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

TSGRP#9(00)0402

Title: **Agreed CRs to TS 25.142**

Source: **TSG-RAN WG4**

Agenda item: **5.4.3**

Tdoc Num	TS	CR number	Title	TYPE	Status	Cur_Ver	New_Ver
R4-000588	25.142	29	Conformance test description for maximum output power	F	agreed	3.2.1	3.3.0
R4-000589	25.142	31	Conformance test description for power control steps	F	agreed	3.2.1	3.3.0
R4-000590	25.142	30	Conformance test description for minimum transmit power	F	agreed	3.2.1	3.3.0
R4-000591	25.142	32	Conformance test description for spectrum emission mask	F	agreed	3.2.1	3.3.0
R4-000592	25.142	34	Conformance test description for modulation accuracy	F	agreed	3.2.1	3.3.0
R4-000593	25.142	35	Conformance test description for blocking characteristics	F	agreed	3.2.1	3.3.0
R4-000594	25.142	36	Conformance test description for performance requirements	F	agreed	3.2.1	3.3.0
R4-000629	25.142	33	Corrections to spectrum mask	F	agreed	3.2.1	3.3.0
R4-000727	25.142	37	Conformance test description for spectrum emission mask	F	agreed	3.2.1	3.3.0
R4-000778	25.142	28	Handling of measurement uncertainties in Base station conformance testing (TDD)	F	agreed	3.2.1	3.3.0

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Document R4-000778
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25.142	CR	28	Current Version:	3.2.1

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

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

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

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

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

Work item:

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

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

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

Clauses affected: 5.9.5, 5.9.6 (new subclause) and 5.10

Other specs affected:

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

Other comments:


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5.9.6 Test tolerances

The following values may be increased only on a test by test basis. The test tolerances should not be increased to take account of commonly known test system errors (such as mismatch, cable loss, etc.)

Transmitter

Subclause 6.2, Base station maximum output power:

Conformance requirement:

RF power, for static power step 0 [± 1,0] dB

Subclause 6.3, Frequency stability:

Conformance requirement:

Frequency ± [10] Hz

Subclause 6.4, Output power dynamics

Conformance requirement:

RF power, for static power steps (minimum and maximum Tx power) ± [1,0] dB

Relative RF Power ± [0,7] dB

Subclause 6.5, Transmit OFF power:

Conformance requirement:

RF power difference

Power difference < 50 dB ± [0,7] dB

Power difference ≥ 50 dB ± [1,5] dB

Subclause 6.6, Output RF spectrum emissions

Conformance requirement:

RF power difference

Power difference < 50 dB ± [0,7] dB

Power difference ≥ 50 dB ± [1,5] dB

Relative RF power:

Table 5.9.5.1: Acceptable uncertainty of relative RF power measurements

Offset from carrier, MHz	Power difference, dB	Uncertainty of relative power, dB

Spurious emissions

RF power

- inside the BS transmit band ± [1.5] dB

- outside the BS transmit band:

f ≤ 2 GHz ± [1.5] dB

2 GHz < f ≤ 4 GHz ± [2.0] dB

f > 4 GHz ± [4.0] dB

Subclause 6.7, Transmit intermodulation:

Test case:

Relative RF power (of injected signal) ± [1.5] dB

Conformance requirement (outside RX band):

RF power; absolute limit values ± [1.5] dB

RF power, relative measurements ± [2.0] dB

Conformance requirement (inside RX band):

RF power; absolute limit values +[4] dB –[3] dB

NOTE: The positive limit for uncertainty is greater than the negative limit because the measurement result can be increased (but not decreased) due to intermodulation products within the measurement apparatus.

Receiver

Where a measurement uncertainty of +5 dB -0 dB is specified for an input signal, the measured value of the input signal should be increased by an amount equal to the uncertainty with which it can be measured. This will ensure that the true value of the input signal is not below the specified nominal.

Subclause 7.2, Reference sensitivity level

Test case:

RF power ± [1.0] dB

Subclause 7.3, Dynamic range:

Test case:

RF power ± [1.5] dB

Relative RF power ± [3.0] dB

Subclause 7.4, Adjacent Channel Selectivity (ACS):

Test case:

RF power ± [1.5] dB

Relative RF power ± [3.0] dB

Subclause 7.5, Blocking characteristics:

Test case:

RF power, wanted signal ± [1.0] dB

RF power, interfering signal;

f ≤ 2 GHz ± [0.7] dB

2 GHz < f ≤ 4 GHz ± [1.5] dB

f > 4 GHz ± [3.0] dB

Subclause 7.6, Intermodulation characteristics:

Test case:

RF power, wanted signal ± [1.0] dB

RF power, interfering signals ± [0.7] dB

Subclause 7.7, Spurious emissions:

Conformance requirement:

RF power;

f ≤ 2 GHz ± [1.5] dB

2 GHz < f ≤ 4 GHz ± [2.0] dB

f > 4 GHz ± [4.0] dB

5.10 Interpretation of measurement results

Compliance with the requirement is determined by comparing the measured value (or derived value from the measured one) with the test limit. The test limit shall be ~~relaxed~~ calculated by adding~~from~~ the specified limit in the core requirement using the test tolerance as specified in subclause 5.9.6.~~maximum allowed uncertainty for the test equipment as specified in subclause 5.9.5.~~

The actual measurement uncertainty of the test equipment for the measurement of each parameter shall be included in the test report.

The recorded value for the test equipment uncertainty shall be, for each measurement, equal to or lower than the appropriate figure in subclause 5.9.5 of this TS.

If the test equipment for a test is known to have a measurement uncertainty greater than that specified in subclause 5.9.5, it is still permitted to use this equipment provided that an adjustment is made to the measured value as follows:

The initial test limit is derived as above ~~by relaxing the specified limit using the maximum allowed test equipment uncertainty as specified in subclause 5.9.5~~. Any additional uncertainty in the test equipment over and above that specified in subclause 5.9.5 shall be used to tighten the test limit. This procedure will ensure that test equipment not compliant with subclause 5.9.5 does not increase the chance of passing a device under test where that device would otherwise have failed the test if test equipment compliant with subclause 5.9.5 had been used.

