TSG RAN Meeting #16 **RP-020298**
Marco Island, FL, USA, 4 - 7 June 2002

Title **CRs (Rel-5) for WI "TDD Base station classification"**
Source **TSG RAN WG4**
Agenda Item **8.2.2.1**

RAN4 Tdoc	Spec	Curr Ver	New Ver	CR	R	Cat	Ph	Title	Acronym
R4-020827	25.105	5.0.0	5.1.0	119		B	Rel-5	ACLR and spurious emission requirements for coexistence for 3.84 Mcps TDD and 1.28 Mcps TDD and Wide Area and Local Area base stations	RInImp-BSClass-TDD, RInImp-BSClass-LCRTDD
R4-020831	25.105	5.0.0	5.1.0	120		B	Rel-5	Addition of requirement for Local Area BS for 3.84 Mcps TDD without requirements for unwanted emissions	RInImp-BSClass-TDD
R4-020832	25.123	5.0.0	5.1.0	220		B	Rel-5	Addition of requirement for Local Area BS for 3.84 Mcps TDD	RInImp-BSClass-TDD
R4-020714	25.142	5.0.0	5.1.0	124		B	Rel-5	Introduction of BS classification for 3,84 Mcps TDD option (excluding ACLR and spurious emission requirements)	RInImp-BSClass-TDD
R4-020958	25.142	5.0.0	5.1.0	127		B	Rel-5	Introduction of BS classification for 3,84 Mcps and 1,28 Mcps TDD options - ACLR and spurious emissions requirements	RInImp-BSClass-TDD, RInImp-BSClass-LCRTDD
R4-020830	25.942	5.0.0	5.1.0	9		B	Rel-5	Antenna-to-antenna isolation for application in the same geographic area for Wide Area and Local Area BS	RInImp-BSClass-TDD
R4-020713	25.952	5.0.0	5.1.0	1		F	Rel-5	Correction of ACLR and spurious emission requirements for the 3.84 Mcps TDD Local Area BS	RInImp-BSClass-TDD

3GPP TSG RAN WG4 Meeting #23 **R4-020827**

Gyeongju, Korea 13th -17th May, 2002

CR-Form-v5

CHANGE REQUEST

⌘ **25.105** **CR** **119** ⌘ **rev** **-** ⌘ Current version: **5.0.0** ⌘

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

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

Title: ⌘	Requirements for TDD ACLR and TDD Spurious Emission for 3.84 Mcps and 1.28 Mcps TDD option	
Source: ⌘	RAN WG4	
Work item code: ⌘	RInImp-BSClass-TDD, RInImp-BSClass-LCRTDD	***Date:*** ⌘ 17/5/2002
Category: ⌘	**B**	***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)*

Reason for change: ⌘	Introduction of different base station classes
Summary of change: ⌘	Addition of unwanted emission requirement for TDD Local Area BS and alignment of unwanted emission requirements with earlier releases. This CR includes the changes corresponding to CR 117 for R99 and CR 118 for REL-4.
Consequences if not approved: ⌘	Different base station classes not distinguished. Misalignment with previous releases.

Clauses affected: ⌘	6.6.2.2, 6.6.3.4		
Other specs affected: ⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications	⌘	TS 25.142
Other comments: ⌘	This CR includes the changes corresponding to CR 117 for R99 and CR 118 for REL-4.		

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

6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the average power centered on the assigned channel frequency to the average power centered on an adjacent channel frequency. In both cases the power is measured with filter that has a Root Raised Cosine (RRC) filter response with roll-off α=0~~,~~22 and a~~-~~ bandwidth equal to the chip rate. The requirements shall apply for all configurations of BS (single carrier or multi-carrier), and for all operating modes foreseen by the manufacturer's specification.

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.

6.6.2.2.1 Minimum Requirement

6.6.2.2.1.1 3,84 Mcps TDD Option

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 6.7.

Table 6.7: 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.

6.6.2.2.1.2 1,28 Mcps TDD Option

For the 1.28Mcps chip rate option, the ACLR of a single carrier BS or a multi-carrier BS with contiguous carrier frequencies shall be better than the value specified in Table 6.7A

Table 6.7A: BS ACLR (1.28Mcps chip rate)

BS adjacent channel offset below the first or above the last carrier frequency used	ACLR limit
1.6 MHz	40 dB
3.2 MHz	45 dB

~~NOTE: This requirement is valid for co-existence with frame and switching point synchronised systems, or for non-synchronised systems if the path loss between the BSs is greater than 107dB.~~

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.

6.6.2.2.2 Additional requirement ~~in case of~~ for operation in the same geographic area with ~~proximity to~~ FDD or unsynchronised TDD ~~BS or FDD BS operating~~ on ~~an~~ adjacent channels~~frequency~~

6.6.2.2.2.1 3,84 Mcps TDD Option

6.6.2.2.2.1.1 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 ~~proximity to another~~ TDD BS ~~or FDD BS~~ operating on the first or second adjacent frequency, the ~~ACLR~~ adjacent channel leakage power of a single carrier BS or a multi-carrier BS with contiguous carrier frequencies shall ~~be higher than~~ not exceed the ~~value~~ limits specified in Table 6.8.

Table 6.8: ~~BS ACLR~~ Adjacent channel leakage power limits for ~~in case of~~ operation in the same geographic area with unsynchronised TDD on adjacent channels ~~proximity~~

BS Class	BS adjacent channel offset below the first or above the last carrier frequency used	~~ACLR limit~~ Maximum Level	Measurement Bandwidth
Wide Area BS	5 MHz	~~70 dB~~ –29 dBm	3,84 MHz
Wide Area BS	10 MHz	~~70 dB~~ –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 6.8 for the Wide Area BS are ~~is~~ based on ~~the assumption that the~~ a coupling loss of 74 dB between the unsynchronised TDD base stations ~~is at least 84dB~~. The requirement in Table 6.8 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 6.8 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 ~~or FDD BS~~ in ~~proximity~~ the same geographic area.

6.6.2.2.2.1.2 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 6.8AA.

Table 6.8AA: 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 6.8AA 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 6.8AA 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 the same geographic area.

6.6.2.2.2.2 1,28 Mcps TDD Option

6.6.2.2.2.2.1 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 ~~proximity to another~~ an unsynchronised TDD BS ~~or FDD BS and both BSs~~ operating on an adjacent channel ~~frequency band~~, the requirement is specified in terms of adjacent channel leakage power ~~level of the transmitting BS~~. In geographic areas where only UTRA 1.28 Mcps TDD option is deployed, the adjacent channel leakage power limits shall not exceed the limits specified in Table 6.8A, otherwise the limits in Table 6.8B shall apply. ~~This requirement is valid for co-existence with non-frame and non-switching point synchronised systems operating on the closest used carrier. The interference power level shall not exceed the limit in Table 6.8A.~~

Table 6.8A: ~~BS ACLR~~ Adjacent channel leakage limits for ~~in case of~~ operation in the same geographic area with unsynchronised 1.28 Mcps TDD on adjacent channels~~proximity~~

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 1,6 MHz	-29 dBm	1,28 MHz
Wide Area BS	± 3,2 MHz	-29 dBm	1,28 MHz
Local Area BS	± 1,6 MHz	-16 dBm	1,28 MHz
Local Area BS	± 3,2 MHz	-16 dBm	1,28 MHz

Table 6.8B: Adjacent Channel leakage power limits for operation in the same geographic area with unsynchronised TDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 3,4 MHz	-29 dBm	3,84 MHz
Local Area BS	± 3,4 MHz	-16 dBm	3,84 MHz

NOTE: The requirement in Table 6.8A and 6.8B for the Wide Area BS are based on a coupling loss of 74 dB between the unsynchronised TDD base stations. The requirement in Table 6.8A and 6.8B for the Local Area BS are based on a coupling loss of 87 dB between unsynchronised Wide Area and Local Area TDD base stations. The scenarios leading to these requirements are addressed in TR25.942 [4].

~~Center Frequency for Measurement~~	~~Maximum Level of the interference power (in case of multiple antennas the interference powers shall be summed at all antenna connectors)~~	~~Measurement Bandwidth~~
~~Closest used carrier of the victim receiver: Either FDD carrier Or 3.84 Mcps TDD carrier Or 1.28 Mcps TDD carrier~~	~~-36 dBm~~	~~chip rate of the victim receiver: In case of FDD: 3.84 MHz In case of 3.84 Mcps TDD: 3.84 MHz In case of 1.28 Mcps TDD: 1.28 MHz~~

~~The closest used carrier with respect to the regarded carrier of one system is defined by:~~
~~a minimum difference in centre frequency between the regarded carrier and the carriers used in the other system and the chip rate of the other system.~~

~~If the actual allowed interference level $P_{int, allowed, actual}$ at the victim receiver is higher than -106dBm, this requirement may be relaxed by the amount $P_{int, allowed, actual}$ – (-106dBm).~~

6.6.2.2.2.2.2 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 an adjacent channel, the adjacent channel leakage power shall not exceed the limits specified in Table 6.8C. This requirement is only applicable if the equipment is intended to operate in frequency bands specified in 5.2 a) and the highest carrier frequency used is in the range 1916,2 – 1920 MHz.

Table 6.8C: Adjacent channel leakage power limits for operation in the same geographic area with FDD on adjacent channels

BS Class	Center Frequency for Measurement	Maximum Level	Measurement Bandwidth
Wide Area BS	1922,6 MHz	-36 dBm	3,84 MHz
Local Area BS	1922,6 MHz	-23 dBm	3,84 MHz

NOTE: The requirement in Table 6.8C for Wide Area BS is based on a relaxed coupling loss of 74 dB between the TDD and FDD base stations. The requirement in Table 6.8C for Local Area BS is based on a relaxed coupling loss of 87 dB between TDD and FDD base stations. The scenarios leading to these requirements are addressed in TR 25.942 [4].

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

6.6.2.2.3.1 3,84 Mcps TDD Option

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

In case the equipment is co-sited to ~~another~~ an unsynchronised TDD BS ~~or FDD BS~~ operating on the first or second adjacent frequency, the ~~requirement is specified in terms of the adjacent channel power level of the BS measured in the adjacent channel. 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 6.9.

Table 6.9: ~~BS ACLR~~ Adjacent channel leakage power limits in case of co-si~~t~~tting 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~~80~~ dBm	3.84 MHz
Wide Area BS	10 MHz	-73~~80~~ 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 6.9 for the Wide Area BS are based on a minimum coupling loss of 30 dB between unsynchronised TDD base stations. The requirements in Table 6.9 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 ~~or FDD BS~~.

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

In case the equipment is co-sited to a FDD BS operating on the first or second adjacent channel, the adjacent channel leakage power shall not exceed the limits specified in Table 6.9AA.

Table 6.9AA: Adjacent channel leakage power limits in case of co-siting with FDD on an adjacent channel

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 5 MHz	-80 dBm	3,84 MHz
Wide Area BS	± 10 MHz	-80 dBm	3,84 MHz

Note: The requirements in Table 6.9AA are based on a minimum coupling loss of 30 dB between base stations. The co-location of different base station classes is not considered. A co-location requirement for the Local Area TDD BS is intended to be part of a later release.

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 FDD BS.

6.6.2.2.3.2 1,28 Mcps TDD Option

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

In case the equipment is co-sited to ~~another~~ an unsynchronised TDD BS ~~or FDD BS and both BSs~~ operating on an adjacent frequency band, the requirement is specified in terms of adjacent channel leakage power ~~level of the transmitting BS~~. In geographic areas where only UTRA 1.28 Mcps TDD option is deployed, the adjacent channel leakage power shall not exceed the limits specified in Table 6.9A, otherwise the limits in Table 6.9B shall apply. ~~This requirement is valid for co-existence with a non-frame and non-switching point synchronised systems operating on closest used carrier. The interference power level shall not exceed the limit in Table 6.9A.~~

Table 6.9A: ~~BS ACLR~~ Adjacent channel leakage power limits in case of co-sitting with unsynchronised 1.28 Mcps TDD on an adjacent channel

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 1,6 MHz	-73 dBm	1,28 MHz
Wide Area BS	± 3,2 MHz	-73 dBm	1,28 MHz
Local Area BS	± 1,6 MHz	-34 dBm	1,28 MHz
Local Area BS	± 3,2 MHz	-34 dBm	1,28 MHz

Table 6.9B: Adjacent Channel leakage power limits for operation in the same geographic area with unsynchronised TDD on an adjacent channel

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 3,4 MHz	-73 dBm	3,84 MHz
Local Area BS	± 3,4 MHz	-31 dBm	3,84 MHz

Note: The requirements in Table 6.9A and 6.9B for the Wide Area BS are based on a minimum coupling loss of 30 dB between unsynchronised TDD base stations. The requirements in Table 6.9A and 6.9B 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.

~~Center Frequency for Measurement~~	~~Maximum Level of the interference power (in case of multiple antennas the interference powers shall be summed at all antenna connectors)~~	~~Measurement Bandwidth~~
~~Closest used carrier of the victim receiver: Either FDD carrier Or 3.84 Mcps TDD carrier Or 1.28 Mcps TDD carrier~~	~~-76 dBm~~	~~chip rate of the victim receiver: In case of FDD: 3.84 MHz In case of 3.84 Mcps TDD: 3.84 MHz In case of 1.28 Mcps TDD: 1.28 MHz~~

~~The closest used carrier with respect to the regarded carrier of one system is defined by:~~
~~a minimum difference in centre frequency between the regarded carrier and the carriers used in the other system and the chip rate of the other system.~~

~~If the actual MCL_{actual} is higher than 30dB, this requirement may be relaxed by the amount MCL_{actual} – 30dB.~~
~~If the actual allowed interference level $P_{int, allowed, actual}$ at the victim receiver is higher than –106dBm, this requirement may be relaxed by the amount $P_{int, allowed, actual}$ – (-106dBm).~~

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

In case the equipment is co-sited to a FDD BS operating on an adjacent channel, the adjacent channel leakage power shall not exceed the limits specified in Table 6.9C. This requirement is only applicable if the equipment is intended to operate in frequency bands specified in 5.2 a) and the highest carrier frequency used is in the range 1916,2 – 1920 MHz.

Table 6.9C: Adjacent channel leakage power in case of co-siting with UTRA FDD on an adjacent channel

BS Class	Center Frequency for Measurement	Maximum Level	Measurement Bandwidth
Wide Area BS	1922,6 MHz	-80 dBm	3,84 MHz

Note: The requirements in Table 6.9C are based on a minimum coupling loss of 30 dB between base stations. The co-location of different base station classes is not considered. A co-location requirement for the Local Area TDD BS is intended to be part of a later release.

6.6.3 Spurious emissions

Spurious emissions are emissions which are caused by unwanted transmitter effects such as harmonics emission, parasitic emission, intermodulation products and frequency conversion products, but exclude out of band emissions. This is measured at the base station RF output port.

The requirements shall apply whatever the type of transmitter considered (single carrier or multi carrier). It applies for all transmission modes foreseen by the manufacturer's.

For 3.84 Mcps TDD option, either requirement applies at frequencies within the specified frequency ranges which are more than 12.5 MHz under the first carrier frequency used or more than 12.5 MHz above the last carrier frequency used.

For 1.28 Mcps TDD option, either requirement applies at frequencies within the specified frequency ranges which are more than 4 MHz under the first carrier frequency used or more than 4 MHz above the last carrier frequency used.

Unless otherwise stated, all requirements are measured as mean power.

6.6.3.1 Mandatory Requirements

The requirements of either subclause 6.6.3.1.1 or subclause 6.6.3.1.2 shall apply.

6.6.3.1.1 Spurious emissions (Category A)

The following requirements shall be met in cases where Category A limits for spurious emissions, as defined in ITU-R Recommendation SM.329-8 [1], are applied.

6.6.3.1.1.1 Minimum Requirement

6.6.3.1.1.1.1 3,84 Mcps TDD Option

The power of any spurious emission shall not exceed:

Table 6.10: BS Mandatory spurious emissions limits, Category A

Band	Minimum requirement	Measurement Bandwidth	Note
9kHz – 150kHz	-13 dBm	1 kHz	Bandwidth as in ITU SM.329-8, s4.1
150kHz – 30MHz		10 kHz	Bandwidth as in ITU SM.329-8, s4.1
30MHz – 1GHz		100 kHz	Bandwidth as in ITU SM.329-8, s4.1
1GHz – 12.75 GHz		1 MHz	Upper frequency as in ITU SM.329-8, s2.5 table 1

6.6.3.1.1.1.2 1,28 Mcps TDD Option

The power of any spurious emission shall not exceed:

Table 6.10A: BS Mandatory spurious emissions limits, Category A

Band	Minimum requirement	Measurement Bandwidth	Note
9kHz – 150kHz	-13 dBm	1 kHz	Bandwidth as in ITU SM.329-8, s4.1
150kHz – 30MHz		10 kHz	Bandwidth as in ITU SM.329-8, s4.1
30MHz – 1GHz		100 kHz	Bandwidth as in ITU SM.329-8, s4.1
1GHz – 12.75 GHz		1 MHz	Upper frequency as in ITU SM.329-8, s2.5 table 1

NOTE: only the measurement bands are different according to the occupied bandwidth.

6.6.3.1.2 Spurious emissions (Category B)

The following requirements shall be met in cases where Category B limits for spurious emissions, as defined in ITU-R Recommendation SM.329-8 [1], are applied.

