3GPP TR 25.829 V7.1.0 (2006-10)

Technical Report

3rd Generation Partnership Project; Technical Specification Group Radio Access Network; 7.68 Mcps TDD opption: RF transmission/reception, System performance requirements and conformance testing (Release 7)

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Keywords
UMTS, radio

3GPP

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Foreword

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Introduction

The 7.68Mcps TDD option is a Release 7 work item that was agreed in the RAN#25 plenary meeting. This work item involves the introduction of the 7.68Mcps TDD physical layer within UTRA. This document describes the RF related aspects of the 7.68Mcps TDD option and serves as a record of the changes that will be required to introduce the 7.68Mcps TDD option within the RAN4 controlled specifications. The structure of this document maps to the main areas of the RAN4 specifications that will be impacted by the introduction of the 7.68Mcps TDD option.

1 Scope

The present document specifies the RF and performance requirements for the 7.68Mcps TDD Option. The RF requirements relate to Radio Resource Management, UE transmission and reception and Base Station transmission and reception. Performance requirements relate to Base Station conformance tests and RF system scenarios. The document highlights areas of commonality with the 3.84Mcps TDD option and, where appropriate, describes the differences to the 3.84Mcps TDD option.

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*.

[1] 3GPP TR 25.895: "Analysis of higher chip rates for UTRA TDD evolution (Release 6)".

[2] 3GPP TS 25.102: "UE Radio Transmission and Reception (TDD)".

[3] 3GPP TS 25.105: "BS Radio Transmission and Reception (TDD)".

[4] ITU-R Recommendation SM.329: "Unwanted emissions in the spurious domain".

[5] 3GPP TS 25.304: "UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode".

[6] 3GPP TS 25.123: "Requirements for support of radio resource management (TDD)".

[7] 3GPP TS 25.331: "RRC protocol specification".

[8] 3GPP TS 45.008: "Radio subsystem link control".

[9] 3GPP TS 25.225: "Physical layer measurements (TDD)".

[10] 3GPP TS 25.302: "Services provided by physical layer".

[11] 3GPP TS 25.809: "7.68 Mcps TDD Option: Physical Layer".

[12] 3GPP TS 25.142: "Base Station (BS) Conformance Testing (TDD)".

[13] ITU-T recommendation O.153: "Basic parameters for the measurement of error performance at bit rates below the primary rate".

[14] 3GPP TS 25.306: "UE Radio Access capabilities definition".

[15] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions, symbols and abbreviations

For the purposes of the present document, the terms and definitions given in TR 21.905 [15] apply.

4 (void)

5 UE radio transmission and reception

The information presented in this section is based on the 7.68 Mcps chip rate.

5.1 Frequency bands and channel arrangement

5.1.1 Frequency bands

Common with 3.84 Mcps TDD option. The 2.6 GHz band is FFS.

5.1.2 TX-RX frequency separation

Common with 3.84 Mcps TDD option.

5.1.3 Channel arrangement

5.1.3.1 Channel spacing

The nominal channel spacing is 10 MHz, but this can be adjusted to optimise performance in a particular deployment scenario.

5.1.3.2 Channel raster

Common with 3.84 Mcps TDD option.

5.1.3.3 Channel number

Common with 3.84 Mcps TDD option.

5.1.3.3 UARFCN

The following UARFCN range shall be supported for each band:

Table 5.1.3.1: UTRA Absolute Radio Frequency Channel Number 7.68 Mcps TDD Option

Frequency Band	Frequency Range	UARFCN Uplink and Downlink transmission
For operation in frequency band as defined in subclause 5.2 (a) of TS 25.102 [2]	1900-1920 MHz 2010-2025 MHz	9524 to 9576 10074 to 10101
For operation in frequency band as defined in subclause 5.2 (b) of TS 25.102 [2]	1850-1910 MHz 1930-1990 MHz	9274 to 9526 9674 to 9926
For operation in frequency band as defined in subclause 5.2 (c) of TS 25.102 [2]	1910-1930 MHz	9574 to 9626

5.2 Transmitter characteristics

5.2.1 General

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

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

All the parameters in Section 5.2 are defined using the UL reference measurement channel (12.2 kbps) as specified in Annex A.2.1 of TS 25.102 [2] with twice the spreading factor (SF=16) and mid-amble (1024 chips). This is the same reference bearer used in TR 25.895 [1].

5.2.2 Transmit power

5.2.2.1 User Equipment Maximum output power

Common with 3.84Mcps TDD option.

5.2.3 UE frequency stability

Common with 3.84Mcps TDD option.

5.2.4 Output power dynamics

Power control is used to limit the interference level.

5.2.4.1 Power control

Uplink power control is the ability of the UE transmitter to set its output power in accordance with measured downlink path loss, values determined by higher layer signalling and path loss weighting parameter α as defined in TS 25.331. The output power is defined as the RRC filtered mean power of the transmit timeslot

5.2.4.1.1 Initial Accuracy

Common with 3.84Mcps TDD option.

5.2.4.1.2 Differential accuracy, controlled input

Common with 3.84Mcps TDD option.

5.2.4.1.3 Differential accuracy, measured input

Common with 3.84Mcps TDD option.

5.2.4.2 Minimum output power

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

5.2.4.2.1 Minimum requirement

The minimum output power is defined as the mean power in one time slot excluding the guard period. The minimum output power shall be less than –41 dBm.

5.2.4.3 Out-of-synchronisation handling of output power

The UE shall monitor the DPCH quality in order to detect a loss of the signal on Layer 1, as specified in TS 25.224. The thresholds Q_{out}, Q_{in}, Q_{sbout} and Q_{sbin} specify at what DPCH quality levels the UE shall shut its power off and when it shall turn its power on, respectively. The thresholds are not defined explicitly, but are defined by the conditions under which the UE shall shut its transmitter off and turn it on, as stated in this clause.

5.2.4.3.1 Requirement for continuous transmission

5.2.4.3.1.1 Minimum requirement

When the UE estimates the DPCH quality over the last 160 ms period to be worse than a threshold Q_{out}, the UE shall shut its transmitter off within 40 ms. The UE shall not turn its transmitter on again until the DPCH quality exceeds an acceptable level Q_{in}. When the UE estimates the DPCH quality over the last 160 ms period to be better than a threshold Q_{in}, the UE shall again turn its transmitter on within 40 ms.

The UE transmitter shall be considered "off" if the transmitted power is below the level defined in subclause 5.2.5.1 (Transmit off power). Otherwise the transmitter shall be considered as "on".

5.2.4.3.1.2 Test case

This subclause specifies a test case, which provides additional information for how the minimum requirement should be interpreted for the purpose of conformance testing in case of continuous transmission.

The conditions for the continuous test case are as follows:

The handover triggering level shall be set very high to ensure that the beacon channel power never exceeds the value of 10dB above it. Therefore the averaging time for signal quality will always be 160 milliseconds.

The quality levels at the thresholds Q_{out} and Q_{in} correspond to different signal levels depending on the downlink conditions DCH parameters. For the conditions in Table 5.2.4.1, a signal with the quality at the level Q_{out} can be generated by a ΣDPCH_Ec/Ior ratio of -16 dB, and a signal with Q_{in} by a ΣDPCH_Ec/Ior ratio of -12 dB. In this test, the DL reference measurement channel (12.2) kbps specified in subclause A.2.2 in TS 25.102 [2] with twice the spreading factor (SF=32) and midamble (1024 chips), where the CRC bits are replaced by data bits, and with static propagation conditions is used.

Table 5.2.4.1: DCH parameters for the of Out-of-synch handling test case – 7.68 Mcps TDD option – continuous transmission

Parameter	Unit	Value
$\hat{I}_{or}/I_{oc}$	dB	1.1
I_{oc}	dBm/7.68 MHz	-60
$\frac{\Sigma DPCH\_E_c}{I_{or}}$	dB	See Figure 5.2.4.1
Information Data Rate	kbps	13
TFCI	-	On

Figure 5.2.4.1 shows an example scenario where the ΣDPCH_Ec/Ior ratio varies from a level where the DPCH is demodulated under normal conditions, down to a level below Q_{out} where the UE shall shut its power off and then back up to a level above Q_{in} where the UE shall turn the power back on.

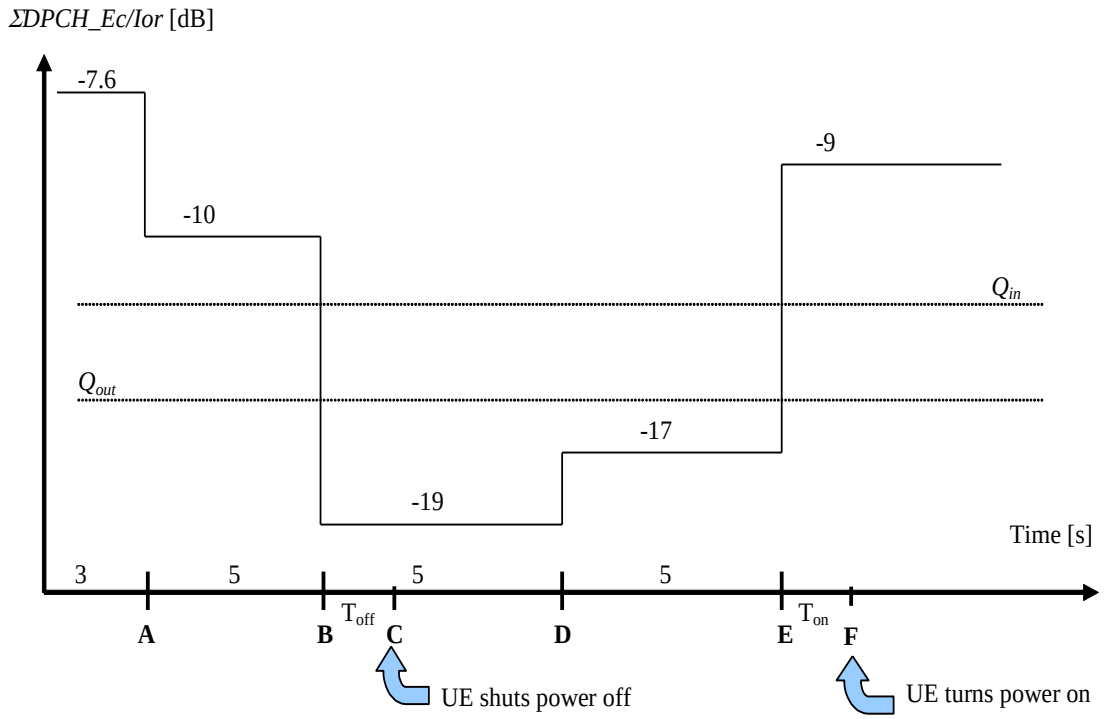

Figure 5.2.4.1: Test case for out-of-synch handling in the UE. – 7.68 Mcps TDD option – continuous transmission

In this test case, the requirements for the UE are that

1) The UE shall not shut its transmitter off before point B.
2) The UE shall shut its transmitter off before point C, which is T_{off} = 200 ms after point B
3) The UE shall not turn its transmitter on between points C and E.
4) The UE shall turn its transmitter on before point F, which is T_{on} = 200 ms after Point E.

5.2.4.3.1.3 Rationale

Since the BER vs. $\hat{I}_{or}/I_{oc}$ performance in 7.68 Mcps is similar to that in 3.84 Mcps as shown in TR 25.895 [1], the $\hat{I}_{or}/I_{oc}$ reference in Table 5.2.4.1 is the same as that in 3.84 Mcps. The processing gain of the 7.68 Mcps reference bearer is twice that of 3.84 Mcps. Hence, the DPCH quality levels (Q_{out}, Q_{in} and levels in Figure 5.2.4.1) are 3dB lower than those in 3.84 Mcps as described in TS 25.102 [2].

5.2.4.3.2 Requirement for discontinuous transmission

5.2.4.3.2.1 Minimum requirement

During DTX, there are periods when the UE will receive no data from the UTRAN. As specified in TS 25.224, in order to keep synchronization, Special Bursts shall be transmitted by the UTRAN during these periods of no data.

During these periods, the conditions for when the UE shall shut its transmitter on or off are defined by the power level of the received Special Bursts.

When the UE does not detect at least one special burst with a quality above a threshold Q_{sbout} over the last 160 ms period, the UE shall shut its transmitter off within 40 ms. The UE shall not turn its transmitter on again until the special burst quality exceeds an acceptable level Q_{sbin}. When the UE estimates the special burst quality to be better than a threshold Q_{sbin} over the last 160 ms, the UE shall again turn its transmitter on within 40 ms.

The UE transmitter shall be considered "off" if the transmitted power is below the level defined in subclause 5.2.5.1 (Transmit off power). Otherwise the transmitter shall be considered as "on".

5.2.4.3.2.2 Test case

This subclause specifies a test case, which provides additional information for how the minimum requirement should be interpreted for the purpose of conformance testing in case of discontinuous transmission.

The conditions for the discontinuous test case are as follows:

The handover triggering level shall be set very high to ensure that the beacon channel power never exceeds the value of 10dB above it. Therefore the averaging time for signal quality will always be 160 milliseconds.

The UTRAN transmits Special Bursts as specified in TS 25.224. The Special Burst Scheduling Parameter, SBSP = 4, which means that UTRAN sends a Special Burst at every fourth frame with no data. Therefore, the UTRAN sends a Special Burst in the first frame without data transmission, followed by 3 frames with no transmission; followed by a Special Burst, etc.

The DCH parameters are shown in Table 5.2.4.2.