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

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

Source: RAN WG4 **Date:** 4.9.2000

Subject: Conformance test description for maximum output power

Work item: TS 25.142

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

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

Reason for change: The proposed change aims at a better alignment between the definition and the conformance testing procedure for maximum output power

Clauses affected: 6.2.4.2

Other specs affected:

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

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6.2 Maximum output power

6.2.1 Definition and applicability

Output power, Pout, of the base station is the power of one carrier delivered to a load with resistance equal to the nominal load impedance, when averaged (in the sense of thermal power) over the useful part of the burst (time slot).

Rated output power, PRAT, of the base station is the mean power level per carrier over an active timeslot that the manufacturer has declared to be available at the antenna connector.

Maximum output power, Pmax, of the base station is the mean power level per carrier over an active timeslot measured at the antenna connector for a specified reference condition.

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

6.2.2 Conformance requirements

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

In extreme conditions, the base station maximum output power shall remain within +2,5 dB and –2,5 dB of the manufacturer's rated output power.

In certain regions, the minimum requirement for normal conditions may apply also for some conditions outside the ranges defined for the Normal test environment in subclause 5.8.1.

The reference for this requirement is TS 25.105 subclause 6.2.1.1.

6.2.3 Test purpose

The test purpose is to verify the accuracy of the maximum output power across the frequency range and under normal and extreme conditions for all transmitters in the BS.

6.2.4 Method of test

6.2.4.1 Initial conditions

(1) The transmitter under test and all other transmitters of the base station (if any) are switched on.

(2) The power of the transmitters not under test (if any) are controlled down.

(3) Connect the power measuring equipment to the BS antenna connector.

(4) Set the parameters of the transmitted signal according to table 6.2.4.1.1.

Table 6.2.4.1.1: Parameters of the transmitted signal for maximum output power test

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
BS output power setting	PRAT
Number of DPCH in each active TS	9
Power of each DPCH	1/9 of Base Station output power
Data content of DPCH	real life (sufficient irregular)

6.2.4.2 Procedure

(1) Measure thermal power over the 2464 active chips of an even time slot (this excludes the guard periods), and with a measurement bandwidth of at least 5 MHz.

~~(2) Average over TBD time slots.~~

(2~~3~~) Run step~~s~~ (1) ~~and (2)~~ for RF channels Low / Mid / High.

6.2.5 Test requirements

The value of the measured output power, derived according to subclause 6.2.4.2, shall be within the tolerance defined in subclause 6.2.2.

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25.142	CR	30	Current Version:	3.2.1

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

Source: RAN WG4 **Date:** 4.9.2000

Subject: Conformance test description for minimum transmit power

Work item: TS 25.142

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

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

Reason for change: Alignment of the conformance testing procedure for minimum transmit power with the procedure adopted for maximum output power

Clauses affected: 6.4.4

Other specs affected:

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

Other comments:

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6.4.4 Minimum transmit power

6.4.4.1 Definition and applicability

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

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

6.4.4.2 Conformance requirements

The DL minimum transmit power shall be lower than or equal to

Maximum output power – 30 dB.

The reference for this requirement is TS 25.105 subclause 6.4.4.1.

6.4.4.3 Test purpose

The test purpose is to verify the ability of the BS to reduce its output power to a specified value.

6.4.4.4 Method of test

6.4.4.4.1 Initial conditions

(1) Connect the BS tester to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.4.4.4.1.1.

(3) Operate the BS in such a mode that it is able to interpret received TPC commands

(4) Start BS transmission.

NOTE: The BS tester used for this test must have the ability

- to analyze the output signal of the BS under test with respect to thermal power;

- to simulate an UE with respect to the generation of TPC commands embedded in a valid UE signal.

Table 6.4.4.4.1.1: Parameters of the BS transmitted signal for minimum transmit power test

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Number of DPCH in each active TS	9
Power of each DPCH	1/9 of Base Station output power
Data content of DPCH	real life (sufficient irregular)

6.4.4.4.2 Procedure

(1) Configure the BS transmitter to enable power control steps of size 1 dB.

(2) Set the BS tester to produce a sequence of TPC commands related to all active DPCH, with content "Decrease Tx power". This sequence shall be sufficiently long so that the transmit output power of all active DPCH is controlled to reach its minimum, and shall be transmitted to the BS within the odd time slots TS i (receive time slots of the BS).

(3) Measure the power of the BS output signal over the 2464 active chips of ~~each~~an even time slot TS i (this excludes the guard period), and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.

~~(4)Average over TBD time slots.~~

~~(5)~~(4) Configure the BS transmitter to enable power control steps of 2 dB and of 3 dB, respectively, and repeat steps (2) ~~to~~and (~~4~~3).

6.4.4.5 Test requirements

For all measurements, the minimum transmit power derived in step (~~4~~3) of 6.4.4.4.2 shall be at least 30 dB below the maximum output power as declared by the manufacturer; see 6.2.

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25.142	CR	31	Current Version:	3.2.1

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

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

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

Source: RAN WG4 **Date:** 4.9.2000

Subject: Conformance test description for power control steps

Work item: TS 25.142

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

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

Reason for change: Clarification of the conformance requirements for power control steps in cases, when the number of power control steps feasible within the power control dynamic range of the BS under test may be lower than 10 (applicable only for power control step size 3 dB)

Clauses affected: 6.4.2

Other specs affected:

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

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6.4.2 Power control steps

6.4.2.1 Definition and applicability

The power control step is the step change in the DL transmitter output power in response to a TPC message from the UE.

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

6.4.2.2 Conformance requirements

The power control step sizes in the DL shall be 1 dB, 2 dB and 3 dB.

The tolerance of the transmitter output power and the greatest average rate of change in mean power due to the power control step shall be within the range shown in Table 6.4.2.2.1.

Table 6.4.2.2.1: Power control step size tolerance

Step size	tolerance	Range of average rate of change in mean power per 10 steps	
		Minimum	maximum
1dB	± 0,5 dB	± 8 dB	± 12 dB
2dB	± 0,75 dB	± 16 dB	± 24 dB
3dB	± 1 dB	± 24 dB	± 36 dB

The reference for this requirement is TS 25.105 subclause 6.4.2.1.

6.4.2.3 Test purpose

The DL power control is applied to adjust the BS output power to a value that is sufficiently high to generate a SIR at the UE receiver equal to the target SIR, while limiting the intercell interference.

