TSG RAN Meeting #18   **RP-020799**
New Orleans, US, 3 - 6 December, 2002

Title   **CRs (Rel-5) to TS 25.141**
Source   **TSG RAN WG4**
Agenda Item   **7.4.5**

RAN4 Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item
R4-021556	25.141	259		F	Rel-5	5.4.0	General Release 5 corrections	TEI5
R4-021655	25.141	263	1	F	Rel-5	5.4.0	Addition of TX Diversity timing accuracy test	TEI5

CR-Form-v7

CHANGE REQUEST

⌘ **25.141** CR **259** ⌘ **rev** ⌘ Current version: **5.4.0** ⌘

*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 **X** Core Network ☐

Title: ⌘	General Release 5 corrections
Source: ⌘	RAN WG4
Work item code: ⌘	TEI5 ***Date:*** ⌘ 26/11/2002

Category: ⌘ **F**	***Release:*** ⌘ Rel-5

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: ⌘	The specification contains some errors in references to tables and sub-clauses. This will lead to ambiguous interpretations of the specification.
Summary of change: ⌘	Clause 3.5.2 Reference corrected to table 3.2 Clause 4.7 Correction of references to frequency bands I and III Clause 6.5.2.2.2 Reference subclause in normative reference corrected Clause 7.5.4.2 Table reference corrected
Consequences if not approved: ⌘	The specification will remain ambiguous. **Isolated impact analysis:** The proposed correction has no impact on NodeB implementation or NodeB-UE interworking since it is a correction to a test specification.
Clauses affected: ⌘	3.5.2, 4.7, 6.5.2.2.2, 7.5.4.2

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

Other comments: ⌘	

How to create CRs using this form:

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2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

3.5.2   Channel raster

The channel raster is 200 kHz, which for all bands except Band II means that the centre frequency must be an integer multiple of 200 kHz. In Band II , 12 additional centre frequencies are specified according to the table in ~~3.1a~~ 3.2 and the centre frequencies for these channels are shifted 100 kHz relative to the normal raster.

3.5.3   Channel number

The carrier frequency is designated by the UTRA Absolute Radio Frequency Channel Number (UARFCN). The UARFCNvalues are defined as follows.

Table 3.1: UTRA Absolute Radio Frequency Channel Number

	UARFCN	Carrier Frequency [MHz]
Uplink	$N_u = 5 * (F_{uplink}$ MHz$)$	0.0 MHz $\leq F_{uplink} \leq 3276.6$ MHz where F_{uplink} is the uplink frequency in MHz
Downlink	$N_d = 5 * (F_{downlink}$ MHz$)$	0.0 MHz $\leq F_{downlink} \leq 3276.6$ MHz where $F_{downlink}$ is the downlink frequency in MHz

Table 3.2: UARFCN definition (Band II additional channels)

	UARFCN	Carrier Frequency [MHz]
Uplink	$N_u = 5 * (F_{uplink} - 1850.1$ MHz$)$	F_{uplink} = 1852.5, 1857.5, 1862.5, 1867.5, 1872.5, 1877.5, 1882.5, 1887.5, 1892.5, 1897.5, 1902.5, 1907.5
Downlink	$N_d = 5 * (F_{downlink} - 1850.1$ MHz$)$	$F_{downlink}$ = 1932.5, 1937.5, 1942.5, 1947.5, 1952.5, 1957.5, 1962.5, 1967.5, 1972.5, 1977.5, 1982.5, 1987.5

--- next changed section ---

4.7   Regional requirements

Some requirements in TS 25.141 may only apply in certain regions. Table 4.4 lists all requirements that may be applied differently in different regions.