6.6.3.1.2.1 Minimum Requirement

6.6.3.1.2.1.1 3,84 Mcps TDD Option

The power of any spurious emission shall not exceed:

Table 6.11: BS Mandatory spurious emissions limits, Category B

Band	Maximum Level	Measurement Bandwidth	Note
9kHz – 150kHz	-36 dBm	1 kHz	Bandwidth as in ITU SM.329-8, s4.1
150kHz – 30MHz	- 36 dBm	10 kHz	Bandwidth as in ITU SM.329-8, s4.1
30MHz – 1GHz	-36 dBm	100 kHz	Bandwidth as in ITU SM.329-8, s4.1
1GHz ↔ Fc1-60 MHz or Fl -10 MHz *whichever is the higher*	-30 dBm	1 MHz	Bandwidth as in ITU SM.329-8, s4.1
Fc1 - 60 MHz or Fl -10 MHz *whichever is the higher* ↔ Fc1 - 50 MHz or Fl -10 MHz *whichever is the higher*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.3 and Annex 7
Fc1 - 50 MHz or Fl -10 MHz *whichever is the higher* ↔ Fc2 + 50 MHz or Fu +10 MHz *whichever is the lower*	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.3 and Annex 7
Fc2 + 50 MHz or Fu + 10 MHz *whichever is the lower* ↔ Fc2 + 60 MHz or Fu + 10 MHz *whichever is the lower*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.3 and Annex 7
Fc2 + 60 MHz or Fu + 10 MHz *whichever is the lower* ↔ 12,75 GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329-8, s4.3 and Annex 7. Upper frequency as in ITU-R SM.329-8, s2.5 table 1

Fc1: Center frequency of emission of the first carrier transmitted by the BS
Fc2: Center frequency of emission of the last carrier transmitted by the BS

Fl : Lower frequency of the band in which TDD operates
Fu : Upper frequency of the band in which TDD operates

6.6.3.1.2.1.2 1,28 Mcps TDD Option

The power of any spurious emission shall not exceed:

Table 6.11A: BS Mandatory spurious emissions limits, Category B

Band	Maximum Level	Measurement Bandwidth	Note
9kHz – 150kHz	-36 dBm	1 kHz	Bandwidth as in ITU SM.329-8, s4.1
150kHz – 30MHz	- 36 dBm	10 kHz	Bandwidth as in ITU SM.329-8, s4.1
30MHz – 1GHz	-36 dBm	100 kHz	Bandwidth as in ITU SM.329-8, s4.1
1GHz ↔ Fc1-19.2 MHz or Fl –3.2 MHz *whichever is the higher*	-30 dBm	1 MHz	Bandwidth as in ITU SM.329-8, s4.1
Fc1 – 19.2 MHz or Fl -3.2MHz *whichever is the higher* ↔ Fc1 - 16 MHz or Fl –3.2 MHz *whichever is the higher*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc1 - 16 MHz or Fl –3.2 MHz *whichever is the higher* ↔ Fc2 + 16 MHz or Fu +3.2 MHz *whichever is the lower*	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc2 + 16 MHz or Fu + 3.2MHz *whichever is the lower* ↔ Fc2 +19.2 MHz or Fu + 3.2MHz *whichever is the lower*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc2 + 19.2 MHz or Fu +3.2 MHz *whichever is the lower* ↔ 12,5 GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329-8, s4.1. Upper frequency as in ITU-R SM.329-8, s2.5 table 1

Fc1: Center frequency of emission of the first carrier transmitted by the BS
Fc2: Center frequency of emission of the last carrier transmitted by the BS
Fl : Lower frequency of the band in which TDD operates
Fu : Upper frequency of the band in which TDD operates

6.6.3.2 Co-existence with GSM 900

6.6.3.2.1 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.

6.6.3.2.1.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.12: BS Spurious emissions limits for BS in geographic coverage area of GSM 900 MS receiver

Band	Maximum Level	Measurement Bandwidth	Note
921 – 960MHz	-57 dBm	100 kHz	

6.6.3.2.2 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.

6.6.3.2.2.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.13: BS Spurious emissions limits for protection of the GSM 900 BTS receiver

Band	Maximum Level	Measurement Bandwidth	Note
876 – 915 MHz	–98 dBm	100 kHz	

6.6.3.3 Co-existence with DCS 1800

6.6.3.3.1 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.

6.6.3.3.1.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.14: BS Spurious emissions limits for BS in geographic coverage area of DCS 1800 MS receiver

Band	Maximum Level	Measurement Bandwidth	Note
1805 – 1880MHz	-47 dBm	100 kHz	

6.6.3.3.2 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.

6.6.3.3.2.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.15: BS Spurious emissions limits for BS co-located with DCS 1800 BTS

Band	Maximum Level	Measurement Bandwidth	Note
1710 – 1785 MHz	-98 dBm	100 kHz	

6.6.3.4 Co-existence with UTRA-FDD

6.6.3.4.1 Operation in the same geographic area

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

6.6.3.4.1.1 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 6.16. 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 6.16: 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~~32~~ dBm (*)	~~1~~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	

(*) 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 6.16 are based on a coupling loss of 67dB between the TDD and FDD base stations. The requirements for Local Area BS in Table 6.16 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].

6.6.3.4.2 Co-located base stations

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

6.6.3.4.2.1 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 6.17. 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 6.17: BS Spurious emissions limits for BS co-located with UTRA-FDD

BS Class	Band	Maximum Level	Measurement Bandwidth	Note
Wide Area BS	1920 – 1980 MHz	-80~~6~~ dBm (*)	~~1~~3,84 MHz	
Wide Area BS	2110 – 2170 MHz	-52 dBm	1 MHz	

(*) 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 in Table 6.17 are based on a minimum coupling loss of 30 dB between base stations. The co-location of different base station classes is not considered. A co-location requirement for the Local Area TDD BS is intended to be part of a later release.

3GPP TSG RAN WG4 Meeting #23 **R4-020831**

Gyeongju, Korea 13th -17th May, 2002

CR-Form-v4

CHANGE REQUEST

⌘ **25.105** **CR** **120** ⌘ ev **-** ⌘ Current version: **5.0.0** ⌘

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

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

Title:	⌘	TDD BS Classification
Source:	⌘	RAN WG4
Work item code:	⌘	RInImp-BSClass-TDD
Date:	⌘	17/5/2002
Category:	⌘	**B**
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)*

Reason for change:	⌘	Local Area BS class has been defined.
Summary of change:	⌘	Requirements are specified for Local Area BS for frequency stability, reference sensitivity, receiver dynamic range, ACS, blocking, intermodulation, and demodulation performance.
Consequences if not approved:	⌘	Deployment of UTRA-TDD in small cells would be compromised.

Clauses affected:	⌘	4.2, 6.3.1.1, 7.2.1.1, 7.3.1.1, 7.4.1.1, 7.5.0, 7.5.0.1, 7.5.1, 7.6.1.1, 8.2.1.1.1, 8.3.1.1.1, 8.3.2, 8.3.3,		
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications	⌘	25.142
Other comments:	⌘			

How to create CRs using this form:

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://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.

4.2 Base station classes

The requirements in this specification apply to both Wide Area Base Stations and Local Area Base Stations ~~base station intended for general purpose applications~~ in co-ordinated network operation, unless otherwise stated.

Wide Area Base Stations are charcterised by requirements based on BS to UE coupling losses equal to or higher than 53dB.

Local Area Base Stations are characterised by requirements based on BS to UE coupling losses less than 53dB.

~~In the future further classes of base stations may be defined; the requirements for these may be different than for general purpose applications.~~

--- next changed section ---

6.3 Frequency stability

Frequency stability is ability of the BS to transmit at the assigned carrier frequency. The BS shall use the same frequency source for both RF frequency generation and the chip clock.

6.3.1 Minimum Requirement

6.3.1.1 3,84 Mcps TDD Option

The modulated carrier frequency ~~of the BS shall be accurate to within ± 0.05 PPM~~ is observed over a period of one timeslot for RF frequency generation. The frequency error shall be within the accuracy range given in Table 6.x.

Table 6.x: Frequency error minimum requirement

BS class	accuracy
Wide Area BS	±0.05 ppm
Local Area BS	±0.1 ppm

6.3.1.2 1,28 Mcps TDD Option

The modulated carrier frequency of the BS shall be accurate to within ± 0.05 PPM observed over a period of one timeslot for RF frequency generation.

--- next changed section ---

7.2 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.

7.2.1 Minimum Requirement

7.2.1.1 3,84 Mcps TDD Option

For the measurement channel specified in Annex A, the reference sensitivity level and performance of the BS shall be as specified in table 7.1 below.

Table 7.1: 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	BER shall not exceed 0.001

7.2.1.2 1,28 Mcps TDD Option

For the measurement channel specified in Annex A, the reference sensitivity level and performance of the BS shall be as specified in table7.1A

Table7.1A: BS reference sensitivity levels

Data rate	BS reference sensitivity level (dBm)	FER/BER
12.2 kbps	-110 dBm	BER shall not exceed 0.001

7.3 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.

7.3.1 Minimum requirement

7.3.1.1 3,84 Mcps TDD Option

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

Table 7.2: 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

7.3.1.2 1,28 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in Table7.2A

Table 7.2A: Dynamic Range

Parameter	Level	Unit
Data rate	12.2	kbps
Wanted signal	<REFSENS> + 30 dB	dBm
Interfering AWGN signal	-76dBm	dBm/1.28 MHz

7.4 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).

7.4.1 Minimum Requirement

7.4.1.1 3,84 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in table 7.3.

Table 7.3: 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

7.4.1.2 1,28 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in table7.3A

Table 7.3A: Adjacent channel selectivity

Parameter	Level	Unit
Data rate	12.2	kbps
Wanted signal	Reference sensitivity level + 6dB	dBm
Interfering signal	–55	dBm
Fuw (Modulated)	1.6	MHz

7.5 Blocking characteristics

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

7.5.0 Minimum requirement

The static reference performance as specified in clause 7.2.1 shall be met with a wanted and an interfering signal coupled to BS antenna input using the ~~following~~ parameters as specified in table 7.4-1 for the Wide Area BS and as specified in table 7.4-2 for the Local Area BS.

7.5.0.1 3,84 Mcps TDD Option

Table 7.4-1 (a): Blocking requirements for Wide Area BS for operating bands defined in 5.2(a)

Centre 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 7.4-1 (b) : Blocking requirements for Wide Area BS for operating bands defined in 5.2(b)

Centre 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, 2010 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.4-1 (c) : Blocking requirements for Wide Area BS for operating bands defined in 5.2(c)

Centre 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

Table 7.4-2 (a): Blocking requirements for Local Area BS for operating bands defined in 5.2(a)

Centre Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
1900 – 1920 MHz, 2010 – 2025 MHz	-30 dBm	–89 dBm	10 MHz	WCDMA signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-30 dBm	–89 dBm	10 MHz	WCDMA signal with one code
1920 – 1980 MHz	-30 dBm	–89 dBm	10 MHz	WCDMA signal with one code
1 – 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz	-15 dBm	–89 dBm	—	CW carrier

Table 7.4-2 (b) : Blocking requirements for Local Area BS for operating bands defined in 5.2(b)

Centre Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
1850 – 1990 MHz	-30 dBm	–89 dBm	10 MHz	WCDMA signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-30 dBm	–89 dBm	10 MHz	WCDMA signal with one code
1 – 1830 MHz, 2010 – 12750 MHz	-15 dBm	–89 dBm	—	CW carrier

Table 7.4-2 (c) : Blocking requirements for Local BS for operating bands defined in 5.2(c)

Centre Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
1910 – 1930 MHz	-30 dBm	–89 dBm	10 MHz	WCDMA signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-30 dBm	–89 dBm	10 MHz	WCDMA signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	–89 dBm	—	CW carrier

7.5.0.2 1,28 Mcps TDD Option

Table 7.4A(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	-40 dBm	<REFSENS> + 6 dB	3.2MHz	Narrow band CDMA signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-40dBm	<REFSENS> + 6 dB	3.2MHz	Narrow band CDMA signal with one code
1920 – 1980 MHz	-40dBm	<REFSENS> + 6 dB	3.2MHz	Narrow band CDMA signal with one code
1 – 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz	-15dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.4A(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	-40dBm	<REFSENS> + 6 dB	3.2MHz	Narrow band CDMA signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-40 dBm	<REFSENS> + 6 dB	3.2MHz	Narrow band CDMA signal with one code
1 – 1830 MHz, 2010 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.4A(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	-40dBm	<REFSENS> + 6 dB	3.2MHz	Narrow band CDMA signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-40dBm	<REFSENS> + 6 dB	3.2 MHz	Narrow band CDMA signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

7.5.1 Co-location with GSM900 and/or DCS 1800

This additional blocking requirement may be applied for the protection of TDD BS receivers when GSM900 and/or DCS1800 BTS are co-located with Wide Area UTRA TDD BS.

The blocking performance requirement applies to interfering signals with center frequency within the ranges specified in the tables below, using a 1MHz step size.

In case this additional blocking requirement is applied, the static reference performance as specified in clause 7.2.1 shall be met with a wanted and an interfering signal coupled to BS antenna input using the following parameters.

7.5.1.1 3,84 Mcps TDD Option

Table 7.4 (d): Additional blocking requirements for operating bands defined in 5.2(a) when co-located with GSM900

Centre Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
921 – 960 MHz	+16 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.4 (e): Additional blocking requirements for operating bands defined in 5.2(a) when co-located with DCS1800

Center Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
1805 - 1880	+16 dBm	<REFSENS> + 6 dB	—	CW carrier

7.5.1.2 1,28 Mcps TDD Option

Table 7.4A (d): Additional blocking requirements for operating bands defined in 5.2(a) when co-located with GSM900

Centre Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
921 – 960 MHz	+16 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.4A (e): Additional blocking requirements for operating bands defined in 5.2(a) when co-located with DCS1800

Center Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
1805 -– 1880	+16 dBm	<REFSENS> + 6 dB	—	CW carrier

7.6 Intermodulation characteristics

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

7.6.1 Minimum requirement

The static reference performance as specified in clause 7.2.1 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.

7.6.1.1 3,84 Mcps TDD Option

Table 7.5 : Intermodulation requirement

Interfering Signal Level		Offset	Type of Interfering Signal
Wide Area BS	**Local Area BS**		
- 48 dBm	- 38 dBm	10 MHz	CW signal
- 48 dBm	- 38 dBm	20 MHz	WCDMA signal with one code

7.6.1.2 1,28 Mcps TDD Option

Table7.5A: Intermodulation requirement

Interfering Signal Level	Offset	Type of Interfering Signal
- 48 dBm	3.2 MHz	CW signal
- 48 dBm	6.4 MHz	1,28 Mcps TDD Option signal with one code

--- next changed section ---

8.2 Demodulation in static propagation conditions

8.2.1 Demodulation of DCH

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

8.2.1.1 Minimum requirement

8.2.1.1.1 3,84 Mcps TDD Option

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

Table 8.2: Parameters in static propagation conditions

Parameters		Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$			6	4	0	0
$\frac{DPCH_o \_ E_c}{I_{or}}$		dB	-9	-9.5	0	0
I_{oc}	Wide Area BS	dBm/3.84 MHz	-89			
	Local Area BS	dBm/3.84 MHz	-74			
Cell Parameter*			0,1			
DPCH Channelization Codes*		C(k,Q)	C(1,8)	C(1,4) C(5,16)	C(1,2) C(9,16)	C(1,2)
$DPCH_o$ Channelization Codes*		C(k,Q)	C(i,16) 3≤ i ≤8	C(i,16) 6≤ i ≤9	-	-
Information Data Rate		kbps	12.2	64	144	384
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.						

Table 8.3: Performance requirements in AWGN channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	-2.0	10^{-2}
2	-0.4	10^{-1}
	-0.1	10^{-2}
3	-0.2	10^{-1}
	0.1	10^{-2}
4	-0.8	10^{-1}
	-0.6	10^{-2}

8.2.1.1.2 1,28 Mcps TDD Option

For the parameters specified in Table8.2A the BLER should not exceed the piece-wise linear BLER curve specified in Table8.3A. These requirements are applicable for TFCS size 16.

Table 8.2A: Parameters in static propagation conditions

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$		4	1	1	0
Spread factor of $DPCH_o$		8	8	8	-
Scrambling code and basic midamble code number*		0	0	0	0
DPCH Channelization Codes*	C(k,Q)	C(1,8)	C(1,2)	C(1,2)	C(1,2) C(5,8)
$DPCH_o$ Channelization Codes*	C(k,Q)	C(i,8) 2≤ i ≤5	C(5,8)	C(5,8)	-
$\frac{DPCH_o \_ E_c}{I_{or}}$	dB	-7	-7	-7	0
I_{oc}	dBm/ 1.28MHz	-91			
Information Data Rate	Kbps	12.2	64	144	384
*Note: Refer to TS 25.223 for definition of channelization codes, scrambling code and basic midamble code.					

Table 8.3A: Performance requirements in AWGN channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	0.5	10^{-2}
2	-1.1	10^{-1}
	-0.7	10^{-2}
3	-0.5	10^{-1}
	-0.3	10^{-2}
4	0.1	10^{-1}
	0.4	10^{-2}

8.3 Demodulation of DCH in multipath fading conditions

8.3.1 Multipath fading Case 1

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

8.3.1.1 Minimum requirement

8.3.1.1.1 3,84 Mcps TDD Option

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

Table 8.4: Parameters in multipath Case 1 channel

Parameters		Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$			6	4	0	0
$\frac{DPCH_o\_E_c}{I_{or}}$		dB	-9	-9.5	0	0
I_{oc}	Wide Area BS	dBm/3.84 MHz	-89			
	Local Area BS	dBm/3.84 MHz	-74			
Cell Parameter*			0,1			
DPCH Channelization Codes*		C(k,Q)	C(1,8)	C(1,4) C(5,16)	C(1,2) C(9,16)	C(1,2)
$DPCH_o$ Channelization Codes*		C(k,Q)	C(i,16) 3≤ i ≤8	C(i,16) 6≤ i ≤9	-	-
Information Data Rate		kbps	12.2	64	144	384
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.						

Table 8.5: Performance requirements in multipath Case 1 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	6.5	10^{-2}
2	5.5	10^{-1}
	9.8	10^{-2}
3	5.5	10^{-1}
	9.8	10^{-2}
4	5.1	10^{-1}
	9.5	10^{-2}

8.3.1.1.2 1,28 Mcps TDD Option

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

Table 8.4A: Parameters in multipath Case 1 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$		4	1	1	0
Spread factor of $DPCH_o$		8	8	8	-
Scrambling code and basic midamble code number*		0	0	0	0
DPCH Channelization Codes*	C(k,Q)	C(1,8)	C(1,2)	C(1,2)	C(1,2) C(5,8)
$DPCH_o$ Channelization Codes*	C(k,Q)	C(i,8) 2≤ i ≤5	C(5,8)	C(5,8)	-
$\frac{DPCH_o\_E_c}{I_{or}}$	dB	-7	-7	-7	0
I_{oc}	dBm/1.28 MHz	-91			
Information Data Rate	Kbps	12.2	64	144	384
*Note: Refer to TS 25.223 for definition of channelization codes, scrambling code and basic midamble code.					

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

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	10.7	10^{-2}
2	5.3	10^{-1}
	9.6	10^{-2}
3	5.7	10^{-1}
	10.3	10^{-2}
4	6.0	10^{-1}
	10.3	10^{-2}

8.3.2 Multipath fading Case 2

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

This requirement shall not be applied to the Local Area BS.

8.3.2.1 Minimum requirement

8.3.2.1.1 3,84 Mcps TDD Option

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

Table 8.6: Parameters in multipath Case 2 channel

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

Table 8.7: Performance requirements in multipath Case 2 channel.

