3GPP TR 25.952 V5.2.0 (2003-03)

Technical Report

3rd Generation Partnership Project;
Technical Specification Group Radio Access Network;
TDD Base Station Classification
(Release 5)

Keywords

UMTS, radio

3GPP

Postal address

3GPP support office address

650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Internet

http://www.3gpp.org

Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

This document is a Technical Report on Release 5 work item "TDD Base Station Classification".

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] 3GPP TS 25.105 "UTRA (BS) TDD; Radio transmission and Reception"

[2] 3GPP TS 25.123 "Requirements for Support of Radio Resources Management (TDD)"

[3] 3GPP TS 25.142 "Base station conformance testing (TDD)"

[4] 3GPP TR 25.942 "RF System Scenarios"

[5] UMTS 30.03 / TR 101 112: "Selection procedures for the choice of radio transmission technologies of the UMTS"

3 Definitions, symbols and abbreviations

3.1 Definitions

void

3.2 Symbols

void

3.3 Abbreviations

void

4 General

Current TSG RAN WG4 specifications have been done according to the requirements for the macrocell base stations (NodeBs). For the UTRA evolution requirement specifications for other types of base stations are needed as well to take into account different use scenarios and radio environments. In this technical report, base station classification is described and requirements for each base station class are derived.

5 System scenarios

This section describes the system scenarios for UTRA operation that are considered when defining base station classes. It also includes typical radio parameters that are used to derive requirements.

5.1 Indoor Environment

5.1.1 Path Loss Model

The indoor path loss model expressed in dB is in the following form, which is derived from the COST 231 indoor model:

$$L = 37 + 20\ \mathrm{Log}_{10}(R) + \Sigma\ k_{wi}\ L_{wi} + 18.3\ n^{((n+2)/(n+1)-0.46)}$$

where:

R = transmitter-receiver separation given in metres

k_{wi} = number of penetrated walls of type i

L_{wi} = loss of wall type i

n = number of penetrated floors

Two types of internal walls are considered. Light internal walls with a loss factor of 3.4 dB and regular internal walls with a loss factor of 6.9 dB.

If internal walls are not modelled individually, the indoor path loss model is represented by the following formula:

$$L = 37 + 30\ \mathrm{Log}_{10}(R) + 18.3\ n^{((n+2)/(n+1)-0.46)}$$

where:

R = transmitter-receiver separation given in metres;

n = number of penetrated floors

Slow fading deviation in pico environment is assumed to be 6 dB.

5.2 Mixed Indoor – Outdoor Environment

5.2.1 Propagation Model

Distance attenuation inside a building is a pico cell model as defined in Chapter 5.1.1. In outdoors UMTS30.03 model is used.

Attenuation from outdoors to indoors is sketched in Figure 5.1 below. In the figure star denotes receiving object and circle transmitting object. Receivers are projected to virtual positions. Attenuation is calculated using micro propagation model between transmitter and each virtual position. Indoor attenuation is calculated between virtual transmitters and the receiver. Finally, lowest pathloss is selected for further calculations. Only one floor is considered.

The total pathloss between outdoor transmitter and indoor receiver is calculated as

$$L = L_{micro} + L_{OW} + \Sigma\ k_{wi}\ L_{wi} + a * R\ ,$$

where:

L_{micro} = Micro cell pathloss according UMTS30.03 Outdoor to Indoor and Pedestrian Test Environment pathloss model

L_{OW} = outdoor wall penetration loss [dB]

R = is the virtual transmitter-receiver separation given in metres;

k_{wi}= number of penetrated walls of type i;

L_{wi}= loss of wall type i;

a = 0.8 attenuation [dB/m]

<Editor Note: a reference to the source 0f the formula is required>

Slow fading deviation in mixed pico-micro environment shall be 6 dB

Propagation from indoors to outdoors would be symmetrical with above models.

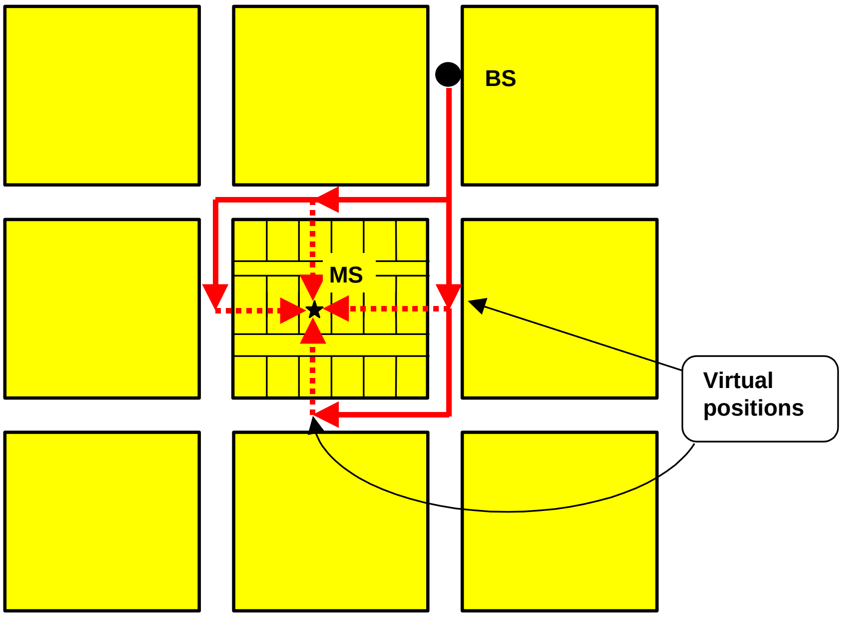

Figure 5.1: Simulation scenario and propagation model.

Parameters related to propagation models are summarised in Table 5.1.

Table 5.1: Parameters related to mixed indoor - outdoor propagation model

Parameter	Value
Inside wall loss	6.9dB
Outside wall loss	10 dB
Slow fading deviation in indoors	6dB
Slow fading deviation in outdoors	6dB
Building size	110 x 110 meters
Street size	110 x 15 meters
Room size	22 x 25 meters
Number of rooms	5 rooms in 4 rows
Corridor size	110 x 5 meters
Number of corridors	2
Size of entrance point	5 meters
Number of base stations	4 .. 6
BS coordinates	tba

5.3 Minimum coupling loss (MCL)

Minimum Coupling Loss (MCL) is defined as the minimum distance loss including antenna gain measured between antenna connectors.

5.3.1 MCL for Local Area scenario

The minimum coupling loss between UEs is independent of the scenario, therefore the same minimum coupling loss is assumed for all environments.

Local area BSs are usually mounted under the ceiling, on wall or some other exposed position. In [4] chapter 4.1.1.2 a minimal separation of 2 metres between UE and indoor BS is assumed. Free space path loss is defined in [4] as:

$$\text{Path loss [dB]} = 38.25 + 20 \log10(d\ [m])$$

Taking into account 0 dBi antenna gain for Local area BS and UE and a body loss of 1 dB at the terminal, a MCL of 45.27 dB is obtained. The additional 2 dB cable loss at the BS as proposed in TR 25.942 is not considered.

