECTION---

6.5.2 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 limit is specified in terms of a spectrum emission mask and adjacent channel leakage power ratio for the transmitter.

6.5.2.1 Spectrum emission mask

6.5.2.1.1 Definitions and applicability

The mask defined in Tables 6.14 to 6.17 below may be mandatory in certain regions. In other regions this mask may not be applied.

6.5.2.1.2 Minimum Requirements

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 6.14 to 6.17 for the appropriate BS maximum output power, in the frequency range from Δf =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 centre of the measurement filter;
- f_offset_{max} is either 12.5 MHz or the offset to the UMTS Tx band edge as defined in subclause 3.4.1, whichever is the greater.
- Δf_{max} is equal to f_offset_{max} minus half of the bandwidth of the measuring filter.

Table 6.14: Spectrum emission mask values, BS maximum output power P ≥ 43 dBm

Frequency offset of measurement filter –3dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Minimum requirement Band I, II, III, V	Additional requirements Band II and V [1]	Measurement bandwidth
2.5 MHz ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	-14 dBm	-15dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	$-14dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	-15dBm	30 kHz
	3.515MHz ≤ f_offset < 4.0MHz	-26 dBm	NA	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0 MHz ≤ f_offset < 8.0MHz	-13 dBm	NA	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0 MHz ≤ f_offset < f_offset_{max}	-13 dBm	NA	1 MHz
NOTE 1: The minimum requirement for operation in band II and V is the lower power of the minimum requirement for band I, II, & III, V and the additional requirement for band II and V.				

Table 6.15: 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	Minimum requirement Band I, II, III, V	Additional requirements Band II and V [1]	Measurement bandwidth
2.5 MHz ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	-14 dBm	-15dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	$-14dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	-15dBm	30 kHz
	3.515MHz ≤ f_offset < 4.0MHz	-26 dBm	NA	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0 MHz ≤ f_offset < 8.0MHz	-13 dBm	NA	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0MHz ≤ f_offset < f_offset_{max}	P – 56 dB	NA	1 MHz
NOTE 1: The minimum requirement for operation in band II and V is the lower power of the minimum requirement for band I, II, & III, V and the additional requirement for band II and V.				

Table 6.16: 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	Minimum requirement Band I, II, III, V	Additional requirements Band II[1] and V	Measurement bandwidth
2.5 MHz ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	P – 53 dB	-15dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	$P - 53dB - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	-15dBm	30 kHz
	3.515MHz ≤ f_offset < 4.0MHz	P – 65 dB	NA	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0 MHz ≤ f_offset < 8.0MHz	P – 52 dB	NA	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0MHz ≤ f_offset < f_offset_{max}	P – 56 dB	NA	1 MHz
NOTE 1: The minimum requirement for operation in band II and V is the lower power of the minimum requirement for band I, II, ~~&~~ III, V and the additional requirement for band II and V.				

Table 6.17: 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	Minimum requirement Band I, II, III, V	Measurement bandwidth
2.5 MHz ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	-22 dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	$-22dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	30 kHz
	3.515MHz ≤ f_offset < 4.0MHz	-34 dBm	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0 MHz ≤ f_offset < 8.0MHz	-21 dBm	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0MHz ≤ f_offset < f_offset_{max}	-25 dBm	1 MHz

The normative reference for this requirement is in TS 25.104 [1] subclause 6.6.2.1

6.5.2.1.3 Test purpose

This test measures the emissions of the BS, close to the assigned channel bandwidth of the wanted signal, while the transmitter is in operation.

6.5.2.1.4 Method of test

6.5.2.1.4.1 Initial conditions

Test environment: normal; see subclause 4.4.1.

RF channels to be tested: B, M and T; see subclause 4.8

1) Set-up the equipment as shown in annex B.
   As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity, efficiency and avoiding e.g. carrier leakage, the resolution bandwidth may be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

2) Measurements with an offset from the carrier centre frequency between 2,515 MHz and 4.0 MHz shall use a 30 kHz measurement bandwidth.

3) Measurements with an offset from the carrier centre frequency between 4.0 MHz and (f_offset_{max} – 500 kHz).shall use a 1 MHz measurement bandwidth.

4) Detection mode: True RMS.

6.5.2.1.4.2 Procedures

1) Set the BS to transmit a signal in accordance to test model 1, subclause 6.1.1.1 at the manufacturer's specified maximum output power.

2) Step the centre frequency of the measurement filter in contiguous steps and measure the emission within the specified frequency ranges with the specified measurement bandwidth.

6.5.2.1.5 Test requirements

The measurement results in step 2 of 6.5.2.1.4.2 shall not exceed the test requirements specified in tables 6.18 to 6.21 for the appropriate BS maximum output power.