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

8.3.2.1.2 1,28 Mcps TDD Option

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

Table 8.6A: Parameters in multipath Case 2 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$		4	1	1	0
Spread factor of $DPCH_o$		8	8	8	-
Scrambling code and basic midamble code number*		0	0	0	0
DPCH Channelization Codes*	C(k,Q)	C(1,8)	C(1,2)	C(1,2)	C(1,2) C(5,8)
$DPCH_o$ Channelization Codes*	C(k,Q)	C(i,8) 2≤ i ≤5	C(5,8)	C(5,8)	-
$\frac{DPCH_o \_ E_c}{I_{or}}$	dB	-7	-7	-7	0
I_{oc}	dBm/1.28 MHz	-91			
Information Data Rate	Kbps	12.2	64	144	384
*Note: Refer to TS 25.223 for definition of channelization codes, scrambling code and basic midamble code.					

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

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	6.7	10^{-2}
2	3.5	10^{-1}
	5.9	10^{-2}
3	4.0	10^{-1}
	6.4	10^{-2}
4	4.4	10^{-1}
	6.3	10^{-2}

8.3.3 Multipath fading Case 3

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

This requirement shall not be applied to the Local Area BS.

8.3.3.1 Minimum requirement

8.3.3.1.1 3,84 Mcps TDD Option

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

Table 8.8: Parameters in multipath Case 3 channel

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

Table 8.9: Performance requirements in multipath Case 3 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	-0.1	10^{-2}
2	0.8	10^{-1}
	2.7	10^{-2}
	4.2	10^{-3}
3	4.5	10^{-1}
	6.3	10^{-2}
	8.0	10^{-3}
4	3.6	10^{-1}
	5.0	10^{-2}
	6.3	10^{-3}

8.3.3.1.2 1,28 Mcps TDD Option

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

Table 8.8A: Parameters in multipath Case 3 channel

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$		4	1	1	0
Spread factor of $DPCH_o$		8	8	8	-
Scrambling code and basic midamble code number*		0	0	0	0
DPCH Channelization Codes*	C(k,Q)	C(1,8)	C(1,2)	C(1,2)	C(1,2) C(5,8)
$DPCH_o$ Channelization Codes*	C(k,Q)	C(i,8) 2≤ i ≤5	C(5,8)	C(5,8)	-
$\frac{DPCH_o\_E_c}{I_{or}}$	dB	-7	-7	-7	0
I_{oc}	dBm/1.28 MHz	-91			
Information Data Rate	Kbps	12.2	64	144	384
*Note: Refer to TS 25.223 for definition of channelization codes, scrambling code and basic midamble code.					

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

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	5.9	10^{-2}
2	3.2	10^{-1}
	4.8	10^{-2}
	6.1	10^{-3}
3	3.7	10^{-1}
	5.0	10^{-2}
	6.1	10^{-3}
4	4.1	10^{-1}
	5.1	10^{-2}
	5.9	10^{-3}

3GPP TSG RAN WG4 Meeting #23 **R4-020832**

Gyeongju, Korea 13th -17th May, 2002

CR-Form-v5.1

CHANGE REQUEST

⌘ **25.123** **CR** **220** ⌘ **rev** **-** ⌘ Current version: **5.0.0** ⌘

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

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

Title:	⌘	3.84 Mcps TDD BS classification changes
Source:	⌘	RAN WG4
Work item code:	⌘	RInImp-BSClass-TDD
Date:	⌘	17/5/2002
Category:	⌘	**B**
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)

Reason for change:	⌘	During the WI "TDD Base station classification" for Release 5 Local area BS class with a different sensitivity level has been defined for 3.84Mcps TDD option. The parameters for classification are introduced in TS25.123.
Summary of change:	⌘	Test conditions for a new base station class for 3.84Mcps Option are added.
Consequences if not approved:	⌘	No distinction between different base station classes for Io ranges of UTRAN measurements.

Clauses affected:	⌘	9.2.1.1.1, 9.2.1.1.2, 9.2.1.2.1, 9.2.1.3.1		
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications	⌘	25.142
Other comments:	⌘			

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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.

9.2 Measurements Performance for UTRAN

9.2.1 Performance for UTRAN Measurements in Uplink (RX)

9.2.1.1 RSCP

The measurement period shall be 100 ms.

9.2.1.1.1 Absolute accuracy requirements

9.2.1.1.1.1 3.84 Mcps TDD Option

Table 9.30 RSCP absolute accuracy for Wide Area BS

		Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/3.84MHz]
RSCP	dB	± 6	± 9	-105..-74

Table 9.30A RSCP absolute accuracy for Local Area BS

		Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/3.84MHz]
RSCP	dB	± 6	± 9	-91..-60

9.2.1.1.1.2 1.28 Mcps TDD Option

9.2.1.1.2 Relative accuracy requirements

The relative accuracy of RSCP in inter frequency case is defined as the RSCP measured from one UE compared to the RSCP measured from another UE.

9.2.1.1.2.1 3.84 Mcps TDD Option

Table 9.31 RSCP relative accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm/3.84MHz]
RSCP	dB	± 3 for intra-frequency	-105..-74

Table 9.31A RSCP relative accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm/3.84MHz]
RSCP	dB	± 3 for intra-frequency	-91..-60

9.2.1.1.2.2 1.28 Mcps TDD Option

9.2.1.1.3 Range/mapping

The reporting range for *RSCP* is from -120 ...-57 dBm.

In table 9.32 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.32

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 _125	-58,0 ≤ RSCP < -57,5	dBm
RSCP_LEV _126	-57,5 ≤ RSCP < -57,0	dBm
RSCP_LEV _127	-57,0 ≤ RSCP	dBm

9.2.1.2 Timeslot ISCP

The measurement period shall be 100 ms.

9.2.1.2.1 Absolute accuracy requirements

9.2.1.2.1.1 3.84 Mcps TDD Option

Table 9.33: Timeslot ISCP Intra frequency absolute accuracy for Wide Area BS

		Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/3.84MHz]
Timeslot ISCP	dB	± 6	± 9	-105..-74

Table 9.33A: Timeslot ISCP Intra frequency absolute accuracy for Local Area BS

		Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/3.84MHz]
Timeslot ISCP	dB	± 6	± 9	-91..-60

9.2.1.2.1.2 1.28 Mcps TDD Option

9.2.1.2.2 Range/mapping

The reporting range for *Timeslot ISCP* is from -120...-57 dBm.

In table 9.34 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.34

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_125	-58,0 ≤ Timeslot_ISCP < -57,5	dBm
UTRAN_TS_ISCP_LEV_126	-57,5 ≤ Timeslot_ISCP < -57,0	dBm
UTRAN_TS_ISCP_LEV_127	-57,0 ≤ Timeslot_ISCP	dBm

9.2.1.3 Received Total Wide Band Power

The measurement period shall be 100 ms.

9.2.1.3.1 Absolute accuracy requirements

9.2.1.3.1.1 3.84 Mcps TDD Option

Table 9.35: RECEIVED TOTAL WIDE BAND POWER Intra frequency absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm/3.84MHz]
RECEIVED TOTAL WIDE BAND POWER	dBm/3.84 MHz	± 4	-105..-74

Table 9.35A: RECEIVED TOTAL WIDE BAND POWER Intra frequency absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm/3.84MHz]
RECEIVED TOTAL WIDE BAND POWER	dBm/3.84 MHz	± 4	-91..-60

9.2.1.3.1.2 1.28 Mcps TDD Option

9.2.1.3.2 Range/mapping

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

In table 9.36 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.36

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

3GPP TSG RAN WG4 Meeting #23 **R4-020714**

Gyeongju, Korea 13th -17th May, 2002

CR-Form-v5.1

CHANGE REQUEST

⌘ **25.142** **CR** **124** ⌘ **rev** **-** ⌘ Current version: **5.0.0** ⌘

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

Title:	⌘	Introduction of BS classification for 3,84 Mcps TDD option (excluding ACLR and spurious emission requirements)
Source:	⌘	RAN WG4
Work item code:	⌘	RInImp-BSClass-TDD
Date:	⌘	17/5/2002
Category:	⌘	**B**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
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D *(editorial modification)*
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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)

Reason for change:	⌘	Completion of the Work Item "TDD Base Station classification" and introduction of specific requirements for the Local Area BS in the relevant core specification TS 25.105.
Summary of change:	⌘	Introduction of conformance test specifications with specific requirements for the Local Area BS with respect to the parameters frequency stability, reference sensitivity level, receiver dynamic range, ACS, blocking characteristics, intermodulation characteristics and performance requirements.
Consequences if not approved:	⌘	Misalignment between TS 25.142 and the relevant core specification TS 25.105, because conformance testing for the new Local Area BS class would not be covered by TS 25.142.

Clauses affected:	⌘	5.1.1 (new); 5.1.2 (new); various subclauses in 6, 7and 8
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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

5 General test conditions and declarations

The requirements of this clause apply to all applicable tests in this TS.

Many of the tests in this TS measure a parameter relative to a value that is not fully specified in the UTRA specifications. For these tests, the Minimum Requirement is determined relative to a nominal value specified by the manufacturer.

Certain functions of a BS are optional in the UTRA specifications. Some requirements for the BS may be regional as listed in subclause 5.17.

When specified in a test, the manufacturer shall declare the nominal value of a parameter, or whether an option is supported.

5.1 Base station classes

5.1.1 Applicability of requirements and BS class definition

The requirements in this specification apply to both Wide Area base stations and Local Area base stations~~intended for general purpose applications~~ in co-ordinated network operation, unless otherwise stated.

Wide Area BS are characterised by requirements based on BS to UE coupling losses equal to or higher than 53 dB.

Local Area BS are characterised by requirements based on BS to UE coupling losses less than 53 dB.

~~In future, further classes of base stations may be defined; the requirements for these may be different than for general purpose applications.~~

5.1.2 Manufacturer's declaration

The manufacturer shall declare the intended class of the BS under test.

6 Transmitter characteristics

6.1 General

Unless otherwise stated, all measurements shall be made at the BS antenna connector.

6.2 Maximum output power

6.2.1 Definition and applicability

Maximum output power (Pmax) and rated output power (PRAT) are defined in subclause 3.1.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

6.3 Frequency stability

6.3.1 Definition and applicability

Frequency stability is the ability of the BS to transmit at the assigned carrier frequency.

~~The requirements i~~In this subclause, different requirements shall apply to Wide Area BS and Local Area BS.~~base stations intended for general purpose applications~~.

6.3.2 Minimum Requirements

The modulated carrier frequency of the BS is observed over a period of one timeslot. The frequency error shall be within the accuracy range given in Table 6.1B.~~The BS frequency stability shall be within ± 0,05 ppm observed over a period of one timeslot.~~

Table 6.1B: Frequency error Minimum Requirements

BS class	Accuracy
Wide Area BS	±0,05 ppm
Local Area BS	±0,1 ppm

The normative reference for this requirement is TS 25.105 [1] subclause 6.3.1.1 for the 3,84 Mcps TDD option and subclause 6.3.1.2 for the 1,28 Mcps TDD option.

TS 25.105 subclause 6.3 specifies the additional requirement that the BS shall use the same frequency source for both RF generation and the chip clock. Compliance with this requirement is demonstrated by manufacturer's declaration; see subclause 5.4; a dedicated conformance test for this requirement is not defined.

6.3.3 Test purpose

The test purpose is to verify the accuracy of the carrier frequency across the frequency range and under normal and extreme conditions.

6.3.4 Method of test

6.3.4.1 Initial conditions

6.3.4.1.0 General test conditions

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: B, M and T; see subclause 5.3.

The following additional test shall be performed:

On each of B, M and T, the test shall be performed under extreme power supply as defined in subclause 5.9.4.

NOTE: Tests under extreme power supply also test extreme temperature.

6.3.4.1.1 3,84 Mcps TDD option

(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 tester to the BS antenna connector.

(4) Set the parameters of the transmitted signal according to table 6.2.

Table 6.2: Parameters of the transmitted signal for frequency stability 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
BS output power setting	PRAT
Data content of DPCH	real life (sufficient irregular)

6.3.4.1.2 1,28 Mcps TDD option

(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 tester to the BS antenna connector.

(4) Set the parameters of the transmitted signal according to table 6.2A.

Table 6.2A: Parameters of the transmitted signal for Frequency stability test for 1,28 Mcps TDD

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 6: transmit, if i is 0, 4,5,6; receive, if i is 1,2,3.
Number of DPCH in each active TS	1
BS output power setting	PRAT
Data content of DPCH	real life (sufficient irregular)

6.3.4.2 Procedure

(1) Measure the frequency error delta f across one burst (time slot), by applying the global in-channel Tx test method described in Annex C.

(2) Repeat step (1) for 200 bursts (time slots).

(3) Run steps (1) and (2) for RF channels Low / Mid / High.

6.3.5 Test Requirements

NOTE: If the Test Requirement below 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 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

For all measured bursts (time slots), the frequency error, derived according to subclause 6.3.4.2, shall be within the accuracy range given in table 6.2B~~not exceed ± (0,05 ppm +12 Hz)~~.

Table 6.2B: Frequency error Test Requirements

BS class	Accuracy
Wide Area BS	± (0,05 ppm + 12 Hz)
Local Area BS	± (0,1 ppm + 12 Hz)

6.4 Output power dynamics

6.4.1 Inner loop power control

Inner loop power control is the ability of the BS transmitter to adjust its output power in response to the UL received signal.

For inner loop correction on the Downlink Channel, the base station adjusts the mean output power level of a CCTrCH in response to each valid power control bit received from the UE on the Uplink Traffic Channel based on the mapping of the TPC bits in uplink CCTrCH to downlink CCTrCH. Inner loop control is based on SIR measurements at the UE receiver, and the corresponding TPC commands are generated by the UE.

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 both Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

6.4.3 Power control dynamic range

6.4.3.1 Definition and applicability

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

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

6.4.4 Minimum output power

6.4.4.1 Definition and applicability

The minimum controlled output power of the BS is when the power is set to a minimum value.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

6.4.5 Primary CCPCH power

6.4.5.1 Definition and applicability

Primary CCPCH power is the transmission power of the Primary Common Control Physical Channel averaged over the transmit timeslot. Primary CCPCH power is signaled on the BCH.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

6.4.6 Differential accuracy of Primary CCPCH power

6.4.6.1 Definition and applicability

The differential accuracy of the Primary CCPCH power is the relative transmitted power accuracy of PCCPCH in consecutive frames when the nominal PCCPCH power is not changed.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

6.5 Transmit ON/OFF power

6.5.1 Transmit OFF power

6.5.1.1 Definition and applicability

The transmit OFF power is defined as the average power measured over one chip when the transmitter is off. The transmit OFF power state is when the BS does not transmit.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

6.5.2 Transmit ON/OFF time mask

6.5.2.1 Definition and applicability

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

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

6.6 Output RF spectrum emissions

6.6.1 Occupied bandwidth

6.6.1.1 Definition and applicability

Occupied bandwidth is a measure of the bandwidth containing 99% of the total integrated power for transmitted spectrum and is centered on the assigned channel frequency.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

6.6.2 Out of band emission

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

6.6.2.1 Spectrum emission mask

6.6.2.1.1 Definition and applicability

6.6.2.1.1.1 3,84 Mcps TDD option

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 6.6.2.1.2.1 below may be mandatory in certain regions. In other regions this mask may not be applied.

For regions in which the mask is mandatory, the requirements shall apply to both Wide Area BS and Local Area BS.

6.7 Transmit intermodulation

6.7.1 Definition and applicability

The transmit intermodulation performance is a measure of the capability of the transmitter to inhibit the generation of signals in its non linear elements caused by presence of the wanted signal and an interfering signal reaching the transmitter via the antenna.

The transmit intermodulation level is the power of the intermodulation products when a WCDMA modulated interference signal is injected into the antenna connector at a level of 30 dB lower than that of the subject signal.

The requirements are applicable for a single carrier.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.

6.7.1.1 3,84 Mcps TDD option

The carrier frequency of the interference signal shall be ±5 MHz, ±10 MHz and ±15 MHz offset from the subject signal carrier frequency, but excluding interference carrier frequencies outside of the UTRA frequency bands specified in 4.2a, 4.2b or 4.2c, respectively.

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

6.8 Transmit Modulation

6.8.1 Modulation accuracy

6.8.1.1 Definition and applicability

The Error Vector Magnitude is a measure of the difference between the reference waveform and the measured waveform. This difference is called the error vector. Both waveforms pass through a matched Root Raised Cosine filter with bandwidth corresponding to the considered chip rate and roll-off α =0,22. Both waveforms are then further modified by selecting the frequency, absolute phase, absolute amplitude and chip clock timing so as to minimise the error vector. The EVM result is defined as the square root of the ratio of the mean error vector power to the mean reference power expressed as a %. The measurement interval is one timeslot. The requirement is valid over the total power dynamic range as specified in 25.105 subclause 6.4.3. See Annex C of this specification for further details.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

6.8.2 Peak code domain error

6.8.2.1 Definition and applicability

The code domain error is computed by projecting the error vector power onto the code domain at a specific spreading factor. The error power for each code is defined as the ratio to the mean power of the reference waveform expressed in dB. And the Peak Code Domain Error is defined as the maximum value for Code Domain Error. The measurement interval is one timeslot.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

7 Receiver characteristics

7.1 General

All tests unless otherwise stated in this subclause shall be conducted on Base Station Systems fitted with a full complement of Transceivers for the configuration. The manufacturer shall provide appropriate logical or physical test access to perform all tests in this subclause. Measurements shall include any RX multicoupler.

The tests in clause 7 assume that the receiver is not equipped with diversity. For receivers with diversity, the tests may be performed by applying the specified signals to one of the receiver inputs, and terminating or disabling the other(s). The tests and requirements are otherwise unchanged.

For receivers with diversity, testing of conformance shall be performed by applying the specified signals to one of the receiver inputs, and terminating or disabling the other(s).

In all the relevant subclauses in this clause all Bit Error Ratio (BER), Residual BER (RBER) and Frame Erasure Ratio (FER) measurements shall be carried out according to the general rules for statistical testing.

Unless detailed the receiver characteristic are specified at each antenna connector of the BS.

7.2 Reference sensitivity level

7.2.1 Definition and applicability

The reference sensitivity is the minimum receiver input power measured at the antenna connector at which the BER does not exceed the specific value.

~~The requirements i~~In this subclause, different requirements shall apply to Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

7.2.2 Minimum Requirements

7.2.2.1 3,84 Mcps TDD option

For the measurement channel specified in Annex A.2.1, the reference sensitivity level and performance of the BS shall be as specified in table 7.1 below.

Table 7.1: Minimum Requirements for BS reference sensitivity level

BS class	Data rate	BS reference sensitivity level (dBm)	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

The normative reference for this requirement is TS 25.105 [1] subclause 7.2.1.1.

7.2.2.2 1,28 Mcps option

For the measurement channel specified in Annex A.2.1.2, the reference sensitivity level and performance of the BS shall be as specified in table 7.1A below.

Table 7.1A: BS reference sensitivity levels (1,28 Mcps option)

Data rate	BS reference sensitivity level (dBm)	BER
12,2 kbps	-110 dBm	BER shall not exceed 0,001

The normative reference for this requirement is TS 25.105 [1] subclause 7.2.1.2.