The assumed MCL values are summarised in Table 5.2.

Table 5.2: Minimum Coupling Losses

	MCL
MS ↔ MS	40 dB
Local area BS ↔ MS	45 dB
Local area BS ↔ Local area BS	45 dB

5.4 Propagation conditions for local area base stations

The demodulation of DCH in multipath fading conditions in TS 25.105 considers three different test environments:

Case 1: Typical indoor environment delay spread, low terminal speed

Case 2: Large delay spread (12 us), low terminal speed

Case 3: Typical vehicular environment delay spread, high terminal speed (120 km/h)

The local area BS is intended for small cells as can be usually found in indoor environments or outdoor hot spot areas. The large delay spread in Case 2 and the high terminal speed in Case 3 are not typical for these scenarios. Therefore, requirements defined for Case 2 and Case 3 shall not be applied to the local area BS. The Case 1 propagation condition shall apply for both the local area and wide area BS.

6 Base station classes

This section describes how the base station classes are defined.

6.1 Base station class criteria

Different sets of requirements are derived from calculations based on Minimum Coupling Loss between BS and UE. Each set of requirements corresponds to a base station class used as criteria for classification. Two classes are defined: Wide Area BS class and Local Area BS class.

Wide Area BS class assumes relatively high MCL, as is typically found in outdoor macro and outdoor micro environments, where the BS antennas are located off masts, roof tops or high above street level. Existing requirements are used, as they are in [1], for the Wide Area BS class. Requirements have been derived assuming 53dB and 70dB MCL for micro and macro scenarios, respectively.

Local Area BS class assumes relatively low MCL, as is typically found in Pico Cells (offices, subway stations etc) where antennas are located on the ceilings or walls or possibly built-in in the BS on the wall. Low-CL can also be found outdoors on hot spot areas like market place, high street or railway station. New requirements, as defined in this TR, are set for the Local Area BS class. Requirements have been derived assuming 45 dB BS to UE MCL.

7 Changes with respect to Release 99

7.1 Changes in 25.105

This section describes the considered changes to requirements on BS minimum RF characteristics, with respect to Release 1999 requirements in TS25.105.

7.1.1 New text for base station classes

The requirements in this specification apply to both Wide Area Base Stations and Local Area Base Stations, unless otherwise stated.

Wide Area Base Stations are characterised by requirements derived from Macro Cell and Micro Cell scenarios with BS to UE coupling losses equal to 70 dB and 53 dB. The Wide Area Base Station has the same requirements as the base station for General Purpose application in Release 99 for 3.84 Mcps option, and in release 4 for both 3.84 Mcps and 1.28 Mcps option.

Local Area Base Stations are characterised by requirements derived from Pico Cell scenarios with a BS to UE coupling loss equals to 45 dB.

7.1.2 Frequency stability

7.1.2.1 New requirement

In the present system the mobile has to be designed to work with a Doppler shift caused by speeds up to 250 km/h at 2100 MHz. This corresponds to a frequency offset of:

[Doppler shift, Hz] = [UE velocity, m/s] * [Carrier frequency, Hz] / [speed of light, m/s]

= (250 * 1000/3600) * 2.1 * 10^9 / (3 *10^8) Hz

≈ 486 Hz

At present, the BS requirement is 0.05 ppm, corresponding to 105 Hz at 2100 MHz.

In this case, the mobile must be able to successfully decode signals with offset of

[present UE decode offset, Hz] = [frequency error, Hz] + [max. Doppler shift, Hz]

= 486 Hz + 105 Hz

= 591 Hz

The frequency error requirement for local area BS class is proposed to be relaxed to 0.1ppm.

[frequency error, ppm] = 0.1 ppm

This corresponds to a maximum UE speed of 155km/h.

[max. new Doppler shift] = [present UE decode offset] - [frequency error, Hz]

= 591 Hz – 210 Hz

= 301 Hz

[UE velocity, km/h] = [speed of light, km/h] * [Doppler shift, Hz] / [Carrier frequency, Hz]

= (3 * 10^8 * 301 * 3600) / (2.1 * 10^9 * 1000)

= 155 km/h

7.1.2.2 New text for frequency stability

The modulated carrier frequency is observed over a period of one power control group (timeslot). The frequency error shall be within the accuracy range given in Table 7.1.

Table 7.1: Frequency error minimum requirement

BS class	accuracy
wide area BS	±0.05 ppm
local area BS	±0.1 ppm

7.1.3 Transmit On/Off Time Mask

The time mask transmit ON/OFF defines the ramping time allowed for the BS between transmit OFF power and transmit ON power.

7.1.3.1 Minimum Requirement

This requirement is independent of the BS class. For the local area BS the same requirement as specified in chapter 6.5.2.1 of TS 25.105 for the wide area BS shall apply.

7.1.4 Spectrum emission mask

The same requirement as for the wide area BS shall apply to the local area BS.

7.1.5 Adjacent Channel Leakage power Ratio (ACLR)

7.1.5.1 Justification

Three different ACLR requirements for the Local Area BS are considered in a similar way as for the Wide Area BS, to take due account of different deployment scenarios:

- a minimum requirement, which is based on BS to MS interference in case of synchronised TDD operation;
- additional requirements for operation in the same geographic area with FDD or unsynchronised TDD on adjacent channels;
- additional requirements in case of co-siting with unsynchronised TDD BS or FDD BS operating on an adjacent channel.

As was done for the Wide Area BS, it is proposed to define the minimum requirement also for the Local Area BS in a relative manner, i.e. as the ratio of the RRC filtered mean power centered on the assigned channel frequency to the RRC filtered mean power centered on an adjacent channel frequency (ACLR). For the additional requirements, it is proposed to state the requirements in an absolute manner, i.e. by defining the adjacent channel leakage power limit, which is the maximum allowed absolute emission level within the adjacent channel.

7.1.5.1.1 Minimum Requirement

The minimum requirement for ACLR is defined taking account of the BS to MS interference only, a scenario applying in case of synchronised TDD operation. BS to MS interference is dominated by the performance of the terminal (limited ACS). Therefore, it is proposed to use the same minimum requirement for the Local Area BS as defined for the Wide Area BS.

7.1.5.1.2 Additional requirement for operation in the same geographic area with FDD or unsynchronised TDD on adjacent channels

Firstly, let us assume that a TDD Local Area BS is operated in the same geographic area with an unsynchronised TDD system operating on adjacent channels. Then, the TDD Local Area BS may generate adjacent channel leakage power which interferes with both MS and BS of the victim TDD system. The ACLR limits for the protection of the victim MS are already covered by the minimum ACLR requirement, see 7.1.5.1.1; therefore, only the ACLR requirement for the protection of the victim TDD BS needs further consideration.