Table 4.4: List of regional requirements

Subclause number	Requirement	Comments
3.4.1	Frequency bands	Some bands may be applied regionally.
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 in geographic areas in which both GSM 900 and UTRA 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 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 in geographic areas in which both DCS 1800 and UTRA 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 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 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 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 in frequency band III -Operation in the same geographic area	This requirement may be applied for the protection of UTRA UE in frequency band I in geographic areas in which both UTRA in frequency band I and III are deployed.
6.5.3.4.9.2	Co-existence with UTRA in frequency band III - Co-located base stations	This requirement may be applied for the protection of UTRA BTS receivers in frequency band I when UTRA BS in frequency band I and III are co-located.
6.5.3.4.10.1	Co-existence with UTRA in frequency band III -Operation in the same geographic area	This requirement may be applied for the protection of UTRA UE in frequency band III in geographic areas in which both UTRA in frequency band I and III are deployed.
6.5.3.4.10.2	Co-existence with UTRA in frequency band III - Co-located base stations	This requirement may be applied for the protection of UTRA BTS receivers in frequency band III when UTRA BS in frequency band I and III are co-located.
6.5.3.4.11.1	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 BS are co-located.
6.5.3.4.12.1	Co-existence with GSM 850 -	This requirement may be applied for the protection

	Co-located base stations	of GSM 850 BTS receivers when GSM 850 BTS and UTRA BS are co-located.
7.5	Blocking characteristic	The requirement is applied according to what frequency bands inclause 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.
	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: HSDPA*: This regional requirement should be reviewed to check its necessity every TSG RAN meeting.

--- next changed section ---

6.5.2.2.2   Minimum Requirement

Table 6.22: BS ACLR

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

The normative reference for this requirement is in TS 25.104 [1] subclause 6.56.2.2

--- next changed section ---

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(fg). 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:

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

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.

NOTE: The test procedure as defined in steps (1) and (2) requests to carry out more than 10 000 BER measurements. To reduce the time needed for these measurements, it may be appropriate to conduct the test in two phases: During phase 1, BER measurements are made on all center frequencies of the interfering signal as requested but with a reduced confidence level, with the aim to identify those frequencies which require more detailed investigation. In phase 2, detailed measurements are made only at those critical frequencies identified before, applying the required confidence level.

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

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CHANGE REQUEST

⌘   **25.141** CR **263**   ⌘ **rev** **1** ⌘   Current version: **5.4.0** ⌘

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

Title: ⌘	Addition of TX Diversity timing accuracy test
Source: ⌘	RAN WG4
Work item code:⌘ TEI5	***Date:*** ⌘ 26/11/2002

Category: ⌘ **F**   ***Release:*** ⌘ Rel-5

Use <u>one</u> of the following categories:	Use <u>one</u> of the following releases:
F *(correction)*	2 *(GSM Phase 2)*
A *(corresponds to a correction in an earlier release)*	R96 *(Release 1996)*
B *(addition of feature),*	R97 *(Release 1997)*
C *(functional modification of feature)*	R98 *(Release 1998)*
D *(editorial modification)*	R99 *(Release 1999)*
Detailed explanations of the above categories can	Rel-4 *(Release 4)*
be found in 3GPP TR 21.900.	Rel-5 *(Release 5)*
	Rel-6 *(Release 6)*

Reason for change: ⌘	A timing accuracy spec has been added to 25.104 CR 146 for TX diversity timing alignment. This change adds the corresponding test case.
Summary of change:⌘	Addition of new test case. Correction of editorial errors in test tolerance table references.
Consequences if not approved: ⌘	There will be no test and if the diversity timing error is not correct, TX diversity will not work.