7.2.3 Test purpose

The test purpose is to verify the ability of the BS to receive a prescribed single-code test signal of minimum input power under defined conditions (no interference, no multipath propagation) with a BER not exceeding a specified limit. This test is also used as a reference case for other tests to allow the assessment of degradations due to various sources of interference.

7.2.4 Method of test

7.2.4.1 Initial conditions

7.2.4.1.0 General test requirements

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: B, M and T; see subclause 5.3.

The following additional test shall be performed:

On each of B, M and T, the test shall be performed under extreme power supply as defined in subclause 5.9.4.

NOTE: Tests under extreme power supply also test extreme temperature.

7.2.4.1.1 3,84 Mcps TDD option

(1) Connect the BS tester (UE simulator) to the antenna connector of one BS Rx port.

(2) Terminate or disable any other BS Rx port not under test.

(3) Start transmission from the BS tester to the BS using the UL reference measurement channel (12.2 kbps) defined in Annex A.2.1.

(4) The level of the BS tester output signal measured at the BS antenna connector shall be adjusted to the Test Requirement for the BS reference sensitivity level specified in table 7.2.

7.2.4.1.2 1,28 Mcps TDD option

(1) Connect the BS tester (UE simulator) to the antenna connector of one BS Rx port.

(2) Terminate or disable any other BS Rx port not under test.

(3) Start transmission from the BS tester to the BS using the UL reference measurement channel (12.2 kbps) defined in Annex A.2.1.

(4) The level of BS tester output signal measured at the BS antenna connector shall be adjusted to –110 dBm.

7.2.4.2 Procedure

(1) Measure the BER by comparing the bit sequence of the information data transmitted by the BS tester with the bit sequence obtained from the BS receiver.

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

7.2.5 Test Requirements

NOTE: If the Test Requirements below differ from the Minimum Requirements, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

7.2.5.1 3,84 Mcps TDD option

For any BS Rx port tested, the measured BER at the Test Requirement of the BS reference sensitivity level specified in table 7.2 shall not exceed 0,001.

Table 7.2: Test Requirement for BS reference sensitivity level

BS class	Data rate	BS reference sensitivity level (dBm)	BER
Wide Area BS	12,2 kbps	-108,3 dBm	BER shall not exceed 0,001
Local Area BS	12,2 kbps	-94,3 dBm	BER shall not exceed 0,001

7.2.5.2 1,28 Mcps TDD option

For any BS Rx port tested, the measured BER at the Test Requirement of the BS reference sensitivity level specified in table 7.2A shall not exceed 0,001.

Table 7.2A: Test Requirement for BS reference sensitivity level for 1,28 Mcps option

Data rate	BS reference sensitivity level (dBm)	BER
12,2 kbps	-109,3 dBm	BER shall not exceed 0,001

7.3 Dynamic range

7.3.1 Definition and applicability

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.

~~The requirements i~~In this subclause, different requirements shall apply to Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

7.3.2 Minimum Requirements

7.3.2.1 3,84 Mcps TDD option

The BER shall not exceed 0,001 for the parameters specified in table 7.3.

Table 7.3: Minimum Requirements for Dynamic Range

Parameter		Level	Unit
Data rate		12,2	kbit/s
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

The normative reference for this requirement is TS 25.105 [1] subclause 7.3.1.1.

7.3.2.2 1,28 Mcps TDD option

The BER shall not exceed 0,001 for the parameters specified in table 7.3A.

Table 7.3A: Dynamic Range for 1,28 Mcps TDD

Parameter	Level	Unit
Data rate	12,2	kbit/s
Wanted signal	<REFSENS> + 30 dB	dBm
Interfering AWGN signal	-76	dBm/1,28 MHz

The normative reference for this requirement is TS 25.105 [1] subclause 7.3.1.2.

7.3.3 Test purpose

The test purpose is to verify the ability of the BS to receive a prescribed single-code test signal of maximum input power under defined conditions (specified interference, no multipath) with a BER not exceeding a specified limit.

7.3.4 Method of test

7.3.4.1 Initial conditions

7.3.4.1.0 General test conditions

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: B, M and T; see subclause 5.3.

7.3.4.1.1 3,84 Mcps TDD option

(1)Connect the BS tester (UE simulator), generating the wanted signal, and a band-limited white noise source, generating the interfering AWGN signal, to the antenna connector of one BS Rx port.

(2) Terminate or disable any other BS Rx port not under test.

(3) Start transmission from the BS tester to the BS using the UL reference measurement channel (12,2 kbps) defined in Annex A.2.1.

(4) The level of the BS tester output signal measured at the BS antenna connector shall be adjusted as specified in table 7.4.

(5) The power spectral density of the band-limited white noise source measured at the BS antenna connector shall be adjusted as specified in table 7.4. The characteristics of the white noise source shall comply with the AWGN interferer definition in subclause 5.18

7.3.4.1.2 1,28 Mcps TDD option

(1) Connect the BS tester (UE simulator), generating the wanted signal, and a band-limited white noise source, generating the interfering AWGN signal, to the antenna connector of one BS Rx port.

(2) Terminate or disable any other BS Rx port not under test.

(3) Start transmission from the BS tester to the BS using the UL reference measurement channel (12.2 kbps) defined in Annex A.2.1.

(4) The level of the BS tester output signal measured at the BS antenna connector shall be adjusted as specified in table 7.3A.

(5) The power spectral density of the band-limited white noise source measured at the BS antenna connector shall be adjusted as specified in table 7.3A. The characteristics of the white noise source shall compy with the AWGN interferer definition in subclause 5.18.

7.3.4.2 Procedure

(1) Measure the BER by comparing the bit sequence of the information data transmitted by the BS tester with the bit sequence obtained from the BS receiver.

(2) Interchange the connections of the BS Rx ports and repeat the measurement according to (1)

7.3.5 Test Requirements

NOTE: If the Test Requirement below 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 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

7.3.5.1 3,84 Mcps TDD option

For any BS Rx port tested, the measured BER shall not exceed 0,001 for the parameters specified in table 7.4.

Table 7.4: Test Requirements for Dynamic Range

Parameter		Level	Unit
Data rate		12,2	kbit/s
Wanted signal		<REFSENS> + 31,2 dB	dBm
Interfering AWGN signal	Wide Area BS	-73	dBm/3,84 MHz
	Local Area BS	-59	dBm/3,84 MHz

7.3.5.2 1,28 Mcps TDD option

For any BS Rx port tested, the measured BER shall not exceed 0,001 for the parameters specified in table 7.4A.

Table 7.4A: Test Requirements for Dynamic Range for 1,28 Mcps TDD option

Parameter	Level	Unit
Data rate	12,2	kbit/s
Wanted signal	<REFSENS> + 31,2 dB	dBm
Interfering AWGN signal	-76	dBm/1,28 MHz

7.4 Adjacent Channel Selectivity (ACS)

7.4.1 Definition and applicability

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.

~~The requirements i~~In this subclause, different requirements shall apply to Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

7.4.2 Minimum Requirements

7.4.2.1 3,84 Mcps TDD option

The BER, measured on the wanted signal in the presence of an interfering signal, shall not exceed 0,001 for the parameters specified in table 7.5.

Table 7.5: Parameters of the wanted signal and the interfering signal for ACS testing

Parameter		Level	Unit
Data rate		12,2	kbit/s
Wanted signal		Reference sensitivity level + 6 dB	dBm
Interfering signal	Wide Area BS	-52	dBm
	Local Area BS	-38	dBm
Fuw (modulated)		5	MHz
NOTE: Fuw is the frequency offset of the unwanted interfering signal from the assigned channel frequency of the wanted signal.			

The normative reference for this requirement is TS 25.105 [1] subclause 7.4.1.1.

7.5 Blocking characteristics

7.5.1 Definition and applicability

7.5.1.1 3,84 Mcps TDD option

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 requirements apply~~ies~~ to interfering signals with center frequency within the ranges specified in tables 7.6-1, 7.7-1, 7.8-1, 7.6-2, 7.7-2, 7.8-2, 7.9 and 7.10 respectively, using a 1 MHz step size.

In this subclause, different requirements shall apply to Wide Area BS and Local Area BS. The requirements in tables 7.6-1, 7.7-1 or 7.8-1 apply to Wide Area BS, and the requirements in tables 7.6-2, 7.7-2 or 7.8-2 apply to Local Area BS~~base stations intended for general-purpose applications~~, depending on which frequency band is used. The additional requirements in Tables 7.9 and 7.10 may be applied for the protection of TDD BS receivers when GSM900 and/or DCS1800 BTS are co-located with UTRA TDD Wide Area BS.

7.5.1.2 1,28 Mcps TDD option

The blocking characteristics is a measure of the receiver ability to receive a wanted signal at its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the adjacent channels. The blocking performance requirement applies to interfering signals with center frequency within the ranges specified in tables 7.6A, 7.7A, 7.8A, 7.9A and 7.10A respectively, using a 1 MHz step size.

The requirements in Table 7.6A, 7.7A or 7.8A apply to base stations intended for general-purpose applications, depending on which frequency band is used. The additional requirements in Tables 7.9A and 7.10A may be applied for the protection of TDD BS receivers when GSM900 and/or DCS1800 BTS are co-located with UTRA TDD BS.

7.5.2 Minimum Requirements

7.5.2.1 3,84 Mcps TDD option

7.5.2.1.1 General requirements

The static reference performance as specified in clause 7.2 shall be met with a wanted and an interfering signal coupled to the BS antenna input using the parameters specified in tables 7.6-1, 7.7-1, 7.8-1, 7.6-2, 7.7-2 ~~and~~ or 7.8-2, respectively.

Table 7.6-1: Blocking requirements for Wide Area BS in 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 7.7-1: Blocking requirements for Wide Area BS in 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, 2010 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.8-1: Blocking requirements for Wide Area BS in 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

Table 7.6-2: Blocking requirements for Local Area BS in 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	-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 7.7-2: Blocking requirements for Local Area BS in 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	-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 7.8-2: Blocking requirements for Local Area BS in 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	-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

The normative reference for this requirement is TS 25.105 [1] subclause 7.5.0.1.

7.5.2.1.2 Co-location with GSM900 and/or DCS 1800

This additional blocking requirement may be applied for the protection of TDD BS receivers when GSM900 and/or DCS1800 BTS are co-located with UTRA TDD Wide Area BS.

The blocking performance requirement applies to interfering signals with center frequency within the ranges specified in the tables below, using a 1MHz step size.

In case this additional blocking requirement is applied, the static reference performance as specified in subclause 7.2.1 shall be met with a wanted and an interfering signal coupled to BS antenna input using the following parameters.

Table 7.9: Additional blocking requirements for Wide Area BS in operating bands defined in subclause 4.2 a) when co-located with GSM900

Center Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
921 – 960 MHz	+16 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.10: Additional blocking requirements for Wide Area BS in operating bands defined in subclause 4.2 a) when co-located with DCS1800

Center Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
1805 - 1880	+16 dBm	<REFSENS> + 6 dB	—	CW carrier

The normative reference for this requirement is TS 25.105 [1] subclause 7.5.1.1.

7.5.2.2 1,28 Mcps TDD option

7.5.2.2.1 General requirements

The static reference performance as specified in clause 7.2 shall be met with a wanted and an interfering signal coupled to the BS antenna input using the parameters specified in tables 7.6A,7.7A or 7.8A, respectively.

Table 7.6A: Blocking requirements for operating bands defined in subclause 4.2 a) for 1,28 Mcps TDD

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	3.2 MHz	1,28 Mcps TDD signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-40 dBm	<REFSENS> + 6 dB	3.2 MHz	1,28 Mcps TDD signal with one code
1920 – 1980 MHz	-40 dBm	<REFSENS> + 6 dB	3.2 MHz	1,28 Mcps TDD signal with one code
1 - 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.7A: Blocking requirements for operating bands defined in subclause 4.2 b)for 1,28 Mcps TDD

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	3.2 MHz	1,28 Mcps TDD signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-40 dBm	<REFSENS> + 6 dB	3.2 MHz	1,28 Mcps TDD signal with one code
1 – 1830 MHz, 2010 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.8A: Blocking requirements for operating bands defined in subclause 4.2 c)for 1,28 Mcps TDD

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	3.2 MHz	1,28 Mcps TDD signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-40 dBm	<REFSENS> + 6 dB	3.2 MHz	1,28 Mcps TDD signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	<REFSENS> + 6 dB	—	CW carrier

The normative reference for this requirement is TS 25.105 [1] subclause 7.5.0.2.

7.5.2.2.2 Co-location with GSM900 and/or DCS 1800

This additional blocking requirement may be applied for the protection of TDD BS receivers when GSM900 and/or DCS1800 BTS are co-located with UTRA TDD BS.

The blocking performance requirement applies to interfering signals with center frequency within the ranges specified in the tables below, using a 1MHz step size.

In case this additional blocking requirement is applied, the static reference performance as specified in clause 7.2.1 shall be met with a wanted and an interfering signal coupled to BS antenna input using the following parameters.

Table 7.9A: Additional blocking requirements for operating bands defined in 4.2(a) when co-located with GSM900

Centre Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
921 – 960 MHz	+16 dBm	<REFSENS> + 6 dB	—	CW carrier

Table 7.10A: Additional blocking requirements for operating bands defined in 4.2(a) when co-located with DCS1800

Center Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal Level	Minimum Offset of Interfering Signal	Type of Interfering Signal
1805 – 1880	+16 dBm	<REFSENS> + 6 dB	—	CW carrier

The normative reference for this requirement is TS 25.105 [1] subclause 7.5.1.2.

7.5.3 Test purpose

7.5.3.1 3,84 Mcps TDD option

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

7.5.3.2 1,28 Mcps TDD option

The test stresses the ability of the BS receiver to withstand high-level interference from unwanted signals at frequency offsets of 3,2 MHz or more, without undue degradation of its sensitivity.

7.5.4 Method of test

7.5.4.1 Initial conditions

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: M; see subclause 5.3. The BS shall be configured to operate as close to the centre of the operating band as possible.

(1) Connect an UE simulator operating at the assigned channel frequency of the wanted signal and a signal generator to the antenna connector of one Rx port.

(2) Terminate or disable any other Rx port not under test.

(3) Start transmission from the BS tester to the BS using the UL reference measurement channel (12,2 kbps) defined in Annex A.2.1.The level of the UE simulator signal measured at the BS antenna connector shall be set to 6 dB above the reference sensitivity level specified in subclause 7.2.2.

7.5.4.2 Procedure

7.5.4.2.1 3,84 Mcps TDD option

(1) Set the signal generator to produce an interfering signal at a frequency offset Fuw from the assigned channel frequency of the wanted signal which is given by

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

where n shall be increased in integer steps from n = 10 up to such a value that the center frequency of the interfering signal covers the range from 1 MHz to 12,75 GHz. The interfering signal level measured at the antenna connector shall be set in dependency of its center frequency, as specified in tables 7.6 to 7.10, ~~7.7, or 7.8~~ respectively. The type of the interfering signal is either equivalent to a continuous wideband CDMA signal with one code of chip frequency 3,84 Mchip/s, filtered by an RRC transmit pulse-shaping filter with roll-off $\alpha = 0,22$, or a CW signal; see tables 7.6 to 7.10, ~~7.7 or 7.8~~ respectively.

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

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

NOTE: The test procedure as defined in steps (1) and (2) requests to carry out more than 10000 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.

7.5.4.2.2 1,28 Mcps TDD option

(1) Set the signal generator to produce an interfering signal at a frequency offset Fuw from the assigned channel frequency of the wanted signal which is given by

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

where n shall be increased in integer steps from n = 10 up to such a value that the center frequency of the interfering signal covers the range from 1 MHz to 12,75 GHz. The interfering signal level measured at the antenna connector shall be set in dependency of its center frequency, as specified in tables 7.6A, 7.7A, or 7.8A respectively. The type of the interfering signal is either equivalent to a continuous wideband CDMA signal with one code of chip frequency 1,28 Mchip/s, filtered by an RRC transmit pulse-shaping filter with roll-off $\alpha = 0,22$, or a CW signal; see tables 7.6A, 7.7A, or 7.8A respectively.

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

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

NOTE: The test procedure as defined in steps (1) and (2) requests to carry out more than 10000 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.

7.5.5 Test Requirements

NOTE: If the Test Requirement below 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 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

In all measurements made according to subclause 7.5.4.2, the BER shall not exceed 0,001.

7.6 Intermodulation characteristics

7.6.1 Definition and applicability

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

~~The requirements i~~In this subclause, different requirements shall apply to Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

7.6.2 Minimum Requirements

7.6.2.1 3,84 Mcps TDD option

The static reference performance as specified in clause 7.2 should be met when the following signals are coupled to the BS antenna input.

- A wanted signal at the assigned channel frequency, 6 dB above the static reference level.
- Two interfering signals with the parameters specified in table 7.11.

Table 7.11: Parameters of the interfering signals for intermodulation characteristics testing

Interfering Signal Level		Offset	Type of Interfering Signal
Wide Area BS	Local Area BS		
- 48 dBm	- 38 dBm	10 MHz	CW signal
- 48 dBm	- 38 dBm	20 MHz	WCDMA signal with one code

The normative reference for this requirement is TS 25.105 [1] subclause 7.6.1.1.

7.6.2.2 1,28 Mcps TDD option

The static reference performance as specified in clause 7.2 should be met when the following signals are coupled to the BS antenna input.

- A wanted signal at the assigned channel frequency, 6 dB above the static reference level.
- Two interfering signals with the parameters specified in table 7.11A.

Table 7.11A: Parameters of the interfering signals for intermodulation characteristics testing for 1,28 Mcps TDD

Interfering Signal Level	Offset	Type of Interfering Signal
- 48 dBm	3,2 MHz	CW signal
- 48 dBm	6,4 MHz	1,28 Mcps TDD signal with one code

The normative reference for this requirement is TS 25.105 [1] subclause 7.6.1.2.

7.6.3 Test purpose

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

7.6.4 Method of test

7.6.4.1 Initial conditions

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: B, M and T; see subclause 5.3.

(1) Connect an UE simulator operating at the assigned channel frequency of the wanted signal and two signal generators to the antenna connector of one Rx port.

(2) Terminate or disable any other Rx port not under test.

(3) Start transmission from the BS tester to the BS using the UL reference measurement channel (12,2 kbps) defined in Annex A.2.1. The level of the UE simulator signal measured at the BS antenna connector shall be set to 6 dB above the reference sensitivity level specified in subclause 7.2.2.