Table 6.18: Spectrum emission mask values, BS maximum output power P ≥ 43 dBm

Frequency offset of measurement filter –3dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Test Requirement I, II, III, V	Additional Requirements Band II and V [1]	Measurement bandwidth
2.5 MHz ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	-12.5 dBm	-15dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	$-12.5dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	-15dBm	30 kHz
	3.515MHz ≤ f_offset < 4.0MHz	-24.5 dBm	NA	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0 MHz ≤ f_offset < 8.0MHz	-11.5 dBm	-13dBm	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0 MHz ≤ f_offset < f_offset_{max}	-11.5 dBm		1 MHz

NOTE 1: The test requirement for operation in band II and V is the lower power of the test requirement for Band I, II, & III, V and the additional requirement for band II and V.

Table 6.19: 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	Test Requirement I, II, III, V	Additional Requirements Band II and V [1]	Measurement bandwidth
2.5 MHz ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	-12.5 dBm	-15dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	$-12.5dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	-15dBm	30 kHz
	3.515MHz ≤ f_offset < 4.0MHz	-24.5 dBm	NA	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0 MHz ≤ f_offset < 8.0MHz	-11.5 dBm	-13dBm	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0MHz ≤ f_offset < f_offset_{max}	P – 54.5 dB	-13dBm	1 MHz

NOTE 1: The test requirement for operation in band II and V is the lower power of the test requirement for Band I, II, & III, V and the additional requirement for band II and V.

Table 6.20: 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	Test Requirement Band I, II, III, V	Additional Requirements I Band II and V [1]	Measurement bandwidth
2.5 MHz ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	P – 51.5 dB	-15dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	$P - 51.5dB - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	-15dBm	30 kHz
	3.515MHz ≤ f_offset < 4.0MHz	P – 63.5 dB	NA	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0 MHz ≤ f_offset < 8.0MHz	P – 50.5 dB	-13dBm	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0MHz ≤ f_offset < f_offset_{max}	P – 54.5 dB	-13dBm	1 MHz

NOTE 1: The test requirement for operation in band II and V is the lower power of the test requirement for Band I, II, ~~&~~ III, V and the additional requirement for band II and V.

Table 6.21: 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	Test Requirement Band I, II, III, V	Measurement bandwidth
2.5 MHz ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	-20.5 dBm	30 kHz
2.7 ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	$-20.5dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	30 kHz
	3.515MHz ≤ f_offset < 4.0MHz	-32.5 dBm	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0 MHz ≤ f_offset < 8.0MHz	-19.5 dBm	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0MHz ≤ f_offset < f_offset_{max}	-23.5 dBm	1 MHz

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 4.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.

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Table 6.25B: BS Mandatory spurious emissions limits, operating band III, Category B

Band	Maximum Level	Measurement Bandwidth	Note
9kHz ↔ 150kHz	-36 dBm	1 kHz	Bandwidth as in ITU-R SM.329 [4], s4.1
150kHz ↔ 30MHz	- 36 dBm	10 kHz	Bandwidth as in ITU-R SM.329 [4], s4.1
30MHz ↔ 1GHz	-36 dBm	100 kHz	Bandwidth as in ITU-R SM.329 [4], s4.1
1GHz ↔ Fc1 - 60 MHz or 1795 MHz *whichever is the higher*	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329 [4], s4.1
Fc1 - 60 MHz or 1795 MHz *whichever is the higher* ↔ Fc1 - 50 MHz or 1795 MHz *whichever is the higher*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329 [4], s4.3 and Annex 7
Fc1 - 50 MHz or 1795 MHz *whichever is the higher* ↔ Fc2 + 50 MHz or 1890 MHz *whichever is the lower*	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329 [4], s4.3 and Annex 7
Fc2 + 50 MHz or 1890 MHz *whichever is the lower* ↔ Fc2 + 60 MHz or 1890 MHz *whichever is the lower*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329 [4], s4.3 and Annex 7
Fc2 + 60 MHz or 1890 MHz *whichever is the lower* ↔ 12.75 GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329 [4], s4.1. Upper frequency as in ITU-R SM.329 [4], s2.5 table 1

Table 6.25C: BS Mandatory spurious emissions limits, operating band V, Category B

Band	Maximum Level	Measurement Bandwidth	Note
9kHz ↔ 150kHz	-36 dBm	1 kHz	Bandwidth as in ITU-R SM.329, s4.1
150kHz ↔ 30MHz	- 36 dBm	10 kHz	Bandwidth as in ITU-R SM.329, s4.1
30MHz ↔ 859 MHz	-36 dBm	100 kHz	Bandwidth as in ITU-R SM.329, s4.1
859 MHz ↔ Fc1 - 20 MHz or 859 MHz *whichever is the higher*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329, s4.3 and Annex 7
Fc1 - 20 MHz or 859 MHz *whichever is the higher* ↔ Fc2 + 20 MHz or 904 MHz *whichever is the lower*	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329, s4.3 and Annex 7
Fc2 + 20 MHz or 904 MHz *whichever is the lower* ↔ 904 MHz	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329, s4.3 and Annex 7
904 MHz ↔ 1 GHz	-36 dBm	100 kHz	Bandwidth as in ITU-R SM.329, s4.1. Upper frequency as in ITU-R SM.329, s4.3 table 3
1GHz ↔ 12.75GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329, s4.1. Upper frequency as in ITU-R SM.329, s2.5 table 1

Fc1: Centre frequency of emission of the first carrier transmitted by the BS.