Clauses affected: ⌘	4.1, 6.7.3, B1.6, Annex F, Annex G

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

Other comments: ⌘	

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4.1.2 Measurement of transmitter

Table 4.1: Maximum Test System Uncertainty for transmitter tests

Subclause	Maximum Test System Uncertainty	Derivation of Test System Uncertainty
6.2.1 Maximum Output Power	±0.7 dB	
6.2.2 CPICH Power accuracy	± 0.8 dB	
6.3.4 Frequency error	± 12 Hz	
6.4.2 Power control steps	± 0.1 dB for one 1 dB step ± 0.1 dB for one 0.5 dB step ± 0.1 dB for ten 1 dB steps ± 0.1 dB for ten 0.5 dB steps	Result is difference between two absolute CDP measurements on the power controlled DPCH. Assume BTS output power on all other channels is constant. Assume Test equipment relative power accuracy over the range of the test conditions is perfect, or otherwise included in the system measurement error. For this test the absolute power change is < 3 dB.
6.4.3 Power control dynamic range	± 1.1 dB	
6.4.4 Total power dynamic range	± 0.3 dB	
6.5.1 Occupied Bandwidth	±100 kHz	Accuracy = ±3*RBW. Assume 30 kHz bandwidth
6.5.2.1 Spectrum emission mask	±1.5 dB Due to carrier leakage, for measurements specified in a 1 MHz bandwidth close to the carrier (4 MHz to 8 MHz), integration of the measurement using several narrower measurements may be necessary in order to achieve the above accuracy.	
6.5.2.2 ACLR	5 MHz offset ± 0.8 dB 10 MHz offset ± 0.8 dB Note: Impact of measurement period (averaging) and intermod effects in the measurement receiver not yet fully studied. However, the above limits remain valid.	
6.5.3 Spurious emissions	± 2.0 dB for BS and coexistance bands for results > -60 dBm ± 3.0 dB for results < -60 dBm Outside above range: f$\leq$2.2GHz : $\pm$ 1.5 dB 2.2 GHz < f $\leq$ 4 GHz : $\pm$ 2.0 dB f > 4 GHz : ±4.0 dB	
6.6 Transmit intermodulation (interferer requirements)	The value below applies only to the interference signal and is unrelated to the measurement uncertainty of the tests (6.5.2.1, 6.5.2.2 and 6.5.3) which have to be carried out in the presence of the interferer. . $\pm$ 1.0 dB	The uncertainty of interferer has double the effect on the result due to the frequency offset.
6.7.1 EVM	±2.5 % (for single code)	
6.7.2 Peak code Domain error	±1.0 dB	
6.7.3 Time alignment error in TX diversity	±0.1 T_c	
Annex H.3 Transmitted code power. Absolute	±0.9 dB	Absolute power accuracy = 0.7dB + relative power accuracy 0.2 dB.
Annex H.3 Transmitted code power. Relative	±0.2 dB	

Annex H.4 Transmitted carrier power	±0.3 dB	

4.1.3 Measurement of receiver

Table 4.1A: Maximum Test System Uncertainty for receiver tests

Subclause	Maximum Test System Uncertainty[1]	Derivation of Test System Uncertainty
7.2 Reference sensitivity level	± 0.7 dB	
7.3 Dynamic range	± 1.2 dB	Formula = SQRT(signal level error^2 and AWGN level error^2)
7.4 Adjacent channel selectivity	± 1.1 dB	Formula = SQRT (wanted_level_error^2 + interferer_level_error^2) + ACLR effect. The ACLR effect is calculated by: (Formula to follow)
7.5 Blocking characteristics	System error with blocking signal <15 MHz offset: ± 1.4 dB Blocking signal >= 15 MHz offset and f ≤ 2.2 GHz: ± 1.1 dB + broadband noise 2.2 GHz < f ≤ 4 GHz : ±1.8 dB f > 4 GHz: ±3.2 dB	Formula = SQRT (wanted_level_error^2 + interferer_level_error^2) + ACLR effect + Broadband noise. (Assuming ACLR 68 dB, and 0.7 dB for signals) Assume-130 dBc broadband noise from blocking signal has 0.1 dB effect. Harmonics and spurs of the interferer need to be carefully considered. Perhaps need to avoid harmonics of the interfere that fall on top of the receive channel. For the –15 dBm CW blocking case, filtering of the blocking signal (at least 25 dB) is necessary to eliminate problems with broadband noise.
7.6 Intermod Characteristics	±1.3 dB	Formula = $\sqrt{(2 \cdot CW\_level\_error)^2 + (\mathrm{mod\_level\_error})^2}$ (Using CW interferer ±0.5 dB, modulated interferer ±0.5 dB, wanted signal ±0.7 dB)
7.7 Spurious Emissions	The Test System uncertainty figures for Spurious emissions apply to the measurement of the DUT and not any stimulus signals. ± 3.0 dB for BS receive band (-78 dBm) Outside above range: f≤2.2GHz : ± 2.0 dB (-57 dBm) 2.2 GHz < f ≤ 4 GHz : ± 2.0 dB (-47 dBm) f > 4 GHz : ±4.0 dB (-47 dBm)	
Note 1: Unless otherwise noted, only the Test System stimulus error is considered here. The effect of errors in the BER/FER measurements due to finite test duration is not considered.		