(4) Set the first signal generator to produce a CW signal with a level measured at the BS antenna connector as specified in table 7.11.~~of -48 dBm.~~

(5) Set the second signal generator to produce an interfering signal equivalent to a wideband CDMA signal with one code of chip frequency, filtered by an RRC transmit pulse-shaping filter with roll-off $\alpha = 0,22$. The level of the signal measured at the BS antenna connector shall be set as specified in table 7.11.~~to -48 dBm.~~

7.6.4.2 Procedure

7.6.4.2.1 3,84 Mcps TDD option

(1) The frequency of the first and the second signal generator shall be set to 10 MHz and 20 MHz, respectively, above the assigned channel frequency of the wanted signal.

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

(3) The frequency of the first and the second signal generator shall be set to 10 MHz and 20 MHz, respectively, below the assigned channel frequency of the wanted signal.

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

(5) Interchange the connections of the BS Rx ports and repeat the measurements according to steps (1) to (4).

7.6.4.2.2 1,28 Mcps TDD option

(1) The frequency of the first and the second signal generator shall be set to 3,2 MHz and 6,4 MHz, respectively, above the assigned channel frequency of the wanted signal.

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

(3) The frequency of the first and the second signal generator shall be set to 3,2 MHz and 6,4 MHz, respectively, below the assigned channel frequency of the wanted signal.

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

(5) Interchange the connections of the BS Rx ports and repeat the measurements according to steps (1) to (4).

7.6.5 Test Requirements

NOTE: If the Test Requirement below 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 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

The BER measured according subclause 7.6.4.2 to shall not exceed 0,001.

7.7 Spurious emissions

7.7.1 Definition and applicability

The spurious emissions power is the power of emissions generated or amplified in a receiver that appear at the BS antenna connector. The requirements apply to all BS with separate Rx and Tx antenna connectors. For BS equipped with only a single antenna connector for both transmitter and receiver, the requirements of subclause 6.6.3 shall apply to this port, and this test need not be performed.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

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 characteristics of the white noise source, simulating interference from other cells (I_{oc}), shall comply with the AWGN interferer definition in subclause 5.18.

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: 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 i~~In this subclause, different requirements shall apply to Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

8.2.1.2 Minimum Requirements

8.2.1.2.1 3,84 Mcps TDD option

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

Table 8.2: Parameters in static propagation conditions

Parameters		Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$			6	4	0	0
$\frac{DPCH_o\_E_c}{I_{or}}$		DB	-9	-9,5	–	–
I_{oc}	Wide Area BS	dBm/3,84 MHz	-89			
	Local Area BS	dBm/3,84 MHz	-74			
Cell Parameter*			0,1			
DPCH Channelization Codes*		C(k,Q)	C(1,8)	C(1,4) C(5,16)	C(1,2) C(9,16)	C(1,2)
$DPCH_o$ Channelization Codes*		C(k,Q)	C(i,16) 3≤ i ≤8	C(i,16) 6≤ i ≤9	-	-
Information Data Rate		Kbps	12,2	64	144	384
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.						

Table 8.3: Performance requirements in AWGN channel.

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

The normative reference for this requirement is TS 25.105 [1] subclause 8.2.1.1.1.

8.2.1.2.2 1,28 Mcps TDD option

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

Table 8.2A: Parameters in static propagation conditions for 1,28 Mcps TDD

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$		4	1	1	0
Spread factor of $DPCH_o$		8	8	8	
$\frac{DPCH_o\_E_c}{I_{or}}$	dB	-7	-7	-7	–
I_{oc}	dBm/1,28 MHz	-91			
Information Data Rate	kbps	12,2	64	144	384

Table 8.3A: Performance requirements in AWGN channel for 1,28 Mcps TDD

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	0.6	10^{-2}
2	-0.9	10^{-1}
	-0.4	10^{-2}
3	-0.3	10^{-1}
	-0.1	10^{-2}
4	0.5	10^{-1}
	0.6	10^{-2}

The normative reference for this requirement is TS 25.105 [1] subclause 8.2.1.1.2.

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

8.2.1.4.1.0 General test conditions

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: B, M and T; see subclause 5.3.

8.2.1.4.1.1 3,84 Mcps TDD option

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.

8.2.1.4.1.2 1,28 Mcps TDD option

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 8, 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 8.2A.

8.2.1.4.2 Procedure

8.2.1.4.2.1 3,84 Mcps TDD option

(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.

(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 8.4.

(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 8.4.

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

Table 8.4: 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]	
			Wide Area BS	Local Area BS			Wide Area BS	Local Area BS
1	10^{-2}	6	-100.0	-85	$DPCH_1$	8	-97,0	-82,0
2	10^{-1}	4	-98,9	-83,9	$DPCH_1$	16	-98,9	-83,9
					$DPCH_2$	4	-92,9	-77,9
	10^{-2}	4	-98,6	-83,6	$DPCH_1$	16	-98,6	-83,6
					$DPCH_2$	4	-92,6	-77,6
3	10^{-1}	0	–	–	$DPCH_1$	16	-98,7	-83,7
					$DPCH_2$	2	-89,7	-74,7
	10^{-2}	0	–	–	$DPCH_1$	16	-98,4	-83,4
					$DPCH_2$	2	-89,4	-74,4
4	10^{-1}	0	–	–	$DPCH_1$	2	-89,8	-74,8
	10^{-2}	0	–	–	$DPCH_1$	2	-89,6	-74,6

8.2.1.4.2.2 1,28 Mcps TDD option

(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 8.2A.

(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 8.4A.

(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 8.4A.

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

Table 8.4A: Parameters of $DPCH_0$ and the wanted signal for 1,28 Mcps TDD

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}	4	-97.4	$DPCH_1$	8	-97.4
2	10^{-1}	1	-98.9	$DPCH_1$	2	-92.9
	10^{-2}	1	-98.4	$DPCH_1$	2	-92.5
3	10^{-1}	1	-98.3	$DPCH_1$	2	-92.3
	10^{-2}	1	-98.1	$DPCH_1$	2	-92.1
4	10^{-1}	0	–	$DPCH_1$	8	-97.5
				$DPCH_2$	2	-91.5
	10^{-2}	0	–	$DPCH_1$	8	-97.4
				$DPCH_2$	2	-91.4

8.2.1.5 Test Requirements

NOTE: If the Test Requirement below 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 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

8.2.1.5.1 3,84 Mcps TDD option

The BLER measured according to subclause 8.2.1.4.2 shall not exceed the limits specified in table 8.3.

8.2.1.5.2 1,28 Mcps TDD option

The BLER measured according to subclause 8.2.1.4.2. shall not exceed the limits specified in table 8.3A.

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 i~~In this subclause, different requirements shall apply to Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

8.3.1.2 Minimum Requirements

8.3.1.2.1 3,84 Mcps TDD option

For the parameters specified in table 8.5, the BLER should not exceed the piece-wise linear BLER curve specified in table 8.6. These requirements are applicable for TFCS size 16.

Table 8.5: 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}	Wide Area BS	dBm/3,84 MHz	-89			
	Local Area BS	dBm/3,84 MHz	-74			
Cell Parameter*			0,1			
DPCH Channelization Codes*		C(k,Q)	C(1,8)	C(1,4) C(5,16)	C(1,2) C(9,16)	C(1,2)
$DPCH_o$ Channelization Codes*		C(k,Q)	C(i,16) 3≤ i ≤8	C(i,16) 6≤ i ≤9	-	-
Information Data Rate		Kbps	12,2	64	144	384

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

Table 8.6: Performance requirements in multipath Case 1 channel.

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

The normative reference for this requirement is TS 25.105 [1] subclause 8.3.1.1.1.

8.3.1.2.2 1,28 Mcps TDD option

For the parameters specified in table 8.5A, the BLER should not exceed the piece-wise linear BLER curve specified in table 8.6A. These requirements are applicable for TFCS size 16.

Table 8.5A: Parameters in multipath Case 1 channel for 1,28 Mcps TDD

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$		4	1	1	0
Spread factor of $DPCH_o$		8	8	8	
$\frac{DPCH_o - E_c}{I_{or}}$	dB	-7	-7	-7	–
I_{oc}	dBm/1,28 MHz	-91			
Information Data Rate	kbps	12,2	64	144	384

Table 8.6A: Performance requirements multipath Case 1 channel for 1,28 Mcps TDD

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

The normative reference for this requirement is TS 25.105 [1] subclause 8.3.1.1.2.

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

8.3.1.4.1.0 General test conditions

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: B, M and T; see subclause 5.3.

8.3.1.4.1.1 3,84 Mcps TDD option

(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 8.5.

(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.

8.3.1.4.1.2 1,28 Mcps TDD option

(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 8, 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 8.5A.

(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

8.3.1.4.2.1 3,84 Mcps TDD option

(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 8.5.

(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 8.7.

(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 8.7.

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

Table 8.7: 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]	
			Wide Area BS	Local Area BS			Wide Area BS	Local Area BS
1	10^{-2}	6	-91,5	-76,5	$DPCH_1$	8	-88,5	-73,5
2	10^{-1}	4	-93,0	-78,0	$DPCH_1$	16	-93,0	-78,0
					$DPCH_2$	4	-87,0	-72,0
	10^{-2}	4	-88,7	-73,7	$DPCH_1$	16	-88,7	-73,7
					$DPCH_2$	4	-82,7	-67,7
3	10^{-1}	0	–	–	$DPCH_1$	16	-93,0	-78,0
					$DPCH_2$	2	-84,0	-69,0
	10^{-2}	0	–	–	$DPCH_1$	16	-88,7	-73,7
					$DPCH_2$	2	-79,7	-64,7
4	10^{-1}	0	–	–	$DPCH_1$	2	-83,9	-68,9
	10^{-2}	0	–	–	$DPCH_1$	2	-79,5	-64,5

8.3.1.4.2.2 1,28 Mcps TDD option

(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 8.5A.

(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 8.7A.

(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 8.7A.

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

Table 8.7A: Parameters of $DPCH_0$ and the wanted signal for 1,28 Mcps TDD

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}	4	-87.6	$DPCH_1$	8	-87.6
2	10^{-1}	1	-92.7	$DPCH_1$	2	-86.7
	10^{-2}	1	-88.6	$DPCH_1$	2	-82.6
3	10^{-1}	1	-92.3	$DPCH_1$	2	-86.3
	10^{-2}	1	-87.9	$DPCH_1$	2	-81.9
4	10^{-1}	0	–	$DPCH_1$	8	-92.0
				$DPCH_2$	2	-86.0
	10^{-2}	0	–	$DPCH_1$	8	-88.0
				$DPCH_2$	2	-82.0

8.3.1.5 Test Requirements

NOTE: If the Test Requirements below differ from the Minimum Requirements, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

8.3.1.5.1 3,84 Mcps TDD option

The BLER measured according to subclause 8.3.1.4.2 shall not exceed the limits specified in table 8.6.

8.3.1.5.2 1,28 Mcps TDD option

The BLER measured according to subclause 8.3.1.4.2 shall not exceed the limits specified in table 8.6A.

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 Wide Area BS only. There is no requirement to test Local Area BS in multipath fading Case 2 conditions.~~base stations intended for general purpose applications.~~

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 Wide Area BS only. There is no requirement to test Local Area BS in multipath fading Case 3 conditions.~~base stations intended for general purpose applications.~~

3GPP TSG RAN WG4 Meeting #23 **R4-020958**

Gyeongju, Korea 13th -17th May, 2002

CR-Form-v5.1

CHANGE REQUEST

⌘ **25.142** **CR** **127** ⌘ **rev** **-** ⌘ Current version: **5.0.0** ⌘

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

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

Title: ⌘	Introduction of BS classification for 3,84 Mcps and 1,28 Mcps TDD options - ACLR and spurious emissions requirements	
Source: ⌘	RAN WG4	
Work item code: ⌘	RInImp-BSClass-TDD, RInImp-BSClass-LCRTDD	***Date:*** ⌘ 17/5/2002
Category: ⌘	**B**	***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)

Reason for change: ⌘	Completion of the Work Items “TDD Base Station classification” and “Base Station classification for 1.28 Mcps TDD option”, and introduction of specific requirements for the Local Area BS in the relevant core specification TS 25.105.
Summary of change: ⌘	Introduction of conformance test specifications with specific requirements for the Local Area BS with respect to the parameters ACLR and Tx spurious emissions.
Consequences if not approved: ⌘	Misalignment between TS 25.142 and the relevant core specification TS 25.105, because conformance testing for the new Local Area BS classes would not be covered by TS 25.142. Isolated Impact Analysis: Does affect BS conformance testing only, does not affect BS-UE interworking.

Clauses affected: ⌘			
Other specs affected: ⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments: ⌘			

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

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

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

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. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document in the same Release as the present document.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] 3GPP TS 25.105: "UTRA (BS) TDD: Radio transmission and reception".

[2] IEC 60721-3-3 (1994): "Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 3: Stationary use at weather protected locations"

[3] IEC 60721-3-4 (1995): "Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 4: Stationary use at non-weather protected locations".

[4] IEC 60068-2-1 (1990): "Environmental testing - Part 2: Tests. Tests A: Cold".

[5] ETR 028: "Uncertainties in the measurement of mobile radio equipment characteristics".

[6] Recommendation ITU-R SM.329-8: "Spurious emissions".

[7] Recommendation ITU-R SM.328-9: "Spectra and bandwidth of emissions".

[8] IEC 60068-2-6 (1995): "Environmental testing - Part 2: Tests - Test Fc: Vibration (sinusoidal)".

[9] 3GPP TR 25.942: "RF System Scenarios".

5.10.2 Measurement of transmitter

Table 5.3: Maximum Test System Uncertainty for transmitter tests

Subclause	Maximum Test System Uncertainty	Derivation of Test System Uncertainty
6.2 Maximum output power	± 0,7 dB	
6.3 Frequency stability	± 12 Hz	
6.4.2 Power control steps	single step: ± 0,1 dB ten steps: ± 0,3 dB	Result is difference between two absolute Code Domain Power measurements on the power controlled DPCH.
6.4.3 Power control dynamic range	± 0,3 dB	
6.4.4 Minimum output power	± 0,7 dB	
6.4.5 Primary CCPCH power	± 0,8 dB	
6.4.6 Differential accuracy of Primary CCPCH power	± 0,1 dB	
6.5.1 Transmit OFF power	± 2,0 dB	
6.5.2 Transmit ON/OFF time mask	Tx power limit = -79 dBm: ± 2,0 dB Tx power limit = -33 dBm: ± 0,7 dB	
6.6.1 Occupied Bandwidth	± 100 kHz	Accuracy = ± 3∗RBW. Assume 30 kHz bandwidth
6.6.2.1 Spectrum emission mask	± 1,5 dB	

6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)	3,84 Mcps TDD option: minimum requirement: 5 MHz offset: ± 0,8 dB 10 MHz offset: ± 0,8 dB requirement ~~in case of~~for operation in the same geographic area ~~proximity to~~ with unsynchronised TDD BS ~~or FDD BS operating~~ on ~~an~~ adjacent channels~~frequency~~: Wide Area BS: 5 MHz offset: ± 4 dB 10 MHz offset: ± 4 dB Local Area BS: 5 MHz offset: ± 0,8 dB 10 MHz offset: ± 0,8 dB requirement for operation in the same geographic area with FDD BS on adjacent channels: Wide Area BS: 5 MHz offset: TBD 10 MHz offset: ± 4 dB Local Area BS: 5 MHz offset: ± 0,8 dB 10 MHz offset: ± 0,8 dB requirement in case of co-siting with unsynchronised TDD BS or FDD BS operating on ~~an~~ adjacent channels~~frequency~~: Wide Area BS: 5 MHz offset: TBD 10 MHz offset: TBD Local Area BS (co-siting with TDD BS): 5 MHz offset: ± 1 dB 10 MHz offset: ± 1 dB 1,28 Mcps TDD option: minimum requirement: 1,6 MHz offset: ± 0,8 dB 3,2 MHz offset: ± 0,8 dB requirement for operation in the same geographic area with unsynchronised 1,28 Mcps TDD BS on adjacent channels: Wide Area BS: 1,6 MHz offset: ± 1 dB 3,2 MHz offset: ± 1 dB Local Area BS: 1,6 MHz offset: ± 0,8 dB 3,2 MHz offset: ± 0,8 dB requirement for operation in the same geographic area with unsynchronised TDD BS on adjacent channels: Wide Area BS: 3,4 MHz offset: ± 1 dB Local Area BS: 3,4 MHz offset: ± 0,8 dB requirement for operation in the same geographic area with FDD BS on adjacent channels: Wide Area BS: ± 4 dB Local Area BS: ± 0,8 dB requirement in case of co-siting with unsynchronised 1,28 Mcps TDD BS on an adjacent channel:	

6.6.3 Spurious emissions	± 2,0 dB for BS and coexistence bands for results > -60 dBm ± 3,0 dB for results < -60 dBm Outside above range: f ≤ 2,2 GHz: ± 1,5 dB 2,2 GHz < f ≤ 4 GHz: ± 2,0 dB f > 4 GHz: ± 4,0 dB	
6.7 Transmit intermodulation	The value below applies to the setting of the interference signal level only and is unrelated to the measurement uncertainty of the tests (6.6.2.1, 6.6.2.2 and 6.6.3) which have to be carried out in the presence of the interference signal. ± 1 dB	The uncertainty of the interferer has double the effect on the result due to the frequency offset.
6.8.1 Modulation accuracy	± 2,5 % (for single code)	
6.8.2 Peak code domain error	± 1 dB	

5.11 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 Tolerance 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.)

5.11.1 Transmitter

Table 5.6: Test Tolerance for transmitter tests

Subclause	Test Tolerance (see NOTE)
6.2 Maximum output power	0,7 dB
6.3 Frequency stability	12 Hz
6.4.2 Power control steps	single step: 0,1 dB ten steps: 0,3 dB
6.4.3 Power control dynamic range	0,3 dB
6.4.4 Minimum output power	0,7 dB
6.4.5 Primary CCPCH power	0,8 dB
6.4.6 Differential accuracy of Primary CCPCH power	± 0,1 dB
6.5.1 Transmit OFF power	2,0 dB
6.5.2 Transmit ON/OFF time mask	Tx power limit = -79 dBm: 2,0 dB Tx power limit = -33 dBm: 0,7 dB
6.6.1 Occupied Bandwidth	0 kHz
6.6.2.1 Spectrum emission mask	1,5 dB
6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)	3,84 Mcps TDD option: minimum requirement: 0,8 dB operation in the same geographic area~~proximity~~: Wide Area BS: 4 dB for TDD BS on adjacent channels TBD/4 dB for FDD BS on adjacent channels Local Area BS: 0,8 dB co-siting: Wide Area BS: TBD Local Area BS: 1 dB 1,28 Mcps TDD option: minimum requirement: 0,8 dB operation in the same geographic area: Wide Area BS: 1 dB for TDD BS on adjacent channels 4 dB for FDD BS on adjacent channels Local Area BS: 0,8 dB co-siting: Wide Area BS: TBD Local Area BS: 1 dB for TDD BS on adjacent channels
6.6.3 Spurious emissions	0 dB
6.7 Transmit intermodulation	Testing of transmit intermodulation consists of 3 parts: - testing of spectrum emission mask, see 6.6.2.1 - testing of ACLR, see 6.6.2.2 - testing of spurious emissions, see 6.6.3 For each of these parts, the respective Test Tolerances as specified in this table shall apply. Test Tolerance for setting of the interferer power level: 0 dB
6.8.1 Modulation accuracy	0 %
6.8.2 Peak code domain error	1 dB
NOTE: Unless otherwise stated, the Test Tolerances are applied to the DUT Minimum Requirement. See Annex D.	