The quality levels at the thresholds Q_{sbout} and Q_{sbin} correspond to different signal levels depending on the downlink conditions DCH parameters. For the conditions in Table 5.2.4.2, a signal with the quality at the level Q_{sbout} can be generated by a DPCH_Ec/Ior ratio during received special bursts of -19 dB, and a signal with Q_{sbin} by a DPCH_Ec/Ior ratio during received special bursts of -15 dB.

Table 5.2.4.2: DCH parameters for the of Out-of-synch handling test case – 7.68 Mcps TDD option – discontinuous transmission

Parameter	Unit	Value
$\hat{I}_{or}/I_{oc}$	dB	1.1
I_{oc}	dBm/7.68 MHz	-60
$\frac{DPCH\_E_c}{I_{or}}$	dB	See Figure 5.2.4.2
Bits/burst (including TFCI bits)	bits	244
TFCI	-	On

Figure 5.2.4.2 shows an example scenario where the special burst quality varies from a level above Q_{sbin} , down to a level below Q_{sbout} where the UE shall shut its power off and then back up to a level above Q_{sbin} where the UE shall turn the power back on.

While the normal data is transmitted using two channelization codes, the Special Burst is transmitted with only one channelization code. Therefore the total energy per chip during Special Bursts is 3 dB lower than for continuous data transmission. The Special Bursts are represented by "SBs" in Figure 5.2.4.2.

During the period of 3 frames with no data, the UE will receive a very low power, which is not shown in the figure. The power shown in the figure is the power of the Special Burst.

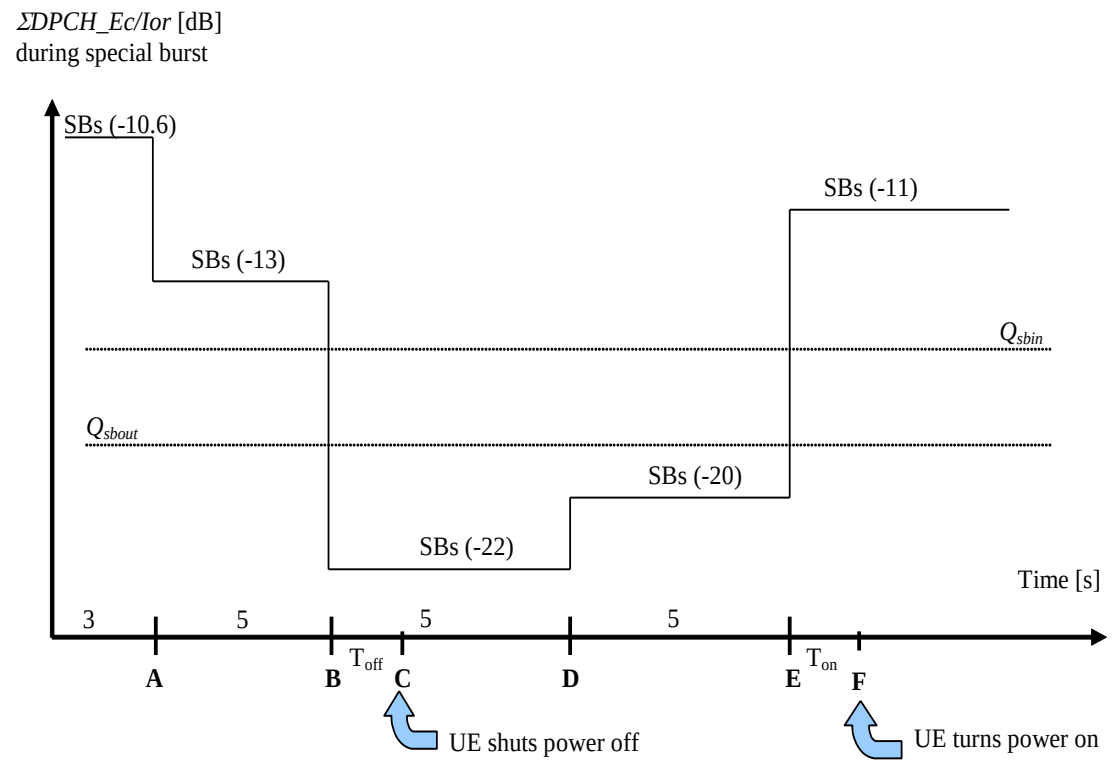

Figure 5.2.4.2: Test case for out-of-synch handling in the UE – 7.68 Mcps TDD option - discontinuous transmission

In this test case, he requirements for the UE are that:

1) The UE shall not shut its transmitter off before point B.
2) The UE shall shut its transmitter off before point C, which is T_{off} = 200 ms after point B.
3) The UE shall not turn its transmitter on between points C and E.
4) The UE shall turn its transmitter on before point F, which is T_{on} = 200 ms after Point E.

5.2.5 Transmit ON/OFF power

5.2.5.1 Transmit OFF power

Common with 3.84Mcps TDD option.

5.2.5.2 Transmit ON/OFF Time mask

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

5.2.5.2.1 Minimum Requirement

The transmit power level versus time shall meet the mask specified in Figure 5.2.5.1, where the transmission period refers to the burst without guard period for a single transmission slot, and to the period from the beginning of the burst in the first transmission slot to the end of the burst without guard period in the last transmission timeslot for consecutive transmission slots.

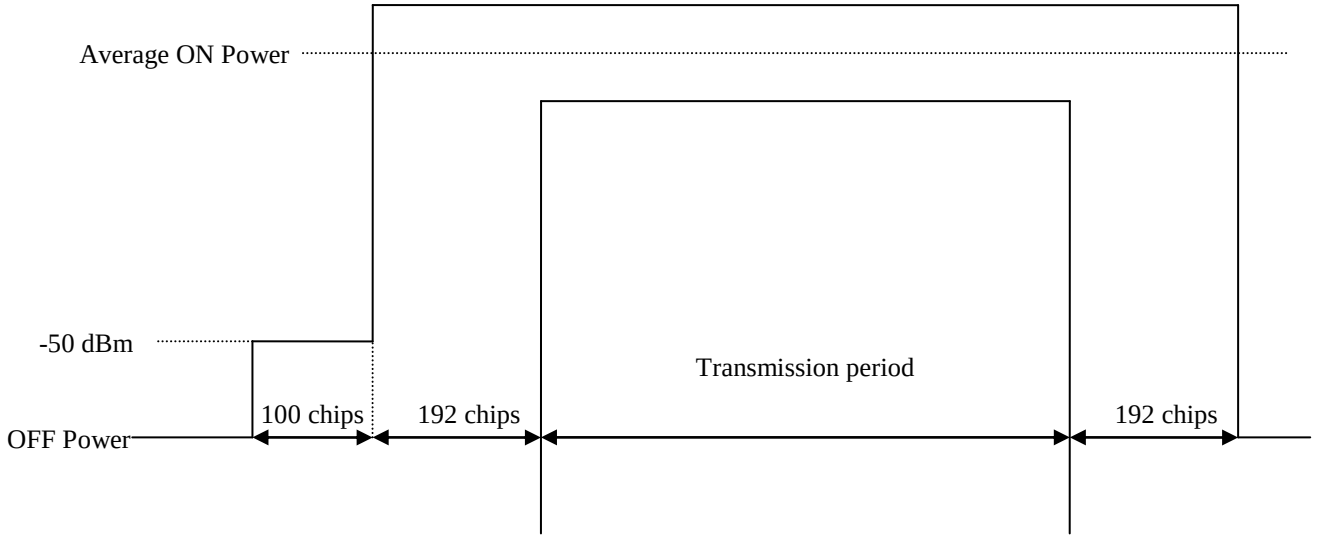

Figure 5.2.5.1: Transmit ON/OFF template for 7.68 Mcps TDD Option

5.2.6 Output RF spectrum emissions

5.2.6.1 Occupied bandwidth

Occupied bandwidth is a measure of the bandwidth containing 99% of the total integrated power of the transmitted spectrum, centred on the assigned channel frequency. The occupied channel bandwidth shall be less than 10 MHz based on a chip rate of 7.68 Mcps.

5.2.6.2 Out of band emission

Out of band emissions are unwanted emissions immediately outside the nominal channel resulting from the modulation process and non-linearity in the transmitter but excluding spurious emissions. This out of band emission limit is specified in terms of a spectrum emission mask and adjacent channel leakage power ratio (ACLR).

5.2.6.2.1 Spectrum emission mask

The spectrum emission mask of the UE applies to frequencies, which are between 5 MHz and 25MHz from the UE centre carrier frequency. The out of channel emission is specified relative to the RRC filtered mean power of the UE carrier. The power of any UE emission shall not exceed the levels specified in Table 5.2.6.1.

Table 5.2.6.1: Spectrum Emission Mask of higher chip rate reference configuration

Δf* in MHz	Minimum requirement	Measurement bandwidth
5.0 – 5.75	$\left\{-38-10.67\cdot\left(\frac{\Delta f}{MHz}-5.0\right)\right\}dBc$	30 kHz **
5.75 – 7.0	$\left\{-46-5.6\cdot\left(\frac{\Delta f}{MHz}-5.75\right)\right\}dBc$	30 kHz**
7.0 - 15	$\left\{-38-0.5\cdot\left(\frac{\Delta f}{MHz}-7.0\right)\right\}dBc$	1 MHz ***
15.0 – 17.0	$\left\{-42-5.0\cdot\left(\frac{\Delta f}{MHz}-15.0\right)\right\}dBc$	1 MHz ***
17.0 – 25.0	-53 dBc	1 MHz ***
*	Δf is the separation between the carrier frequency and the centre of the measuring filter.	
**	The first and last measurement position with a 30 kHz filter is at Δf equals to 5.015 MHz and 6.985 MHz	
***	The first and last measurement position with a 1 MHz filter is at Δf equals to 7.5 MHz and 24.5 MHz. As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. To improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be different from the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.	
Note:	The lower limit shall be –47dBm/7.68 MHz or the minimum requirement presented in this table which ever is the higher.	

5.2.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)

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

If the adjacent channel RRC filtered mean power is greater than –50dBm measured with a 3.84 Mcps RRC filter then the ACLR shall be higher than the value specified in Table 5.2.6.1.

Table 5.2.6.1: UE ACLR of higher chip rate reference configuration

Power Class	adjacent channel	Chip Rate for RRC Measurement Filter	ACLR limit
2, 3	UE channel ± 7.5 MHz	3.84 MHz	33 dB
2, 3	UE channel ± 12.5 MHz	3.84 MHz	43 dB
2 ,3	UE channel ± 20.0 MHz	7.68 MHz	43 dB

NOTE:

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

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

5.2.6.2.3 Spurious emissions

The spurious emissions limits specified for 3.84 Mcps option in section 6.6.3.1.1 of [2] shall apply at offset greater than 25 MHz from the UE centre frequency [1].

5.2.7 Transmit intermodulation

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.

5.2.7.1 Minimum requirement

User Equipment(s) transmitting in close vicinity of each other can produce intermodulation products, which can fall into the UE, or BS receive band as an unwanted interfering signal. The UE intermodulation attenuation is defined by the ratio of the RRC filtered mean power of the wanted signal to the RRC filtered mean power of the intermodulation product when an interfering CW signal is added at a level below the wanted signal.

The requirement of transmitting intermodulation for carrier spacing 10 MHz is prescribed in Table 5.2.7.1.

Table 5.2.7.1: Transmit Intermodulation (7.68 Mcps TDD Option)

Interference Signal Frequency Offset	10MHz	20MHz
Interference Signal Level	-40 dBc	
Minimum Requirement	-31dBc	-41dBc

5.2.8 Transmit Modulation

Transmit modulation defines the modulation quality for expected in-channel RF transmissions from the UE. The requirements apply to all transmissions.

5.2.8.1 Transmit pulse shape filter

Common with 3.84Mcps TDD option.

5.2.8.2 Error Vector Magnitude

Common with 3.84Mcps TDD option.

5.2.8.3 Peak Code Domain Error

This specification is applicable for multi-code transmission only.

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. The Peak Code Domain Error is defined as the maximum value for Code Domain Error. The period of measurement shall be one transmit timeslot excluding the guard period, and the midamble.

5.2.8.3.1 Minimum Requirement

The peak code domain error shall not exceed -24 dB at spreading factor 32 for the parameters specified in Table 5.2.7.1.

The requirements are defined using the UL reference measurement channel specified in subclause A.2.7 of TS 25.102 [2] with twice the spreading factor (SF32) and twice the mid-amble (1024 chips).

5.2.8.3.2 Rationale

The Peak Code Domain Error is a function of the Error Vector Magnitude and inverse of spreading factor (1/SF). Since the spreading factor used here is twice that of 3.84 Mcps, the Peak Code Domain Error for 7.68 Mcps should be 3 dB lower than that in 3.84 Mcps.

5.3 Receiver characteristics

5.3.1 General

Unless detailed the receiver characteristic are specified at the antenna connector of the UE. For UE with an integral antenna only, a reference antenna with a gain of 0 dBi is assumed. UE with an integral antenna may be taken into account by converting these power levels into field strength requirements, assuming a 0 dBi gain antenna. Receiver characteristics for UE(s) with multiple antennas/antenna connectors are FFS.

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

All the parameters in Section 5.3 are defined using the DL reference measurement channel specified in Annex A.2.2 of TS 25.102 [2] with twice the spreading factor (SF=32) and mid-amble (1024 chips). This is the same reference bearer used in TR 25.895 [1].

5.3.2 Diversity characteristics

Common with 3.84Mcps TDD option.

5.3.3 Reference sensitivity level

The reference sensitivity level is the minimum mean power received at the UE antenna port at which the BIT Error Ratio BER shall not exceed a specific value.