Fc2: Centre frequency of emission of the last carrier transmitted by the BS.

6.5.3.4.3 Protection of the BS receiver of own or different BS

This requirement shall be applied in order to prevent the receivers of the BSs being desensitised by emissions from a BS transmitter. This is measured at the transmit antenna port for any type of BS which has common or separate Tx/Rx antenna ports.

6.5.3.4.3.1 Minimum Requirement

The power of any spurious emission shall not exceed.

Table 6.26: Wide Area BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
I	1920 - 1980MHz	-96 dBm	100 kHz	
II	1850 - 1910 MHz	-96 dBm	100 kHz	
III	1710 - 1785 MHz	-96 dBm	100 kHz	
V	824-849 MHz	-96 dBm	100 kHz	

Table 6.26A: Medium Range BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
I	1920 - 1980MHz	-86 dBm	100 kHz	
II	1850 - 1910 MHz	-86 dBm	100 kHz	
III	1710 - 1785 MHz	-86 dBm	100 kHz	
V	824-849 MHz	-86 dBm	100 kHz	

Table 6.26B: Local Area BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
I	1920 - 1980MHz	-82 dBm	100 kHz	
II	1850 - 1910 MHz	-82 dBm	100 kHz	
III	1710 - 1785 MHz	-82 dBm	100 kHz	
V	824-849 MHz	-82 dBm	100 kHz	

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6.5.3.7.3 Protection of the BS receiver of own or different BS

Table 6.37: Wide Area BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
I	1920 - 1980MHz	-96 dBm	100 kHz	
II	1850 - 1910 MHz	-96 dBm	100 kHz	
III	1710 - 1785 MHz	-96 dBm	100 kHz	
V	824-849 MHz	-96 dBm	100 kHz	

Table 6.37A: Medium Range BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
I	1920 - 1980MHz	-86 dBm	100 kHz	
II	1850 - 1910 MHz	-86 dBm	100 kHz	
III	1710 - 1785 MHz	-86 dBm	100 kHz	
V	824-849 MHz	-86 dBm	100 kHz	

Table 6.37B: Local Area BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
I	1920 - 1980MHz	-82 dBm	100 kHz	
II	1850 - 1910 MHz	-82 dBm	100 kHz	
III	1710 - 1785 MHz	-82 dBm	100 kHz	
V	824-849 MHz	-82 dBm	100 kHz	

---NEXT MODIFIED SECTION---

6.5.3.4.12 Co-existence with GSM850

6.5.3.4.12.1 Operation in the same geographic area

This requirement may be applied for the protection of GSM 850 MS and GSM 850 BS receiver in geographic areas in which both GSM 850 and UTRA FDD BS are deployed.

6.5.3.4.12.1.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.34Ea: BS Spurious emissions limits for BS in geographic coverage area of GSM 850

Band	Maximum Level	Measurement Bandwidth	Note
824 - 849 MHz	-61 dBm	100 kHz	
869 – 894 MHz	-57 dBm	100 kHz	

6.5.3.4.12.2 Co-located base stations

This requirement may be applied for the protection of GSM850 BS receivers when UTRA FDD BS and GSM850 BS are co-located.

6.5.3.4.12.2.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.34F: BS Spurious emissions limits for BS co-located with GSM850 BS

BS class	Band	Maximum Level	Measurement Bandwidth	Note
Wide Area BS	824 - 849 MHz	-98 dBm	100 kHz	
Medium Range BS	824 - 849 MHz	-91 dBm	100 kHz	
Local Area BS	824 - 849 MHz	-70 dBm	100 kHz	

6.5.3.4.13 Co-existence with UTRA FDD in frequency band II

6.5.3.4.13.1 Operation in the same geographic area

This requirement may be applied for the protection of UTRA FDD UE and BS operating in frequency band II in geographic areas in which both UTRA FDD in frequency band II and UTRA FDD in other frequency bands are deployed.

6.5.3.4.13.1.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.34G: BS Spurious emissions limits for BS in geographic coverage area of UTRA FDD UE receiver and BS receiver operating in frequency band II

Band	Maximum Level	Measurement Bandwidth	Note
1930 – 1990 MHz	-52 dBm	1 MHz	This requirement does not apply to UTRA-FDD BS operating in band II
1850 – 1910 MHz	-49 dBm	1 MHz	This requirement does not apply to UTRA-FDD BS operating in band II, since it is already covered by the requirement in sub-clause 6.6.3.2.

6.5.3.4.13.2 Co-located base stations

This requirement may be applied for the protection of UTRA FDD BS receivers operating in frequency band II when UTRA FDD BS operating in frequency band II and UTRA-FDD BS operating in other frequency bands are co-located.