Secondly, let us assume that a TDD Local Area BS is operated in the same geographic area with FDD on adjacent channels. Due to the given spectrum arrangement for TDD and FDD, and, in particular, due to the fact that the lower TDD band (1900 – 1920 MHz) and the receive band of the FDD BS (1920 – 1980 MHz) are contiguous without any explicit guard band, the TDD Local Area BS – if operated in the lower TDD band as indicated above - may generate adjacent channel leakage power which falls into the receive band of a FDD BS; therefore, an ACLR requirement for the protection of a FDD BS needs to be established.

In both cases considered above, the victim BS may be a Local Area BS or a Wide Area BS, so that a number of different interference scenarios exist. According to [4], it is assumed that the most critical scenario is given by situation that the TDD Local Area BS interferes with a Wide Area BS operated in a macro environment.

The derivation of ACLR requirements in the following subclauses makes use of the Minimum Coupling Loss between the TDD Local Area BS and the victim BS. As shown in [4], a MCL of 87 dB may be assumed in cases where the ACLR requirement applies and the carrier separation is 5 MHz or less (first adjacent channel of a 3.84 Mcps TDD BS). A MCL of 77 dB may be assumed in cases where the ACLR requirement applies and the carrier separation is more than 5 MHz (second adjacent channel of a 3,84 Mcps TDD BS).

7.1.5.1.2.1 Additional requirement for operation in the same geographic area with unsynchronised TDD on adjacent channels

The acceptable interference level of a possible victim TDD Wide Area BS is assumed to be –106 dBm (3 dB below the receiver noise level), if the interference is time-continuous. If the interference is generated by a TDD BS operating on an adjacent channel, the interference tends to be non-continuous, and the victim TDD system can escape from this interference to a large extent via DCA (dynamic channel allocation). That means that TDD systems will synchronise themselves via DCA as far as possible. As a result, depending on the actual traffic demand of the interferer and interfered-with BS for up- and downlink, only few timeslots may remain where the victim BS will be affected by adjacent channel interference. Even these timeslots might be usable for terminals located close to the BS. To take account of this effect, a 3 dB gain due to DCA is assumed for TDD-TDD interference. This leads to an acceptable interference level of a TDD Wide Area BS of –103 dBm.

With the MCL of 87 dB and 77 dB for the first and the second adjacent channel, respectively, the adjacent channel leakage power according to table 7.2 can be derived.

Table 7.2: Adjacent channel leakage power limits for operation in the same geographic area with unsynchronised TDD on adjacent channels

BS Class	BS adjacent channel offset below the first or above the last carrier frequency used	Maximum Level	Measurement Bandwidth
Local Area BS	5 MHz	-16 dBm	3.84 MHz
Local Area BS	10 MHz	-26 dBm	3.84 MHz

7.1.5.1.2.2 Additional requirement for operation in the same geographic area with FDD on adjacent channels

The acceptable interference level of a possible victim FDD Wide Area BS is assumed to be –110 dBm. With the MCL of 87 dB and 77 dB for the first and the second adjacent channel, respectively, the adjacent channel leakage power according to table 7.3 can be derived.

Table 7.3: Adjacent channel leakage power limits for operation in the same geographic area with FDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Local Area BS	± 5 MHz	-23 dBm	3.84 MHz
Local Area BS	± 10 MHz	-33 dBm	3.84 MHz

7.1.5.1.3 Additional requirement in case of co-siting with unsynchronised TDD BS or FDD BS operating on an adjacent channel

Different BS classes are defined to take into account unlike usage scenarios and radio environments. Therefore, it is assumed that base stations of different classes will typically not be deployed at the same site, and co-siting of different base station classes is not considered.

However, a TDD Local Area BS may be co-sited with another TDD Local Area BS or a FDD Local Area BS. Both cases are considered in the following subclauses.

7.1.5.1.3.1 Additional requirement in case of co-siting with unsynchronised TDD BS operating on an adjacent channel

As explained above, only the co-siting with another (unsynchronised) TDD Local Area BS is considered here.

Due to desensitisation, the acceptable interference level of a victim TDD Local Area BS is higher as in case of a Wide Area BS; a value of –79 dBm is assumed for continuous interference. For non-continuous interference, as generated by the TDD Local Area BS, a 3 dB gain due to DCA is taken into account; see 7.1.5.1.2.1; this leads to an acceptable interference level of –76 dBm.

Assuming a Minimum Coupling Loss between two Local Area BS of MCL=45 dB, as deduced in subclause 5.3.1 of this TR, the adjacent channel leakage power limits given in table 7.4 can be derived.

Table 7.4: Adjacent channel leakage power limits in case of co-siting with unsynchronised TDD on adjacent channel

BS Class	BS adjacent channel offset below the first or above the last carrier frequency used	Maximum Level	Measurement Bandwidth
Local Area BS	5 MHz	-31 dBm	3.84 MHz
Local Area BS	10 MHz	-31 dBm	3.84 MHz

7.1.5.1.3.2 Additional requirement in case of co-siting with FDD BS operating on an adjacent channel

As explained above, only co-siting with an FDD Local Area BS is considered here. However, requirements for the FDD Local Area BS are not defined yet. Therefore, a co-location requirement for the TDD Local Area BS is intended to be part of a later release.

7.1.5.2 New text for Adjacent Channel Leakage power Ratio (ACLR)

NOTE: (NOT INTENDED TO BE INCLUDED IN 25.105)
The new text proposal in 7.1.5.2 contains elements which are applicable to the TDD Wide Area BS only and therefore out of scope with respect to the present TR. However, it seems inconvenient and not practical to separate the text proposal into two individual parts (one part for each BS class).

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the RRC filtered mean power centered on the assigned channel frequency to the RRC filtered mean power centered on an adjacent channel frequency. The requirements shall apply for all configurations of BS (single carrier or multi-carrier), and for all operating modes foreseen by the manufacturer's specification.

In some cases the requirement is expressed as adjacent channel leakage power, which is the maximum absolute emission level on the adjacent channel frequency measured with a filter that has a Root Raised Cosine (RRC) filter response with roll-off α=0.22 and a bandwidth equal to the chip rate of the victim system.

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

7.1.5.2.1 Minimum Requirement

The ACLR of a single carrier BS or a multi-carrier BS with contiguous carrier frequencies shall be higher than the value specified in Table 7.5.

Table 7.5: BS ACLR

BS adjacent channel offset below the first or above the last carrier frequency used	ACLR limit
5 MHz	45 dB
10 MHz	55 dB

If a BS provides multiple non-contiguous single carriers or multiple non-contiguous groups of contiguous single carriers, the above requirements shall be applied individually to the single carriers or group of single carriers.