4.1.4　Measurement of performance requirement

Table 4.1B: Maximum Test System Uncertainty for Performance Requirements

Subclause	Maximum Test System Uncertainty[1]	Derivation of Test System Uncertainty
8.2, Demodulation in static propagation condition	± 0.4dB	Wanted/AWGN: ± 0.4dB (relative uncertainty for E_b/N_0) (AWGN: ±1dB)
8.3, Demodulation of DCH in multiplath fading conditions	± 0.6dB	Fader: ± 0.5dB Wanted/AWGN: ± 0.4dB (relative) Combined relative uncertainty for E_b/N_0: ± 0.6dB
8.4 Demodulation of DCH in moving propagation conditions	± 0.6dB	Fader: ± 0.5dB Wanted/AWGN: ± 0.4dB (relative) Combined relative uncertainty for E_b/N_0: ± 0.6dB
8.5 Demodulation of DCH in birth/death propagation conditions	± 0.6dB	Fader: ± 0.5dB Wanted/AWGN: ± 0.4dB (relative) Combined relative uncertainty for E_b/N_0: ± 0.6dB
8.8.1 RACH preamble detection in static propagation conditions	± 0.4dB	Wanted/AWGN: ± 0.4dB (relative uncertainty for E_c/N_0) (AWGN: ±1dB)
8.8.2 RACH preamble detection in multipath fading case 3	± 0.6dB	Fader: ± 0.5dB Wanted/AWGN: ± 0.4dB (relative) Combined relative uncertainty for E_c/N_0: ± 0.6dB
8.8.3 Demodulation of RACH message in static propagation conditions	± 0.4dB	Wanted/AWGN: ± 0.4dB (relative uncertainty for E_b/N_0) (AWGN: ±1dB)
8.8.4 Demodulation of RACH message in multipath fading case 3	± 0.6dB	Fader: ± 0.5dB Wanted/AWGN: ± 0.4dB (relative) Combined relative uncertainty for E_b/N_0: ± 0.6dB
8.9.3 Demodulation of CPCH message in static propagation conditions	± 0.4 dB	Wanted/AWGN: ± 0.4dB (relative uncertainty for E_b/N_0) (AWGN: ±1dB
8.9.4 Demodulation of CPCH message in multipath fading case 3	± 0.6 dB	Fader: ± 0.5dB Wanted/AWGN: ± 0.4dB (relative) Combined relative uncertainty for E_b/N_0: ± 0.6dB
8.10 Site Selection Diversity Transmission (SSDT) Mode	± 0.4dB	Wanted/AWGN: ± 0.4dB (relative) (AWGN: ±1dB)
Note 1:　Only the overall stimulus error is considered here. The effect of errors in the BER/FER measurements due to finite test duration is not considered.		

4.2　Test Tolerances (informative)

The Test Tolerances defined in this subclause have been used to relax the Minimum Requirements in this specification to derive the Test Requirements.

The Test Tolerances are derived from Test System uncertainties, regulatory requirements and criticality to system performance. As a result, the Test Tolerances may sometimes be set to zero.