The test purpose is to verify the ability of the BS to interpret received TPC commands in a correct way and to adjust its output power according to these commands with the specified accuracy.

6.4.2.4 Method of test

6.4.2.4.1 Initial conditions

(1) Connect the BS tester to the antenna connector of the BS under test.

(2) Disable closed loop power control in the BS under test.

(3) Set the initial parameters of the BS transmitted signal according to table 6.4.2.4.1.1.

(4) Operate the BS in such a mode that it is able to interpret received TPC commands.

(5) Start BS transmission.

NOTE: The BS tester used for this test must have the ability

- to analyze the output signal of the BS under test with respect to code domain power, by applying the global in-channel Tx test method described in Annex C;

- to simulate an UE with respect to the generation of TPC commands embedded in a valid UE signal.

Table 6.4.2.4.1.1: Initial parameters of the BS transmitted signal for power control steps test

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Number of DPCH in each active TS	1
DPCH power	Minimum
Data content of DPCH	real life (sufficient irregular)

6.4.2.4.2 Procedure

(1) Configure the BS transmitter to enable power control steps of size 1 dB.

(2) Set the BS tester to produce a sequence of TPC commands related to the active DPCH. This sequence shall be transmitted to the BS within the odd time slots TS i (receive time slots of the BS) and shall consist of a series of TPC commands with content "Increase Tx power", followed by a series of TPC commands with content "Decrease Tx power". Each of these series should be sufficiently long so that the transmit output power of the active DPCH is controlled to reach its maximum and its minimum, respectively.

(3) Measure the power of the active DPCH over the 2464 active chips of each even time slot TS i (-this excludes the guard period)~~,~~, and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.

(4) Based on the measurement made in step (3), calculate the power control step sizes and the average rate of change per 10 steps.

(5) Configure the BS transmitter to enable power control steps of 2 dB and of 3 dB, respectively, and repeat steps (2) to (4).

~~NOTE: In case of power control step size 3 dB, the number of power control steps feasible within the power control dynamic range of the BS under test may be lower than 10. In this case, the evaluation of the average rate of change in mean power may be based on less than 10 power control steps.~~

6.4.2.5 Test requirements

For all measurements, the tolerance of the power control step sizes and the average rate of change per 10 steps shall be within the limits given in Table 6.4.2.2.1.

In case, the power control step size is set to 3 dB, the number of power control steps feasible within the power control dynamic range of the BS under test may be less than 10. In this case, the evaluation of the average rate of change in mean power shall be based on the number of power control steps actually feasible, and the permitted range of average rate of change shall be reduced compared to the values given in table 6.4.2.4.1.1 in proportion to the ratio (number of power control steps actually feasible /10).

EXAMPLE: If the number of power control steps actually feasible is 9, the minimum and maximum value of the range of average rate of change in mean power are given by 21,6 dB and 32,4 dB, respectively.

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25.142	CR	32	Current Version:	3.2.1

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

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

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

Source: RAN WG4 **Date:** 4.9.2000

Subject: Conformance test description for spectrum emission mask

Work item: TS 25.142

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

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

Reason for change: Correction of the value for frequency offset of measurement filter centre frequency in Table 6.6.2.1.2.1.

Clauses affected: 6.6.2.1.2

Other specs affected:

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

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6.6.2.1 Spectrum emission mask

6.6.2.1.1 Definition and applicability

The spectrum emission mask specifies the limit of the transmitter out of band emissions at frequency offsets from the assigned channel frequency of the wanted signal between 2,5 MHz and 12,5 MHz.

The mask defined in subclause 6.6.2.1.2 below may be mandatory in certain regions. In other regions this mask may not be applied.

6.6.2.1.2 Conformance requirements

For regions where this subclause 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 6.6.2.1.2.1 to 6.6.2.1.2.4 in the frequency range of f_offset from 2,515 MHz to f_offset_{max} from the carrier frequency, where:

- 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 4.2, whichever is the greater.

Table 6.6.2.1.2.1: Spectrum emission mask values, BS rated output power PRAT ≥ 43 dBm

	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
	2,515 MHz ≤ f_offset < 2,715 MHz	-14 dBm	30 kHz
	2,715 MHz ≤ f_offset < 3,515 MHz	- 14 - 15·(f_offset – 2,715) dBm	30 kHz
	3,515 MHz ≤ f_offset < 4,0 MHz	-26 dBm	30 kHz
	4,0 MHz ≤ f_offset < 8,0 MHz	-13 dBm	1 MHz
	48,0 MHz ≤ f_offset < f_offset_{max}	-13 dBm	1 MHz

Table 6.6.2.1.2.2: Spectrum emission mask values, BS rated output power 39 ≤ PRAT < 43 dBm

	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
	2,515 MHz ≤ f_offset < 2,715 MHz	-14 dBm	30 kHz
	2,715 MHz ≤ f_offset < 3,515 MHz	-14 - 15·(f_offset – 2,715) dBm	30 kHz
	3,515 MHz ≤ f_offset < 4,0 MHz	-26 dBm	30 kHz
	4,0 MHz ≤ f_offset < 8,0 MHz	-13 dBm	1 MHz
	8,0 MHz ≤ f_offset < f_offset_{max}	P - 56 dBm	1 MHz

Table 6.6.2.1.2.3: Spectrum emission mask values, BS rated output power 31 ≤ PRAT < 39 dBm

	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
	2,515 MHz ≤ f_offset < 2,715 MHz	P - 53 dBm	30 kHz
	2,715 MHz ≤ f_offset < 3,515 MHz	P – 53 - 15·(f_offset – 2,715) dBm	30 kHz
	3,515 MHz ≤ f_offset < 4,0 MHz	-26 dBm	30 kHz
	4,0 MHz ≤ f_offset < 8,0 MHz	P - 52 dBm	1 MHz
	8,0 MHz ≤ f_offset < f_offset_{max}	P - 56 dBm	1 MHz

Table 6.6.2.1.2.4: Spectrum emission mask values, BS rated output power PRAT < 31 dBm

	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
	2,515 MHz ≤ f_offset < 2,715 MHz	-22 dBm	30 kHz
	2,715 MHz ≤ f_offset < 3,515 MHz	-22 – 15·(f_offset – 2,715) dBm	30 kHz
	3,515 MHz ≤ f_offset < 4,0 MHz	-26 dBm	30 kHz
	4,0 MHz ≤ f_offset < 8,0 MHz	-21 dBm	1 MHz
	8,0 MHz ≤ f_offset < f_offset_{max}	-25 dBm	1 MHz

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25.142	CR	33	Current Version:	3.2.0

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

For submission to:	RAN #9	for approval	X	strategic		(for SMG use only)
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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

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

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

Subject: Corrections to spectrum mask

Work item:

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

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

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

Clauses affected: 6.6.2.1.2

Other specs affected:

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

Other comments:

6.6.2.1.2 Conformance requirements

For regions where this subclause 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 6.6.2.1.2.1 to 6.6.2.1.2.4 in the frequency range of f_offset from 2,515 MHz to f_offset_{max} from the carrier frequency, where:

- 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 4.2, whichever is the greater.