6.5.3.4.13.2.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.34H: BS Spurious emissions limits for BS co-located with UTRA BS operating in frequency band II

Band	Maximum Level	Measurement Bandwidth	Note
1850 – 1910 MHz	-96 dBm	100 kHz	

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Table 6.36B: BS Mandatory spurious emissions limits, operating band III, Category B

Band	Maximum Level	Measurement Bandwidth	Note
9kHz ↔ 150kHz	-36 dBm	1 kHz	Bandwidth as in ITU-R SM.329 [4], s4.1
150kHz ↔ 30MHz	- 36 dBm	10 kHz	Bandwidth as in ITU-R SM.329 [4], s4.1
30MHz ↔ 1GHz	-36 dBm	100 kHz	Bandwidth as in ITU-R SM.329 [4], s4.1
1GHz ↔ Fc1 - 60 MHz or 1795 MHz *whichever is the higher*	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329 [4], s4.1
Fc1 - 60 MHz or 1795 MHz *whichever is the higher* ↔ Fc1 - 50 MHz or 1795 MHz *whichever is the higher*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329 [4], s4.3 and Annex 7
Fc1 - 50 MHz or 1795 MHz *whichever is the higher* ↔ Fc2 + 50 MHz or 1890 MHz *whichever is the lower*	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329 [4], s4.3 and Annex 7
Fc2 + 50 MHz or 1890 MHz *whichever is the lower* ↔ Fc2 + 60 MHz or 1890 MHz *whichever is the lower*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329 [4], s4.3 and Annex 7
Fc2 + 60 MHz or 1890 MHz *whichever is the lower* ↔ 12.75 GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329 [4], s4.1. Upper frequency as in ITU-R SM.329 [4], s2.5 table 1

Table 6.36C: BS Mandatory spurious emissions limits, operating band V, Category B

Band	Maximum Level	Measurement Bandwidth	Note
9kHz ↔ 150kHz	-36 dBm	1 kHz	Bandwidth as in ITU-R SM.329, s4.1
150kHz ↔ 30MHz	- 36 dBm	10 kHz	Bandwidth as in ITU-R SM.329, s4.1
30MHz ↔ 859 MHz	-36 dBm	100 kHz	Bandwidth as in ITU-R SM.329, s4.1
859 MHz ↔ Fc1 - 20 MHz or 859 MHz *whichever is the higher*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329, s4.3 and Annex 7
Fc1 - 20 MHz or 859 MHz *whichever is the higher* ↔ Fc2 + 20 MHz or 904 MHz *whichever is the lower*	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329, s4.3 and Annex 7
Fc2 + 20 MHz or 904 MHz *whichever is the lower* ↔ 904 MHz	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329, s4.3 and Annex 7
904 MHz ↔ 1 GHz	-36 dBm	100 kHz	Bandwidth as in ITU-R SM.329, s4.1. Upper frequency as in ITU-R SM.329, s4.3 table 3
1GHz ↔ 12.75GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329, s4.1. Upper frequency as in ITU-R SM.329, s2.5 table 1

Fc1: Centre frequency of emission of the first carrier transmitted by the BS.

Fc2: Centre frequency of emission of the last carrier transmitted by the BS.

6.5.3.7.3 Protection of the BS receiver of own or different BS

Table 6.37: BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
I	1920 - 1980MHz	-96 dBm	100 kHz	
II	1850 - 1910 MHz	-96 dBm	100 kHz	
III	1710 - 1785 MHz	-96 dBm	100 kHz	
V	824-849 MHz	-96 dBm	100 kHz	

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6.5.3.7.12 Co-existence with GSM850

6.5.3.7.12.1 Operation in the same geographic area

Table 6.50A: BS Spurious emissions limits for BS in geographic coverage area of GSM 850

Band	Maximum Level	Measurement Bandwidth	Note
824 - 849 MHz	-61 dBm	100 kHz	
869 – 894 MHz	-57 dBm	100 kHz	

6.5.3.7.12.2 Co-located base stations

Table 6.51: BS Spurious emissions limits for BS co-located with GSM850 BS

BS class	Band	Maximum Level	Measurement Bandwidth	Note
Wide Area BS	824 - 849 MHz	-98 dBm	100 kHz	
Medium Range BS	824 - 849 MHz	-91 dBm	100 kHz	
Local Area BS	824 - 849 MHz	-70 dBm	100 kHz	

6.5.3.7.13 Co-existence with UTRA FDD in frequency band II

6.5.3.7.13.1 Operation in the same geographic area

Table 6.52: BS Spurious emissions limits for BS in geographic coverage area of UTRA FDD UE receiver and BS receiver operating in frequency band II

Band	Maximum Level	Measurement Bandwidth	Note
1930 – 1990 MHz	-52 dBm	1 MHz	This requirement does not apply to UTRA-FDD BS operating in band II
1850 – 1910 MHz	-49 dBm	1 MHz	This requirement does not apply to UTRA-FDD BS operating in band II, since it is already covered by the requirement in sub-clause 6.5.3.4.3.

6.5.3.7.13.2 Co-located base stations

Table 6.53: BS Spurious emissions limits for BS co-located with UTRA BS operating in frequency band II

Band	Maximum Level	Measurement Bandwidth	Note
1850 – 1910 MHz	-96 dBm	100 kHz	

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7.5 Blocking characteristics

7.5.1 Definition and applicability

The blocking characteristics is a measure of the receiver ability to receive a wanted signal at is assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the adjacent channels. The blocking performance requirement applies as specified in tables 7.4(a) to 7.4(g).