5.3.3.1 Minimum Requirement

The BER shall not exceed 0.001 for the parameters specified in Table 5.3.3.1.

Table 5.3.3.1: Test parameters for reference sensitivity (7.68 Mcps TDD Option)

Parameter	Level	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	-105	dBm/7.68 MHz

5.3.3.2 Rationale

In TR 25.895 [1], at BER performance is approximately the same for 7.68 Mcps and 3.84 Mcps for 12.2 kbps bearer in AWGN. The processing gain for 7.68 Mcps is 3dB more than that in 3.84 Mcps. However, the Rx Noise for 7.68 Mcps is 3dB more than that in 3.84 Mcps. Hence, the reference sensitivity for 7.68 Mcps is approximately the same as that in 3.84 Mcps.

5.3.4 Maximum input level

The maximum input level is defined as the maximum mean power received at the UE antenna port which does not degrade the specified BER performance.

5.3.4.1 Minimum Requirement

The BER shall not exceed 0.001 for the parameters specified in Table 5.3.4.1.

Table 5.3.4.1: Maximum input level (7.68 Mcps TDD Option)

Parameter	Level	Unit
$\frac{\Sigma \text{DPCH\_Ec}}{\text{I}_{\text{or}}}$	-10	dB
$\hat{\text{I}}_{\text{or}}$	-25	dBm/7.68 MHz

5.3.4.2 Rationale

The data rate of the reference bearer is the same as that in 3.84 Mcps and the processing gain of the reference bearer in 7.68 Mcps is twice that in 3.84 Mcps. Hence the $\frac{\Sigma \text{DPCH\_Ec}}{\text{I}_{\text{or}}}$ is 3 dB lower (or -10 dB) in 7.68 Mcps compared to that 3.84 Mcps (i.e. -7 dB [2]).

5.3.5 Adjacent Channel Selectivity (ACS)

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

5.3.5.1 Minimum Requirement

The ACS shall be better than the value indicated in Table 5.3.5.1 for the test parameters specified in 5.3.5.2where the BER shall not exceed 0.001

Table 5.3.5.1: Adjacent Channel Selectivity (7.68 Mcps TDD Option)

Power Class	Unit	ACS
2	dB	33
3	dB	33

Table 5.3.5.2: Test parameters for Adjacent Channel Selectivity (7.68 Mcps TDD Option)

Parameter	Unit	Level
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	dB	0
$\hat{I}_{or}$	dBm/7.68 MHz	-91
I_{oac} mean power (modulated)	dBm	-52
F_{uw} offset (3.84 Mcps Modulated)	MHz	+7.5 or –7.5
F_{uw} offset (7.68 Mcps Modulated)	MHz	+10 or -10

5.3.6 Blocking characteristics

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

5.3.6.1 Minimum Requirement

The BER shall not exceed 0.001 for the parameters specified in table 5.3.6.1 and table 5.3.6.2. For table 5.3.6.2 up to 24 exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a 1MHz step size.

Table 5.3.6.1: In-band blocking

Parameter	Level		Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0		dB
$\hat{I}_{or}$	-102		dBm/7.68 MHz
I_{ouw} mean power (modulated)	-53 (for F_{uw} offset ±20 MHz)	-41 (for F_{uw} offset ±30 MHz)	dBm

Table 5.3.6.2: Out of band blocking

Parameter	Band 1	Band 2	Band 3	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	0	0	dB
$\hat{I}_{or}$	–102	–102	–102	dBm/7.68 MHz
I_{ouw} (CW)	-44	-30	-15	dBm
F_{uw} For operation in frequency bands as definded in subclause 5.2(a) of TS 25.102 [2]	1840 <f <1870 1950 <f <1980 2055 <f <2085	1815 <f <1840 2085 <f <2110	1< f <1815 2110< f <12750	MHz
F_{uw} For operation in frequency bands as definded in subclause 5.2(b) of TS 25.102 [2]	1790 < f < 1820 2020 < f < 2050	1765 < f < 1790 2050 < f < 2075	1 < f < 1765 2075 < f < 12750	MHz
F_{uw} For operation in frequency bands as definded in subclause 5.2(c) of TS 25.102 [2]	1850 < f < 1880 1960 < f < 1990	1825 < f < 1850 1990 < f < 2015	1 < f < 1825 2015 < f < 12750	MHz
1. For operation referenced in 5.2(a) of TS 25.102 [2], from 1870 <f< 1900 MHz, 1920 <f< 1950 MHz, 1980 <f< 2010 MHz and 2025<f< 2055 MHz , the appropriate in-band blocking in table 5.3.6.1 or adjacent channel selectivity in section 5.3.5.1 shall be applied.				
2. For operation referenced in 5.2(b) of TS 25.102 [2], from 1820 < f < 1850 MHz and 1990< f < 2020 MHz, the appropriate in-band blocking in table 5.3.6.1 or adjacent channel selectivity in section 5.3.5.1 shall be applied.				
3. For operation referenced in 5.2(c) of TS 25.102 [2], from 1880 < f < 1910 MHz and 1930< f < 1960 MHz, the appropriate in-band blocking in table 5.3.6.1 or adjacent channel selectivity in section 5.3.5.1 shall be applied.				

5.3.6.2 Rationale

The in-band blocking at the Xth adjacent channel (ACS X) can be calculated as follows (based on 3 dB degradation in sensitivity).

$I_{blocking}$ = Noise Figure + 10 × Log(Channel Chip Rate) – kT + ACS X

Where kT = -174 dBm/Hz. The Noise Figure and ACS for 7.68 Mcps are the same as those in 3.84 Mcps. Since the Channel Chip Rate in 7.68 Mcps TDD Option is twice that in 3.84 Mcps TDD Option, $I_{blocking}$ for 7.68 Mcps is 3 dB higher than that of 3.84 Mcps TDD option.

5.3.7 Spurious response

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

5.3.7.1 Minimum Requirement

The BER shall not exceed 0.001 for the parameters specified in Table 5.3.7.1.

Table 5.3.7.1: Spurious Response

Parameter	Level	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	–102	dBm/7.68 MHz
I_{ouw} (CW)	-44	dBm
F_{uw}	Spurious response frequencies	MHz

5.3.8 Intermodulation characteristics

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

5.3.8.1 Minimum Requirement

The BER shall not exceed 0.001 for the parameters specified in table 5.3.8.1.

Table 5.3.8.1: Receive intermodulation characteristics

Parameter	Level	Unit
$\frac{\Sigma DPCH\_Ec}{I_{or}}$	0	dB
$\hat{I}_{or}$	–102	dBm/7.68 MHz
I_{ouw1} (CW)	-46	dBm
I_{ouw2} mean power (modulated)	-46	dBm
F_{uw1} (CW)	±20	MHz
F_{uw2} (modulated)	±40	MHz

5.3.9 Spurious emissions

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

5.3.9.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 5.3.9.1: Receiver spurious emission requirements

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1.9 GHz and 1.92 GHz – 2.01 GHz and 2.025 GHz – 2.11 GHz	-47 dBm	1 MHz	With the exception of frequencies between 25MHz below the first carrier frequency and 25MHz above the last carrier frequency used by the UE.
1.9 GHz – 1.92 GHz and 2.01 GHz – 2.025 GHz and 2.11 GHz – 2.170 GHz	-57 dBm	7.68 MHz	With the exception of frequencies between 25MHz below the first carrier frequency and 25MHz above the last carrier frequency used by the UE.
2.170 GHz – 12.75 GHz	-47 dBm	1 MHz	

5.4 Performance requirements

The performance requirements for the UE in this section are specified for the measurement channels specified in 5.5.1 and the propagation condition specified in 5.5.2.

5.4.1 Demodulation in static propagation conditions

5.4.1.1 Demodulation of DCH

The performance requirement of DCH in static propagation conditions is determined by the maximum Block Error Ratio (BLER). The BLER is specified for each individual data rate of the DCH. DCH is mapped into the Dedicated Physical Channel (DPCH).

5.4.1.1.1 Minimum requirement

For the parameters specified in Table 5.4.1.1 the BLER should not exceed the piece-wise linear BLER curve specified in Table 5.4.1.2. These requirements are applicable for TFCS size 16.

Table 5.4.1.1: DCH parameters in static propagation conditions

Parameters	Unit	Test 1
$\frac{\Sigma DPCH\_E_c}{I_{or}}$	dB	-9
I_{oc}	dBm/7.68 MHz	-60
Cell Parameter (note)	-	0,1
DPCH Channelization Codes (note)	C(k, Q)	C(i, 32), i = 1,2
OCNS Channelization Code (note)	C(k, Q)	C(3, 32)
Information Data Rate	kbps	12.2
NOTE: Refer to TS 25.223 for definition of channelization codes and cell parameter.		

Table 5.4.1.2: Performance requirements in AWGN channel

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	1.1	10^{-2}

5.4.2 Demodulation of DCH in multipath fading conditions

5.4.2.1 Multipath fading Case 1

The performance requirement of DCH is determined by the maximum Block Error Ratio (BLER). The BLER is specified for each individual data rate of the DCH. DCH is mapped into the Dedicated Physical Channel (DPCH).

5.4.2.1.1 Minimum requirement

For the parameters specified in Table 5.4.2.1 the BLER should not exceed the piece-wise linear BLER curve specified in Table 5.4.2.2. These requirements are applicable for TFCS size 16.

Table 5.4.2.1: DCH parameters in multipath Case 1 channel

Parameters	Unit	Test 1
$\frac{\Sigma DPCH\_E_c}{I_{or}}$	dB	-9
Ioc	dBm/7.68 MHz	-60
Cell Parameter (note)	-	0,1
DPCH Channelization Codes (note)	C(k, Q)	C(i, 32), i = 1,2
OCNS Channelization Code (note)	C(k, Q)	C(3, 32)
Information Data Rate	kbps	12.2
NOTE: Refer to TS 25.223 for definition of channelization codes and cell parameter.		

Table 5.4.2.2: Performance requirements in multipath Case 1 channel

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	13.9	10^{-2}

5.4.2.2 Multipath fading Case 2

The performance requirement of DCH is determined by the maximum Block Error Ratio (BLER). The BLER is specified for each individual data rate of the DCH. DCH is mapped into the Dedicated Physical Channel (DPCH).

5.4.2.2.1 Minimum requirement

For the parameters specified in Table 5.4.2.3 the BLER should not exceed the piece-wise linear BLER curve specified in Table 5.4.2.4. These requirements are applicable for TFCS size 16.

Table 5.4.2.3: DCH parameters in multipath Case 2 channel

Parameters	Unit	Test 1
$\frac{\Sigma DPCH\_E_c}{I_{or}}$	dB	-6
I_{oc}	dBm/7.68 MHz	-60
Cell Parameter (note)	-	0,1
DPCH Channelization Codes (note)	C(k, Q)	C(i, 32), i = 1,2
OCNS Channelization Code (note)	C(k, Q)	C(3, 32)
Information Data Rate	kbps	12.2
NOTE: Refer to TS 25.223 for definition of channelization codes and cell parameter.		

Table 5.4.2.4: Performance requirements in multipath Case 2 channel

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	5.8	10^{-2}

5.4.2.3 Multipath fading Case 3

The performance requirement of DCH is determined by the maximum Block Error Ratio (BLER). The BLER is specified for each individual data rate of the DCH. DCH is mapped into the Dedicated Physical Channel (DPCH).

5.4.2.3.1 Minimum requirement

For the parameters specified in Table 5.4.2.5 the BLER should not exceed the piece-wise linear BLER curve specified in Table 5.4.2.6. These requirements are applicable for TFCS size 16.

Table 5.4.2.5: DCH parameters in multipath Case 3 channel

Parameters	Unit	Test 1
$\frac{\Sigma DPCH\_E_c}{I_{or}}$	dB	-6
Ioc	dBm/7.68 MHz	-60
Cell Parameter (note)	-	0,1
DPCH Channelization Codes (note)	C(k, Q)	C(i, 32), i = 1,2
OCNS Channelization Code (note)	C(k, Q)	C(3, 32)
Information Data Rate	kbps	12.2
NOTE: Refer to TS 25.223 for definition of channelization codes and cell parameter.		

Table 5.4.2.6: Performance requirements in multipath Case 3 channel

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	4.8	10^{-2}

5.4.3 HSDPA Performance Requirement

The requirements are stated for the HSDPA UE reference combination classes specified in [14] and under the multipath propagation conditions specified in Section 5.5.2. The performance metric for HS-DSCH requirements in multi-path propagation conditions is the throughput R measured on HS-DSCH.

5.4.3.1 HS-DSCH throughput for fixed reference channels

The performance requirements in this subclause apply for the reference measurement channels specified in 5.5.1.3.

During the Fixed Reference Channel tests the behaviour of the Node-B emulator in response to the ACK/NACK signalling field of the HS-SICH is specified in Table 5.4.3.1:

Table 5.4.3.1: Node-B Emulator Behaviour in response to ACK/NACK/DTX

HS-SICH ACK/NACK Field State	Node-B Emulator Behaviour
ACK	ACK: new transmission using 1st redundancy version (RV)
NACK	NACK: retransmission using the next RV (up to the maximum permitted number or RV's)
DTX	DTX: retransmission using the RV previously transmitted to the same H-ARQ process

5.4.3.1.1 Minimum requirement QPSK, Fixed Reference Channel, 5.3 Mbps – Category 8 – UE

For the parameters specified in Table 5.4.3.2, the measured throughput R shall exceed the throughput specified in Table 5.4.3.3 for each radio condition.