The test tolerances should not be modified for any reason e.g. to take account of commonly known test system errors (such as mismatch, cable loss, etc.)

4.2.1   Transmitter

Table 4.1C: Test Tolerances for transmitter tests.

Subclause	Test Tolerance[1]
6.2.1 Maximum Output Power	0.7 dB
6.2.2 CPICH Power accuracy	0.8 dB
6.3.4 Frequency error	12 Hz
6.4.2 Power control steps	0.1 dB
6.4.3 Power control dynamic range	1.1 dB
6.4.4 Total power dynamic range	0.3 dB
6.5.1 Occupied Bandwidth	0 kHz
6.5.2.1 Spectrum emission mask	1.5 dB[3]
6.5.2.2 ACLR	0.8 dB
6.5.3 Spurious emissions	0 dB
6.6 Transmit intermodulation (interferer requirements)	0 dB[2]
~~6.7.1 Frequency error~~	~~12 Hz~~
6.7.1~~2~~ EVM	0 %
6.7.2~~3~~ Peak code Domain error	1.0dB
6.7.3 Time alignment error in TX diversity	0.1 T_c
Annex H.3 Transmitted code power (absolute)	0.9 dB
Annex H.3 Transmitted code power (relative)	0.2 dB
Annex H.4 Transmitted carrier power	0.3 dB
Note 1: Unless otherwise stated, The Test Tolerances are applied to the DUT Minimum Requirement. See Annex F. Note 2: The Test Tolerance is applied to the stimulus signal(s). See Annex F. Note 3: 0 dB test tolerance for the additional Band II requirements.	

6.7.3 Time alignment error in Tx Diversity

6.7.3.2 Definition and applicability

In Tx Diversity, signals are transmitted from two antennas. These signals shall be aligned. The time alignment error in Tx Diversity is specified as the delay between the signals from the two diversity antennas at the antenna ports.

This test is only applicable for Node B supporting TX diversity transmission.

6.7.3.2 Minimum Requirement

The time alignment error in Tx Diversity shall not exceed ¼ T_c.

The normative reference for this requirement is in TS 25.104 [1] subclause 6.8.4

6.7.3.3 Test Purpose

To verify that the timing alignment error in TX diversity is within the limit specified in 6.7.3.2

6.7.3.4 Method of Test

6.7.3.4.1 Initial Conditions

Test environment: normal; see subclause 4.4.1.

RF channels to be tested: Middle. See subclause 4.8

Refer to annex B 1.6 for a functional block diagram of the test set-up.

1) Connect both base station RF antenna ports to the measurement equipment according to figure B.6.

2) Set the base station to transmit Test Model 1 according to subclause 6.1.1.1 using TX diversity.

3) Set BS frequency.

6.7.3.4.2 Procedure

1) Start BS transmission at Pmax.

2) Measure the time alignment error between the CPICH on the main antenna port and the CPICH on the diversity antenna port.

6.7.3.5 Test Requirement

The time alignment error shall be less than 0.35 T_c.

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.

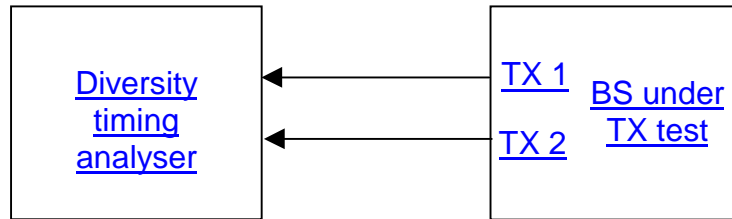# B.1.6 Time alignment error in TX Diversity

Figure B.6: Measuring system set-up for time alignment error in TX diversity

Annex F (informative):
Derivation of Test Requirements

The Test Requirements in this specification have been calculated by relaxing the Minimum Requirements of the core specification using the Test Tolerances defined in subclause 4.2. When the Test Tolerance is zero, the Test Requirement will be the same as the Minimum Requirement. When the Test Tolerance is non-zero, the Test Requirements will differ from the Minimum Requirements, and the formula used for this relaxation is given in tables F.1, F.2 and F.3

Note that a formula for applying Test Tolerances is provided for all tests, even those with a test tolerance of zero. This is necessary in the case that the Test System uncertainty is greater than that allowed in subclause 4.1. In this event, the excess error shall be subtracted from the defined test tolerance in order to generate the correct tightened Test Requirements as defined in subclause 4.3.