The requirements in Tables 7.4(a1), 7.4(a2) and 7.4(a3) shall apply to the indicated base station class, depending on which frequency band is used. The requirements in Tables 7.4 (b) to 7.4 (g) may be applied when the FDD BS is co-located with GSM900, ~~GSM850~~ (UTRA FDD or GSM) 850, ~~PCS1900~~ (UTRA FDD or GSM) 1900 and/or BS operation in ~~DCS1800 band~~ (UTRA FDD or GSM) 1800 band.

7.5.2 Minimum Requirements

The BER shall not exceed 0.001 for the parameters specified in table 7.4.

Table 7.4(a1): Blocking characteristics for Wide Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
I	1920 - 1980 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1900 - 1920 MHz 1980 - 2000 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz -1900 MHz 2000 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
II	1850 - 1910 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1830 - 1850 MHz 1910 - 1930 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz - 1830 MHz 1930 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
III	1710 – 1785 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1690 - 1710 MHz 1785 – 1805 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz - 1690 MHz 1805 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
V	824-849 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	804-824 MHz 849-869 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz – 804 MHz 869 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
Note*: The characteristics of the W-CDMA interference signal are specified in Annex I					

Table 7.4(a2): Blocking characteristics for Medium Range BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
I	1920 - 1980 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1900 - 1920 MHz 1980 - 2000 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz -1900 MHz 2000 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
II	1850 - 1910 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1830 - 1850 MHz 1910 - 1930 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz - 1830 MHz 1930 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
III	1710 – 1785 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1690 - 1710 MHz 1785 – 1805 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz - 1690 MHz 1805 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
V	824-849 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	804-824 MHz 849-869 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz – 804 MHz 869 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
Note*: The characteristics of the W-CDMA interference signal are specified in Annex I					

Table 7.4(a3): Blocking characteristics for Local Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
I	1920 - 1980 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1900 - 1920 MHz 1980 - 2000 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz -1900 MHz 2000 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier
II	1850 - 1910 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1830 - 1850 MHz 1910 - 1930 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz - 1830 MHz 1930 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier
III	1710 – 1785 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1690 - 1710 MHz 1785 – 1805 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz - 1690 MHz 1805 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier
V	824-849 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	804-824 MHz 849-869 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz – 804 MHz 869 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier
Note*: The characteristics of the W-CDMA interference signal are specified in Annex I					

Table 7.4(b): Blocking performance requirement when co-located with GSM900

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
921 -960 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.4(c): Blocking performance requirement for operation when co-located with BTS operating inDCS1800 band (GSM or UTRA)

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
1805 – 1880 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.4(d): Blocking performance requirement for operation when co-located with UTRA BS operating in Frequency band I

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
2110 – 2170 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.4(e): Blocking performance requirement for operation when co-located with PCS1900 BTS

Table 7.4(e): Blocking performance requirement for operation when co-located with PCS1900 BTS Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
1930 – 1990 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.4(f1): Blocking performance requirement (narrowband) for Wide Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
II	1850 - 1910 MHz	- 47 dBm	-115 dBm	2.7 MHz	GMSK modulated*
III	1710 – 1785 MHz	- 47 dBm	-115 dBm	2.8 MHz	GMSK modulated*
V	824 – 849 MHz	- 47 dBm	-115 dBm	2.7 MHz	GMSK modulated*
* GMSK modulation as defined in TS 45.004 [12].					

Table 7.4(f2): Blocking performance requirement (narrowband) for Medium range BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
II	1850 - 1910 MHz	- 42 dBm	-105 dBm	2.7 MHz	GMSK modulated*
III	1710 – 1785 MHz	- 42 dBm	-105 dBm	2.8 MHz	GMSK modulated*
V	824 – 849 MHz	- 42 dBm	-105 dBm	2.7 MHz	GMSK modulated*
* GMSK modulation as defined in TS 45.004 [12].					

Table 7.4(f3): Blocking performance requirement (narrowband) for Local Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
II	1850 - 1910 MHz	- 37 dBm	-101 dBm	2.7 MHz	GMSK modulated*
III	1710 – 1785 MHz	- 37 dBm	-101 dBm	2.8 MHz	GMSK modulated*
V	824 – 849 MHz	- 37 dBm	-101 dBm	2.7 MHz	GMSK modulated*
* GMSK modulation as defined in TS 45.004 [12].					

Table 7.4(g): Blocking performance requirement for operation when co-located with GSM850 BTS

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
869 – 894 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.4(h): Blocking performance requirement for operation when co-located with UTRA BS operating in Frequency band II

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
1930 – 1990 MHz	+16 dBm	-115 dBm	—	CW carrier

The normative reference for these requirements is in TS 25.104[1] subclause 7.5

7.5.3 Test purpose

The test stresses the ability of the BS receiver to withstand high-level interference from unwanted signals at frequency offsets of 10 MHz or more, without undue degradation of its sensitivity.