Table 5.4.3.2: Test parameters for fixed reference measurement channel requirements for 5,3 Mbps – Category 8 - UE (7,68 Mcps TDD Option) QPSK

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
HS-PDSCH Modulation	-	QPSK			
Scrambling code and basic midamble code number (note 1)	-	0, 1			
Number of TS	-	4			
HS-PDSCH Channelization Codes*	C(k,Q)	C(i,32) i=1..32			
Number of Hybrid ARQ processes	-	3			
Maximum number of Hybrid ARQ transmissions	-	4			
Redundancy and constellation version coding sequence (note 2)	-	{0,0,0,0} s=1, R=0, b=0			
$\frac{HS-PDSCH\_E_c}{I_{or}}$	dB	-15,05			
$\frac{\sum HS-PDSCH\_E_c}{I_{or}}$	dB	0			
I_{oc}	dBm/7,68 MHz	-60			
NOTE 1: Refer to TS 25.223 for definition of channelization codes, scrambling code and basic midamble code. NOTE 2: This sequence implies Chase combining					

Table 5.4.3.3: Performance requirements for fixed reference measurement channel requirement in multipath channels for 5,3 Mbps – Category 8 - UE (7,68 Mcps TDD Option) QPSK

Test Number	Propagation conditions	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	R (Throughput) [kbps]
1	PA3	5,2	880
2	PB3	5,5	880
3	VA30	6,2	880
4	VA120	6,2	880

5.4.3.1.2 Minimum requirement 16 QAM, Fixed Reference Channel, 5.3 Mbps – Category 8 – UE

For the parameters specified in Table 5.4.3.4, the measured throughput R shall exceed the throughput specified in Table 5.4.3.5 for each radio condition.

Table 5.4.3.4: Test parameters for fixed reference measurement channel requirements for 5,3 Mbps – Category 8 - UE (7,68 Mcps TDD Option) 16QAM

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
HS-PDSCH Modulation	-	16QAM			
Scrambling code and basic midamble code number (note 1)	-	0, 1			
Number of TS	-	4			
HS-PDSCH Channelization Codes*	C(k,Q)	C(i,32) i=1..32			
Number of Hybrid ARQ processes	-	3			
Maximum number of Hybrid ARQ transmissions	-	4			
Redundancy and constellation version coding sequence (note 2)	-	{0,0,0,0} s=1, R=0, b=0			
$\frac{HS-PDSCH\_E_c}{I_{or}}$	dB	-15,05			
$\frac{\sum HS-PDSCH\_E_c}{I_{or}}$	dB	0			
I_{oc}	dBm/7,68 MHz	-60			
NOTE 1: Refer to TS 25.223 for definition of channelization codes, scrambling code and basic midamble code. NOTE 2: This sequence implies Chase combining					

Table 5.4.3.5: Performance requirements for fixed reference measurement channel requirement in multipath channels for 5,3 Mbps – Category 8 - UE (7,68 Mcps TDD Option) 16QAM

Test Number	Propagation conditions	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	R (Throughput) [kbps]
1	PA3	11,1	1765
2	PB3	13,2	1765
3	VA30	13,7	1765
4	VA120	13,6	1765

5.5 Measurement channels and propagation conditions

5.5.1 Measurement channels

5.5.1.1 General

5.5.1.2 Reference measurement channel

5.5.1.2.1 UL reference measurement channel (12.2 kbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

5.5.1.2.2 DL reference measurement channel (12.2 kbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

5.5.1.2.3 DL reference measurement channel (64 kbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

5.5.1.2.4 DL reference measurement channel (144 kbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

5.5.1.2.5 DL reference measurement channel (384 kbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

5.5.1.2.6 BCH reference measurement channel

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

5.5.1.2.7 UL multi code reference measurement channel (12.2 kbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

5.5.1.2.8 DL reference measurement channel (2 Mbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

5.5.1.3 HSDPA reference measurement channels

5.5.1.3.1 Reference measurement channels for 5.3 Mbps – Category 8 - UE

5.5.1.3.1.1 QPSK modulation scheme for PA3, PB3, VA30 and VA120 test channels

Table 5.5.1.1: HS-PDSCH fixed reference channel for the PA3, PB3, VA30 and VA120 Channel models - Category 8

Parameter	Unit	Value
Maximum information bit throughput	Mbps	1.7612
Number of HARQ Processes	Processes	3
Information Bit Payload (N_{INF})	Bits	17612
Number Code Blocks	Blocks	4
Total Available of Soft Channel bits in UE	Bits	211968
Number of Soft Channel bit per HARQ Proc.	Bits	70656
Number of coded bits per TTI	Bits	35328
Coding Rate		1/2
Number of HS-PDSCH Timeslots	Slots	4
Number of HS-PDSCH codes per TS	Codes	32
Spreading factor	SF	32

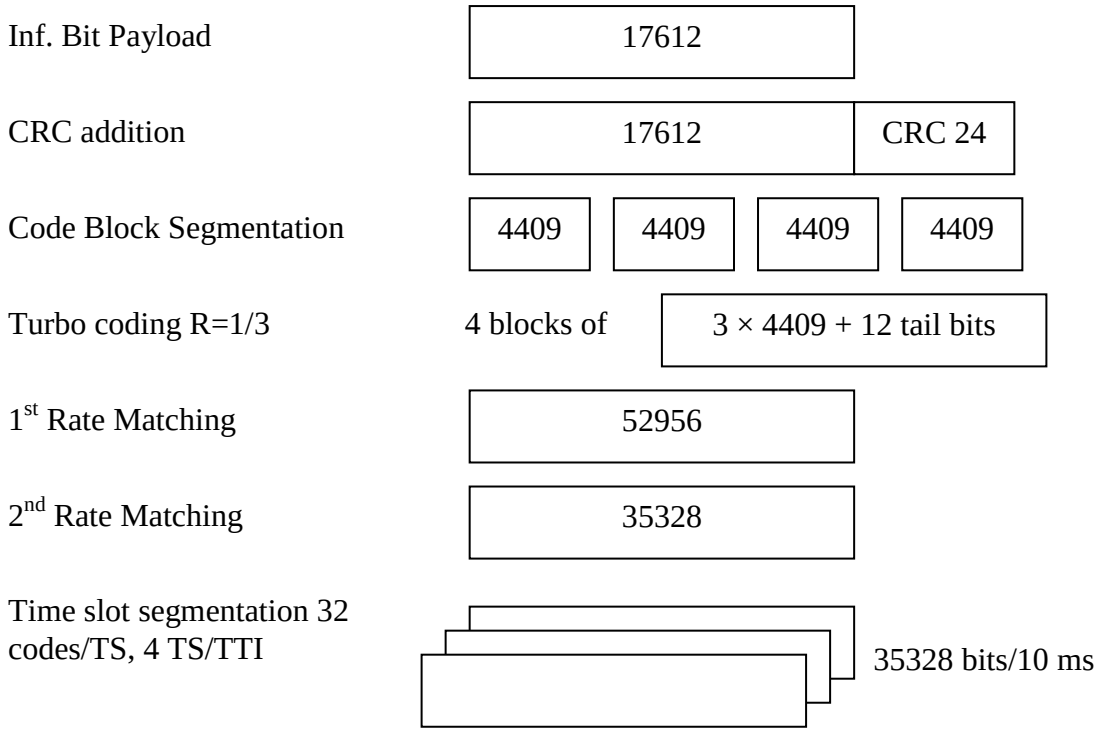

Figure 5.5.1.1: Coding for HS-PDSCH fixed reference channel with QPSK modulation for the PA3, PB3, VA30 and VA120 Channels – Category 8

5.5.1.3.1.2 16-QAM modulation scheme for PA3, PB3, VA30 and VA120 test channels

Table 5.5.1.2: HS-PDSCH fixed reference channel for the PA3, PB3, VA30 and VA120 Channel models - Category 8

Parameter	Unit	Value
Modulation		**16-QAM**
Maximum information bit throughput	Mbps	3.5066
Number of HARQ Processes	Processes	3
Information Bit Payload (N_{INF})	Bits	35066
Number Code Blocks	Blocks	7
Total Available of Soft Channel bits in UE	Bits	211968
Number of Soft Channel bit per HARQ Proc.	Bits	70656
Number of coded bits per TTI	Bits	70656
Coding Rate		½
Number of HS-PDSCH Timeslots	Slots	4
Number of HS-PDSCH codes per TS	Codes	32
Spreading factor	SF	32

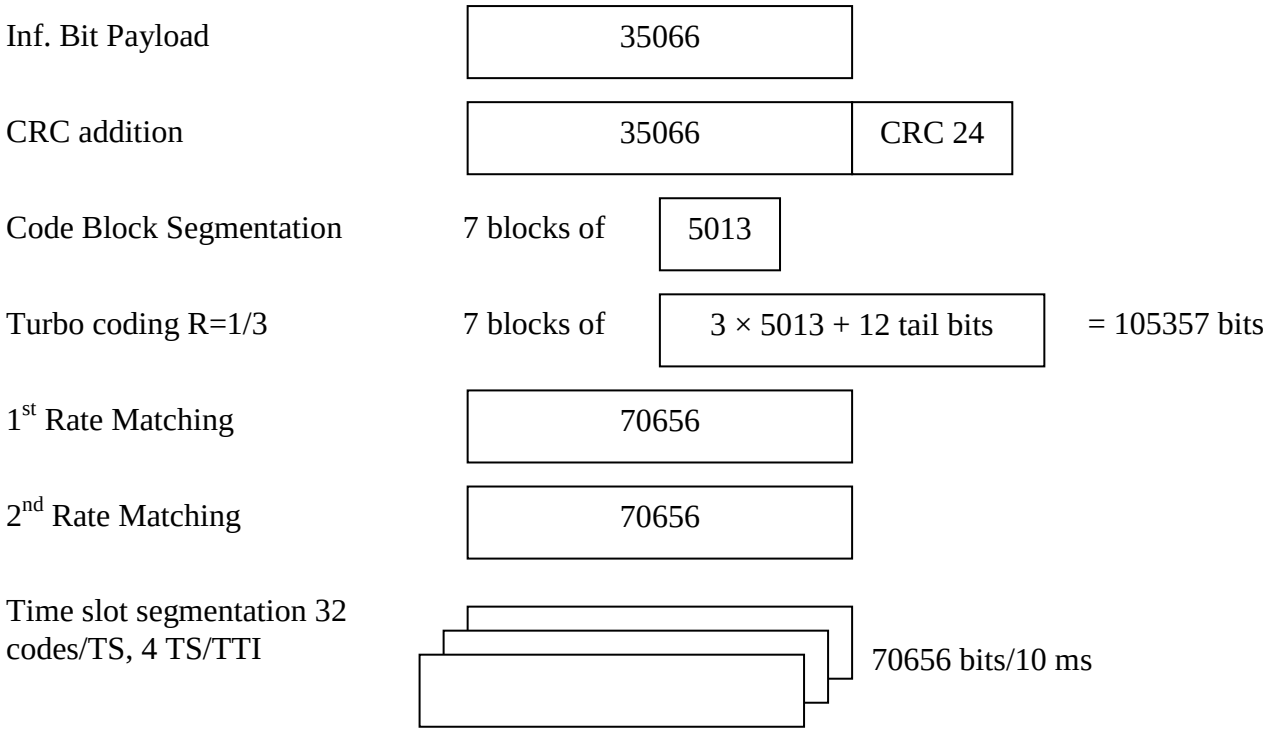

Figure 5.5.1.2: Coding for HS-PDSCH fixed reference channel with 16-QAM modulation for the PA3 PB3, VA30 and VA120 Channels – Category 8

5.5.2 Propagation Conditions

5.5.2.1 Static propagation conditions

Common with 3.84Mcps TDD option.

5.5.2.2 Multi-path fading propagation conditions

Common with 3.84Mcps TDD option.

6 Base station radio transmission and reception

6.1 Frequency bands and channel arrangement

6.1.1 Frequency bands

Common with 3.84 Mcps TDD option. The 2.6 GHz band is FFS.

6.1.2 TX-RX frequency separation

Common with 3.84Mcps TDD option.

6.1.3 Channel arrangement

The nominal channel spacing is 10 MHz, but this can be adjusted to optimise performance in a particular deployment scenario.

6.1.3.2 Channel raster

Common with 3.84 Mcps TDD option.

6.1.3.3 Channel number

Common with 3.84 Mcps TDD option.

6.2 Transmitter characteristics

6.2.1 General

Common with 3.84 Mcps TDD option.

6.2.2 Base station output power

Common with 3.84Mcps TDD option.

6.2.3 Frequency stability

Common with 3.84Mcps TDD option.

6.2.4 Output power dynamics

Common with 3.84Mcps TDD option.

6.2.5 Transmit ON/OFF power

6.2.5.1 Transmit OFF power

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

6.2.5.1.1 Minimum requirement

The transmit OFF power shall be less than –76 dBm.

6.2.5.1.2 Rationale

The transmit off power is required to be below the noise floor of a victim receiver. Since the noise floor in a 7.68 Mcps TDD BS is 3dB higher than that in a 3.84 Mcps TDD BS, the transmit off power for 7.68 Mcps BS is hence 3 dB higher (-76 dBm) than that in a 3.84 Mcps BS (-79 dBm).

6.2.5.2 Transmit ON/OFF Time mask

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

6.2.5.2.1 Minimum requirement

The transmit power level versus time should meet the mask specified in figure 6.1.