Table 6.6.2.1.2.1: Spectrum emission mask values, BS rated output power PRAT ≥ 43 dBm

	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
	2,515 MHz ≤ f_offset < 2,715 MHz	-14 dBm	30 kHz
	2,715 MHz ≤ f_offset < 3,515 MHz	- 14 - 15·(f_offset – 2,715) dBm	30 kHz
	3,515 MHz ≤ f_offset < 4,0 MHz	-26 dBm	30 kHz
	4,0 MHz ≤ f_offset < 8,0 MHz	-13 dBm	1 MHz
	4,0 MHz ≤ f_offset < f_offset_{max}	-13 dBm	1 MHz

Table 6.6.2.1.2.2: Spectrum emission mask values, BS rated output power 39 ≤ PRAT < 43 dBm

	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
	2,515 MHz ≤ f_offset < 2,715 MHz	-14 dBm	30 kHz
	2,715 MHz ≤ f_offset < 3,515 MHz	-14 - 15·(f_offset – 2,715) dBm	30 kHz
	3,515 MHz ≤ f_offset < 4,0 MHz	-26 dBm	30 kHz
	4,0 MHz ≤ f_offset < 8,0 MHz	-13 dBm	1 MHz
	8,0 MHz ≤ f_offset < f_offset_{max}	P - 56 dBm	1 MHz

Table 6.6.2.1.2.3: Spectrum emission mask values, BS rated output power 31 ≤ PRAT < 39 dBm

	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
	2,515 MHz ≤ f_offset < 2,715 MHz	P - 53 dBm	30 kHz
	2,715 MHz ≤ f_offset < 3,515 MHz	P – 53 - 15·(f_offset – 2,715) dBm	30 kHz
	3,515 MHz ≤ f_offset < 4,0 MHz	~~-26~~P-65 dBm	30 kHz
	4,0 MHz ≤ f_offset < 8,0 MHz	P - 52 dBm	1 MHz
	8,0 MHz ≤ f_offset < f_offset_{max}	P - 56 dBm	1 MHz

Table 6.6.2.1.2.4: Spectrum emission mask values, BS rated output power PRAT < 31 dBm

	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
	2,515 MHz ≤ f_offset < 2,715 MHz	-22 dBm	30 kHz
	2,715 MHz ≤ f_offset < 3,515 MHz	-22 – 15·(f_offset – 2,715) dBm	30 kHz
	3,515 MHz ≤ f_offset < 4,0 MHz	~~-26~~-34 dBm	30 kHz
	4,0 MHz ≤ f_offset < 8,0 MHz	-21 dBm	1 MHz
	8,0 MHz ≤ f_offset < f_offset_{max}	-25 dBm	1 MHz

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25.142	CR	34	Current Version:	3.2.1

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

For submission to:	RAN #9	for approval	X	strategic		(for SMG use only)
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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

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

Source: RAN WG4 **Date:** 4.9.2000

Subject: Conformance test description for modulation accuracy

Work item: TS 25.142

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

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

Reason for change: Alignment of the conformance test specification for modulation accuracy with recent amendments incorporated into the core specification TS 25.105 via CR 022

Clauses affected: 6.8.1.2, 6.8.1.4.1, 6.8.1.4.2

Other specs affected:

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

Other comments:

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6.8 Transmit Modulation

6.8.1 Modulation accuracy

6.8.1.1 Definition and applicability

The modulation accuracy is a measure of the difference between the measured waveform and the theoretical modulated waveform (the error vector). A quantitative measure of the modulation accuracy is the error vector magnitude (EVM) which is defined as the square root of the ratio of the mean error vector power to the mean reference signal power expressed as %. The measurement interval is one timeslot.

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

NOTE: The theoretical modulated waveform shall be calculated on the basis that the transmit pulse shaping filter is a root-raised cosine (RRC) with roll-off α =0,22 in the frequency domain. The impulse response of the chip impulse filter $RC_0(t)$ is

$$RC_0(t) = \frac{\sin\left(\pi \frac{t}{T_C}(1-\alpha)\right) + 4\alpha \frac{t}{T_C}\cos\left(\pi \frac{t}{T_C}(1+\alpha)\right)}{\pi \frac{t}{T_C}\left(1-\left(4\alpha \frac{t}{T_C}\right)^2\right)}$$

Where the roll-off factor α = 0,22 and the chip duration $T_C = \frac{1}{chiprate} \approx 0.26042\mu s$.

6.8.1.2 Conformance requirements

The error vector magnitude (EVM) shall not exceed 12,5 %. The requirement is valid over the total power dynamic range as specified in subclause 6.4.3 of TS 25.105.

The reference for this requirement is TS 25.105 subclause 6.8.2.1.

6.8.1.3 Test purpose

The test purpose is to verify the ability of the BS transmitter to generate a sufficient precise waveform and thus to enable the UE receiver to achieve the specified error performance.

6.8.1.4 Method of test

6.8.1.4.1 Initial conditions

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.8.1.4.1.1.

Table 6.8.1.4.1.1: Parameters of the BS transmitted signal for modulation accuracy testing

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Number of DPCH in each active TS	1
BS~~ase station~~ power setting	PRAT~~maximum, according to manufacturer's declaration~~
Data content of DPCH	real life (sufficient irregular)

6.8.1.4.2 Procedure

(1) Measure the error vector magnitude (EVM) by applying the global in-channel Tx test method described in Annex C.