For example, a Test System having 0.9 dB accuracy for test 6.2.1 Base Station maximum output power (which is 0.2 dB above the limit specified in subclause 4.) would subtract 0.2 dB from the Test Tolerance of 0.7 dB defined in subclause 4.2. This new test tolerance of 0.5 dB would then be applied to the Minimum Requirement using the formula defined in Table F.1 to give a new range of ±2.5 dB of the manufacturer's rated output power.

Using this same approach for the case where a test had a test tolerance of 0 dB, an excess error of 0.2 dB would result in a modified test tolerance of –0.2 dB.

Table F.1: Derivation of Test Requirements (Transmitter tests)

Test	Minimum Requirement in TS 25.104	Test Tolerance (TT)	Test Requirement in TS 25.141
6.2.1 Base station maximum output power	In normal conditions … within +2 dB and -2 dB of the manufacturer's rated output power In extreme conditions… within +2.5 dB and –2.5 dB of the manufacturer's rated output power	0.7 dB	Formula: Upper limit + TT Lower limit – TT In normal conditions … within +2.7 dB and –2.7 dB of the manufacturer's rated output power In extreme conditions… within +3.2 dB and –3.2 dB of the manufacturer's rated output power
6.2.2 CPICH Power accuracy	CPICH power shall be within ±2.1dB	0.8 dB	Formula: Upper limit + TT Lower limit – TT CPICH power shall be within ±2.9dB
6.3.4 Frequency error	Frequency error limit = 0.05 ppm	12 Hz	Formula: Frequency Error limit + TT Frequency Error limit = 0.05 ppm + 12 Hz
6.4.2 Power control steps	Lower and upper limits as specified in tables 6.9 and 6.10a	0.1 dB	Formula: Upper limits + TT Lower limits – TT 0.1 dB applied as above to tables 6.9 and 6.10a
6.4.3 Power control dynamic range	maximum power limit = BS maximum output power -3 dB minimum power limit = BS maximum output power –28 dB	1.1 dB	Formula: maximum power limit – TT minimum power limit + TT maximum power limit = BS maximum output power –4.1 dB minimum power limit = BS maximum output power –26.9 dB
6.4.4 Total power dynamic range	total power dynamic range limit = 18 dB	0.3 dB	Formula: total power dynamic range limit – TT total power dynamic range limit = 17.7 dB
6.5.1 Occupied Bandwidth	occupied bandwidth limit = 5 MHz	0 kHz	Formula: Occupied bandwidth limit + TT Occupied bandwidth limit = 5 MHz
6.5.2.1 Spectrum emission mask	Maximum level defined in tables 6.11, 6.12, 6.13 and 6.14:	1.5 dB(0 dB for the additional Band II requirements)	Formula: Maximum level + TT Add 1.5 to Maximum level entries in tables 6.11, 6.12, 6.13 and 6.14.
6.5.2.2 Adjacent Channel Leakage power Ratio (ACLR)	ACLR limit = 45 dB at 5 MHz ACLR limit = 50 dB at 10 MHz	0.8 dB	Formula: ACLR limit – TT ACLR limit = 44.2 dB at 5 MHz ACLR limit = 49.2 dB at 10 MHz
6.5.3 Spurious emissions	Maximum level defined in tables 6.16 to 6.26	0 dB	Formula: Maximum limit + TT Add 0 to Maximum level in tables 6.16 to 6.26
6.6 Transmit intermodulation (interferer requirements) This tolerance applies to the stimulus and not the measurements defined in 6.5.2.1, 6.5.2.2 and 6.5.3.	Wanted signal level – interferer level = 30 dB	0 dB	Formula: Ratio + TT Wanted signal level – interferer level = 30 + 0 dB
6.7.1 EVM	EVM limit =17.5 % for a composite signal modulated only by QPSK EVM limit = 12.5 % for a composite signal modulated by QPSK and 16QAM	0 %	Formula: EVM limit + TT EVM limit = 17.5% for a composite signal modulated only by QPSK EVM limit = 12.5 % for a composite signal modulated by QPSK and 16QAM