6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)

6.6.2.2.1 Definition and applicability

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the average power centered on the assigned channel frequency to the average power centered on an adjacent channel frequency. In both cases, the power is 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. 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 requirements i~~In this subclause, different requirements shall apply to Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

6.6.2.2.2 Minimum Requirements

6.6.2.2.2.1 Minimum requirement

6.6.2.2.2.1.1 3,84 Mcps TDD option

The ACLR of a single carrier BS or a multi-carrier BS with contiguous carrier frequencies shall be equal to or greater than the limits given in table 6.22.

Table 6.22: BS ACLR limits

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.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.1.1.

6.6.2.2.2.1.2 1,28 Mcps TDD option

The ACLR of a single carrier BS or a multi-carrier BS with contiguous carrier frequencies shall be equal to or greater than the limits given in Table 6.22A.

Table 6.22A: BS ACLR limits for 1,28 Mcps TDD

BS adjacent channel offset below the first or above the last carrier frequency used	ACLR limit
1,~~-~~6 MHz	40 dB
3,~~-~~2 MHz	45 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.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.1.2

6.6.2.2.2.2 Additional r~~R~~equirement ~~in case of~~for operation in the same geographic area ~~proximity~~with FDD ~~to~~or unsynchronised TDD ~~BS or FDD BS operating~~ on ~~an~~ adjacent channels ~~frequency~~

6.6.2.2.2.2.1 3,84 Mcps TDD option

6.6.2.2.2.2.1.1 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 ~~proximity to another~~ TDD BS ~~or FDD BS~~ operating on ~~an~~the first or second adjacent frequency, the ~~ACLR~~adjacent channel leakage power of a single carrier BS or a multi-carrier BS with contiguous carrier frequencies shall ~~be equal to or greater than the value~~not exceed the limits specified in table 6.23.

Table 6.23: ~~BS ACLR~~Adjacent channel leakage power limits for~~in case of~~ operation in the same geographic area with unsynchronised TDD on adjacent channels~~proximity~~

BS Class	BS adjacent channel offset below the first or above the last carrier frequency used	~~ACLR limit~~Maximum Level	Measurement Bandwidth
Wide Area BS	5 MHz	~~70 dB~~-29 dBm	3,84 MHz
Wide Area BS	10 MHz	~~70 dB~~-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 requirements in table 6.23 for the Wide Area BS are~~is~~ based on ~~the assumption that the~~a coupling loss of 74 dB between the unsynchronised TDD base stations. ~~is at least 84dB~~ The requirement in table 6.23 for the Local Area BS ACLR1 (± 5 MHz channel offset) is based on a coupling loss of 87 dB between unsynchronised Wide Area and Local Area TDD base stations. The requirement in table 6.23 for the Local Area BS ACLR2 (± 10 MHz channel offset) is 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 [9].

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 ~~or FDD BS~~ in the same geographic area.~~proximity.~~

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.2.1.1

NOTE: The necessary dynamic range to very the conformance requirements specified in table 6.23 is at the limits of the capability of state-of-art measuring equipment.

6.6.2.2.2.1.2 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 6.23AA.

Table 6.23AA: 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 6.23AA 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 6.23AA 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 [9].

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 the same geographic area.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.2.1.2.

6.6.2.2.2.2 1,28 Mcps TDD option

6.6.2.2.2.2.1 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~~proximity to another~~ an unsynchronised TDD BS ~~or FDD BS and both BSs~~ operating on an adjacent channel~~frequency band~~, the requirement is specified in terms of adjacent channel leakage power. ~~level of the transmitting BS.~~ In geographic areas where only UTRA 1,28 Mcps TDD option is deployed, the adjacent channel leakage power limits shall not exceed the limits specified in table 6.23A, otherwise the limits in table 6.23B shall apply~~This requirement is valid for co-existence with non-frame and non-switching point synchronised systems operating on the closest used carrier. The interference power level shall not exceed the limit in Table 6.23A.~~

Table 6.23A: Adjacent channel leakage power limits for operation in the same geographic area with unsynchronised 1,28 Mcps TDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 1,6 MHz	-29 dBm	1,28 MHz
Wide Area BS	± 3,2 MHz	-29 dBm	1,28 MHz
Local Area BS	± 1,6 MHz	-16 dBm	1,28 MHz
Local Area BS	± 3,2 MHz	-16 dBm	1,28 MHz

Table 6.23B: Adjacent channel leakage power limits for operation in the same geographic area with unsynchronised TDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 3,4 MHz	-29 dBm	3,84 MHz
Local Area BS	± 3,4 MHz	-16 dBm	3,84 MHz

NOTE: The requirements in table 6.23A and 6.23B for the Wide Area BS are based on a coupling loss of 74 dB between the unsynchronised TDD base stations. The requirements in table 6.23A and 6.23B for the Local Area BS are based on a coupling loss of 87 dB between unsynchronised Wide Area and Local Area TDD base stations. The scenarios leading to these requirements are addressed in TR25.942 [9].

~~**Table 6.23A: BS ACLR in case of operation in proximity for 1,28 Mcps TDD**~~

~~Center Frequency for Measurement~~	~~Maximum Level of the interference power (in case of multiple antennas the interference powers shall be summed at all antenna connectors)~~	~~Measurement Bandwidth~~
~~Closest used carrier of the victim receiver: Either FDD carrier Or 3,84 Mcps TDD carrier Or 1,28 Mcps TDD carrier~~	~~-36 dBm~~	~~chip rate of the victim receiver: In case of FDD: 3,84 MHz In case of 3,84 Mcps TDD: 3,84 MHz In case of 1,28 Mcps TDD: 1,28 MHz~~

~~The closest used carrier with respect to the regarded carrier of one system is defined by~~

~~a minimum difference in centre frequency between the regarded carrier and the carriers used in the other system and the chip rate of the other system.~~

~~If the actual allowed interference level $P_{int, allowed, actual}$ at the victim receiver is higher than –106dBm, this requirement may be relaxed by the amount $P_{int, allowed, actual}$ – (106dBm).~~

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.2.2.1.

6.6.2.2.2.2.2 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 an adjacent channel, the adjacent channel leakage power shall not exceed the limits specified in table 6.23C. This requirement is only applicable if the equipment is intended to operate in frequency bands specified in 4.2 a) and the highest carrier frequency used is in the range 1916,2 – 1920 MHz.

Table 6.23C: Adjacent channel leakage power limits for operation in the same geographic area with FDD on adjacent channels

BS Class	Center Frequency for Measurement	Maximum Level	Measurement Bandwidth
Wide Area BS	1922,6 MHz	-36 dBm	3,84 MHz
Local Area BS	1922,6 MHz	-23 dBm	3,84 MHz

NOTE: The requirement in table 6.23C for Wide Area BS is based on a relaxed coupling loss of 74 dB between the TDD and FDD base stations. The requirement in table 6.23C for Local Area BS is based on a relaxed coupling loss of 87 dB between TDD and FDD base stations. The scenarios leading to these requirements are addressed in TR 25.942 [9].

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.2.2.2.

6.6.2.2.3 Additional r~~R~~equirement in case of co-si~~t~~tting with unsynchronised TDD BS or FDD BS operating on an adjacent channel~~frequency~~

6.6.2.2.3.1 3,84 Mcps TDD option

6.6.2.2.3.1.1 Additional requirement in case of co-siting with unsynchronised TDD BS operating on adjacent channels

In case the equipment is co-sited to ~~another~~an unsynchronised TDD BS ~~or FDD BS~~ operating on ~~an~~the first or second adjacent frequency, the ~~ACLR is specified in terms of the absolute average power level of the BS measured in the adjacent channel. The maximum~~adjacent channel leakage power ~~level~~ of a single carrier BS or a multi-carrier BS with contiguous carrier frequencies shall not exceed the limits specified in table 6.24.

Table 6.24: ~~BS ACLR~~Adjacent channel leakage power limits in case of co-siting 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	-73~~80~~ dBm	3,~~-~~84 MHz
Wide Area BS	10 MHz	-73~~80~~ 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 6.24 for the Wide Area BS are based on a minimum coupling loss of 30 dB between unsynchronised TDD base stations. The requirements in table 6.24 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. ~~or FDD BS.~~

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.3.1.1.

NOTE: The necessary dynamic range of the measuring equipment to verify the conformance requirements specified in table 6.24 for the Wide Area BS is dependent on the BS output power. If the BS output power is larger than –10 dBm, the necessary dynamic range is beyond the capability of state-of-the-art measuring equipment; direct verification of the conformance requirements is not feasible. Alternatively, indirect measurement methods need to be defined.

6.6.2.2.2.3.1.2 Additional requirement in case of co-siting with FDD BS operating on adjacent channels

In case the equipment is co-sited to a FDD BS operating on the first or second adjacent channel, the adjacent channel leakage power shall not exceed the limits specified in table 6.24A.

Table 6.24A: Adjacent channel leakage power limits in case of co-siting with FDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 5 MHz	-80 dBm	3,84 MHz
Wide Area BS	± 10 MHz	-80 dBm	3,84 MHz

NOTE: The requirements in table 6.24A are based on a minimum coupling loss of 30 dB between base stations. The co-location of different base station classes is not considered. A co-location requirement for the Local Area TDD BS is intended to be part of a later release.

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 FDD BS.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.3.1.2.

6.6.2.2.3.2 1,28 Mcps TDD option

6.6.2.2.3.2.1 Additional requirement in case of co-siting with unsynchronised TDD BS operating on adjacent channels

In case the equipment is co-sited to ~~another~~an unsynchronised TDD BS ~~or FDD BS and both BSs~~ operating on an adjacent channel~~frequency band~~, the requirement is specified in terms of adjacent channel leakage power~~the average power level of the transmitting BS~~. In geographic areas where only UTRA 1,28 Mcps TDD option is deployed, the adjacent channel leakage power shall not exceed the limits specified in table 6.24B, otherwise the limits in table 6.24C shall apply.~~This requirement is valid for co-existence with a non-frame and non-switching point synchronised systems operating on closest used carrier. The interference power level shall not exceed the limit in Table 6.24A.~~

Table 6.24B: Adjacent channel leakage power limits in case of co-siting with unsynchronised 1,28 Mcps TDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 1,6 MHz	-73 dBm	1,28 MHz
Wide Area BS	± 3,2 MHz	-73 dBm	1,28 MHz
Local Area BS	± 1,6 MHz	-34 dBm	1,28 MHz
Local Area BS	± 3,2 MHz	-34 dBm	1,28 MHz

Table 6.24C: Adjacent channel leakage power limits in case of co-siting with unsynchronised TDD on an adjacent channel

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 3,4 MHz	-73 dBm	3,84 MHz
Local Area BS	± 3,4 MHz	-31 dBm	3,84 MHz

NOTE: The requirements in table 6.24B and 6.24C for the Wide Area BS are based on a minimum coupling loss of 30 dB between unsynchronised TDD base stations. The requirements in table 6.24B and 6.24C 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.

~~**Table 6.24A : BS ACLR in case of co-siting for 1,28 Mcps TDD**~~

~~Center Frequency for Measurement~~	~~Maximum Level of the interference power (in case of multiple antennas the interference powers shall be summed at all antenna connectors)~~	~~Measurement Bandwidth~~
~~Closest used carrier of the victim receiver: Either FDD carrier Or 3,84 Mcps TDD carrier Or 1,28 Mcps TDD carrier~~	~~-76 dBm~~	~~chip rate of the victim receiver: In case of FDD: 3,84 MHz In case of 3,84 Mcps TDD: 3,84 MHz In case of 1,28 Mcps TDD: 1,28 MHz~~

~~The closest used carrier with respect to the regarded carrier of one system is defined by:~~

- ~~a minimum difference in centre frequency between the regarded carrier and the carriers used in the other system and the chip rate of the other system.~~

~~If the actual MCL_{actual} is higher than 30dB, this requirement may be relaxed by the amount MCL_{actual} – 30dB.~~

~~If the actual allowed interference level $P_{int, allowed, actual}$ at the victim receiver is higher than -106dBm, this requirement may be relaxed by the amount $P_{int, allowed, actual}$ – (-106dBm).~~

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.3.2.1.

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

In case the equipment is co-sited to a FDD BS operating on an adjacent channel, the adjacent channel leakage power shall not exceed the limits specified in table 6.24D. This requirement is only applicable if the equipment is intended to operate in frequency bands specified in 4.2 a) and the highest carrier frequency used is in the range 1916,2 – 1920 MHz.

Table 6.24D: Adjacent channel leakage power in case of co-siting with UTRA FDD on an adjacent channel

BS Class	Center Frequency for Measurement	Maximum Level	Measurement Bandwidth
Wide Area BS	1922,6 MHz	-80 dBm	3,84 MHz

NOTE: The requirements in table 6.24D are based on a minimum coupling loss of 30 dB between base stations. The co-location of different base station classes is not considered. A co-location requirement for the Local Area TDD BS is intended to be part of a later release.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.2.2.3.2.2.

6.6.2.2.3 Test purpose

The test purpose is to verify the ability of the BS to limit the interference produced by the transmitted signal to other UTRA receivers operating at the first or second adjacent RF channel.

6.6.2.2.4 Method of test

6.6.2.2.4.1 Initial conditions

6.6.2.2.4.1.0 General test conditions

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: B, M and T with multiple carriers if supported; see subclause 5.3.

6.6.2.2.4.1.1 3,84 Mcps TDD option

(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 6.25.

Table 6.25: Parameters of the BS transmitted signal for ACLR testing

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)

6.6.2.2.4.1.2 1,28 Mcps TDD option

(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 6.25A.

Table 6.25A: Parameters of the BS transmitted signal for ACLR testing for 1,28 Mcps TDD

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, 3, 4, 5, 6: transmit, if i is 0,4,5,6; receive, if i is 1,2,3.
BS output power setting	PRAT
Number of DPCH in each active TS	8
Power of each DPCH	1/8 of Base Station output power
Data content of DPCH	real life (sufficient irregular)

6.6.2.2.4.2 Procedure

6.6.2.2.4.2.1 3,84 Mcps TDD option

1) Measure the average power centered on the lowest assigned channel frequency over the 2464 active chips of the even time slots 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.

2) Average over TBD time slots.

3) Measure the average power at the first lower adjacent RF channel (center frequency 5 MHz below the lowest assigned channel frequency of the transmitted signal) over the useful part of the burst within the even time slots 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 with adherence to the sampling theorem.

4) Average over TBD time slots.

5) Calculate the ACLR by the ratio

ACLR = average acc. to (2) / average interference power acc. to (4).

6) Repeat steps (3), (4) and (5) for the second lower adjacent RF channel (center frequency 10 MHz below the lowest assigned channel frequency of the transmitted signal).

7) In case of a multi-carrier Bs, repeat steps (1) and (2) for the highest assigned channel frequency. Otherwise, use the result obtained in step (2) above for further calculation in step (10).

8) Measure the average power at the first higher adjacent RF channel (center frequency 5 MHz above the highest assigned channel frequency of the transmitted signal) over the useful part of the burst within the even time slots 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 with adherence to the sampling theorem.

9) Average over TBD time slots.

10) Calculate the ACLR by the ratio

ACLR = average power acc. to (7) / average interference power acc. to (9).

11) Repeat steps (8) to (10) for the second upper adjacent RF channel (center frequency 10 MHz above the highest assigned channel frequency of the transmitted signal).

6.6.2.2.4.2.2 1,28 Mcps TDD option

1) Measure the average power centered on the lowest assigned channel frequency over the 848 active chips of the transmit time slots 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.

2) Average over TBD time slots.

3) Measure the average power at the first lower adjacent RF channel (center frequency 1,6 MHz below the assigned channel frequency of the transmitted signal) over the useful part of the burst within the transmit time slots 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 with adherence to the sampling theorem.

4) Average over TBD time slots.

5) Calculate the ACLR by the ratio:

ACLR = average power acc. to (2) / average interference power acc. to (4).

6) Repeat steps (3), (4) and (5) for the second lower adjacent RF channel (center frequency 3,2 MHz below the lowest assigned channel frequency of the transmitted signal) and also for the first and second upper adjacent RF channel (center frequency 1,6 MHz and 3,2 MHz above the assigned channel frequency of the transmitted signal, respectively).

7) In case of a multi-carrier BS, repeat steps (1) and 2 for the highest assigned channel frequency. Otherwise, use the result obtained in step (2) above for further calculation in step (10).

8) Measure the average power at the first higher adjacent RF channel (center frequency 1,6 MHz above the highest assigned channel frequency of the transmitted signal) over the useful part of the burst within the transmit time slots 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 with adherence to the sampling theorem.

9) Average over TBD time slots.

10) Calculate the ACLR by the ratio

ACLR = average power acc. to (7) / average interference power acc. to (9).

11) Repeat steps (8) to (10) for the second upper adjacent RF channel (center frequency 3,2 MHz above the highest assigned channel frequency of the transmitted signal).

6.6.2.2.5 Test Requirements

NOTE: If the Test Requirements below differ from the Minimum Requirements, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

6.6.2.2.5.1 3,84 Mcps TDD option

The ACLR calculated in steps (5) and (10) of subclause 6.6.2.2.4.2.1 shall be equal or greater than the limits given in table 6.26~~, or table 6.272, respectively~~. In case the equipment is tested against the requirements defined for operation in the same geographic area or co-sited with unsynchronised TDD or FDD on adjacent channels~~co-sited to another TDD BS or FDD BS operating on an adjacent frequency~~, the ~~interference~~adjacent channel leakage power ~~at the first and second adjacent channel~~ measured according to steps (4) and (9) of subclause 6.6.2.2.4.2.1 shall not exceed the maximum levels specified in tables 6.27, 6.27A, 6.28 or 6.28A, respectively.