7.1.5.2.2 Additional requirement for operation in the same geographic area with FDD or unsynchronised TDD on adjacent channels

7.1.5.2.2.1 Additional requirement for operation in the same geographic area with unsynchronised TDD on adjacent channels

In case the equipment is operated in the same geographic area with an unsynchronised TDD BS operating on the first or second adjacent frequency, the adjacent channel leakage power of a single carrier BS or a multi-carrier BS with contiguous carrier frequencies shall not exceed the limits specified in Table 7.5A.

Table 7.5A: Adjacent channel leakage power limits for operation in the same geographic area with unsynchronised TDD on adjacent channels

BS Class	BS adjacent channel offset below the first or above the last carrier frequency used	Maximum Level	Measurement Bandwidth
Wide Area BS	5 MHz	–29 dBm	3,84 MHz
Wide Area BS	10 MHz	–29 dBm	3,84 MHz
Local Area BS	5 MHz	-16 dBm	3,84 MHz
Local Area BS	10 MHz	-26 dBm	3,84 MHz

NOTE: The requirement in Table 7.5A for the Wide Area BS are based on a coupling loss of 74 dB between the unsynchronised TDD base stations. The requirement in Table 7.5A for the Local Area BS ACLR1 (± 5 MHz channel offset) are based on a coupling loss of 87 dB between unsynchronised Wide Area and Local Area TDD base stations. The requirement in Table 7.5A for the Local Area BS ACLR2 (± 10 MHz channel offset) are based on a coupling loss of 77 dB between unsynchronised Wide Area and Local Area TDD base stations. The scenarios leading to these requirements are addressed in TR25.942 [4].

If a BS provides multiple non-contiguous single carriers or multiple non-contiguous groups of contiguous single carriers, the above requirements shall be applied to those adjacent channels of the single carriers or group of single channels which are used by the TDD BS in proximity.

7.1.5.2.2.2 Additional requirement for operation in the same geographic area with FDD on adjacent channels

In case the equipment is operated in the same geographic area with a FDD BS operating on the first or second adjacent channel, the adjacent channel leakage power shall not exceed the limits specified in Table 7.5B.

Table 7.5B: Adjacent channel leakage power limits for operation in the same geographic area with FDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 5 MHz	-36 dBm	3,84 MHz
Wide Area BS	± 10 MHz	– 36 dBm	3,84 MHz
Local Area BS	± 5 MHz	-23 dBm	3,84 MHz
Local Area BS	± 10 MHz	-33 dBm	3,84 MHz

NOTE: The requirements in Table 7.5B for the Wide Area BS are based on a coupling loss of 74 dB between the FDD and TDD base stations. The requirements in Table 7.5B for the Local Area BS ACLR1 (± 5 MHz channel offset) are based on a relaxed coupling loss of 87 dB between TDD and FDD base stations. The requirement for the Local Area BS ACLR2 (± 10 MHz channel offset) are based on a relaxed coupling loss of 77 dB between TDD and FDD base stations. The scenarios leading to these requirements are addressed in TR 25.942 [4].

If a BS provides multiple non-contiguous single carriers or multiple non-contiguous groups of contiguous single carriers, the above requirements shall be applied to those adjacent channels of the single carriers or group of single channels which are used by the FDD BS in proximity.

7.1.5.2.3 Additional requirement in case of co-siting with unsynchronised TDD BS or FDD BS operating on an adjacent channel

7.1.5.2.3.1 Additional requirement in case of co-siting with unsynchronised TDD BS operating on an adjacent channel

In case the equipment is co-sited to an unsynchronised TDD BS operating on the first or second adjacent frequency, the adjacent channel leakage power of a single carrier BS or a multi-carrier BS with contiguous carrier frequencies shall not exceed the limits specified in Table 7.6.

Table 7.6: Adjacent channel leakage power limits in case of co-siting with unsynchronised TDD on adjacent channel

BS Class	BS adjacent channel offset below the first or above the last carrier frequency used	Maximum Level	Measurement Bandwidth
Wide Area BS	5 MHz	-73 dBm	3.84 MHz
Wide Area BS	10 MHz	-73 dBm	3.84 MHz
Local Area BS	5 MHz	-31 dBm	3.84 MHz
Local Area BS	10 MHz	-31 dBm	3.84 MHz

NOTE: The requirements in Table 7.6 for the Wide Area BS are based on a minimum coupling loss of 30 dB between unsynchronised TDD base stations. The requirements in Table 7.6 for the Local Area BS are based on a minimum coupling loss of 45 dB between unsynchronised Local Area base stations. The co-location of different base station classes is not considered.

If a BS provides multiple non-contiguous single carriers or multiple non-contiguous groups of contiguous single carriers, the above requirements shall be applied to those adjacent channels of the single carriers or group of single channels which are used by the co-sited TDD BS.

7.1.5.2.3.2 Additional requirement in case of co-siting with FDD BS operating on an adjacent channel

NOTE: The co-location of different base station classes is not considered. A co-location requirement for the TDD Local Area BS is intended to be part of a later release.

7.1.6 New text for reference sensitivity level

The reference sensitivity is the minimum receiver input power measured at the antenna connector at which the FER/BER does not exceed the specific value indicated in section 7.2.1.

7.1.6.1 Minimum Requirement

For the measurement channel specified in Annex A, the reference sensitivity level and performance of the BS shall be as specified in Table 7.7.

Table 7.7: BS reference sensitivity levels

BS class	Data rate	BS reference sensitivity level (dBm)	FER/BER
Wide area BS	12.2 kbps	-109 dBm	BER shall not exceed 0.001
Local area BS	12.2 kbps	-95 dBm	BER shall not exceed 0.001

7.1.7 New text for adjacent channel selectivity (ACS)

Adjacent channel selectivity (ACS) is a measure of the receiver ability to receive a wanted signal at its assigned channel frequency in the presence of an adjacent channel signal at a given frequency offset from the center frequency of the assigned channel. ACS is the ratio of the receiver filter attenuation on the assigned channel frequency to the receive filter attenuation on the adjacent channel(s).

7.1.7.1 Minimum Requirement

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

Table 7.8: Adjacent channel selectivity

Parameter		Level	Unit
Data rate		12.2	kbps
Wanted signal		Reference sensitivity level + 6dB	dBm
Interfering signal	Wide area BS	-52	dBm
	Local area BS	-38	dBm
Fuw (Modulated)		5	MHz

7.1.8 Blocking and Intermodulation Characteristics

7.1.8.1 Justification

7.1.8.1.1 Simulation Description

To derive values for the level of the interfering signal at a minimum offset frequency of 10 MHz for the local area BS, multi operator simulations were performed with a snapshot based monte-carlo simulator, using at least 10000 trials. The indoor environment is applied while the number of penetrated floors is set to zero and a path loss model according to UMTS30.03, using continuous attenuation. In the simulations a 8kbps service is considered. The receiver noise of the base station is set to -89 dBm, for the terminal it is set to -99dBm. Further basic simulation assumptions are depicted in Table 7.9. In order to have an homogenous coverage with base stations a placement of the BS of the two operators was chosen as shown in Figure 7.1.