(2) Set the BS output power to PRAT – 30 dB and repeat step (1) above.

6.8.1.5 Test requirements

The error vector magnitude (EVM) measured according to subclause 6.8.1.4.2 shall not exceed 12,5 %.

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25.142	CR	35	Current Version:	3.2.1

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

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

Source: RAN WG4 **Date:** 4.9.2000

Subject: Conformance test description for blocking characteristics

Work item: TS 25.142

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

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

Reason for change: Alignment of the conformance requirements for blocking characteristics with the core specification TS 25.105

Clauses affected: 7.5.2

Other specs affected:

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

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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 its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the adjacent channels. The blocking performance shall apply at all frequencies as specified in tables 7.5.2.1, 7.5.2.2 or 7.5.2.3 respectively, using a 1 MHz step size.

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

7.5.2 Conformance requirements

The static reference performance as specified in clause 7.2 should be met with a wanted and an interfering signal coupled to the BS antenna input using the parameters specified in tables 7.5.2.1, 7.5.2.2 or 7.5.2.3, respectively.

Table 7.5.2.1: Blocking requirements for operating bands defined in subclause 4.2 a)

Center frequency of interfering signal	Interfering signal level	Wanted signal level	Minimum offset of interfering signal	Type of interfering signal
1900 – 1920 MHz, 2010 – 2025 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1920 – 1980 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1 - 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.5.2.2: Blocking requirements for operating bands defined in subclause 4.2 b)

Center frequency of interfering signal	Interfering signal level	Wanted signal level	Minimum offset of interfering signal	Type of interfering signal
1850 – 1990 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1 – 1830 MHz, ~~2045~~ 2010 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.5.2.3: Blocking requirements for operating bands defined in subclause 4.2 c)

Center frequency of interfering signal	Interfering signal level	Wanted signal level	Minimum offset of interfering signal	Type of interfering signal
1910 – 1930 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-40 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

The reference for this requirement is TS 25.105 subclause 7.5.

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25.142	CR	36	Current Version:	3.2.1

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

For submission to:	RAN #9	for approval	X	strategic		(for SMG use only)
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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

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

Source: RAN WG4 **Date:** 4.9.2000

Subject: Conformance test description for performance requirements

Work item: TS 25.142

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

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

Reason for change: Alignment of the conformance test description for performance requirements with recent amendments incorporated into the core specification TS 25.105 via CR 035 (correction of the power level of the interfering AWGN signal and of other affected parameters).

Clauses affected: 8

Other specs affected:

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

Other comments:

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8 Performance requirements

8.1 General

Performance requirements for the BS are specified for the measurement channels defined in Annex A and the propagation conditions in Annex B. The requirements only apply to those measurement channels that are supported by the base station.

The minimum bandwidth of the white noise source, simulating interference from other cells (I_{oc}) shall be 1,5 times the chip rate (5,76 MHz for a chip rate of 3,84 MHz).

The requirements only apply to a base station with dual receiver antenna diversity. The required $\hat{I}_{or}/I_{oc}$ shall be applied separately at each antenna port.

Table 8.1.1: Summary of Base Station performance targets

Physical channel	Measurement channel	Static	Multi-path Case 1	Multi-path Case 2	Multi-path Case 3
		Performance metric			
DCH	12,2 kbps	BLER < 10^{-2}	BLER < 10^{-2}	BLER < 10^{-2}	BLER < 10^{-2}
	64 kbps	BLER < 10^{-1}, 10^{-2}	BLER < 10^{-1}, 10^{-2}	BLER < 10^{-1}, 10^{-2}	BLER < 10^{-1}, 10^{-2}, 10^{-3}
	144 kbps	BLER < 10^{-1}, 10^{-2}	BLER < 10^{-1}, 10^{-2}	BLER < 10^{-1}, 10^{-2}	BLER < 10^{-1}, 10^{-2}, 10^{-3}
	384 kbps	BLER < 10^{-1}, 10^{-2}	BLER < 10^{-1}, 10^{-2}	BLER < 10^{-1}, 10^{-2}	BLER < 10^{-1}, 10^{-2}, 10^{-3}

8.2 Demodulation in static propagation conditions

8.2.1 Demodulation of DCH

8.2.1.1 Definition and applicability

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

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

8.2.1.2 Conformance requirements

For the parameters specified in table 8.2.1.2.1, the BLER should not exceed the piece-wise linear BLER curve specified in table 8.2.1.2.2.

Table 8.2.1.2.1: Parameters in static propagation conditions

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$		6	4	0	0
$\frac{DPCH_o \_ E_c}{I_{or}}$	dB	-9	-9,5	–	–
I_{oc}	dBm/3,84 MHz	-89			
Information Data Rate	kbps	12,2	64	144	384

Table 8.2.1.2.2: Performance requirements in AWGN channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	-1,9	10^{-2}
2	-0,3	10^{-1}
	0,0	10^{-2}
3	0,0	10^{-1}
	0,2	10^{-2}
4	-0,5	10^{-1}
	-0,3	10^{-2}

The reference for this requirement is TS 25.105 subclause 8.2.1.

8.2.1.3 Test purpose

The test purpose is to verify the ability of the BS to receive a prescribed test signal under static propagation conditions with a BLER not exceeding a specified limit. Within the wanted channel, intracell interference sources as well as an additional intercell interference source are taken into account. Therefore, this test – as all other tests in clause 8 - mainly checks the ability of the signal processing part of the receiver to extract the wanted signal from the interfered-with input signal, whereas the tests in clause 7 concentrate on the receiver RF part.

8.2.1.4 Method of test

8.2.1.4.1 Initial conditions

Connect the BS tester (UE simulator) generating the wanted signal and a set of interference generators to both BS antenna connectors for diversity reception via a combining network. The set of interference generators comprises a number of CDMA generators, each representing an individual intracell interferer (subsequently called $DPCH_0$ generators), and an additional band-limited white noise source, simulating interference from other cells. Each $DPCH_0$ generator shall produce an interfering signal that is equivalent to a valid UTRA TDD signal with spreading factor 16, using the same time slot(s) than the wanted signal and applying the same cell-specific scrambling code. The number of the $DPCH_0$ generators used in each test is given in table 8.2.1.2.1.