7.5.4 Method of test

7.5.4.1 Initial conditions

Test environment: normal; see subclause 4.4.1.

RF channels to be tested: M see subclause 4.8. The BS shall be configured to operate as close to the centre of the operating band as possible.

1) Connect WCDMA signal generator at the assigned channel frequency of the wanted signal and a signal generator to the antenna connector of one Rx port.

2) Terminate any other Rx port not under test.

3) Transmit a signal from the WCDMA signal generator to the BS. The characteristics of the signal shall be set according to the UL reference measurement channel (12,2 kbit/s) specified in annex A subclause A.2.1. The level of the WCDMA signal measured at the BS antenna connector shall be set to the level specified in subclause 7.5.5.

7.5.4.2 Procedure

1) Adjust the signal generators to the type of interfering signals and the frequency offsets as specified in Tables 7.4A(a) to 7.4A(g). Note that the GMSK modulated interfering signal shall have an ACLR of at least 72 dB in order to eliminate the impact of interference signal adjacent channel leakage power on the blocking characteristics measurement. For the tests defined in Table 7.4A(a), the interfering signal shall be at a frequency offset Fuw from the assigned channel frequency of the wanted signal which is given by:

$$Fuw = \pm (n \times 1\ MHz),$$

where n shall be increased in integer steps from n = 10 up to such a value that the center frequency of the interfering signal covers the range from 1 MHz to 12,75 GHz.

2) Measure the BER of the wanted signal at the BS receiver.

3) Interchange the connections of the BS Rx ports and repeat the measurements according to steps (1) to (2).

7.5.5 Test Requirements

The BER shall not exceed 0.001 for the parameters specified in table 7.4A.

Table 7.4A(a1): Blocking characteristics for Wide Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
I	1920 - 1980 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1900 - 1920 MHz 1980 - 2000 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz -1900 MHz 2000 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
II	1850 - 1910 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1830 - 1850 MHz 1910 - 1930 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz - 1830 MHz 1930 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
III	1710 – 1785 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1690 - 1710 MHz 1785 – 1805 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz - 1690 MHz 1805 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
V	824-849 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	804-824 MHz 849-869 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz – 804 MHz 869 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
Note*: The characteristics of the W-CDMA interference signal are specified in Annex I					

Table 7.4A(a2): Blocking characteristics for Medium Range BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
I	1920 - 1980 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1900 - 1920 MHz 1980 - 2000 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz -1900 MHz 2000 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
II	1850 - 1910 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1830 - 1850 MHz 1910 - 1930 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz - 1830 MHz 1930 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
III	1710 – 1785 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1690 - 1710 MHz 1785 – 1805 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz - 1690 MHz 1805 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
V	824-849 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	804-824 MHz 849-869 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz – 804 MHz 869 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
Note*: The characteristics of the W-CDMA interference signal are specified in Annex I					

Table 7.4A(a3): Blocking characteristics for Local Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
I	1920 - 1980 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1900 - 1920 MHz 1980 - 2000 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz -1900 MHz 2000 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier
II	1850 - 1910 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1830 - 1850 MHz 1910 - 1930 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz - 1830 MHz 1930 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier
III	1710 – 1785 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1690 - 1710 MHz 1785 – 1805 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz - 1690 MHz 1805 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier
V	824-849 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	804-824 MHz 849-869 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz – 804 MHz 869 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier
Note*: The characteristics of the W-CDMA interference signal are specified in Annex I					

Table 7.4A(b): Blocking performance requirement when co-located with GSM900

Table 7.4A(b): Blocking performance requirement when co-located with GSM900 Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
921 -960 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.4A(c): Blocking performance requirement when co-located with Base Station operating in DCS1800 band (GSM or UTRA FDD)

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
1805 – 1880 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.4A(d): Blocking performance requirement for operation when co-located with UTRA BS operating in Frequency band I

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
2110 – 2170 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.4A(e): Blocking performance requirement for operation when co-located with PCS1900 BTS

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
1930 – 1990 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.4A(f1): Blocking performance requirement (narrowband) for Wide Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
II	1850 - 1910 MHz	- 47 dBm	-115 dBm	2.7 MHz	GMSK modulated*
III	1710 – 1785 MHz	- 47 dBm	-115 dBm	2.8 MHz	GMSK modulated*
V	824 – 849 MHz	- 47 dBm	-115 dBm	2.7 MHz	GMSK modulated*
* GMSK modulation as defined in TS 45.004 [12].					

Table 7.4A(f2): Blocking performance requirement (narrowband) for Medium range BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
II	1850 - 1910 MHz	- 42 dBm	-105 dBm	2.7 MHz	GMSK modulated*
III	1710 – 1785 MHz	- 42 dBm	-105 dBm	2.8 MHz	GMSK modulated*
V	824 – 849 MHz	- 42 dBm	-105 dBm	2.7 MHz	GMSK modulated*
* GMSK modulation as defined in TS 45.004 [12].					