Table 7.9: Simulation parameters

Reference sensitivity level	-95 dBm
considered service	8 kbps
number of users (victim and interferer system)	57MS/4TS
max. BS Tx power	26 dBm
min CIR BS	-8.1 dBm
ACS BS	53 dB
BS power control range	30 dB
BS receiver noise	-89 dBm
max. MS Tx power	21 dBm
min. CIR MS	-5.6 dBm
ACLR2 of UE	43 dB
MS power control range	65 dB
MS receiver noise	-99 dBm
Spreading factor	16
Indoor path loss model	continuous attenuation (UMTS 30.03)
Fading standard deviation	12 dB

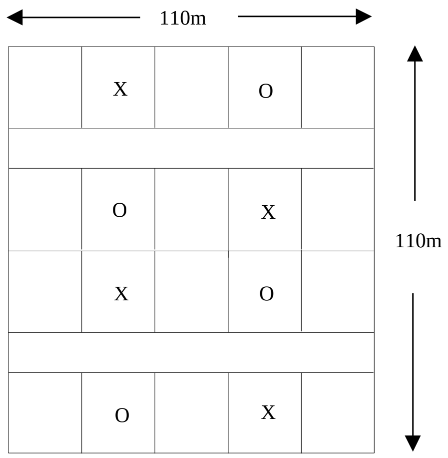

Figure 7.1: Placement of the base stations in the multi operator scenario (X is operator 1, O is operator 2)

The aim in the simulations is to obtain the adjacent channel interference I_{adj} at a chosen base station of operator 1 caused by the terminals of operator 2 to verify the interference level given in Tdoc R4–010268. For the simulations, the scenario is filled with the maximum number of users for a 2 % blocking probability according to the Erlang B formula. During each trial of the simulation random drops of the UEs are made and the power levels are adapted for each link. One base station of operator one is determined to be the victim station. At this station the adjacent channel interference I_{adj} caused by the uplink of operator 2 is recorded.

In the next section the simulation results received with the given assumptions are introduced.

7.1.8.1.2 Simulation Results

With the simulation parameters given in Table 7.9 we obtain an outage below 1 percent and a noise raise of 13.9 dB after 10000 trials. Also note that all results are derived for a capacity loss of 0. Figure 7.2 shows the CDF of the adjacent channel interference measured at the victim base station receiver caused by the strongest and the second strongest interferer. In Figure 7.2 it can be seen that the difference of the interference levels caused by the strongest interferer I_{adj1} and the second strongest interferer I_{adj2} is approximately 10 dB. For this reason the influence on the victim station is dominated by I_{adj1}.

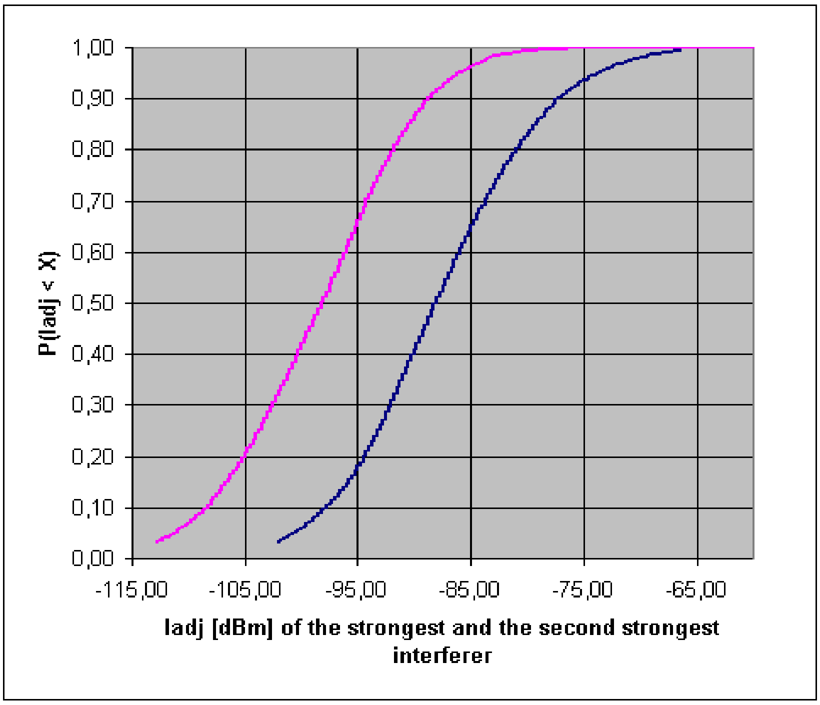

Figure 7.2: CDFs of the adjacent interference I_{adj} originating from the strongest interferer and the second strongest interferer at the victim BS. Parameter: P_{noise} = -89 dBm.

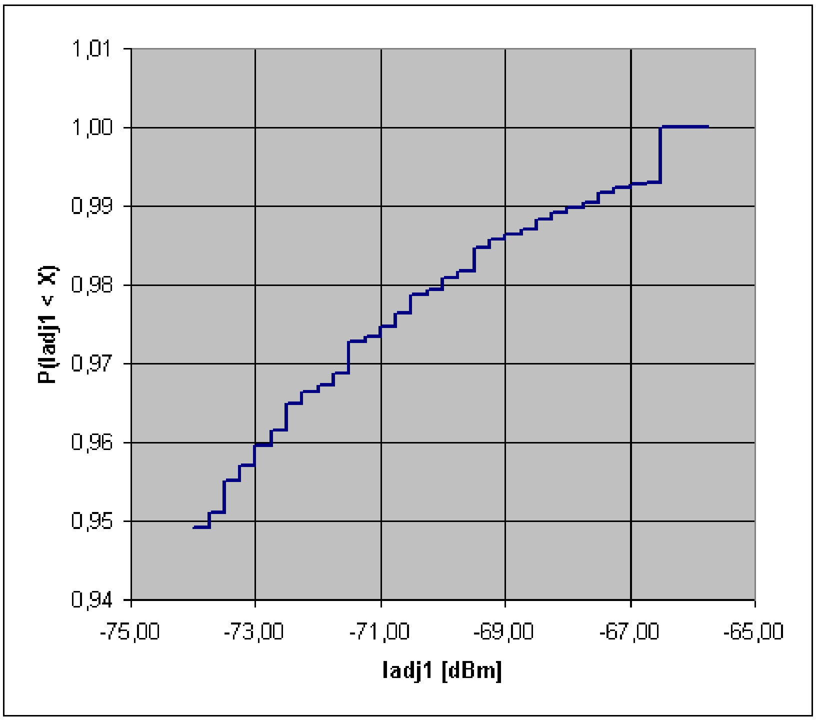

Figure 7.3: CDF of I_{adj1} originating from the strongest interferer at the victim BS. Parameter: P_{noise} = -89 dBm (zoomed in).