8.2.1.4.2 Procedure

(1) Adjust the power of the band-limited white noise source in such a way that its power spectral density measured at the BS antenna connector takes on the value I_{oc} as specified in table 8.2.1.2.1.

(2) For a given test defined by the information data rate and the BLER objective, set the power of each $DPCH_0$ measured at the BS antenna connector during the active time slots to the value specified in table 8.2.1.4.2.1.

(3) Set up a call between the BS tester generating the wanted signal and the BS. The characteristics of the call shall be configured according to the information data rate to be provided and the corresponding UL reference measurement channel defined in Annex A. Depending on the information data rate, the UL reference measurement channel makes use of one or two Dedicated Physical Channels ($DPCH_1$ and $DPCH_2$) with different spreading factors SF. The power(s) of $DPCH_1$ and $DPCH_2$ (if applicable) measured at the BS antenna connector during the active time slots shall be set to the value(s) given in table 8.2.1.4.2.1.

(4) Measure the BLER of the wanted signal at the BS receiver.

Table 8.2.1.4.2.1: Parameters of $DPCH_0$ and the wanted signal

Test Number	BLER objective	Number of $DPCH_0$	Power of each $DPCH_0$ measured at the BS antenna connector [dBm]	Parameters of the wanted signal		
				DPCH	SF	Power measured at the BS antenna connector [dBm]
1	10^{-2}	6	~~-70,9~~ -99,9	$DPCH_1$	8	~~-67,9~~ -96,9
2	10^{-1}	4	~~-69,8~~ -98,8	$DPCH_1$	16	~~-69,8~~ -98,8
				$DPCH_2$	4	~~-63,8~~ -92,8
	10^{-2}	4	~~-69,5~~ -98,5	$DPCH_1$	16	~~-69,5~~ -98,5
				$DPCH_2$	4	~~-63,5~~ -92,5
3	10^{-1}	0	–	$DPCH_1$	16	~~-69,5~~ -98,5
				$DPCH_2$	2	~~-60,5~~ -89,5
	10^{-2}	0	–	$DPCH_1$	16	~~-69,3~~ -98,3
				$DPCH_2$	2	~~-60,3~~ -89,3
4	10^{-1}	0	–	$DPCH_1$	2	~~-60,5~~ -89,5
	10^{-2}	0	–	$DPCH_1$	2	~~-60,3~~ -89,3

8.2.1.5 Test requirements

The BLER measured according to subclause 8.2.1.4.2 shall not exceed the limits specified in table 8.2.1.2.2.

8.3 Demodulation of DCH in multipath fading conditions

8.3.1 Multipath fading Case 1

8.3.1.1 Definition and applicability

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

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

8.3.1.2 Conformance requirements

For the parameters specified in table 8.3.1.2.1, the BLER should not exceed the piece-wise linear BLER curve specified in table 8.3.1.2.2.

Table 8.3.1.2.1: Parameters in multipath Case 1 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$		6	4	0	0
$\frac{DPCH_o \_ E_c}{I_{or}}$	dB	-9	-9,5	–	–
I_{oc}	dBm/3,84 MHz	-89			
Information Data Rate	kbps	12,2	64	144	384

Table 8.3.1.2.2: Performance requirements in multipath Case 1 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	6,3	10^{-2}
2	5,5	10^{-1}
	9,4	10^{-2}
3	5,6	10^{-1}
	9,4	10^{-2}
4	5,5	10^{-1}
	8,7	10^{-2}

The reference for this requirement is TS 25.105 subclause 8.3.1.

8.3.1.3 Test purpose

The test purpose is to verify the ability of the BS to receive a prescribed test signal under defined propagation conditions (multipath fading Case 1) with a BLER not exceeding a specified limit. Within the wanted channel, independent intracell interference sources as well as an additional intercell interference source are taken into account. Therefore, this test – as all other tests in clause 8 - mainly checks the ability of the signal processing part of the receiver to extract the wanted signal from the distorted and interfered-with input signal, whereas the tests in clause 7 concentrate on the receiver RF part.

8.3.1.4 Method of test

8.3.1.4.1 Initial conditions

(1) Connect the BS tester (UE simulator) generating the wanted signal and a set of interference generators to both BS antenna connectors for diversity reception via a combining network. The set of interference generators comprises a number of CDMA generators, each representing an individual intracell interferer (subsequently called $DPCH_0$ generators), and an additional band-limited white noise source, simulating interference from other cells. Each $DPCH_0$ generator shall produce an interfering signal that is equivalent to a valid UTRA TDD signal with spreading factor 16, using the same time slot(s) than the wanted signal and applying the same cell-specific scrambling code. The number of the $DPCH_0$ generators used in each test is given in table 8.3.1.2.1.

(2) The wanted signal produced by the BS tester and the interfering signals produced by the $DPCH_0$ generators are individually passed through independent Multipath Fading Simulators (MFS) before entering the combining network. Each MFS shall be configured to simulate multipath fading Case 1.

8.3.1.4.2 Procedure

(1) Adjust the power of the band-limited white noise source in such a way that its power spectral density measured at the BS antenna connector takes on the value I_{oc} as specified in table 8.3.1.2.1.

(2) For a given test defined by the information data rate and the BLER objective, set the power of each $DPCH_0$ measured at the BS antenna connector during the active time slots to the value specified in table 8.3.1.4.2.1.

(3) Set up a call between the BS tester generating the wanted signal and the BS. The characteristics of the call shall be configured according to the information data rate to be provided and the corresponding UL reference measurement channel defined in Annex A. Depending on the information data rate, the UL reference measurement channel makes use of one or two Dedicated Physical Channels ($DPCH_1$ and $DPCH_2$) with different spreading factors SF.

The power(s) of $DPCH_1$ and $DPCH_2$ (if applicable) measured at the BS antenna connector during the active time slots shall be set to the value(s) given in table 8.3.1.4.2.1.

(4) Measure the BLER of the wanted signal at the BS receiver.