Table 7.4A(f3): Blocking performance requirement (narrowband) for Local Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
II	1850 - 1910 MHz	- 37 dBm	-101 dBm	2.7 MHz	GMSK modulated*
III	1710 – 1785 MHz	- 37 dBm	-101 dBm	2.8 MHz	GMSK modulated*
V	824 – 849 MHz	- 37 dBm	-101 dBm	2.7 MHz	GMSK modulated*
* GMSK modulation as defined in TS 45.004 [12].					

Table 7.4A(g): Blocking performance requirement for operation when co-located with GSM850 BTS

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
869 – 894 MHz	+16 dBm	-115 dBm	—	CW carrier

Table 7.4A(h): Blocking performance requirement for operation when co-located with UTRA BS operating in Frequency band II

Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
1930 – 1990 MHz	+16 dBm	-115 dBm	—	CW carrier

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 4.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.

NOTE: Annex C describes the procedure for BER tests taking into account the statistical consequence of frequent repetition of BER measurements within the blocking test . The consequence is: a DUT exactly on the limit may fail due to the statistical nature 2.55 times(mean value) in 12750 BER measurements using the predefined wrong decision probability of 0.02%. If the fail cases are ≤12, it is allowed to repeat the fail cases 1 time before the final verdict.

7.6 Intermodulation characteristics

7.6.1 Definition and applicability

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

7.6.2 Minimum Requirement

The intermodulation performance shall be met when the following signals are applied to the receiver.

Table 7.5(a): Interferer signals for intermodulation performance requirement

Operating Band	Type of Signal	Offset	Signal mean power		
			Wide Area BS	Medium Range BS	Local Area BS
I, II, III, V	Wanted signal	-	-115 dBm	-105 dBm	-101 dBm
	CW signal	10 MHz	-48 dBm	-44 dBm	-38 dBm
	WCDMA signal *	20 MHz	-48 dBm	-44 dBm	-38 dBm
Note *: The characteristics of the W-CDMA interference signal are specified in Annex I.					

Table 7.5(b): Narrowband intermodulation performance requirement

Operating band	Type of Signal	Offset	Signal mean power		
			Wide Area BS	Medium Range BS	Local Area BS
II, III, V	Wanted signal	-	-115 dBm	-105 dBm	-101 dBm
	CW signal	3.5 MHz	- 47 dBm	- 43 dBm	-37 dBm
	GMSK modulated*	5.9 MHz	- 47 dBm	- 43 dBm	-37 dBm
* GMSK as defined in TS 45.004 [12].					

The BER for wanted signal shall not exceed 0,001 for the parameters specified in table 7.5.

The normative reference for this requirement is in TS 25.104 [1] subclause 7.6

7.6.3 Test purpose

The test purpose is to verify the ability of the BS receiver to inhibit the generation of intermodulation products in its non-linear elements caused by the presence of two high-level interfering signals at frequencies with a specific relationship to the frequency of the wanted signal.

7.6.4 Method of test

7.6.4.1 Initial conditions

Test environment: normal; see subclause 4.4.1.

RF channels to be tested: B, M and T; see subclause 4.8

1) Set-up the equipment as shown in annex B.

7.6.4.2 Procedures

1) Generate the wanted signal (reference signal) and adjust ATT1 to set the signal level to the BS under test to the level specified in table 7.5A.

2) Adjust the signal generators to the type of interfering signals and the frequency offsets as specified in Tables 7.5A(a) and 7.5A(b). Note that the GMSK modulated interfering signal shall have an ACLR of at least 72 dB in order to eliminate the impact of interference signal adjacent channel leakage power on the intermodulation characteristics measurement.

3) Adjust the ATT2 and ATT3 to obtain the specified level of interference signal at the BS input.

4) Measure the BER

5) Repeat the whole test for the port which was terminated.

7.6.5 Test requirements

The intermodulation performance shall be met when the following signals are applied to the receiver.

Table 7.5A(a): Interferer signals for intermodulation performance requirement

Operating Band	Type of Signal	Offset	Signal mean		
			Wide Area BS	Medium Range BS	Local Area BS
I, II, III, V	Wanted signal	-	-115 dBm	-105 dBm	-101 dBm
	CW signal	10 MHz	-48 dBm	-44 dBm	-38 dBm
	WCDMA signal *	20 MHz	-48 dBm	-44 dBm	-38 dBm
Note*: The characteristics of the W-CDMA interference signal are specified in Annex I.					

Table 7.5A(b): Narrowband intermodulation performance requirement

Operating band	Type of Signal	Offset	Signal mean power		
			Wide Area BS	Medium Range BS	Local Area BS
II, III, V	Wanted signal	-	-115 dBm	-105 dBm	-101 dBm
	CW signal	3.5 MHz	- 47 dBm	- 43 dBm	-37 dBm
	GMSK modulated*	5.9 MHz	- 47 dBm	- 43 dBm	-37 dBm
* GMSK as defined in TS 45.004 [12].					

The BER for wanted signal shall not exceed 0,001 for the parameters specified in table 7.5A.

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 4.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.

7.7 Spurious Emissions

7.7.1 Definition and applicability

The spurious emission power is the power of the emissions generated or amplified in a receiver that appears 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 subclause 6.5.3 is valid.