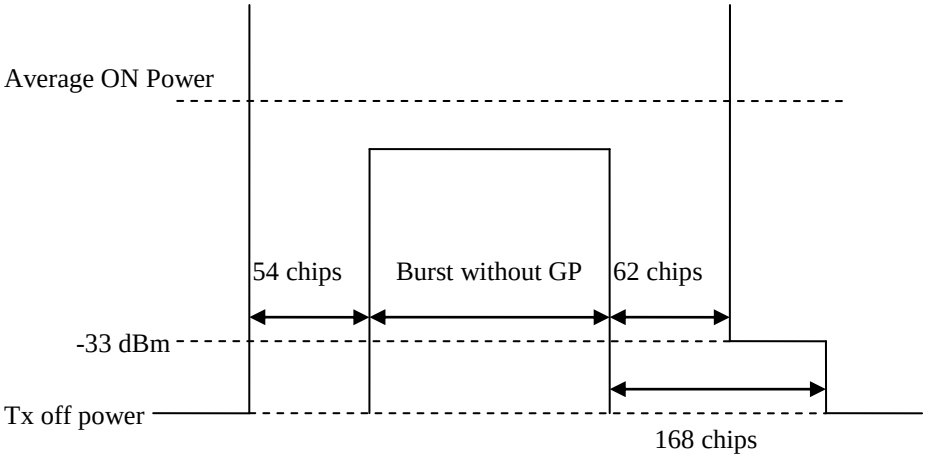

Figure 6.2.5.1. Transmit ON/OFF template

6.2.6 Output RF spectrum emissions

6.2.6.1 Occupied bandwidth

Occupied bandwidth is a measure of the bandwidth containing 99% of the total integrated power for transmitted spectrum and is centered on the assigned channel frequency. The occupied channel bandwidth is less than 10 MHz based on a chip rate of 7.68 Mcps.

6.2.6.2 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.

6.2.6.2.1 Spectrum emission mask

The mask defined in Table 6.2.6.1 to 6.2.6.4 below may be mandatory in certain regions. In other regions this mask may not be applied.

For regions where this clause applies, the requirement shall be met by a base station transmitting on a single RF carrier configured in accordance with the manufacturer's specification. Emissions shall not exceed the maximum level specified in tables 6.2.6.1 to 6.2.6.4 for the appropriate BS maximum output power, in the frequency range from Δf = 5 MHz to Δf_{max} from the carrier frequency, where:

- Δf is the separation between the carrier frequency and the nominal -3dB point of the measuring filter closest to the carrier frequency.
- f_offset is the separation between the carrier frequency and the center frequency of the measuring filter. - f_offset_{max} is either 25 MHz or the offset to the UMTS Tx band edge as defined in TS 25.105 [3], whichever is the greater.
- Δf_{max} is equal to f_offset_{max} minus half of the bandwidth of the measurement filter.

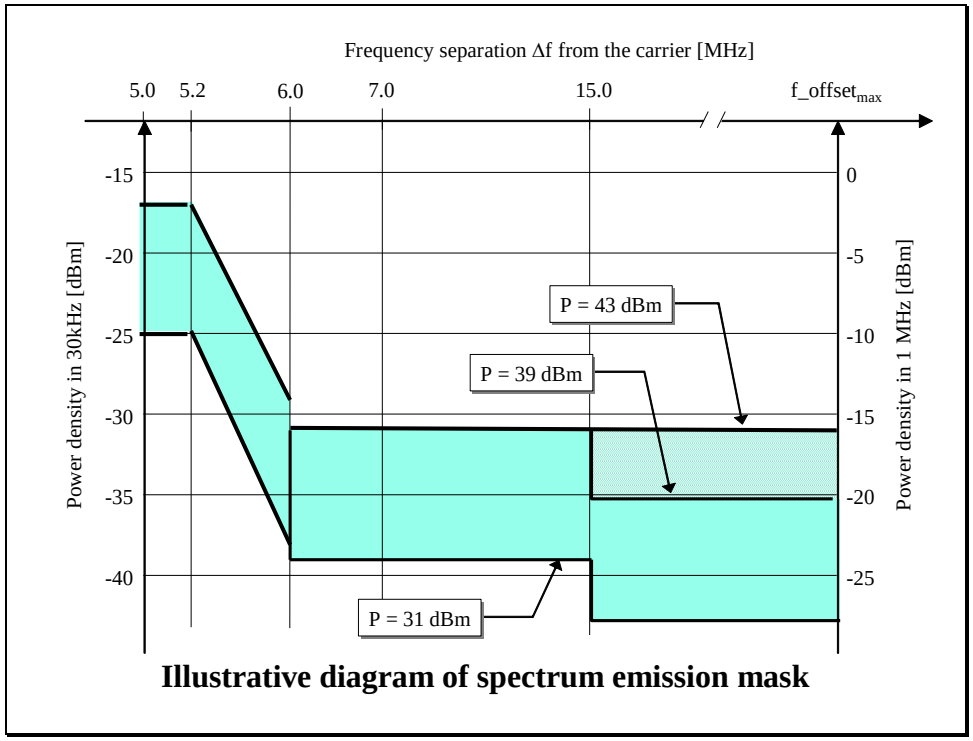

Figure 6.2.6.1: Spectrum emission mask

Table 6.2.6.1: Spectrum emission mask values, BS maximum output power P ≥ 43 dBm

Frequency offset of measurement filter –3dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
5 MHz ≤ Δf < 5.2 MHz	5.015MHz ≤ f_offset < 5.215MHz	-17 dBm	30 kHz
5.2 MHz ≤ Δf < 6 MHz	5.215MHz ≤ f_offset < 6.015MHz	$-17dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 5.215 \right) dB$	30 kHz
(see note)	6.015MHz ≤ f_offset < 6.5MHz	-29 dBm	30 kHz
6 MHz ≤ Δf ≤ Δf_{max}	6.5MHz ≤ f_offset < f_offset_{max}	-16 dBm	1 MHz

Table 6.2.6.2: Spectrum emission mask values, BS maximum output power 39 ≤ P < 43 dBm

Frequency offset of measurement filter –3dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
5 MHz ≤ Δf < 5.2 MHz	5.015MHz ≤ f_offset < 5.215MHz	-17 dBm	30 kHz
5.2 MHz ≤ Δf < 6 MHz	5.215MHz ≤ f_offset < 6.015MHz	$-17dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 5.215 \right) dB$	30 kHz
(see note)	6.015MHz ≤ f_offset < 6.5MHz	-29 dBm	30 kHz
6 MHz ≤ Δf < 15 MHz	6.5MHz ≤ f_offset < 15.5MHz	-16 dBm	1 MHz
15 MHz ≤ Δf ≤ Δf_{max}	15.5MHz ≤ f_offset < f_offset_{max}	P - 59 dB	1 MHz

Table 6.2.6.3: Spectrum emission mask values, BS maximum output power 31 ≤ P < 39 dBm

Frequency offset of measurement filter –3dB point,Δf	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
5 MHz ≤ Δf < 5.2 MHz	5.015MHz ≤ f_offset < 5.215MHz	P - 56 dB	30 kHz
5.2 MHz ≤ Δf < 6 MHz	5.215MHz ≤ f_offset < 6.015MHz	$P - 56dB - 15 \cdot \left(\frac{f\_offset}{MHz} - 5.215 \right) dB$	30 kHz
(see note)	6.015MHz ≤ f_offset < 6.5MHz	P – 68 dB	30 kHz
6 MHz ≤ Δf < 15 MHz	6.5MHz ≤ f_offset < 15.5MHz	P – 55 dB	1 MHz
15 MHz ≤ Δf ≤ Δf_{max}	15.5MHz ≤ f_offset < f_offset_{max}	P - 59 dB	1 MHz

Table 6.2.6.4: Spectrum emission mask values, BS maximum output power P < 31 dBm

Frequency offset of measurement filter –3dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
5 MHz ≤ Δf < 5.2 MHz	5.015MHz ≤ f_offset < 5.215MHz	-25 dBm	30 kHz
5.2 MHz ≤ Δf < 6 MHz	5.215MHz ≤ f_offset < 6.015MHz	$-25dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 5.215 \right) dB$	30 kHz
(see note)	6.015MHz ≤ f_offset < 6.5MHz	-37 dBm	30 kHz
6 MHz ≤ Δf < 15 MHz	6.5MHz ≤ f_offset < 15.5MHz	-24 dBm	1 MHz
15 MHz ≤ Δf ≤ Δf_{max}	15.5MHz ≤ f_offset < f_offset_{max}	-28 dBm	1 MHz

NOTE: This frequency range ensures that the range of values of f_offset is continuous.

6.2.6.2.1.1 Rationale

Since the modulation bandwidth of the 7.68 Mcps TDD option is twice that of 3.84 Mcps [1], the occupied bandwidth is therefore 10 MHz, which is twice that of 3.84 Mcps. The spectral emission mask starts at 5 MHz offset from the carrier frequency given that the bandwidth is 10MHz. The emission power level is modified according to the change (half) in power spectral density due to increased modulation bandwidth. For BS Maximum output power less than 43 dBm, the ACLR2 levels will start 15 MHz offset from carrier frequency.

6.2.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the RRC filtered mean power centered on the assigned channel frequency to the RRC filtered mean power centered on an adjacent channel frequency. 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 RRC filtered mean power for the given bandwidth of the victim system at the defined adjacent channel offset.

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

6.2.6.2.2.1 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 6.2.6.5.

Table 6.2.6.5: BS ACLR

BS adjacent channel offset below the first or above the last carrier frequency used	Chip Rate for RRC Measurement Filter	ACLR limit
7.5 MHz	3.84 Mcps	45 dB
12.5 MHz	3.84 Mcps	55 dB
10.0 MHz	7.68 Mcps	45 dB
20.0 MHz	7.68 Mcps	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.

6.2.6.2.2.2 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 6.2.6.6 and 6.2.6.7.

Table 6.2.6.6: Adjacent channel leakage power limits for operation in the same geographic area with unsynchronised TDD (7.68 Mcps TDD and 3.84 Mcps 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	7.5 MHz	- 29 dBm	3,84 MHz
Wide Area BS	12.5 MHz	- 29 dBm	3,84 MHz
Wide Area BS	17.5 MHz	- 29 dBm	3,84 MHz
Wide Area BS	22.5 MHz	- 29 dBm	3,84 MHz
Local Area BS	7.5 MHz	-16 dBm	3,84 MHz
Local Area BS	12.5 MHz	-26 dBm	3,84 MHz
Local Area BS	17.5 MHz	-26 dBm	3,84 MHz
Local Area BS	22.5 MHz	-26 dBm	3,84 MHz

Table 6.2.6.7: 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 below the first or above the last carrier frequency used	Maximum Level	Measurement Bandwidth
Wide Area BS	5.8 MHz	- 29 dBm	1.28 MHz
Wide Area BS	7.4 MHz	- 29 dBm	1.28 MHz
Local Area BS	5.8 MHz	- 16 dBm	1.28 MHz
Local Area BS	7.4 MHz	- 16 dBm	1.28 MHz

NOTE: The requirements in Table 6.2.6.6 and 6.2.6.7 for the Wide Area BS are based on a coupling loss of 74 dB between the unsynchronised TDD base stations. The requirement in Table 6.2.6.6 and 6.2.6.7 for the Local Area BS ACLR1 are based on a coupling loss of 87 dB between unsynchronised Wide Area and Local Area TDD base stations. The requirement in Table 6.2.6.6 and 6.2.6.7 for the Local Area BS ACLR2 are based on a coupling loss of 77 dB and 87 dB between unsynchronised Wide Area and Local Area 3.84 Mcps TDD and 1.28 Mcps TDD base stations respectively.

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 the same geographic area.

6.2.6.2.2.3 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 6.2.6.8.

Table 6.2.6.8: 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	± 7.5 MHz	-36 dBm	3,84 MHz
Wide Area BS	± 12.5 MHz	-36 dBm	3,84 MHz
Wide Area BS	± 17.5 MHz	-39 dBm	3,84 MHz
Wide Area BS	± 22.5 MHz	-43 dBm	3,84 MHz
Local Area BS	± 7.5 MHz	-23 dBm	3,84 MHz
Local Area BS	± 12.5 MHz	-33 dBm	3,84 MHz
Local Area BS	± 17.5 MHz	-36 dBm	3,84 MHz
Local Area BS	± 22.5 MHz	-40 dBm	3,84 MHz

NOTE: The requirements in Table 6.2.6.8 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 6.2.6.8 for the Local Area BS ACLR1 (± 10 MHz channel offset) are based on a relaxed coupling loss of 87 dB between TDD and FDD base stations. The requirements for the Local Area BS ACLR2 (± 20 MHz channel offset) are based on a relaxed coupling loss of 77 dB between TDD and FDD base stations.

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.

6.2.6.2.2.4 Additional requirement in case of co-siting with unsynchronized 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 6.2.6.9 and 6.2.6.10.

Table 6.2.6.9: Adjacent channel leakage power limits in case of co-siting with unsynchronised TDD (7.68 Mcps TDD and 3.84 Mcps 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	7.5 MHz	-73 dBm	3.84 MHz
Wide Area BS	12.5 MHz	-73 dBm	3.84 MHz
Wide Area BS	17.5 MHz	-73 dBm	3.84 MHz
Wide Area BS	22.5 MHz	-73 dBm	3.84 MHz
Local Area BS	7.5 MHz	-31 dBm	3.84 MHz
Local Area BS	12.5 MHz	-31 dBm	3.84 MHz
Local Area BS	17.5 MHz	-31 dBm	3.84 MHz
Local Area BS	22.5 MHz	-31 dBm	3.84 MHz

Table 6.2.6.10: Adjacent channel leakage power limits in case of co-siting with unsynchronised 1.28 Mcps 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	5.8 MHz	-73 dBm	1.28 MHz
Wide Area BS	7.4 MHz	-73 dBm	1.28 MHz
Local Area BS	5.8 MHz	-34 dBm	1.28 MHz
Local Area BS	7.4 MHz	-34 dBm	1.28 MHz

NOTE: The requirements in Table 6.2.6.9 and 6.2.6.10 for the Wide Area BS are based on a minimum coupling loss of 30 dB between unsynchronised TDD base stations. The requirements in Table 6.2.6.9 and 6.2.6.10 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.