Table 8.3.1.4.2.1: Parameters of $DPCH_0$ and the wanted signal

Test Number	BLER objective	Number of $DPCH_0$	Power of each $DPCH_0$ measured at the BS antenna connector [dBm]	Parameters of the wanted signal		
				DPCH	SF	Power measured at the BS antenna connector [dBm]
1	10^{-2}	6	~~-62,7~~-91,7	$DPCH_1$	8	~~-59,7~~-88,7
2	10^{-1}	4	~~-64~~-93	$DPCH_1$	16	~~-64~~-93
				$DPCH_2$	4	~~58~~-87
	10^{-2}	4	~~-60,1~~-89,1	$DPCH_1$	16	~~-60,1~~-89,1
				$DPCH_2$	4	~~-54,1~~-83,1
3	10^{-1}	0	–	$DPCH_1$	16	~~-63,9~~-92,9
				$DPCH_2$	2	~~-54,9~~-83,9
	10^{-2}	0	–	$DPCH_1$	16	~~-60,1~~-89,1
				$DPCH_2$	2	~~-51,1~~-80,1
4	10^{-1}	0	–	$DPCH_1$	2	~~-54,5~~-83,5
	10^{-2}	0	–	$DPCH_1$	2	~~-51,3~~-80,3

8.3.1.5 Test requirements

The BLER measured according to subclause 8.3.1.4.2 shall not exceed the limits specified in table 8.3.1.2.2.

8.3.2 Multipath fading Case 2

8.3.2.1 Definition and applicability

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

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

8.3.2.2 Conformance requirements

For the parameters specified in table 8.3.2.2.1, the BLER should not exceed the piece-wise linear BLER curve specified in table 8.3.2.2.2.

Table 8.3.2.2.1: Parameters in multipath Case 2 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_0$		2	0	0	0
$\frac{DPCH_o \_ E_c}{I_{or}}$	dB	-6	–	–	–
I_{oc}	dBm/3,84 MHz	-89			
Information Data Rate	kbps	12,2	64	144	384

Table 8.3.2.2.2: Performance requirements in multipath Case 2 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	0,1	10^{-2}
2	0,4	10^{-1}
	2,8	10^{-2}
3	3,6	10^{-1}
	6,0	10^{-2}
4	3,0	10^{-1}
	5,4	10^{-2}

The reference for this requirement is TS 25.105 subclause 8.3.2.

8.3.2.3 Test purpose

The test purpose is to verify the ability of the BS to receive a prescribed test signal under defined propagation conditions (multipath fading Case 2) with a BLER not exceeding a specified limit. Within the wanted channel, independent intracell interference sources as well as an additional intercell interference source are taken into account. Therefore, this test – as all other tests in clause 8 - mainly checks the ability of the signal processing part of the receiver to extract the wanted signal from the distorted and interfered-with input signal, whereas the tests in clause 7 concentrate on the receiver RF part.

8.3.2.4 Method of test

8.3.2.4.1 Initial conditions

(1) Connect the BS tester (UE simulator) generating the wanted signal and a set of interference generators to both BS antenna connectors for diversity reception via a combining network. The set of interference generators comprises a number of CDMA generators, each representing an individual intracell interferer (subsequently called $DPCH_0$ generators), and an additional band-limited white noise source, simulating interference from other cells. Each $DPCH_0$ generator shall produce an interfering signal that is equivalent to a valid UTRA TDD signal with spreading factor 16, using the same time slot(s) than the wanted signal and applying the same cell-specific scrambling code. The number of the $DPCH_0$ generators used in each test is given in table 8.3.2.2.1.

(2) The wanted signal produced by the BS tester and the interfering signals produced by the $DPCH_0$ generators are individually passed through independent Multipath Fading Simulators (MFS) before entering the combining network. Each MFS shall be configured to simulate multipath fading Case 2.

8.3.2.4.2 Procedure

(1) Adjust the power of the band-limited white noise source in such a way that its power spectral density measured at the BS antenna connector takes on the value I_{oc} as specified in table 8.3.2.2.1.

(2) For a given test defined by the information data rate and the BLER objective, set the power of each $DPCH_0$ measured at the BS antenna connector during the active time slots to the value specified in table 8.3.2.4.2.1.

(3) Set up a call between the BS tester generating the wanted signal and the BS. The characteristics of the call shall be configured according to the information data rate to be provided and the corresponding UL reference measurement channel defined in Annex A. Depending on the information data rate, the UL reference measurement channel makes use of one or two Dedicated Physical Channels ($DPCH_1$ and $DPCH_2$) with different spreading factors SF. The power(s) of $DPCH_1$ and $DPCH_2$ (if applicable) measured at the BS antenna connector during the active time slots shall be set to the value(s) given in table 8.3.2.4.2.1.

(4) Measure the BLER of the wanted signal at the BS receiver.

Table 8.3.2.4.2.1: Parameters of $DPCH_0$ and the wanted signal

Test Number	BLER objective	Number of $DPCH_0$	Power of each $DPCH_0$ measured at the BS antenna connector [dBm]	Parameters of the wanted signal		
				DPCH	SF	Power measured at the BS antenna connector [dBm]
1	10^{-2}	2	~~-65,9~~ -94,9	$DPCH_1$	8	~~-62,9~~ -91,9
2	10^{-1}	0	–	$DPCH_1$	16	~~-66,6~~ -95,6
				$DPCH_2$	4	~~-60,6~~ -89,6
	10^{-2}	0	–	$DPCH_1$	16	~~-64,2~~ -93,2
				$DPCH_2$	4	~~-58,2~~ -87,2
3	10^{-1}	0	–	$DPCH_1$	16	~~-65,9~~ -94,9
				$DPCH_2$	2	~~-56,9~~ -85,9
	10^{-2}	0	–	$DPCH_1$	16	~~-63,5~~ -92,5
				$DPCH_2$	2	~~-54,5~~ -83,5
4	10^{-1}	0	–	$DPCH_1$	2	~~-57~~ -86
	10^{-2}	0	–	$DPCH_1$	2	~~-54,6~~ -83,6

8.3.2.5 Test requirements

The BLER measured according to subclause 8.3.2.4.2 shall not exceed the limits specified in table 8.3.2.2.2.

8.3.3 Multipath fading Case 3

8.3.3.1 Definition and applicability

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

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

8.3.3.2 Conformance requirements

For the parameters specified in table 8.3.3.2.1, the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.3.3.2.2.