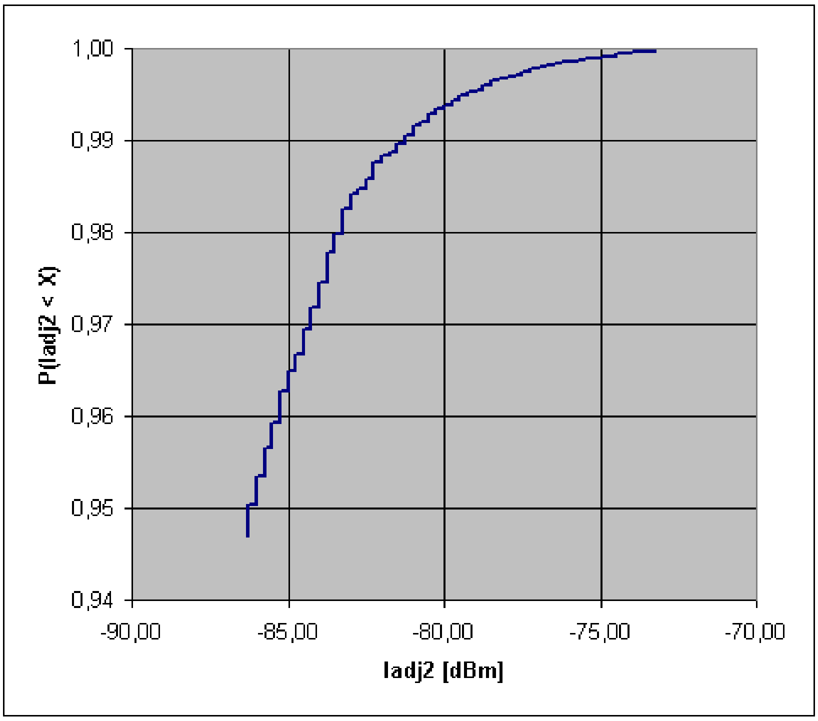

Figure 7.4: CDF of I_{adj2} originating from the second strongest interferer at the victim BS. Parameter: P_{noise} = -89 dBm (zoomed in).

Figure 7.3 shows a zoomed in extract of the CDF of the strongest interferer depicted in Figure 7.2 for probabilities between 94 and 100 percent. At -66.5 dBm a sharp discontinuity can be seen.

This can be explained by the fact that in a small scenario the strongest interferer will be located only a few times close to the victim station while transmitting with high power levels.

Figure 7.4 shows the zoomed in extract of the CDF of the interference level I_{adj2} caused by second strongest interferer.

7.1.8.1.3 Local Area BS Receiver Blocking

With an ACLR2 of the terminal equal to 43 dB and a maximum level of interference of -30 dBm which was proposed in Tdoc R4-010268 an adjacent channel interference of -73 dBm is allowed. The probability of levels below -73 dBm is greater than 95.5 percent which corresponds to a deviation of 2σ of the normal distribution. Therefore an interference level of -30dBm is considered to be sufficient for the receiver blocking.

7.1.8.1.4 Local Area BS Receiver Blocking

For the derivation of the intermodulation characteristic of the wide area base station the second strongest interferer is considered and a level of the interfering signals 8 dB below the blocking requirement are considered to be sufficient.

For the local area base station the same assumptions are taken into account. This leads to an interference level of -38 dBm. With an ACLR2 of the UE of 43 dB a level of -81 dBm is obtained. With the results depicted in Figure 7.4 the occurrence of a signal level below -81 dBm for the second strongest interferer is higher than 99 percent. With these facts a value of -38 dBm is considered to be sufficient.

7.1.8.2 New text for blocking characteristics

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

The static reference performance as specified in clause 7.1.5.1 in TS25.105 should be met with a wanted and an interfering signal coupled to BS antenna input using the following parameters.

Table 7.10(a): Blocking requirements for operating bands defined in 5.2(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	-30 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-30 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1920 – 1980 MHz	-30 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 7.10(b): Blocking requirements for operating bands defined in 5.2(b)

Center Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
1850 – 1990 MHz	-30 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-30 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1 – 1830 MHz, 2010 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.10(c): Blocking requirements for operating bands defined in 5.2(c)

Center Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
1910 – 1930 MHz	-30 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-30 dBm	<REFSENS> + 6 dB	10 MHz	WCDMA signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

7.1.8.3 New text for intermodulation characteristics

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

The static reference performance as specified in clause 7.1.5.1 in TS 25.105 should be met when the following signals are coupled to BS antenna input.

- A wanted signal at the assigned channel frequency, 6 dB above the static reference level.
- Two interfering signals with the following parameters.

Table 7.11: Intermodulation requirement

Interfering Signal Level	Offset	Type of Interfering Signal
- -38 dBm	10 MHz	CW signal
- -38 dBm	20 MHz	WCDMA signal with one code

7.1.9 New text for demodulation in static propagation conditions

7.1.9.1 Demodulation of DCH

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

7.1.9.1.1 Minimum requirement

This performance requirement is independent of the BS class. For the parameters specified in Table 7.12 for the local area BS the same performance requirement as specified in chapter 8.2.1.1 of TS 25.105 for the wide area BS shall apply.

Table 7.12: Parameters in static propagation conditions

Parameters		Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$			6	4	0	0
$\frac{DPCH_o\_E_c}{I_{or}}$		dB	-9	-9.5	0	0
I_{oc}	Wide area BS	dBm/3.84 MHz	-89			
	Local area BS	dBm/3.84 MHz	-74			
Information Data Rate		Kbps	12.2	64	144	384

7.1.10 New text for demodulation of DCH in multipath fading conditions

7.1.10.1 Multipath fading Case 1

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

7.1.10.1.1 Minimum requirement

The performance requirement is independent of the BS class. For the parameters specified in Table 7.13 for the local area BS the same performance requirement as specified in chapter 8.3.1.1 of TS 25.105 for the wide area BS shall apply.

Table 7.13: Parameters in multipath Case 1 channel

Parameters		Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$			6	4	0	0
$\frac{DPCH_o\_E_c}{I_{or}}$		dB	-9	-9.5	0	0
I_{oc}	Wide area BS	dBm/3.84 MHz	-89			
	Local area BS	dBm/3.84 MHz	-74			
Information Data Rate		kbps	12.2	64	144	384

7.1.10.2 Multipath fading Case 2

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

This requirement shall not be applied to Local Area BS.

7.1.10.3 Multipath fading Case 3

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

This requirement shall not be applied to Local Area BS.

7.1.11 New text for receiver dynamic range

Receiver dynamic range is the receiver ability to handle a rise of interference in the reception frequency channel. The receiver shall fulfil a specified BER requirement for a specified sensitivity degradation of the wanted signal in the presence of an interfering AWGN signal in the same reception frequency channel.

7.1.11.1 Minimum requirement

The BER shall not exceed 0.001 for the parameters specified in Table 7.14.