7.7.2 Minimum Requirements

The power of any spurious emission shall not exceed:

Table 7.6(a): General spurious emission minimum requirement

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

Table 7.6(b): Additional spurious emission requirements

Operating Band	Band	Maximum level	Measurement Bandwidth	Note
I	1900 – 1980 MHz 2010 – 2025 MHz	-78 dBm	3.84 MHz	
II	1850 – 1910 MHz	-78 dBm	3.84 MHz	
III	1710 – 1785 MHz	-78 dBm	3.84 MHz	
V	824 – 849 MHz	-78 dBm	3.84 MHz	

In addition to the requirements in tables 7.6, the co-existence requirements for co-located base stations in subclauses 6.5.3.4.4.2, 6.5.3.4.5.2, 6.5.3.4.8.2, 6.5.3.4.9.2, 6.5.3.4.10.2, 6.5.3.4.11, ~~and~~ 6.5.3.4.12 and 6.5.3.4.13 may also be applied.The normative reference for this requirement is in TS 25.104[1] subclause 7.7

7.7.3 Test purpose

The test purpose is to verify the ability of the BS to limit the interference caused by receiver spurious emissions to other systems.

7.7.4 Method of test

7.7.4.1 Initial conditions

Test environment: normal; see subclause 4.4.1.

RF channels to be tested: M with multi-carrier if supported, see subclause 4.8

1) Connect a measurement receiver to the BS antenna connector as shown in annex B.
2) Enable the BS receiver.
3) Start BS transmission with channel configuration as specified in the table 6.1 and 6.2 (Test model 1) at Pmax.

7.7.4.2 Procedure

1) Terminate the BS Tx antenna connector as shown in annex B.
2) Set measurement equipment parameters as specified in table 7.7.
3) Measure the spurious emissions over each frequency range described in subclause 7.7.2.
4) Repeat the test using diversity antenna connector if available.

Table 7.7

Measurement Band width	3.84 MHz (Root raised cosine,0.22) / 100 kHz/ 1MHz (note)
Sweep frequency range	30 MHz to 12.75GHz
Detection	True RMS
NOTE: As defined in subclause 7.7.2.	

7.7.5 Test requirements

The all measured spurious emissions, derived in step (3) and (4), shall be within requirement limits as specified in Tables 7.7A.

Table 7.7A(a): Spurious emission minimum requirement

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

Table 7.7A(b): Additional spurious emission requirements

Operating Band	Band	Maximum level	Measurement Bandwidth	Note
I	1900 – 1980 MHz 2010 – 2025 MHz	-78 dBm	3.84 MHz	
II	1850 – 1910 MHz	-78 dBm	3.84 MHz	
III	1710 – 1785 MHz	-78 dBm	3.84 MHz	
V	824 – 849 MHz	-78 dBm	3.84 MHz	

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 4.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.

In addition to the requirements in tables 7.7A, the co-existence requirements for co-located base stations in subclauses 6.5.3.7.4.2, 6.5.3.7.5.2, 6.5.3.7.8.2, 6.5.3.7.9.2, 6.5.3.7.10.2, 6.5.3.7.11, ~~and~~ 6.5.3.7.12 and 6.5.3.7.13 may also be applied.

---NEXT MODIFIED SECTION---

Annex D (normative): Propagation conditions

D.1 Static propagation condition

The propagation for the static performance measurement is an Additive White Gaussian Noise (AWGN) environment. No fading or multi-paths exist for this propagation model.

D.2 Multi-path fading propagation conditions

Table D.1 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum, defined as:

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

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

Case 1~~, speed 3km/h~~		**Case 2~~, speed 3 km/h~~**		**Case 3~~, 120 km/h~~**		**Case 4~~, 250 km/h~~**	
Speed for Band I, II, III 3 km/h		Speed for Band I, II, III 3 km/h		Speed for Band I, II, III 120 km/h		Speed for Band I, II, III 250 km/h	
Speed for Band V 7 km/h		Speed for Band V 7 km/h		Speed for Band V 280 km/h		*Speed for Band V 583 km/h	
Relative Delay [ns]	**Average Power [dB]**	**Relative Delay [ns]**	**Average Power [dB]**	**Relative Delay [ns]**	**Average Power [dB]**	**Relative Delay [ns]**	**Average Power [dB]**
0	0	0	0	0	0	0	0
976	-10	976	0	260	-3	260	-3
		20000	0	521	-6	521	-6
				781	-9	781	-9

NOTE: * Speed above 250km/h is applicable to demodulation performance requirements only.

D.3 Moving propagation conditions

The dynamic propagation conditions for the test of the baseband performance are non fading channel models with two taps. The moving propagation condition has two tap, one static, Path0, and one moving, Path1. The time difference between the two paths is according Equation (D.1). The taps have equal strengths and equal phases.

Figure D.1: The moving propagation conditions

$$\Delta\tau = B + \frac{A}{2}\left(1+\sin(\Delta\omega \cdot t)\right) \quad \text{(D.1)}$$