Table 6.26: BS ACLR Test Requirements

BS adjacent channel offset below the first or above the last carrier frequency used	ACLR limit
5 MHz	44,2 dB
10 MHz	54,2 dB

Table 6.27: ~~BS ACLR~~ Adjacent channel leakage power Test Requirements for ~~in case of~~ operation in the same geographic area with unsynchronised TDD on adjacent channels~~in proximity~~

BS Class	BS adjacent channel offset below the first or above the last carrier frequency used	~~ACLR limit~~Maximum Level	Measurement Bandwidth
Wide Area BS	5 MHz	~~66 dB~~-25 dBm	3,84 MHz
Wide Area BS	10 MHz	~~66 dB~~-25 dBm	3,84 MHz
Local Area BS	5 MHz	-15,2 dBm	3,84 MHz
Local Area BS	10 MHz	-25,2 dBm	3,84 MHz

Table 6.27A: Adjacent channel leakage power Test Requirements 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 – TT]	3,84 MHz
Wide Area BS	± 10 MHz	-32 dBm	3,84 MHz
Local Area BS	± 5 MHz	-22,2 dBm	3,84 MHz
Local Area BS	± 10 MHz	-32,2 dBm	3,84 MHz

Table 6.28: ~~BS ACLR~~Adjacent channel leakage power Test Requirements in case of co-si~~t~~ting 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	-[73~~80~~ dBm - TT]	3,~~-~~84 MHz
Wide Area BS	10 MHz	-[73~~80~~ dBm - TT]	3,~~-~~84 MHz
Local Area BS	5 MHz	-30 dBm	3,84 MHz
Local Area BS	10 MHz	-30 dBm	3,84 MHz

Table 6.28A: Adjacent channel leakage power Test Requirements in case of co-siting with FDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 5 MHz	-80 dBm	3,84 MHz
Wide Area BS	± 10 MHz	-80 dBm	3,84 MHz

6.6.2.2.5.2 1,28 Mcps TDD option

The ACLR calculated in steps (5) and (10) of subclause 6.6.2.2.4.2.2 shall be equal or greater than the limits given in table 6.26A. In case the equipment is tested against the requirements defined for operation in the same geographic area or co-sited with unsynchronised TDD or FDD on adjacent channels~~in proximity or co-sited to another TDD BS or FDD BS operating on an adjacent frequency~~, the ~~interference~~ adjacent channel leakage power ~~at the adjacent channel~~ measured according to steps (3) and (4) of subclause 6.6.2.2.4.2.2 shall not exceed the maximum level~~s~~ specified in table~~s~~ ~~6.27A or 6.28A~~6.27B, 6.27C, 6.27D, 6.28B, 6.28C or 6.28D, respectively.

Table 6.26A: BS ACLR Test Requirements (1,28 Mcps option)

BS adjacent channel offset below the first or above the last carrier frequency used	ACLR limit
1,~~-~~6 MHz	~~-~~39,~~-~~2 dB
3,~~-~~2 MHz	44,~~-~~2 dB

Table 6.27B: Adjacent channel leakage power Test Requirements for operation in the same geographic area with unsynchronised 1,28 Mcps TDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 1,6 MHz	-28 dBm	1,28 MHz
Wide Area BS	± 3,2 MHz	-28 dBm	1,28 MHz
Local Area BS	± 1,6 MHz	-15,2 dBm	1,28 MHz
Local Area BS	± 3,2 MHz	-15,2 dBm	1,28 MHz

Table 6.27C: Adjacent channel leakage power Test Requirements for operation in the same geographic area with unsynchronised TDD on an adjacent channel

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 3,4 MHz	-28 dBm	3,84 MHz
Local Area BS	± 3,4 MHz	-15,2 dBm	3,84 MHz

Table 6.27D: Adjacent channel leakage power Test Requirements for operation in the same geographic area with FDD on an adjacent channel

BS Class	Center Frequency for Measurement	Maximum Level	Measurement Bandwidth
Wide Area BS	1922,6 MHz	-32 dBm	3,84 MHz
Local Area BS	1922,6 MHz	-22,2 dBm	3,84 MHz

Table 6.28B: Adjacent channel leakage power Test Requirements in case of co-siting with unsynchronised 1,28 Mcps TDD on adjacent channels

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 1,6 MHz	-[73 dBm – TT]	1,28 MHz
Wide Area BS	± 3,2 MHz	-[73 dBm – TT]	1,28 MHz
Local Area BS	± 1,6 MHz	-33 dBm	1,28 MHz
Local Area BS	± 3,2 MHz	-33 dBm	1,28 MHz

Table 6.28C: Adjacent channel leakage power Test Requirements for operation in the same geographic area with unsynchronised TDD on an adjacent channel

BS Class	BS Adjacent Channel Offset	Maximum Level	Measurement Bandwidth
Wide Area BS	± 3,4 MHz	-[73 dBm – TT]	3,84 MHz
Local Area BS	± 3,4 MHz	-30 dBm	3,84 MHz

Table 6.28D: Adjacent channel leakage power Test Requirements in case of co-siting with UTRA FDD on an adjacent channel

BS Class	Center Frequency for Measurement	Maximum Level	Measurement Bandwidth
Wide Area BS	1922,6 MHz	-[80 dBm – TT]	3,84 MHz

~~**Table 6.27A: BS ACLR Test Requirements in case of operation in proximity (1,28 Mcps option)**~~

~~Center Frequency for Measurement~~	~~Maximum Level (sum of emitted interference power of all node B antennas at the antenna connector)~~	~~Measurement Bandwidth~~
~~Closest used frequency of victim receiver~~	~~[-36 dBm-TT]~~	~~chip rate of victim receiver~~

~~**Table 6.28A: BS ACLR Test Requirements in case of co-siting (1,28 Mcps option)**~~

~~Center Frequency for Measurement~~	~~Maximum Level (sum of emitted interference power of all node B antennas at the antenna connector)~~	~~Measurement Bandwidth~~
~~Closest used frequency of victim receiver~~	~~[-76 dBm-TT]~~	~~Chip rate of victim receiver~~

6.6.3 Spurious emissions

6.6.3.1 Definition and applicability

Spurious emissions are emissions which are caused by unwanted transmitter effects such as harmonics emission, parasitic emission, intermodulation products and frequency conversion products, but exclude out of band emissions. This is measured at the base station RF output port.

The requirements shall apply whatever the type of transmitter considered (single carrier or multiple carrier). It applies for all transmission modes foreseen by the manufacturer's specification.

For 3.84 Mcps TDD option, either requirement applies at frequencies within the specified frequency ranges which are more than 12,5 MHz under the first carrier frequency used or more than 12,5 MHz above the last carrier frequency used.

For 1,28 Mcps TDD option, either requirement applies at frequencies within the specified frequency ranges which are more than 4 MHz under the first carrier frequency used or more than 4 MHz above the last carrier frequency used.

Unless otherwise stated, all requirements are measured as mean power.

The requirements in this subclause shall apply to both Wide Area BS and Local Area BS, with the exception of the requirements which may be applied for co-existence with UTRA FDD; in this case, different requirements shall apply to Wide Area BS and Local Area BS.~~base stations intended for general purpose applications.~~

6.6.3.2 Minimum Requirements

6.6.3.2.1 Mandatory requirements

The requirements of either subclause 6.6.3.2.1.1 or subclause 6.6.3.2.1.2 shall apply.

6.6.3.2.1.1 Spurious emissions (Category A)

The following requirements shall be met in cases where Category A limits for spurious emissions, as defined in ITU-R Recommendation SM.329-8 [6], are applied.

6.6.3.2.1.1.1 3,84 Mcps TDD option

The power of any spurious emission shall not exceed the maximum level given in Table 6.29.

Table 6.29: BS Mandatory spurious emissions limits, Category A

Band	Maximum level	Measurement bandwidth	Note
9 kHz – 150 kHz	-13 dBm	1 kHz	Bandwidth as in ITU-R SM.329-8, s4.1
150 kHz – 30 MHz		10 kHz	Bandwidth as in ITU-R SM.329-8, s4.1
30 MHz – 1 GHz		100 kHz	Bandwidth as in ITU-R SM.329-8, s4.1
1 GHz – 12,75 GHz		1 MHz	Upper frequency as in ITU-R SM.329-8, s2.5 table 1

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.1.1.1.1.

6.6.3.2.1.1.2 1,28 Mcps TDD option

The power of any spurious emission shall not exceed the maximum level given in Table 6.29A.

Table 6.29A: BS Mandatory spurious emissions limits, Category A

Band	Maximum level	Measurement bandwidth	Note
9 kHz – 150 kHz	-13 dBm	1 kHz	Bandwidth as in ITU-R SM.329-8, s4.1
150 kHz – 30 MHz		10 kHz	Bandwidth as in ITU-R SM.329-8, s4.1
30 MHz – 1 GHz		100 kHz	Bandwidth as in ITU-R SM.329-8, s4.1
1 GHz – 12,75 GHz		1 MHz	Upper frequency as in ITU-R SM.329-8, s2.5 table 1

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.1.1.1.2.

6.6.3.2.1.2 Spurious emissions (Category B)

The following requirements shall be met in cases where Category B limits for spurious emissions, as defined in ITU-R Recommendation SM.329-8 [6], are applied.

6.6.3.2.1.2.1 3,84 Mcps TDD option

The power of any spurious emission shall not exceed the maximum levels given in Table 6.30.

Table 6.30: BS Mandatory spurious emissions limits, Category B

Band	Maximum level	Measurement bandwidth	Note
9 kHz – 150 kHz	-36 dBm	1 kHz	Bandwidth as in ITU-R SM.329-8, s4.1
150 kHz – 30 MHz	-36 dBm	10 kHz	Bandwidth as in ITU-R SM.329-8, s4.1
30 MHz – 1 GHz	-36 dBm	100 kHz	Bandwidth as in ITU-R SM.329-8, s4.1
1 GHz – Fc1 - 60 MHz or Fl - 10 MHz *whichever is the higher*	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329-8, s4.1
Fc1 - 60 MHz or Fl - 10 MHz *whichever is the higher* – Fc1 - 50 MHz or Fl -10 MHz *whichever is the higher*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.3 and Annex 7
Fc1 - 50 MHz or Fl -10 MHz *whichever is the higher* – Fc2 + 50 MHz or Fu +10 MHz *whichever is the lower*	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.3 and Annex 7
Fc2 + 50 MHz or Fu + 10 MHz *whichever is the lower* – Fc2 + 60 MHz or Fu + 10 MHz *whichever is the lower*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.3 and Annex 7
Fc2 + 60 MHz or Fu + 10 MHz *whichever is the lower* – 12,75 GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329-8, s4.1. Upper frequency as in ITU-R SM.329-8, s2.5 table 1

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

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

Fl : Lower frequency of the band in which TDD operates

Fu : Upper frequency of the band in which TDD operates

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.1.2.1.1.

6.6.3.2.1.2.2 1,28 Mcps TDD option

The power of any spurious emission shall not exceed the maximum levels given in Table 6.30A.

Table 6.30A: BS Mandatory spurious emissions limits, Category B for 1,28 Mcps TDD

Band	Maximum Level	Measurement Bandwidth	Note
9kHz – 150kHz	-36 dBm	1 kHz	Bandwidth as in ITU SM.329-8, s4.1
150kHz – 30MHz	- 36 dBm	10 kHz	Bandwidth as in ITU SM.329-8, s4.1
30MHz – 1GHz	-36 dBm	100 kHz	Bandwidth as in ITU SM.329-8, s4.1
1GHz ↔ Fc1-19,2 MHz or Fl –3,2 MHz *whichever is the higher*	-30 dBm	1 MHz	Bandwidth as in ITU SM.329-8, s4.1
Fc1 – 19,2 MHz or Fl - 3,2MHz *whichever is the higher* ↔ Fc1 - 16 MHz or Fl –3,2 MHz *whichever is the higher*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc1 - 16 MHz or Fl –3,2 MHz *whichever is the higher* ↔ Fc2 + 16 MHz or Fu +3,2 MHz *whichever is the lower*	-15 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc2 + 16 MHz or Fu + 3,2MHz *whichever is the lower* ↔ Fc2 +19,2 MHz or Fu + 3,2MHz *whichever is the lower*	-25 dBm	1 MHz	Specification in accordance with ITU-R SM.329-8, s4.1
Fc2 + 19,2 MHz or Fu +3,2 MHz *whichever is the lower* ↔ 12,75 GHz	-30 dBm	1 MHz	Bandwidth as in ITU-R SM.329-8, s4.1. Upper frequency as in ITU-R SM.329-8, s2.5 table 1

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

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

Fl : Lower frequency of the band in which TDD operates

Fu : Upper frequency of the band in which TDD operates

The reference for this requirement is TS 25.105 subclause 6.6.3.1.2.1.2.

6.6.3.2.2 Co-existence with GSM

6.6.3.2.2.1 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.

The power of any spurious emission shall not exceed the maximum level given in Table 6.31.

Table 6.31: BS Spurious emissions limits for BS in geographic coverage area of GSM 900 MS receiver

Band	Maximum level	Measurement bandwidth	Note
921 MHz – 960 MHz	-57 dBm	100 kHz	

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.2.1.1.

6.6.3.2.2.2 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.

The power of any spurious emission shall not exceed the maximum level given in table 6.32.

Table 6.32: BS Spurious emissions limits for protection of the GSM 900 BTS receiver

Band	Maximum level	Measurement bandwidth	Note
876 MHz – 915 MHz	–98 dBm	100 kHz	

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.2.2.1.

6.6.3.2.3 Co-existence with DCS 1800

6.6.3.2.3.1 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.

The power of any spurious emission shall not exceed the maximum level given in table 6.33.

Table 6.33: BS Spurious emissions limits for BS in geographic coverage area of DCS 1800 MS receiver

Band	Maximum level	Measurement bandwidth	Note
1805 MHz – 1880 MHz	-47 dBm	100 kHz	

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.3.1.1.

6.6.3.2.3.2 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.

The power of any spurious emission shall not exceed the maximum level given in table 6.34.

Table 6.34: BS Spurious emissions limits for BS co-located with DCS 1800 BTS

Band	Maximum level	Measurement bandwidth	Note
1710 MHz – 1785 MHz	-98 dBm	100 kHz	

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.3.2.1.

6.6.3.2.4 Co-existence with UTRA FDD

6.6.3.2.4.1 Operation in the same geographic area

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

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 6.35. 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 the maximum level given in table 6.35.

Table 6.35: 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~~32~~ dBm (*)	3,84~~1~~ 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	

(*) 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 6.35 are based on a coupling loss of 67 dB between the TDD and FDD base stations. The requirements for Local Area BS in Table 6.35 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 [9].

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.4.1.1.

6.6.3.2.4.2 Co-located base stations

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

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 6.36. 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 the maximum level given in table 6.36.

Table 6.36: BS Spurious emissions limits for BS co-located with UTRA FDD

BS Class	Band	Maximum Level	Measurement Bandwidth	Note
Wide Area BS	1920 – 1980 MHz	-80~~6~~ dBm (*)	~~1~~3,84 MHz	
Wide Area BS	2110 – 2170 MHz	-52 dBm	1 MHz	

(*) 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 in table 6.36 are based on a minimum coupling loss of 30 dB between base stations. The co-location of different base station classes is not considered. A co-location requirement for the Local Area TDD BS is intended to be part of a later release.

The normative reference for this requirement is TS 25.105 [1] subclause 6.6.3.4.2.1.

Annex D (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 5.11. 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 D.1 to D.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 5.10. 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 5.12.

For example, a Test System having 0,9 dB accuracy for test 6.2 Maximum output power (which is 0,2 dB above the limit specified in subclause 5.10.2) would subtract 0,2 dB from the Test Tolerance of 0,7 dB defined in subclause 5.11.1. This new test tolerance of 0,5 dB would then be applied to the Minimum Requirement using the formula defined in Table D.1 to give a new range of ±2,5 dB of the manufacturer's rated output power.

For the case where an excess error of 0.2 dB exists, when applied to a test with a test tolerance of zero, the test tolerance used in the formula would be –0.2 dB.

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

Test	Minimum Requirement in TS 25.105 (numbering of tables in the column below refers to TS 25.142)	Test Tolerance (TT)	Test Requirement in TS 25.142
6.2 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
6.3 Frequency stability	Frequency stability = ± 0,05 ppm	12 Hz	Formula: ± (frequency stability +TT) ± (0,05 ppm + 12 Hz)
6.4.2 Power control steps	single step: step size tolerance specified in table 6.3 ten steps: minimum and maximum average rate of change in mean power specified in table 6.3	single step: 0,1 dB ten steps: 0,3 dB	Formula: single step: ± (step size tolerance + TT) ten steps: maximum average rate + TT minimum average rate – TT 0,1 dB and 0,3 dB, respectively, applied as above to table 6.3
6.4.3 Power control dynamic range	range ≥ 30 dB	0,3 dB	Formula: Range – TT range ≥ 29,7 dB
6.4.4 Minimum output power	PRAT – 30 dB	0,7 dB	Formula : PRAT – 30 dB +TT PRAT – 29,3 dB
6.4.5 Primary CCPCH power	PCCPCH power tolerance defined in table 6.8	0,8 dB	Formula: ± (power tolerance + TT) 0,8 dB applied as above to table 6.8
6.4.6 Differential accuracy of Primary CCPCH power	Differential accuracy of PCCPCH power: ≤ ± 0,5 dB	0,1 dB	Formula: ± (PCCPCH tolerance + TT) ± 0,6 dB
6.5.1 Transmit OFF power	Tx OFF power limit < -79 dBm	2,0 dB	Formula: < Tx OFF power limit + TT < - 77 dBm
6.5.2 Transmit ON/OFF time mask	Tx power limit < -33 dBm or –79 dBm, resp.	< -33 dBm: 0,7 dB < -79 dBm: 2,0 dB	Formula: < Tx power limit + TT < -32,3 dBm or < - 77 dBm

6.6.1 Occupied bandwidth	occupied bandwidth limit = 5 MHz	0 kHz	Formula: Occupied bandwidth limit + TT Occupied bandwidth limit = 5 MHz
6.6.2.1 Spectrum emission mask	Maximum level defined in tables 6.13 to 6.16	1,5 dB	Formula: Maximum level + TT Add 1,5 dB to Maximum level entries in tables 6.13 to 6.16