6.7.2 Peak code Domain error	Peak code domain error limit = -33 dB	1.0 dB	Formula: Peak code domain error limit + TT Peak code domain error limit = -32 dB
6.7.3 Time alignment error in TX diversity	Max time alignment error = 0.25 T_c Min time alignment error = -0.25 T_c	0.1 T_c	Formula: Max time alignment error + TT Min time alignment error – TT Max time alignment error = 0.35 T_c Min time alignment error = -0.35 T_c
Annex H.3 Transmitted code power (absolute)	Absolute accuracy limit = Pout,code – 3 dB Pout,code + 3 dB	0.9 dB	Formula: Absolute accuracy limit –TT Absolute accuracy limit +TT Absolute accuracy limit: minimum power limit = -3.9 dB maximum power limit = +3.9 dB
Annex H.3 Transmitted code power (relative)	Relative accuracy limit = $\mid$ Pout,code1 - Pout,code2 $\mid \leq$ 2 dB	0.2 dB	Formula: Relative accuracy limit + TT Relative accuracy limit = 2.2 dB
Annex H.4 Transmitted carrier power	total power dynamic range limit = 18 dB	0.3 dB	Formula: total power dynamic range limit – TT total power dynamic range limit = 17.7 dB

Table F.2: Derivation of Test Requirements (Receiver tests)

Test	Minimum Requirement in TS 25.104	Test Tolerance (TT)	Test Requirement in TS 25.141
7.2 Reference sensitivity	Reference sensitivity level = -121 dBm FER/BER limit = 0.001	0.7 dB	Formula: Reference sensitivity level + TT Reference sensitivity level = -120.3 dBm FER/BER limit is not changed
7.3 Dynamic range	Wanted signal level = -91 dBm AWGN level = -73 dBm/3.84 MHz	1.2 dB	Formula: Wanted signal level + TT AWGN level unchanged Wanted signal level = -89.8 dBm
7.4 Adjacent channel selectivity	Wanted signal level = -115 dBm W-CDMA interferer level = -52 dBm	0 dB	Formula: Wanted signal level + TT W-CDMA interferer level unchanged Wanted signal level = -115 dBm
7.5 Blocking characteristics	Wanted signal level = -115 dBm Interferer level See table 7.4a / 7.4b	0 dB	Formula: Wanted signal level + TT Interferer level unchanged Wanted signal level = -115 dBm

7.6 Intermod Characteristics	Wanted signal level = -115 dBm
	Interferer1 level (10 MHz offset CW) = -48 dBm
	Interferer2 level (20 MHz offset W-CDMA Modulated) = -48 dBm
		0 dB	Formula: Wanted signal level + TT
			     Interferer1 level unchanged
			     Interferer2 level unchanged
			
			Wanted signal level = -115 dBm

7.7 Spurious Emissions	Maximum level defined in Table 7.7	0 dB	Formula: Maximum level + TT Add TT to Maximum level in table 7.7

Table F.3: Derivation of Test Requirements (Performance tests)