Table 7.14: Dynamic Range

Parameter		Level	Unit
Data rate		12.2	kbps
Wanted signal		<REFSENS> + 30 dB	dBm
Interfering AWGN signal	Wide Area BS	-73	dBm/3.84 MHz
	Local Area BS	-59	dBm/3.84 MHz

7.1.12 Transmitter spurious emissions

7.1.12.1 Justification

For the BS intended for general-purpose applications – the only BS class defined up to now-, 3GPP has specified mandatory transmitter spurious emissions requirements of Category A or Category B. These mandatory requirements are aligned with relevant ITU-R recommendations and are accepted as generally applicable; therefore, it is proposed to adopt them independent of the BS class considered.

Furthermore, 3GPP has specified additional requirements which may be applied for the protection of other systems in specific interference scenarios. Three scenarios are looked at:

- Co-existence with GSM 900
- Co-existence with DCS 1800
- Co-existence with UTRA FDD

Similar as the mandatory requirements, also the additional requirements for co-existence with GSM 900 and DCS 1800 are assumed to be independent of the BS class under consideration.

Special considerations are however necessary when examining the co-existence of the TDD Local Area BS with FDD. The TDD Local Area BS generates spurious emissions which may fall into the receive band of the FDD UE or into the receive band of the FDD BS. With respect to the spurious emissions falling into the receive band of the FDD UE, it is proposed that the same limits apply independent of the BS class. However, a different approach may be needed with respect to the spurious emissions requirements within the receive band of the FDD BS: Due to the given spectrum arrangement for TDD and FDD, see also the considerations in 7.1.5.1.2 with respect to ACLR, it may be required to define specific spurious emissions limits for the TDD Local Area BS to protect the FDD BS. Two cases will be considered:

- Operation of TDD Local Area BS and FDD BS in the same geographic area; see 7.1.12.1.1.
- Co-location of TDD Local Area BS and FDD BS; see 7.1.12.1.2.

7.1.12.1.1 Operation of TDD Local Area BS and FDD BS in the same geographic area

Let us assume that a TDD Local Area BS is operated in the same geographic area with FDD BS (Local Area or Wide Area). Then, as shown in [4] and already used for the derivation of additional ACLR requirements in 7.1.5.1.2, it may be concluded that the most critical interference scenario is given by the situation that the TDD Local Area BS interferes with a FDD Wide Area BS operated in a macro environment.

The Local Area BS may be seen as similar to a mobile station with respect to output power, antenna gain and antenna height. Therefore, it seems reasonable to assume that the MCL for the most critical interference scenario mentioned above is the same as between a mobile station and a Wide Area BS operated in a macro environment. According to [4], a MCL of 70 dB is appropriate for this case.

Assuming a maximum allowed interference level of the FDD Wide Area BS of –110 dBm, the required spurious emissions limit within the receive band of a FDD BS can be calculated as

$$-110 \text{ dBm} + 70 \text{ dB} = -40 \text{ dBm}.$$

Because the spurious emissions limit given above is derived from the maximum allowed interference level within receiver bandwidth of the FDD Wide Area BS, the measurement bandwidth should be equal to 3.84 MHz.

7.1.12.1.2 Co-location of TDD Local Area BS and FDD BS

Different BS classes are defined to take into account unlike use scenarios and radio environments. Therefore, it is assumed that base stations of different classes will typically not be deployed at the same location, and co-location of different base station classes is not considered.

However, a TDD Local Area BS may be co-located with an FDD Local Area BS. Requirements for the FDD Local Area BS are not defined yet. Therefore, a co-location requirement for the TDD Local Area BS is intended to be part of a later release.

7.1.12.2 New text for transmitter spurious emissions

NOTE: (NOT INTENDED TO BE INCLUDED IN 25.105)
The new text proposal in 7.1.12.2 contains elements which are applicable to the TDD Wide Area BS only and therefore out of scope with respect to the present TR. However, it seems inconvenient and not practical to separate the text proposal into two individual parts (one part for each BS class).

7.1.12.2.1 Co-existence with UTRA-FDD

7.1.12.2.1.1 Operation in the same geographic area

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

7.1.12.2.1.1.1 Minimum Requirement

For TDD base stations which use carrier frequencies within the band 2010 – 2025 MHz the requirements applies at all frequencies within the specified frequency bands in table 7.14A. For 3.84 Mcps TDD option base stations which use a carrier frequency within the band 1900-1920 MHz, the requirement applies at frequencies within the specified frequency range which are more than 12.5 MHz above the last carrier used in the frequency band 1900-1920 MHz. For 1.28 Mcps TDD option base stations which use carrier frequencies within the band 1900-1920 MHz, the requirement applies at frequencies within the specified frequency range which are more than 4 MHz above the last carrier used in the frequency band 1900-1920 MHz.

The power of any spurious emission shall not exceed:

Table 7.14A: BS Spurious emissions limits for BS in geographic coverage area of UTRA-FDD

BS Class	Band	Maximum Level	Measurement Bandwidth	Note
Wide Area BS	1920 – 1980 MHz	-43 dBm (*)	3.84 MHz	
Wide Area BS	2110 – 2170 MHz	-52 dBm	1 MHz	
Local Area BS	1920 – 1980 MHz	-40 dBm (*)	3.84 MHz	
Local Area BS	2110 – 2170 MHz	-52 dBm	1 MHz	
NOTE * For 3.84 Mcps TDD option base stations, the requirement shall be measured with the lowest center frequency of measurement at 1922.6 MHz or 15 MHz above the last TDD carrier used, whichever is higher. For 1.28 Mcps TDD option base stations, the requirement shall be measured with the lowest center frequency of measurement at 1922.6 MHz or 6.6 MHz above the last TDD carrier used, whichever is higher.				

NOTE: The requirements for Wide Area BS in Table 7.14A are based on a coupling loss of 67dB between the TDD and FDD base stations. The requirements for Local Area BS in Table 7.14A are based on a coupling loss of 70 dB between TDD and FDD Wide Area base stations. The scenarios leading to these requirements are addressed in TR 25.942 [4].

7.1.12.2.1.2 Co-located base stations

NOTE: The co-location of different base station classes is not considered. A co-location requirement for the TDD Local Area BS is intended to be part of a later release.

7.2 Changes in 25.123

This section describes the considered changes to requirements on UTRAN measurements, with respect to Release 1999 requirements in TS25.123.

7.2.1 New text for performance for UTRAN measurements in uplink (RX)

7.2.1.1 RSCP

The measurement period shall be [100] ms.