6.2.6.2.2.5 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 6.2.6.11.

Table 6.2.6.11: 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	± 7.5 MHz	-80 dBm	3,84 MHz
Wide Area BS	± 12.5 MHz	-80 dBm	3,84 MHz
Wide Area BS	± 17.5 MHz	-80 dBm	3,84 MHz
Wide Area BS	± 22.5 MHz	-80 dBm	3,84 MHz

NOTE: The requirements in Table 6.2.6.11 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.

6.2.6.2.2.6 Rationale

The same filter characteristic in 3.84 Mcps TDD Option is applied to 7.68 Mcps TDD Option. Hence the ACLR of 7.68 Mcps has the same level as that in 3.84 Mcps TDD Option. The 1st ACLRs are also specified in two separate 5 MHz bandwidth and these values are equal to ACLR1 and ACLR2 of the 3.84 Mcps TDD Option.

Additional ACLR requirement for co-existence in same geographical area have emission power equals to that in 3.84 Mcps TDD Option. Since the emission power of 7.68 Mcps TDD BS is no greater than that of 3.84 Mcps TDD BS, any system that can co-exist with 3.84 Mcps TDD Option will be able to co-exist with 7.68 Mcps TDD Option.

6.2.6.3 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.

The requirement applies at frequencies within the specified frequency ranges which are more than 25 MHz under the first carrier frequency used or more than 25 MHz above the last carrier frequency used.

6.2.6.3.1 Mandatory Requirements

6.2.6.3.1.1 Spurious emissions (Category A)

Common with 3.84 Mcps option.

6.2.6.3.1.2 Spurious emissions (Category B)

Common with 3.84 Mcps option.

6.2.6.3.2 Co-existence with GSM 900

Common with 3.84 Mcps option.

6.2.6.3.3 Co-existence with DCS 1800

Common with 3.84 Mcps option.

6.2.6.3.4 Co-existence with UTRA-FDD

Common with 3.84 Mcps option.

6.2.6.3.5 Co-existence with unsynchronised TDD

6.2.6.3.5.1 Operation in the same geographic area

This requirement shall apply in case the equipment is operated in the same geographic area with unsynchronised TDD BS.

The RRC filtered mean power of any spurious emission shall not exceed the limits specified in table 6.2.6.12 and 6.2.6.13.

Table 6.2.6.12: BS Spurious emissions limits for operation in same geographic area with unsynchronised TDD (7.68 Mcps TDD and 3.84 Mcps TDD)

BS Class	Band	Maximum Level	Measurement Bandwidth
Wide Area BS	1900 – 1920 MHz	–39 dBm	3,84 MHz
Wide Area BS	2010 – 2025 MHz	–39 dBm	3,84 MHz
Wide Area BS	2570 – 2620 MHz	-39 dBm	3,84 MHz
Local Area BS	1900 – 1920 MHz	–36 dBm	3,84 MHz
Local Area BS	2010 – 2025 MHz	–36 dBm	3,84 MHz
Local Area BS	2570 – 2620 MHz	-36 dBm	3,84 MHz

Table 6.2.6.13: BS Spurious emissions limits for operation in same geographic area with unsynchronised 1,28 Mcps TDD

BS Class	Band	Maximum Level	Measurement Bandwidth
Wide Area BS	1900 – 1920 MHz	–39 dBm	1,28 MHz
Wide Area BS	2010 – 2025 MHz	–39 dBm	1,28 MHz
Wide Area BS	2570 – 2620 MHz	–39 dBm	1,28 MHz
Local Area BS	1900 – 1920 MHz	–36 dBm	1,28 MHz
Local Area BS	2010 – 2025 MHz	–36 dBm	1,28 MHz
Local Area BS	2570 – 2620 MHz	–36 dBm	1,28 MHz

NOTE: The requirements in Table 6.2.6.12 and 6.2.6.13 for the Wide Area BS are based on a minimum coupling loss of 67 dB between unsynchronised TDD base stations. The requirements in Table 6.2.6.12 and 6.2.6.13 for the Local Area BS are based on a coupling loss of 70 dB between unsynchronised Wide Area and Local Area TDD base stations.

6.2.6.3.5.2 Co-located base stations

This requirement shall apply in case of co-location with unsynchronised TDD BS.

The RRC filtered mean power of any spurious emission in case of co-location shall not exceed the limits specified in table 6.2.6.14 and 6.2.6.15.

Table 6.2.6.14: BS Spurious emissions limits for co-location with unsynchronised TDD (7.68 Mcps TDD and 3.84 Mcps TDD)

BS Class	Band	Maximum Level	Measurement Bandwidth
Wide Area BS	1900 – 1920 MHz	–76 dBm	3,84 MHz
Wide Area BS	2010 – 2025 MHz	–76 dBm	3,84 MHz
Wide Area BS	2570 – 2620 MHz	-76 dBm	3,84 MHz
Local Area BS	1900 – 1920 MHz	–36 dBm	3,84 MHz
Local Area BS	2010 – 2025 MHz	–36 dBm	3,84 MHz
Local Area BS	2570 – 2620 MHz	-36 dBm	3,84 MHz

Table 6.2.6.15: BS Spurious emissions limits for co-location with unsynchronised 1,28 Mcps TDD

BS Class	Band	Maximum Level	Measurement Bandwidth
Wide Area BS	1900 – 1920 MHz	–76 dBm	1,28 MHz
Wide Area BS	2010 – 2025 MHz	–76 dBm	1,28 MHz
Wide Area BS	2570 – 2620 MHz	–76 dBm	1,28 MHz
Local Area BS	1900 – 1920 MHz	–37 dBm	1,28 MHz
Local Area BS	2010 – 2025 MHz	–37 dBm	1,28 MHz
Local Area BS	2570 – 2620 MHz	–37 dBm	1,28 MHz

NOTE: The requirements in Table 6.2.6.14 and 6.2.6.15 for the Wide Area BS are based on a minimum coupling loss of 30 dB between unsynchronised TDD base stations. The requirements in Table 6.2.6.14 and 6.2.6.15 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.

6.2.7 Transmit intermodulation

Common with 3.84 Mcps option.

6.2.7.1 Minimum Requirement

The frequency of the interference signal shall be ±10 MHz, ±20 MHz and ±30 MHz offset from the subject signal. The Transmit intermodulation level shall not exceed the out of band or the spurious emission requirements of section 6.2.6.2 and 6.2.6.3.

6.2.8 Transmit modulation

Common with 3.84 Mcps option.

6.2.8.1 Transmit pulse shape filter

Common with 3.84 Mcps option.

6.2.8.2 Modulation Accuracy

Common with 3.84 Mcps option.

6.2.8.2.1 Minimum Requirement

Common with 3.84 Mcps option.

6.2.8.3 Peak Code Domain Error

Common with 3.84 Mcps option.

6.2.8.3.1 Minimum Requirement

The peak code domain error shall not exceed -31 dB at spreading factor 32.

6.2.8.3.2 Rationale

The Peak Code Domain Error is a function of the Error Vector Magnitude and inverse of the spreading factor (1/SF). Since the spreading factor of the reference channel used in 7.68 Mcps is 32, which is twice that of 3.84 Mcps, the Peak Code Domain Error for 7.68 Mcps should be 3 dB lower than that in 3.84 Mcps.

6.3 Receiver characteristics

6.3.1 General

Common with 3.84 Mcps TDD option.

6.3.2 Reference sensitivity level

The reference sensitivity level is the minimum mean power received at the antenna connector at which the BER shall not exceed the specific value indicated in section 6.3.2.1.

6.3.2.1 Minimum Requirement

The UL reference measurement channel used in the simulations of TR 25.895 is the 12.2 kbps channel specified in Annex A.2.1 of TS 25.105 [3] with twice the spreading factor (SF=16) and mid-amble (1024 chips). The reference sensitivity level and performance of the BS shall be as specified in Table 6.3.2.1.

Table 6.3.2.1: BS reference sensitivity level

BS Class	Reference measurement channel data rate	BS reference sensitivity level	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

6.3.2.2 Rationale

In TR 25.895 [1], at BER performance is approximately the same for 7.68 Mcps and 3.84 Mcps for 12.2 kbps bearer in AWGN. The processing gain for 7.68 Mcps is 3dB more than that in 3.84 Mcps. However, the Rx Noise for 7.68 Mcps is 3dB more than that in 3.84 Mcps. Hence, the reference sensitivity for 7.68 Mcps is approximately the same as that in 3.84 Mcps.

6.3.3 Dynamic range

Common with 3.84 Mcps TDD option.

6.3.3.1 Minimum Requirement

The BER shall not exceed 0.001 for the parameters specified in Table 6.3.3.1.

Table 6.3.3.1: Dynamic Range

Parameter		Level	Unit
Reference measurement channel data rate		12.2	kbps
Wanted signal mean power	Wide Area BS	-79	dBm
	Local Area BS	-65	dBm

Interfering AWGN signal	Wide Area BS	-70	dBm/7.68 MHz
	Local Area BS	-56	dBm/7.68 MHz

6.3.3.2 Rationale

The link level performances for the reference channel (12.2 kbps) in AWGN are the same for both 7.68 Mcps and 3.84 Mcps TDD options [1], the 7.68 Mcps TDD Option will have the same BER performance, the 7.68 Mcps TDD Option can tolerate the same rise in interference as that in 3.84 Mcps TDD Option. Since the receiving bandwidth in 7.68 Mcps TDD Option is twice that of 3.84 Mcps TDD Option, the total interference power measured over the receive bandwidth of the 7.68 Mcps TDD Option is hence doubled.

6.3.4 Adjacent Channel Selectivity (ACS)

Common with 3.84 Mcps TDD option.

6.3.4.1 Minimum Requirement

The BER shall not exceed 0.001 for the parameters specified in table 6.3.4.1.

Table 6.3.4.1: Adjacent channel selectivity

Parameter		Level	Unit
Reference measurement channel data rate		12.2	kbps
Wanted signal mean power	Wide Area BS	-103	dBm
	Local Area BS	-89	dBm
Interfering signal mean power	Wide Area BS	–49	dBm
	Local Area BS	–35	dBm
Fuw offset (Modulated)		10	MHz

6.3.4.2 Rationale

The ACS proposed to be common with 3.84 Mcps. The receiver noise of the 7.68 Mcps TDD BS is 3 dB higher than that in 3.84 Mcps TDD BS for the same Noise Figure. Using the same ACS and the same sensitivity degradation (6 dB), the interfering power needs to be 3 dB higher. Since the reference sensitivity is the same in both chip rates, the wanted signal mean power in 7.68 Mcps TDD Option is the same as that in 3.84 Mcps TDD Option. The frequency offset is 10 MHz for 7.68 Mcps TDD Option since its bandwith is twice that of 3.84 Mcps TDD Option.

6.3.5 Blocking characteristics

Common with 3.84 Mcps TDD option.

6.3.5.1 Minimum Requirement

The static reference performance as specified in clause 6.3.2.1 shall be met with a wanted and an interfering signal coupled to BS antenna input using the parameters as specified in Table 6.3.5.1 to 6.3.5.3 for the Wide Area BS and as specified in Table 6.3.5.4 to 6.3.5.6 for the Local Area BS.

Table 6.3.5.1: Blocking requirements for Wide Area BS for operating bands defined in 5.2(a) of TS 25.105 [3]

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	-40 dBm	-103 dBm	20 MHz	WCDMA signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-40 dBm	-103 dBm	20 MHz	WCDMA signal with one code
1920 – 1980 MHz	-40 dBm	-103 dBm	20 MHz	WCDMA signal with one code
1 – 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz	-15 dBm	-103 dBm	—	CW carrier

Table 6.3.5.2: Blocking requirements for Wide Area BS for operating bands defined in 5.2(b) of TS 25.105 [3]

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	-40 dBm	-103 dBm	20 MHz	WCDMA signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-40 dBm	-103 dBm	20 MHz	WCDMA signal with one code
1 – 1830 MHz, 2010 – 12750 MHz	-15 dBm	-103 dBm	—	CW carrier

Table 6.3.5.3: Blocking requirements for Wide Area BS for operating bands defined in 5.2(c) of TS 25.105 [3]

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	-40 dBm	-103 dBm	20 MHz	WCDMA signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-40 dBm	-103 dBm	20 MHz	WCDMA signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	-103 dBm	—	CW carrier

Table 6.3.5.4: Blocking requirements for Local Area BS for operating bands defined in 5.2(a) of TS 25.105 [3]

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	20 MHz	WCDMA signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-30 dBm	–89 dBm	20 MHz	WCDMA signal with one code
1920 – 1980 MHz	-30 dBm	–89 dBm	20 MHz	WCDMA signal with one code
1 – 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz	-15 dBm	–89 dBm	—	CW carrier

Table 6.3.5.5: Blocking requirements for Local Area BS for operating bands defined in 5.2(b) of TS 25.105 [3]

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	20 MHz	WCDMA signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-30 dBm	–89 dBm	20 MHz	WCDMA signal with one code
1 – 1830 MHz, 2010 – 12750 MHz	-15 dBm	–89 dBm	—	CW carrier

Table 6.3.5.6: Blocking requirements for Local BS for operating bands defined in 5.2(c) of TS 25.105 [3]

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	20 MHz	WCDMA signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-30 dBm	–89 dBm	20 MHz	WCDMA signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	–89 dBm	—	CW carrier

6.3.5.2 Co-location with GSM900 and/or DCS 1800

Common with 3.84 Mcps TDD option.