Table 8.3.3.2.1: Parameters in multipath Case 3 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$		2	0	0	0
$\frac{DPCH_o\_E_c}{I_{or}}$	dB	-6	–	–	–
I_{oc}	dBm/3,84 MHz	-89			
Information Data Rate	kbps	12,2	64	144	384

Table 8.8: Performance requirements in multipath Case 3 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	-0,6	10^{-2}
2	0,7	10^{-1}
	2,4	10^{-2}
	3,8	10^{-3}
3	3,9	10^{-1}
	5,9	10^{-2}
	7,3	10^{-3}
4	2,8	10^{-1}
	4,2	10^{-2}
	4,8	10^{-3}

The reference for this requirement is TS 25.105 subclause 8.3.3.

8.3.3.3 Test purpose

The test purpose is to verify the ability of the BS to receive a prescribed test signal under defined propagation conditions (multipath fading Case 3) with a BLER not exceeding a specified limit. Within the wanted channel, independent intracell interference sources as well as an additional intercell interference source are taken into account. Therefore, this test – as all other tests in clause 8 - mainly checks the ability of the signal processing part of the receiver to extract the wanted signal from the distorted and interfered-with input signal, whereas the tests in clause 7 concentrate on the receiver RF part.

8.3.3.4 Method of test

8.3.3.4.1 Initial conditions

(1) Connect the BS tester (UE simulator) generating the wanted signal and a set of interference generators to both BS antenna connectors for diversity reception via a combining network. The set of interference generators comprises a number of CDMA generators, each representing an individual intracell interferer (subsequently called $DPCH_0$ generators), and an additional band-limited white noise source, simulating interference from other cells. Each $DPCH_0$ generator shall produce an interfering signal that is equivalent to a valid UTRA TDD signal with spreading factor 16, using the same time slot(s) than the wanted signal and applying the same cell-specific scrambling code. The number of the $DPCH_0$ generators used in each test is given in table 8.3.3.2.1.

(2) The wanted signal produced by the BS tester and the interfering signals produced by the $DPCH_0$ generators are individually passed through independent Multipath Fading Simulators (MFS) before entering the combining network. Each MFS shall be configured to simulate multipath fading Case 3.

8.3.3.4.2 Procedure

(1) Adjust the power of the band-limited white noise source in such a way that its power spectral density measured at the BS antenna connector takes on the value I_{oc} as specified in table 8.3.3.2.1.

(2) For a given test defined by the information data rate and the BLER objective, set the power of each $DPCH_0$ measured at the BS antenna connector during the active time slots to the value specified in table 8.3.3.4.2.1.

(3) Set up a call between the BS tester generating the wanted signal and the BS. The characteristics of the call shall be configured according to the information data rate to be provided and the corresponding UL reference measurement channel defined in Annex A. Depending on the information data rate, the UL reference measurement channel makes use of one or two Dedicated Physical Channels ($DPCH_1$ and $DPCH_2$) with different spreading factors SF. The power(s) of $DPCH_1$ and $DPCH_2$ (if applicable) measured at the BS antenna connector during the active time slots shall be set to the value(s) given in table 8.3.3.4.2.1.

(4) Measure the BLER of the wanted signal at the BS receiver.

Table 8.3.3.4.2.1: Parameters of $DPCH_0$ and the wanted signal

Test Number	BLER objective	Number of $DPCH_0$	Power of each $DPCH_0$ measured at the BS antenna connector [dBm]	Parameters of the wanted signal		
				DPCH	SF	Power measured at the BS antenna connector [dBm]
1	10^{-2}	2	~~-66,6~~-95,6	$DPCH_1$	8	~~-63,6~~-92,6
2	10^{-1}	0	–	$DPCH_1$	16	~~-66,3~~-95,3
				$DPCH_2$	4	~~-60,3~~-89,3
	10^{-2}	0	–	$DPCH_1$	16	~~-64,6~~-93,6
				$DPCH_2$	4	~~-58,6~~-87,6
	10^{-3}	0	–	$DPCH_1$	16	~~-63,2~~-92,2
				$DPCH_2$	4	~~-57,2~~-86,2
3	10^{-1}	0	–	$DPCH_1$	16	~~-65,6~~-94,6
				$DPCH_2$	2	~~-56,6~~-85,6
	10^{-2}	0	–	$DPCH_1$	16	~~-63,6~~-92,6
				$DPCH_2$	2	~~-54,6~~-83,6
	10^{-3}	0	–	$DPCH_1$	16	~~-62,2~~-91,2
				$DPCH_2$	2	~~-53,2~~-82,2
4	10^{-1}	0	–	$DPCH_1$	2	~~-57,2~~-86,2
	10^{-2}	0	–	$DPCH_1$	2	~~-55,8~~-84,8
	10^{-3}	0	–	$DPCH_1$	2	~~-55,2~~-84,2

8.3.3.5 Test requirements

The BLER measured according to subclause 8.3.3.4.2 shall not exceed the limits specified in table 8.3.3.2.2.

3GPP TSG RAN WG4 Meeting #13
Torino, Italy, 4 – 8 September 2000

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CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.142	CR	37	Current Version:	3.2.1

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

For submission to: RAN #9 *list expected approval meeting # here ↑*

for approval [X] for information [ ]

strategic [ ] non-strategic [ ] *(for SMG use only)*

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

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

Source: RAN WG4 **Date:** 4.9.2000

Subject: Conformance test description for spectrum emission mask

Work item: TS 25.142

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

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: To simply the spectrum mask measurement method.

Clauses affected: 6.6.2.1.4.2

Other specs affected:

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

Other comments:


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6.6.2.1.4.2 Procedure

Measure the power of the BS spectrum emissions by applying measurement filters with bandwidths as specified in the relevant table in subclause 6.6.2.1.2. The characteristic of the filters shall be approximately Gaussian (typical spectrum analyzer filters). The centre~~r~~ frequency of the filter shall be stepped in contiguous steps over the ranges of frequency offsets f_offset ~~bands~~ as given in the tables. The step width shall be equal to the respective measurement bandwidth. The time duration of each step shall be sufficiently long to capture one active time slot.

For frequency offsets of the measurement filter centre frequency in the range 4,0 MHz ≤ f_offset < f_offset_{max} ~~8,0 MHz~~, the measurement shall be performed by applying filters with measurement bandwidth of 50 kHz or less and integrating the measured results over the nominal measurement bandwidth 1 MHz specified in the tables in subclause 6.6.2.1.2.1.