Test	Minimum Requirement in TS 25.104	Test Tolerance (TT)	Test Requirement in TS 25.141
8.2, Demodulation in static propagation condtion	Received E_b/N_0 values	0.4 dB	Minimum requirement + TT
8.3, Demodulation of DCH in multiplath fading conditons	Received E_b/N_0 values	0.6 dB	Minimum requirement + TT
8.4 Demodulation of DCH in moving propagation conditions	Received E_b/N_0 values	0.6 dB	Minimum requirement + TT
8.5 Demodulation of DCH in birth/death propagation conditions	Received E_b/N_0 values	0.6 dB	Minimum requirement + TT
8.8.1 RACH preamble detection in static propagation conditions	Received E_c/N_0 values	0.4dB	Minimum requirement + TT
8.8.2 RACH preamble detection in multipath fading case 3	Received E_c/N_0 values	0.6dB	Minimum requirement + TT
8.8.3 Demodulation of RACH message in static propagation conditions	Received E_b/N_0 values	0.4dB	Minimum requirement + TT
8.8.4 Demodulation of RACH message in multipath fading case 3	Received E_b/N_0 values	0.6dB	Minimum requirement + TT
8.9.3 Demodulation of CPCH message in static propagation conditions	Received E_b/N_0 values	0.4 dB	Minimum requirement + TT
8.9.4 Demodulation of CPCH message in multipath fading case 3	Received E_b/N_0 values	0.6 dB	Minimum requirement + TT
8.10 Site Selection Diversity Transmission (SSDT) Mode	$SIR_{target} + Q_{th} +7.5$ $SIR_{target} + Q_{th} -7.5$	0.4 dB	$Q_{th} + 7.5 +TT$ $Q_{th} +7.5 -TT$

Annex G (informative): Acceptable uncertainty of Test Equipment

This informative annex specifies the critical parameters of the components of an overall Test System (e.g. Signal generators, Signal Analysers etc.) which are necessary when assembling a Test System which complies with subclause 4.1 Acceptable Uncertainty of Test System. These Test Equipment parameters are fundamental to the accuracy of the overall Test System and are unlikely to be improved upon through System Calibration.

G.1 Transmitter measurements

Table G.1: Equipment accuracy for transmitter measurements

Test	Equipment accuracy	Range over which equipment accuracy applies
6.2.1 Maximum Output Power	Not critical	Not critical
6.2.2 CPICH Power accuracy	Not critical	Not critical
6.3.4 Frequency error	± 10 Hz + timebase = [12] Hz	Measurements in the range ±500 Hz.
6.4.2 Power control steps	± 0.1 dB for one 1 dB step ± 0.1 dB for ten 1 dB steps	Pmax – 3dB to Pmax – 28 dB
6.4.3 Power control dynamic range	± 0.2 dB relative code domain power accuracy	Pmax – 3dB to Pmax – 28 dB
6.4.4 Total power dynamic range	±0.3 dB relative error over 18 dB	Pmax to Pmax – 18 dB
6.5.1 Occupied Bandwidth	± 100 kHz	±1 MHz of the minimum requirement
6.5.2.1 Spectrum emission mask	Not critical	Not critical
6.5.2.2 ACLR	± 0.8 dB	Measurements in the range ±3 dB of the minumum requirement at signal power = Pmax
6.5.3 Spurious emissions	Not critical	Not critical
6.6 Transmit intermodulation (interferer requirements)	Not critical	Not critical
6.7.1 EVM	± 2.5 % (for single code)	Measurements in the range 12.5% to 22.5% at signal power = Pmax –3 dB to Pmax – 18 dB
6.7.2 Peak code Domain error	±1.0dB	Measurements in the range –30 to –36 dB at signal power = Pmax
6.7.3 Time alignment error in TX diversity	0.1 T	
Annex H.3 Transmitted code power (absolute)	±0.9dB	Pmax – 3dB to Pmax – 28 dB
Annex H.3 Transmitted code power (relative)	±0.2dB	Pmax – 3dB to Pmax – 28 dB
Annex H.4 Transmitted carrier power	±0.3 dB relative error over 18 dB	Pmax to Pmax – 18 dB