6.3.6 Intermodulation characteristics

Common with 3.84 Mcps TDD option.

6.3.6.1 Minimum Requirement

The static reference performance as specified in clause 6.3.2 should be met when the following signals are coupled to BS antenna input.

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

Table 6.3.6.1: Intermodulation requirement

Interfering Signal Mean Power		Offset	Type of Interfering Signal
Wide Area BS	Local Area BS		
- 48 dBm	- 38 dBm	20 MHz	CW signal
- 48 dBm	- 38 dBm	40 MHz	WCDMA signal with one code

6.3.7 Spurious emissions

Common with 3.84 Mcps TDD option.

6.3.7.1 Minimum Requirement

The power of any spurious emission shall not exceed:

Table 6.3.7.1: Receiver spurious emission requirements

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1.9 GHz and 1.98 GHz – 2.01 GHz	-47 dBm	1 MHz	With the exception of frequencies between 25MHz below the first carrier frequency and 25MHz above the last carrier frequency used by the BS.
1.9 GHz – 1.98 GHz and 2.01 GHz – 2.025 GHz	-75 dBm	7.68 MHz	With the exception of frequencies between 25MHz below the first carrier frequency and 25MHz above the last carrier frequency used by the BS.
2.025 GHz – 12.75 GHz	-47 dBm	1 MHz	With the exception of frequencies between 25MHz below the first carrier frequency and 25MHz above the last carrier frequency used by the BS.

In addition to the requirements in table 6.3.7.1, the co-existence requirements for co-located base stations specified in subclause 6.2.6.3.2, 6.2.6.3.3, 6.2.6.3.4 and 6.2.6.3.5 may also be applied.

6.4 Performance requirements

Performance requirements for the BS are specified for the measurement channels defined in 6.5.1 and the propagation conditions in 6.5.2. The requirements only apply to those measurement channels that are supported by the base station.

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.

6.4.1 Demodulation in static propagation conditions

6.4.1.1 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.

6.4.1.1.1 Minimum requirement

For the parameters specified in Table 6.4.1.1 the BLER should not exceed the piece-wise linear BLER curve specified in Table 6.4.1.2. These requirements are applicable for TFCS size 16.

Table 6.4.1.1: Parameters in static propagation conditions

Parameters		Unit	Test 1
Number of $DPCH_o$			14
$\frac{DPCH_o \_ E_c}{I_{or}}$		dB	-12
I_{oc}	Wide Area BS	dBm/7.68 MHz	-89
	Local Area BS	dBm/7.68 MHz	-74
Cell Parameter*			0,1
DPCH Channelization Codes*		C(k,Q)	C(1, 16)
$DPCH_o$ Channelization Codes*		C(k,Q)	C(i, 32) 3≤ i ≤16
Information Data Rate		kbps	12.2
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.			

Table 6.4.1.2: Performance requirements in AWGN channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	-2.0	10^{-2}

6.4.2 Demodulation of DCH in multipath fading conditions

6.4.2.1 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.

6.4.2.1.1 Minimum requirement

For the parameters specified in Table 6.4.2.1 the BLER should not exceed the piece-wise linear BLER curve specified in Table 6.4.2.2. These requirements are applicable for TFCS size 16.

Table 6.4.2.1: Parameters in multipath Case 1 channel

Parameters		Unit	Test 1
Number of $DPCH_o$			14
$\frac{DPCH_o\_E_c}{I_{or}}$		dB	-12
I_{oc}	Wide Area BS	dBm/7.68 MHz	-89
	Local Area BS	dBm/7.68 MHz	-74
Cell Parameter*			0,1
DPCH Channelization Codes*		C(k,Q)	C(1, 16)
$DPCH_o$ Channelization Codes*		C(k,Q)	C(i, 32) 3≤ i ≤16
Information Data Rate		kbps	12.2
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.			

Table 6.4.2.2: Performance requirements in multipath Case 1 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	6.5	10^{-2}

6.4.2.2 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.

6.4.2.2.1 Minimum requirement

For the parameters specified in Table 6.4.2.3 the BLER should not exceed the piece-wise linear BLER curve specified in Table 6.4.2.4. These requirements are applicable for TFCS size 16.

Table 6.4.2.3: Parameters in multipath Case 2 channel

Parameters	Unit	Test 1
Number of $DPCH_o$		6
$\frac{DPCH_o\_E_c}{I_{or}}$	dB	-9
I_{oc}	dBm/7.68 MHz	-89
Cell Parameter*		0,1
DPCH Channelization Codes*	C(k,Q)	C(1, 16)
$DPCH_o$ Channelization Codes*	C(k,Q)	C(i, 32) 3≤ i ≤8
Information Data Rate	kbps	12.2
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.		

Table 6.4.2.4: Performance requirements in multipath Case 2 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	1	10^{-2}

6.4.2.3 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.

6.4.2.3.1 Minimum requirement

For the parameters specified in Table 6.4.2.5 the BLER should not exceed the piece-wise linear BLER curve specified in Table 6.4.2.6. These requirements are applicable for TFCS size 16.

Table 6.4.2.5: Parameters in multipath Case 3 channel

Parameters	Unit	Test 1
Number of $DPCH_o$		6
$\frac{DPCH_o\_E_c}{I_{or}}$	dB	-9
I_{oc}	dBm/7.68 MHz	-89
Cell Parameter*		0,1
DPCH Channelization Codes*	C(k,Q)	C(1, 16)
$DPCH_o$ Channelization Codes*	C(k,Q)	C(i, 32) 3≤ i ≤8
Information Data Rate	kbps	12.2
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.		

Table 6.4.2.6: Performance requirements in multipath Case 3 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	-0.1	10^{-2}

6.5 Measurement channels and propagation conditions

6.5.1 Measurement channels

6.5.1.1 General

6.5.1.2 Reference measurement channel

6.5.1.2.1 UL reference measurement channel (12.2 kbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

6.5.1.2.2 UL reference measurement channel (64 kbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

6.5.1.2.3 UL reference measurement channel (144 kbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

6.5.1.2.4 UL reference measurement channel (384 kbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

6.5.1.2.5 RACH reference measurement channel

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

6.5.2 Propagation Conditions

6.5.2.1 Static propagation conditions

Common with 3.84Mcps TDD option.

6.5.2.2 Multi-path fading propagation conditions

Common with 3.84Mcps TDD option.

7 Requirements for Support of Radio Resource Management

7.1 Idle Mode

7.1.1 Cell Selection

Common with 3.84 Mcps Chip rate TDD option.

7.1.2 Cell Re-selection

7.1.2.1 Introduction

Common with 3.84 Mcps Chip rate TDD option.

7.1.2.2 Requirements

7.1.2.2.1 Measurement and evaluation of cell selection criteria S of serving cell

Common with 3.84 Mcps Chip rate TDD option.

7.1.2.2.2 Measurement of intra-frequency cells

Common with 3.84 Mcps Chip rate TDD option.

7.1.2.2.3 Measurement of inter-frequency cells

Common with 3.84 Mcps Chip rate TDD option.

7.1.2.2.4 7.68 Mcps TDD to 3.84 Mcps TDD cell re-selection

The ranking of 3.84 Mcps and 7.68 Mcps chip rate TDD cells shall be made according to the cell reselection criteria specified in TS 25.304 [5].

The UE shall measure PCCPCH RSCP at least every $N_{TDDcarrier}$ * $T_{measureTDD}$ (see Table 7.1.2.1) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for 3.84 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured 3.84 Mcps chip rate TDD cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurement used for filtering is at least $T_{measureTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a 3.84 Mcps chip rate TDD cell has become better ranked than the serving cell within $N_{TDDcarrier}$ * $T_{evaluateTDD}$ from the moment the inter-frequency cell became at least 3 better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 3.84Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 3.84Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

7.1.2.2.5 3.84 Mcps TDD to 7.68 Mcps TDD cell re-selection

This requirement in this section only applies to UEs supporting both 3.84 Mcps TDD and 7.68 Mcps TDD.

The UE shall measure PCCPCH RSCP at least every $N_{carrierNTDD}$ * $T_{measureNTDD}$ (see Table 7.1.2.1) for inter-frequency 7.68 Mcps TDD OPTION cells that are identified and measured according to the measurement rules. The parameter $N_{carrierNTDD}$ is the number of carriers used for 7.68 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured 7.68 Mcps TDD cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurement is at least $T_{measureNTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a 7.68 Mcps TDD cell has become better ranked than the serving cell within $N_{carrierNTDD}$ * $T_{evaluateNTDD}$ from the moment the inter-frequency cell became at least 3 better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 7.68 Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 7.68 Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

7.1.2.2.6 Measurement of inter-frequency FDD cells

Common with 3.84 Mcps Chip rate TDD option.

7.1.2.2.7 Measurement of inter-RAT GSM cells

Common with 3.84 Mcps Chip rate TDD option.

7.1.2.2.8 Evaluation of cell reselection criteria

Common with 3.84 Mcps Chip rate TDD option.

7.1.2.2.9 Maximum interruption time in paging reception

UE shall perform the cell re-selection with minimum interruption in monitoring downlink channels for paging reception.

At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.

At inter-frequency and inter-RAT cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels for paging reception of the target inter-frequency cell. For inter-frequency cell re-selection, the interruption time shall not exceed T_{SI} + 50 ms. For inter-RAT cell re-selection the interruption time shall not exceed T_{BCCH} + 50 ms.

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in TS 25.331 [7] for a UTRAN cell.

T_{BCCH} is the maximum time allowed to read BCCH data from a GSM cell as defined in TS45.008 [8].

These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors.

Table 7.1.2.1: $T_{measureTDD}$, $T_{evaluateTDD}$, $T_{measureNTDD}$, $T_{evaluateNTDD}$, $T_{measureFDD}$, $T_{evaluateFDD}$ and $T_{measureGSM}$

DRX cycle length [s]	N_{serv} (number of DRX cycles)	$T_{measureTDD}$ [s] (number of DRX cycles)	$T_{evaluateTDD}$ [s] (number of DRX cycles)	$T_{measureNTDD}$ [s] (number of DRX cycles)	$T_{evaluateNTDD}$ [s] (number of DRX cycles)	$T_{measureFDD}$ [s] (number of DRX cycles)	$T_{evaluateFDD}$ [s] (number of DRX cycles)	$T_{measureGSM}$ [s] (number of DRX cycles)
0.08	4	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	2.56 (32 DRX cycles)
0.16	4	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	2.56 (16)
0.32	4	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	5.12 (16)
0.64	4	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	5.12 (8)
1.28	2	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	6.4 (5)
2.56	2	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	7.68 (3)
5.12	1	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	10.24 (2)

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s, according to [7].

7.1.2.2.10 Number of cells in cell lists

Common with 3.84 Mcps Chip rate TDD option.

7.2 UTRAN Connected Mode Mobility

Common with 3.84 Mcps Chip rate TDD option.

7.2.1 TDD/TDD Handover

Common with 3.84 Mcps Chip rate TDD option.

7.2.2 TDD/FDD Handover

Common with 3.84 Mcps Chip rate TDD option.

7.2.3 TDD/GSM Handover

Common with 3.84 Mcps Chip rate TDD option.

7.2.4 Cell Re-selection in Cell_FACH

Common with 3.84 Mcps Chip rate TDD option.

7.2.5 Cell Re-selection in Cell_PCH

Common with 3.84 Mcps Chip rate TDD option.

7.2.6 Cell Re-selection in URA_PCH

Common with 3.84 Mcps Chip rate TDD option.

7.2.7 RACH reporting

Common with 3.84 Mcps Chip rate TDD option.

7.2.8 Inter-RAT cell change order from UTRAN in CELL_DCH and CELL_FACH

Common with 3.84 Mcps Chip rate TDD option.

7.3 RRC Connection Control

7.3.1 RRC re-establishment

7.3.1.1 Introduction

RRC connection re-establishment is needed, when a UE in CELL_DCH state loses radio connection due to radio link failure. The procedure when a radio link failure occurs in CELL_DCH state is specified in [7].

7.3.1.2 Requirements

Common with 3.84 Mcps Chip rate TDD option.

7.3.2 Transport format combination selection in UE

7.3.2.1 Introduction

Common with 3.84 Mcps Chip rate TDD option.

7.3.2.2 Requirements

Common with 3.84 Mcps Chip rate TDD option.

7.3.3 Maximum allowed UL TX Power

7.3.3.1 Introduction

UTRAN may limit the power the UE is using on the uplink by setting the maximum allowed UL TX power IE defined in [7].

7.3.3.2 Requirements

Common with 3.84 Mcps Chip rate TDD option.

7.4 Timing characteristics

7.4.1 Timing Advance

7.4.1.1 Introduction

The timing advance is initiated from UTRAN with an RRC message that implies an adjustement of the timing advance, see TS 25.331 section 8.6.6.26.

To update timing advance of a UE, the UTRAN measures RX Timing deviation. The measurements are defined in TS 25.225 and measurement accuracies are specified in section 7.6.

7.4.1.2 Requirements

7.4.1.2.1 Timing Advance adjustment accuracy

The UE shall adjust the timing of its transmissions with an accuracy better than or equal to ±0.5 chip to the signalled timing advance value.