7.2.1.1.1 Absolute accuracy requirements

Table 7.15: RSCP absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions	BS class
		Normal conditions	Extreme conditions	Io [dBm]	
RSCP	dB	± 6	± 9	-105..-74	Wide area BS
RSCP	dB	± 6	± 9	-91..-60	Local area BS

7.2.1.1.2 Relative accuracy requirements

Table 7.16: RSCP relative accuracy

Parameter	Unit	Accuracy [dB]	Conditions	BS class
			Io [dBm]	
RSCP	dB	± 3 for intra-frequency	-105..-74	Wide area BS
RSCP	dB	± 3 for intra-frequency	-91..-60	Local area BS

7.2.1.1.3 Range/mapping

The reporting range for *RSCP* is from -120 ...-66 dBm.

In Table 7.17 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 7.17

Reported value	Measured quantity value	Unit
RSCP_LEV _00	RSCP <–120,0	dBm
RSCP_LEV _01	-120,0 ≤ RSCP < –119,5	dBm
RSCP_LEV _02	-119,5 ≤ RSCP < –119,0	dBm
…	…	…
RSCP_LEV _107	-67,0 ≤ RSCP < -66,5	dBm
RSCP_LEV _108	-66,5 ≤ RSCP < -66,0	dBm
RSCP_LEV _109	-66,0 ≤ RSCP	dBm

7.2.1.2 Timeslot ISCP

The measurement period shall be [100] ms.

7.2.1.2.1 Absolute accuracy requirements

Table 7.18: Timeslot ISCP Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions	BS class
		Normal conditions	Extreme conditions	Io [dBm]	
Timeslot ISCP	dB	± 6	± 9	-105..-74	Wide area BS
Timeslot ISCP	dB	± 6	± 9	-91..-60	Local area BS

7.2.1.2.2 Range/mapping

The reporting range for *Timeslot ISCP* is from -120...-66 dBm.

In Table 7.19 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 7.19

Reported value	Measured quantity value	Unit
UTRAN_TS_ISCP_LEV_00	Timeslot_ISCP < –120,0	dBm
UTRAN_TS_ISCP_LEV_01	-120,0 ≤ Timeslot_ISCP < –119,5	dBm
UTRAN_TS_ISCP_LEV_02	-119,5 ≤ Timeslot_ISCP < –119,0	dBm
…	…	…
UTRAN_TS_ISCP_LEV_107	-67,0 ≤ Timeslot_ISCP < -66,5	dBm
UTRAN_TS_ISCP_LEV_108	-66,5 ≤ Timeslot_ISCP < -66,0	dBm
UTRAN_TS_ISCP_LEV_109	-66,0 ≤ Timeslot_ISCP	dBm

7.2.1.3 Received total wide band power

The measurement period shall be [100] ms.

7.2.1.3.1 Absolute accuracy requirements

Table 7.20: RECEIVED TOTAL WIDE BAND POWER Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]	Conditions	BS class
			Io [dBm]	
RECEIVED TOTAL WIDE BAND POWER	dB	± 4	-105..-74	Wide area BS
RECEIVED TOTAL WIDE BAND POWER	dB	± 4	-91..-60	Local area BS

7.2.1.3.2 Range/mapping

The reporting range for *RECEIVED TOTAL WIDE BAND POWER* is from -112 ... -50 dBm.

In Table 7.21 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 7.21

Reported value	Measured quantity value	Unit
RECEIVED TOTAL WIDE BAND POWER_LEV _000	RECEIVED TOTAL WIDE BAND POWER < –112,0	dBm
RECEIVED TOTAL WIDE BAND POWER_LEV _001	-112,0 ≤ RECEIVED TOTAL WIDE BAND POWER < –111,9	dBm
RECEIVED TOTAL WIDE BAND POWER_LEV _002	-111,9 ≤ RECEIVED TOTAL WIDE BAND POWER < –111,8	dBm
…	…	…
RECEIVED TOTAL WIDE BAND POWER_LEV _619	-50,2 ≤ RECEIVED TOTAL WIDE BAND POWER < -50,1	dBm
RECEIVED TOTAL WIDE BAND POWER_LEV _620	-50,1 ≤ RECEIVED TOTAL WIDE BAND POWER < -50,0	dBm
RECEIVED TOTAL WIDE BAND POWER_LEV _621	-50,0 ≤ RECEIVED TOTAL WIDE BAND POWER	dBm

7.2.2 New text for test cases for measurement performance for UTRAN

7.2.2.1 UTRAN RX measurements

If not otherwise stated, the test parameters in Table 7.22 for the wide area BS and Table 7.23 for the local area BS should be applied for UTRAN RX measurements requirements in this clause.

Table 7.22: Intra frequency test parameters for UTRAN RX measurements for wide area BS

Parameter	Unit	Cell 1
UTRA RF Channel number		Channel 1
Timeslot		[]
DPCH Ec/Ior	dB	[]
Îor/Ioc	dB	[]
Ioc	dBm/ 3,84 MHz	-89
Range: Io	dBm	-105..-74
Propagation condition	-	AWGN

Table 7.23: Intra frequency test parameters for UTRAN RX Measurements for local area BS

Parameter	Unit	Cell 1
UTRA RF Channel number		Channel 1
Timeslot		[]
DPCH Ec/Ior	dB	[]
Ior/Ioc	dB	[]
Ioc	dBm/ 3,84 MHz	-74
Range: Io	dBm	-91..-60
Propagation condition	-	AWGN

7.3 Changes in 25.142

This section describes the considered changes to base station conformance testing, with respect to Release 1999 requirements in TS25.142.

8 Impacts to other WGs

8.1 WG1

8.2 WG2

8.3 WG3

9 Backward compatibility

Annex A (informative): Change history

Table A.1: Document History

Date	Version	Comment
14 Sept 2000	0.0.1	Document created
24 Nov 2000	1.0.0	Update based on TSG RAN WG4 meeting #14 approved input documents R4-000860, R4-000880, R4-000882, R4-000883, R4-000884
30 Jan 2001	1.0.1	Update based on TSG RAN WG4 meeting #15 approved input documents R4-010080, R4-010081, R4-010084, R4-010152
05 March 2001	1.1.0	Update based on TSG RAN WG4 meeting #16 approved input documents R4-010067, R4-010068, R4-010069, R4-010070, R4-010071
01 June 2001	2.0.0	Updated based on TSG RAN WG4 meeting #17 approved input documents R4-010597, R4-010625, R4-010652, R4-010653
27 June 2001	5.0.0	Approval at RAN#12, report under change control

Table A.2: Release 5 CR approved at TSG RAN #16

RAN Tdoc	Spec	CR	R	Ph	Title	Cat	Curr	New	Work Item
RP-020298	25.952	1		Rel-5	Correction of ACLR and spurious emission requirements for the 3.84 Mcps TDD Local Area BS	F	5.0.0	5.1.0	RInImp-BSClass-TDD

Table A.3: Release 5 CR approved at TSG RAN #19

RAN Tdoc	Spec	CR	R	Ph	Title	Cat	Curr	New	Work Item
RP-030045	25.952	002		Rel-5	The definition of UTRA-TDD BS classes	F	5.1.0	5.2.0	RInImp-BSClass-TDD