6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)	3,84 Mcps TDD option: minimum requirement: ACLR limit = 45 dB at 5 MHz ACLR limit = 55 dB at 10 MHz requirement ~~in case of~~for operation in the same geographic area~~proximity to~~ with unsynchronised TDD BS or FDD BS ~~operating~~ on ~~an~~ adjacent channels ~~frequency~~: Maximum Level defined in tables 6.23 and 6.23AA ~~ACLR limit = 70 dB at 5 MHz~~ ~~ACLR limit = 70 dB at 10 MHz~~ requirement in case of co-siting with unsynchronised TDD BS or FDD BS operating on ~~an~~ adjacent channels ~~frequency~~: Maximum Level defined in tables 6.24 and 6.24A ~~ACLR limit = - 80 dBm at 5 MHz~~ ~~ACLR limit = - 80 dBm at 10 MHz~~ 1,28 Mcps TDD option: minimum requirement: ACLR limit = 40 dB at 1,6 MHz ACLR limit = 45 dB at 3,2 MHz requirement for operation in the same geographic area with unsynchronised TDD or FDD on adjacent channels: Maximum Level defined in tables 6.23A, 6.23B and 6.23C requirement in case of co-siting with unsynchronised TDD or FDD on an adjacent channel: Maximum Level defined in tables 6.24B, 6.24C and 6.24D	3,84 Mcps TDD option: min. req. : 0,8 dB operation in the same geographic area~~proxim~~.: 4 dB (TBD in table 6.23A, 5 MHz offset, resp.) for Wide Area BS ; 0,8 dB for Local Area BS co-siting: TBD for Wide Area BS; 1 dB for Local Area BS 1,28 Mcps TDD option: min. req. : 0,8 dB operation in the same geographic area: 1 dB or 4 dB for the Wide Area BS; 0,8 dB for the Local Area BS co-siting: TBD for the Wide Area BS; 1 dB for the Local Area BS	Formula: ACLR limit – TT 3,84 Mcps TDD option: min. requirement: ACLR limit = 44,2 dB at 5 MHz ACLR limit = 54,2 dB at 10 MHz operation in the same geographic area~~proximity~~: Wide Area BS: Add 4 dB (TBD in table 6.23A, 5 MHz offset, resp.) to the Maximum Level entries in tables 6.23 and 6.23AA. ~~ACLR limit = 66 dB at 5 MHz~~ ~~ACLR limit = 66 dB at 10 MHz~~ Local Area BS: Add 0,8 dB to the Maximum Level entries in tables 6.23 and 6.23AA. co-siting: Wide Area BS: Add TBD to the Maximum Level entries in tables 6.24 and 6.24A. Local Area BS: Add 1 dB to the Maximum Level entries in tables 6.24 and 6.24A. 1,28 Mcps TDD option: min. requirement: ACLR limit = 39,2 dB at 1,6 MHz ACLR limit = 44,2 dB at 3,2 MHz operation in the same geographic area: Wide Area BS: Add 1 dB to the Maximum Level entries in tables 6.23A and 6.23B, and 4 dB to the Maximum Level entry in table 6.23C. Local Area BS: Add 0,8 dB to the Maximum Level entries in tables 6.23A, 6.23B and 6.23C. co-siting: Wide Area BS: Add TBD to the Maximum Level entries in tables 6.24B, 6.24C and 6.24D. Local Area BS: Add 1 dB to the Maximum Level entries in tables 6.24B, 6.24C and 6.24D.
6.6.3 Spurious emissions	maximum level defined in tables 6.29 to 6.37	0 dB	Formula: Maximum limit + TT add 0 dB to maximum levels in tables 6.29 to 6.37

6.7 Transmit intermodulation (interferer requirements) This tolerance applies to the stimulus and not the measurements defined in 6.6.2.1, 6.6.2.2 and 6.6.3.	Wanted signal level – interferer level = 30 dB	0 dB	Formula: Ratio + TT Wanted signal level – interferer level = 30 + 0 dB
6.8.1 Modulation accuracy	EVM limit = 12,5 %	0 %	Formula: EVM limit + TT EVM limit = 12,5 %
6.8.2 Peak code domain error	PCDE limit = - 28 dB	1 dB	Formula: PCDE limit + TT PCDE limit = - 27 dB

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

Test	Minimum Requirement in TS 25.105 (numbering of tables in the column below refers to TS 25.142)	Test Tolerance (TT)	Test Requirement in TS 25.142
7.2 Reference sensitivity	Reference sensitivity level = -109 dBm BER limit = 0,001	0,7 dB	Formula: Reference sensitivity level + TT Reference sensitivity level = -108,3 dBm BER limit is not changed
7.3 Dynamic range	Wanted signal level = <REFSENS> + 30 dB Interfering AWGN level = -73 dBm/3,84 MHz	1,2 dB	Formula: Wanted signal level + TT AWGN level unchanged Wanted signal level = <REFSENS> + 31,2 dB
7.4 Adjacent Channel Selectivity (ACS)	Wanted signal level = Ref. sensitivity level + 6 dB Interfering signal level = -52 dBm/3,84 MHz	0 dB	Formula: Wanted signal level + TT Interfering signal level unchanged Wanted signal level = Ref. sensitivity level + 6 dB
7.5 Blocking characteristics	Wanted signal level = <REFSENS> + 6 dB Interfering signal level see tables 7.6 to 7.8	0 dB	Formula: Wanted signal level + TT Interfering signal level unchanged Wanted signal level = <REFSENS> + 6 dB
7.6 Intermodulation characteristics	Wanted signal level = <REFSENS> + 6 dB 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 Interferer 1 level: unchanged Interferer 2 level: unchanged Wanted signal level = <REFSENS> + 6 dB
7.7 Spurious emissions	Maximum level defined in table 7.12	0 dB	Formula: Maximum level + TT Add TT to maximum level in table 7.12

Table D.3: Derivation of Test Requirements (Performance requirements)

Test	Minimum Requirement in TS 25.105	Test Tolerance (TT)	Test Requirement in TS 25.142
8.2 Demodulation in static propagation conditions		TBD	
8.3 Demodulation of DCH in multipath fading conditions		TBD	

3GPP TSG RAN WG4 Meeting #23 **R4-020830**

Gyeongju, Korea 13th -17th May, 2002

CR-Form-v5

CHANGE REQUEST

⌘ **25.942** **CR** **9** ⌘ ev **-** ⌘ Current version: **5.0.0** ⌘

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

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

Title:	⌘	Antenna to antenna isolation for application in the same geographic area
Source:	⌘	RAN WG4
Work item code:	⌘	RInImp-BSClass-TDD
Date:	⌘	17/5/2002
Category:	⌘	**B**
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)*

Reason for change:	⌘	Addition of system scenarios for different base station classes.
Summary of change:	⌘	Addition of reference coupling loss between base stations for application in the same geographic area. This CR includes the changes corresponding to CR 7 for R99 and CR 8 for Rel-4.
Consequences if not approved:	⌘	Reference scenarios for the requirement in the core specifications are unclear.

Clauses affected:	⌘	10
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications
	⌘	
Other comments:	⌘	This CR includes the changes corresponding to CR 7 for R99 and CR 8 for Rel-4.

10 Antenna-to-Antenna Isolation

10.1 Rationale for MCL value for co-located base stations

The coupling losses between two co-sited base stations are depending on e.g. the deployment scenario and BS antenna gain values. As seen from e.g. [28], different deployment scenarios give raise to a large variation in coupling loss values. However, in order not to have different requirements for different deployment scenarios, it is fruitful to use one value of the minimum coupling loss (MCL) representing all deployment scenarios.

For the case of two operators co-siting their antenna installations on a roof-top, the antennas could be situated in each other's far-fields and the isolation that occur between the sites can be analysed using the ordinary Friis' transmission equation:

$$\text{Isolation}\,[\text{dB}] = 20\log_{10}\left(\frac{2\pi R}{\lambda}\right) - \text{Gain}\,[\text{dBi}],$$

where R is the distance between the antennas, λ is the wavelength and Gain is the total effective gain of the two antennas.

When applying this equation to a deployment scenario with a separation distance of 10 meters between the two sites, both using 65^{o} (14 dBi) sector antennas, an isolation of about 30 dB occur when the antennas are situated in a 35^{o} angle compared to each other. This deployment scenario is regarded as typical to many co-sited antenna installations.

A coupling loss value of 30 dB also coincides with the minimum coupling loss value reported in [29] and one of the measured antenna configurations in [28]. It is also typical to many existing installations, as reported by several operators.

10.2 Rationale for MCL value for operation of base stations in the same geographic area

In general, unwanted emissions limits of base stations for coexistence are devided into requirements for operation in the same geographic area and co-located base stations. The requirements for operation in the same geographic area protect the victim mobile and the requirements for co-located base stations protect the victim base station.

Due to the spectrum arrangement of TDD and FDD, 3GPP defines in addition unwanted emission limits for TDD base stations for protection of the victim base station for operation in the same geographic area. In the same way as for co-located base stations, these additional limits are based on a specific MCL value between base stations. The assumed MCL values between base stations for operation in the same geographic area are explained below.

10.2.1 Wide Area and Geneal Purpose Base Station

It is assumed that the Wide Area and General Purpose BS is mainly deployed in Micro and Macro Environments. Due to the low receiver noise floor of the Macro base station, it is assumed that the Macro BS to Macro BS interference scenario is the most critical situation. That means eventhough the coupling loss for Micro BS to Micro BS or Macro BS to Micro BS may be lower, the desensitisation of the Micro BS would lead to less demanding requirements.

The following scenario is captured in chapter 7.4.1.2.1.3 BS-to-BS propogation model:

87 dB	Pathloss (288 m Line-of-sight)
+13 dB	TX antenna gain
+13 dB	RX antenna gain
-6 dB	Reduction in effective antenna gain due to antenna tilt
= 67 dB	MCL

A MCL of 67 dB is considered as the reference scenario for Macro BS to Macro BS interference for operation in the same geographic area.

For the adjacent channels, where the ACLR requirement applies, an increase of 7 dB for the MCL is assumed, that means a MCL of 74 dB. The increase in MCL is justified by the lower number of interfering base stations, if only adjacent carriers are considered. Further, if the adjacent channels are controlled by the same operator, the carriers may not be deployed in the same hierarchical cell layer in proximity. Note that a requirement for adjacent carriers based on a MCL of 74 dB between Macro base stations may be as well used for Macro base stations with a MCL of 67 dB, if a higher desensitisation of the victim base station is acceptable. I. e. for FDD Macro base stations with a MCL of 67 dB instead of 74 dB the desensitisation would be 3 dB instead of 0.8 dB.

10.2.2 Local Area Base Station

It is assumed that the Local Area is deployed in Pico Environments. Due to the low receiver noise floor of the Macro base station, it is assumed that the Pico BS to Macro BS interference scenario is the most critical situation. That means eventhough the coupling loss for Pico BS to Pico BS or Pico BS to Micro BS may be lower, the desensitisation of the Micro and Pico BS would lead to less stringent requirements.

The Pico BS is similar to a mobile in respect to output power, antenna gain and antenna heights. Therefore for the Pico BS to Macro BS, the same MCL as for the UE to Macro BS is assumed. I. e. a MCL of 70 dB is considered as the reference scenario for Pico BS to Macro BS interference for operation in the same geographic area.

For the adjacent channels, where the ACLR requirement applies, an increase of 7 dB for the MCL is assumed, that means a MCL of 77 dB. The increase in MCL is justified by the lower number of interfering base stations, if only adjacent carriers are considered. Note that a requirement based on a MCL of 77 dB between Pico and Macro base station may be as well used for base stations with a MCL of 70 dB, if a higher desensitisation of the victim base station is accepted. I. e. for FDD Macro base stations with a MCL of 70 dB instead of 77 dB to Pico base stations the desensitisation would be 3 dB instead of 0.8 dB.

For the adjacent channels, where the ACLR requirement applies and the carrier separation is 5 MHz or less, an additional increase of 10 dB for the MCL is assumed, that means a MCL of 87 dB. The increase in MCL is justified by the fact that Local Area base stations will be deployed indoors or significantly below roof top. In these scenarios it may possible to increase the MCL by some adjustment (e.g. deployment around the corner or in the next room). Further, if the adjacent channels are controlled by the same operator, the carriers may not be deployed in the same hierarchical cell layer in proximity. The additional 10 dB assume a typical indoor to outdoor penetration loss.

3GPP TSG RAN WG4 Meeting #23 **R4-020713**

Gyeongju, Korea 13th -17th May, 2002

CR-Form-v5.1

CHANGE REQUEST

⌘ **25.952** **CR** **1** ⌘ **rev** **-** ⌘ Current version: **5.0.0** ⌘

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

Title:	⌘	Correction of ACLR and spurious emission requirements for the 3.84 Mcps TDD Local Area BS
Source:	⌘	RAN WG4
Work item code:	⌘	RInImp-BSClass-TDD
Date:	⌘	17/5/2002
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)

Reason for change:	⌘	The ACLR and spurious emissions requirements currently proposed for the Local Area BS (3.84 Mcps TDD option) in case of operation in the same geographic area or co-siting with other UTRA systems may not provide sufficient protection for co-existence.
Summary of change:	⌘	ACLR requirements are re-defined taking into account the impact on different BS classes and types (FDD or TDD). New requirements for spurious emissions are derived to enable co-existence with UTRA FDD. Correction of wrong references.
Consequences if not approved:	⌘	The ACLR and spurious emissions requirements of the Local Area BS would not sufficiently restrict the generation of interference in adjacent channels; this would impede the co-existence with other UTRA systems operated in the same geographic area or co-sited.

Clauses affected:	⌘	2; 5.3.1; 6.1; 7.1.5.1 (including all subordinate subclauses); 7.1.5.2 (including all subordinate subclauses); 7.1.12 (including all subordinate subclauses)		
Other specs affected:	⌘	☒ Other core specifications ☒ Test specifications ☐ O&M Specifications	⌘	25.105 25.142
Other comments:	⌘			

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Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

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

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

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"

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 ϴ[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 ϴ[4] as:

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 ϴ[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 indoors (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 40dB MCL.

7.1.5 Adjacent Channel Leakage power Ratio (ACLR)

7.1.5.1 Justification

~~Two different ACLR requirements for the local area BS are defined in a similar way as for the wide area BS to consider different deployment scenarios. A minimum requirement, which is based on MS-BS interference and BS-BS interference in case of unsynchronised TDD operation on adjacent carriers with a sufficient de-coupling, and another ACLR requirement based on BS-BS interference for co-siting of unsynchronised TDD operation.~~

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.

~~The minimum requirement is based on MS to BS interference (synchronised operation). Because MS to BS interference is dominated by the performance of the terminal, the same minimum requirement as for the wide area BS is proposed for the local area BS.~~

~~The minimum requirement can also be used for unsynchronised operation, if base stations have a certain distance. The de-coupling between base stations is calculated as follows: for local area BS to local area BS, the indoor office path loss model according to UMTS 30.03 is used, while in case of wide area to local area and vice versa, the path loss model for outdoor to indoor according to UMTS 30.30 is utilised.~~

~~In Table 7.2 the required path loss between base stations is calculated as well as the required distances for free space propagation and for indoor propagation as well as for outdoor to indoor propagation. The value for the required distance in the indoor environment is calculated using a continuous attenuation model according to UMTS 30.03. The required distance for outdoor to indoor environment are also depicted in UMTS 30.03. The chosen formula considers a typical urban and suburban environment.~~

~~**Table 7.2**~~

	~~Unit~~	~~Local area BS to local area BS~~	~~Local area BS to wide area BS~~	~~Wide area BS to local area BS~~
~~Maximum transmit power~~	~~dBm~~	~~26~~	~~26~~	~~39~~
~~TX antenna gain~~	~~dBi~~	~~0~~	~~0~~	~~11~~
~~RX antenna gain~~	~~dBi~~	~~0~~	~~11~~	~~0~~
~~ACLR~~	~~dBc~~	~~45~~	~~45~~	~~45~~
~~Allowed interference~~	~~dBm~~	~~-79~~	~~-106~~	~~-79~~
~~Required path loss~~	~~dB~~	~~**60**~~	~~**98**~~	~~**-84**~~
~~Required distance free space~~	~~m~~	~~11.93~~	~~984.42~~	~~189.23~~
~~Required distance indoor~~	~~m~~	~~5.84~~	~~-~~	
~~Indoor-outdoor model~~	~~m~~	~~-~~	~~56.2~~	~~25.1~~

~~From the table above, it can be observed that already with the minimum requirement a distance below 12 m in the worst case of a line of sight between local area base stations is sufficient to achieve the required de-coupling. Due to this fact there is no need to define a separate proximity requirement for the local area BS. Only an additional co-siting requirement is considered for the local area BS.~~

~~7.1.5.1.2 Requirement in case of co-siting with TDD BS or FDD BS operating on an adjacent frequency~~

~~The co-siting requirement defines an ACLR requirement, which is based on the worst case BS-BS interference of co-located base stations. Only the co-siting of base stations belonging to one class is considered. In Table 7.3 the maximum interference level for co-sited local area base stations is calculated which corresponds to the same absolute ACLR value.~~

Table 7.3

	Unit	Local area BS to local area BS
BS-BS MCL	dB	45
Allowed interference	dBm	-79
max. interference level	dBm	**-34**

For the co-location of local area BSs a maximum interference level of -34 dBm is required.

If base stations of different classes are co-sited, it is assumed that the MCL between the base stations has to be increased. In Table 7.4 the required MCL for co-siting of local and wide area base stations is calculated.

Table 7.4

	Unit	Local area BS to wide area BS	Wide area BS to local area BS
ACLR	dBm	-34	-80
Allowed interference	dBm	-106	-79
BS-BS MCL	dB	**72**	**<0**

If wide area and local area base stations are co-located the de-coupling has to be increased to 72 dB to protect the receiver of the wide area BS.

7.1.5.2 New text for ACLR

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the transmitted power to the power measured in an adjacent channel. Both the transmitted and the adjacent channel power are measured through a matched filter (Root Raised Cosine and roll-off 0.22) with a noise power bandwidth equal to the chip rate. The requirements shall apply for all configurations of BS (single carrier or multi-carrier), and for all operating modes foreseen by the manufacturer's specification.

7.1.5.2.1 Minimum Requirement

The ACLR shall be higher than the value specified in Table 7.5.

Table 7.5: BS ACLR

BS adjacent channel offset	ACLR limit
± 5 MHz	45 dB
± 10 MHz	55 dB

7.1.5.2.2 Requirement in case of co-siting with TDD local area BS or FDD local area BS operating on an adjacent frequency

In case the equipment is co-sited to another TDD BS or FDD BS operating on the first or second adjacent frequency, the requirement is specified in terms of the adjacent channel power level of the BS measured in the adjacent channel. The adjacent channel power shall not exceed the limit in Table 7.6.

Table 7.6: BS ACLR in case of co-siting

BS class	BS adjacent channel offset	Maximum Level	Measurement Bandwidth
Wide area BS	± 5 MHz	-80 dBm	3.84 MHz
Wide area BS	± 10 MHz	-80 dBm	3.84 MHz
Local area BS	± 5 MHz	-34 dBm	3.84 MHz
Local area BS	± 10 MHz	-34 dBm	3.84 MHz

~~NOTE: The requirement is based on a minimum coupling loss of 30 dB between wide area base stations and a minimum coupling loss of 45 dB between local area base stations. For the co-siting of unsynchronised base stations of different classes operating on adjacent frequencies a minimum coupling loss of 72 dB between wide area and local area base stations is assumed.~~

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.

7.1.12 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 dBm + 70 dB = -40 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	

(*) 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.