7.4.1.2.2 Timing Advance adjustment delay

Common with 3.84 Mcps Chip rate TDD option.

7.4.2 Cell synchronization accuracy

7.4.2.1 Definition

Common with 3.84 Mcps Chip rate TDD option.

7.4.2.2 Minimum requirements

Common with 3.84 Mcps Chip rate TDD option.

7.4.3 UE Transmit Timing

7.4.3.1 Definition

UE transmit timing is defined as the frame start time of uplink transmissions relative to the downlink frame timing at zero propagation delay with timing advance turned off. The reference point for UE transmit timing shall be the antenna connector. This is applicable for the AWGN propagation condition. In the case of multi-path fading conditions, the reference point for UE transmit timing shall be the first significant path of the received PCCPCH.

7.4.3.2 Minimum requirements

The UE transmit timing error shall be within 0 to +3 chips for the AWGN propagation condition.

7.4.4 UE timer accuracy

7.4.4.1 Introduction

Common with 3.84 Mcps Chip rate TDD option.

7.4.4.2 Requirements

Common with 3.84 Mcps Chip rate TDD option.

7.5 UE Measurement Procedures

7.5.1 General Measurement Requirements in CELL_DCH State

7.5.1.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL_DCH state. The requirements are split in TDD intra frequency, TDD inter frequency, FDD and GSM measurements. These measurements may be used by the UTRAN, e.g. for handover decisions. The measurements are defined in [9], the measurement model is defined in [10] and measurement accuracies are specified in section 7.6. Control of measurement reporting is specified in [7] and parallel measurements are specified in section 7.5.2. For the description of the idle intervals see [9].

7.5.1.2 Requirements

7.5.1.2.1 UE Measurement Capability

Common with 3.84 Mcps Chip rate TDD option.

7.5.1.2.2 TDD intra frequency measurements

Common with 3.84 Mcps Chip rate TDD option.

7.5.1.2.3 TDD inter frequency measurements

Common with 3.84 Mcps Chip rate TDD option.

7.5.1.2.4 FDD measurements

Common with 3.84 Mcps Chip rate TDD option.

7.5.1.2.5 GSM measurements

Common with 3.84 Mcps Chip rate TDD option.

7.5.1.2.6 TDD Synchronisation to new cells

For the requirements in section 7.5 and 7.6 to apply, an intra-frequency or inter-frequency TDD cell shall be considered detectable when, $\left.\left(\frac{P-CCPCH\_E_c}{I_o}\right)\right|_{in\ dB} \geq -11dB$

$$\left.\left(\frac{SCH\_E_c}{I_o}\right)\right|_{in\ dB} \geq -13dB$$

where the received P-CCPCH E_c/I_o is defined as

$$\left.\left(\frac{P-CCPCH\_E_c}{I_o}\right)\right|_{in\ dB} = \left.\left(\frac{P-CCPCH\_E_c}{I_{or}}\right)\right|_{in\ dB} - \left.\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB}$$

and the received SCH E_c/I_o is defined as

$$\left.\left(\frac{SCH\_E_c}{I_o}\right)\right|_{in\ dB} = \left.\left(\frac{SCH\_E_c}{I_{or}}\right)\right|_{in\ dB} - \left.\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB}$$

and SCH_Ec/Ior is equally divided between primary synchronisation code and the sum of all secondary synchronisation codes, where the secondary synchronisation codes are also equally divided.

7.5.1.2.6.1 Rationale

The P-CCPCH in 7.68 Mcps TDD Option has twice the processing gain than that in 3.84 Mcps TDD Option. Hence the P-CCPCH detection level is 3 dB lower in 7.68 Mcps TDD Option compared to that in 3.84 Mcps TDD Option.

The SCH in 7.68 Mcps TDD Option is based on repetition coded version of the 3.84 Mcps TDD synchronization sequences [11]. The detection level is hence same as that in 3.84 Mcps TDD Option.

7.5.2 Measurements in CELL_DCH State with special requirements

Common with 3.84 Mcps Chip rate TDD option.

7.5.3 Capabilities for Support of Event Triggering and Reporting Criteria in CELL_DCH state

Common with 3.84 Mcps Chip rate TDD option.

7.5.4 Measurements in CELL_FACH State

7.5.4.1 Introduction

Common with 3.84 Mcps Chip rate TDD option.

7.5.4.2 Requirements

7.5.4.2.1 UE Measurement Capability

Common with 3.84 Mcps Chip rate TDD option.

7.5.4.2.2 TDD intra frequency measurements

Common with 3.84 Mcps Chip rate TDD option.

7.5.4.2.3 TDD inter frequency measurements

Common with 3.84 Mcps Chip rate TDD option.

7.5.4.2.4 FDD measurements

Common with 3.84 Mcps Chip rate TDD option.

7.5.4.2.5 GSM measurements

Common with 3.84 Mcps Chip rate TDD option.

7.5.5 Capabilities for Support of Event Triggering and Reporting Criteria in CELL_FACH state

7.5.5.1 Introduction

Common with 3.84 Mcps Chip rate TDD option.

7.5.5.2 Requirements

Common with 3.84 Mcps Chip rate TDD option.

7.6 Measurements Performance Requirements

One of the key services provided by the physical layer is the measurement of various quantities which are used to trigger or perform a multitude of functions. Both the UE and the UTRAN are required to perform a variety of measurements. The complete list of measurements is specified in 3GPP TS 25.302 "Services Provided by Physical Layer". The physical layer measurements for TDD are described and defined in 3GPP TS 25.225 "Physical layer – Measurements (TDD)". In this clause for TDD, per each measurement the relevant requirements on performance in terms of accuracy are reported.

The accuracy requirements in this clause are applicable for AWGN radio propagation conditions.

Unless explicitly stated,

- Reported measurements shall be within defined range in 90 % of the cases.
- Measurement channel is 12,2 kbps as defined in 3GPP TS 25.102 annex A. This measurement channel is used both in active cell and cells to be measured.
- Physical channels used as defined in 3GPP TS 25.102 annex A.
- All requirements are defined when UE is in a CELL_DCH or CELL_FACH stage. The difference between modes are the reporting delay. Some of the measurements are not requested to be reported in both stages.
- Single task reporting.
- Power control is active.

7.6.1 Measurement performance for UE

Common with 3.84 Mcps TDD.

7.6.1.1 Performance for UE measurements in Downlink (RX)

7.6.1.1.1 P-CCPCH RSCP (TDD)

Common with 3.84 Mcps TDD.

7.6.1.1.2 CPICH measurements (FDD)

Common with 3.84 Mcps TDD.

7.6.1.1.3 Timeslot ISCP

Common with 3.84 Mcps TDD.

7.6.1.1.4 UTRA carrier RSSI

Common with 3.84 Mcps TDD.

7.6.1.1.5 GSM carrier RSSI

Common with 3.84 Mcps TDD.

7.6.1.1.6 SIR

Common with 3.84 Mcps TDD.

7.6.1.1.7 Transport channel BLER

Common with 3.84 Mcps TDD.

7.6.1.1.8 SFN-SFN observed time difference

Common with 3.84 Mcps TDD.

7.6.1.1.9 Observed time difference to GSM cell

Common with 3.84 Mcps TDD.

7.6.1.1.10 UE GPS Timing of Cell Frames for UP

Common with 3.84 Mcps TDD.

7.6.1.1.11 SFN-CFN observed time difference

Common with 3.84 Mcps TDD.

7.6.1.2 Performance for UE measurements in Uplink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate.

7.6.1.2.1 UE transmitted power

Common with 3.84 Mcps TDD

7.6.2 Measurements Performance for UTRAN

7.6.2.1 Performance for UTRAN Measurements in Uplink (RX)

7.6.2.1.1 RSCP

The measurement period shall be 100 ms.

7.6.2.1.1.1 Absolute accuracy requirements

Table 7.6.2.1: RSCP absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/7.68 MHz]
RSCP	dBm	± 6	± 9	-105..-74

Table 7.6.2.2: RSCP absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/7.68 MHz]
RSCP	dBm	± 6	± 9	-91..-60

7.6.2.1.1.2 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.

Table 7.6.2.3: RSCP relative accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm/7.68 MHz]
RSCP	dBm	± 3 for intra-frequency	-105..-74

Table 7.6.2.4: RSCP relative accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Io [dBm/7.68MHz]
RSCP	dBm	± 3 for intra-frequency	-91..-60

7.6.2.1.1.3 Range/mapping

Common with 3.84 Mcps TDD.

7.6.2.1.2 Timeslot ISCP

The measurement period shall be 100 ms.

7.6.2.1.2.1 Absolute accuracy requirements

Table 7.6.2.5: Timeslot ISCP Intra frequency absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/7.68 MHz]
Timeslot ISCP	dBm	± 6	± 9	-105..-74

Table 7.6.2.6: Timeslot ISCP Intra frequency absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]		Conditions
		Normal conditions	Extreme conditions	Io [dBm/7.68 MHz]
Timeslot ISCP	dBm	± 6	± 9	-91..-60

7.6.2.1.2.2 Range/mapping

Common with 3.84 Mcps TDD.

7.6.2.1.3 Received Total Wide Band Power

The measurement period shall be 100 ms.

7.6.2.1.3.1 Absolute accuracy requirements

Table 7.6.2.7: RECEIVED TOTAL WIDE BAND POWER Intra frequency absolute accuracy for Wide Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Iob [dBm/7.68 MHz]
Iob	dBm/7.68 MHz	± 4	-105..-74

Table 7.6.2.8: RECEIVED TOTAL WIDE BAND POWER Intra frequency absolute accuracy for Local Area BS

Parameter	Unit	Accuracy [dB]	Conditions
			Iob [dBm/7.68 MHz]
Iob	dBm/7.68 MHz	± 4	-91..-60

7.6.2.1.3.2 Range/mapping

Common with 3.84 Mcps TDD.

7.6.2.1.4 SIR

The measurement period shall be 80 ms.

7.6.2.1.4.1 Absolute accuracy requirements

Table 7.6.2.9: SIR Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Range
SIR	dB	± 3	For 0<SIR<20 dB when Iob > -105 dBm/7.68MHz
SIR	dB	+/-(3 - SIR)	For -7<SIR<0 dB when Iob > -105 dBm/7.68MHz

7.6.2.1.4.2 Range/mapping

Common with 3.84 Mcps TDD.

7.6.2.1.5 Transport Channel BER

Common with 3.84 Mcps TDD.

7.6.2.1.6 RX Timing Deviation

The measurement period shall be 100 ms.

7.6.2.1.6.1 Accuracy requirements

Table 7.6.2.10: RX Timing Deviation accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Range [chips]
RX Timing Deviation	chip	+/- 1.0	-2048, …, 2048

7.6.2.1.6.2 Range/mapping

The reporting range for *RX Timing Deviation* is from -2047,9375 ... 2047,9375 chips.

In Table 7.6.2.11 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 7.6.2.11

Reported value	Measured quantity value	Unit
RX_TIME_DEV_0000	RX Timing Deviation < –2047,9375	chip
RX_TIME_DEV_0001	-2047,9375 ≤ RX Timing Deviation < -2047,875	chip
RX_TIME_DEV_0002	-2047,875 ≤ RX Timing Deviation < –2047,8125	chip
…	…	…
RX_TIME_DEV_32768	000,00 ≤ RX Timing Deviation <0,0625	chip
…	…	…
RX_TIME_DEV_65533	2047,8125 ≤ RX Timing Deviation < 2047,875	chip
RX_TIME_DEV_65534	2047,875 ≤ RX Timing Deviation < 2047,9375	chip
RX_TIME_DEV_65535	2047,9375 ≤ RX Timing Deviation	chip

NOTE: This measurement may be used for timing advance calculation or location services.

7.6.2.1.6.3 Rationale

In line with the increase in Timing Advance value in Release 7, the Rx Timing Deviation range is increase.

7.6.2.1.7 UTRAN GPS Timing of Cell Frames for UE Positioning

NOTE: This measurement is used for UP purposes.

The measurement period shall be [1] second.

7.6.2.1.7.1 Accuracy requirements

Three accuracy classes are defined for the UTRAN GPS Timing of Cell Frames for UP measurement, i.e. accuracy class A, B and C. The implemented accuracy class depends on the UP methods that are supported.

Table 7.6.2.12

Parameter	Unit	Accuracy [chip]	Conditions
UTRAN GPS timing of Cell Frames for UP	chip	Accuracy Class A: +/- [40000] chip Accuracy Class B: +/- [40] chip Accuracy Class C: +/- [X] chip	Over the full range

7.6.2.1.7.2 Range/mapping

The reporting range for *UTRAN GPS timing of Cell Frames for UP* is from 0 ... 4644864000000 chip.

In table 7.6.2.13 the mapping of measured quantity is defined.

Table 7.6.2.13

Reported value	Measured quantity value	Unit
GPS_TIME_00000000000000	UTRAN GPS timing of Cell Frames for UP < 0,125	chip
GPS_TIME_00000000000001	0,125 ≤ UTRAN GPS timing of Cell Frames for UP < 0, 250	chip
GPS_TIME_00000000000002	0,250 ≤ UTRAN GPS timing of Cell Frames for UP < 0,375	chip
…	…	…
GPS_TIME_37158911999997	4644863999999,625 ≤ UTRAN GPS timing of Cell Frames for UP < 4644863999999,750	chip
GPS_TIME_37158911999998	4644863999999,750 ≤ UTRAN GPS timing of Cell Frames for UP < 4644863999999,875	chip
GPS_TIME_37158911999999	4644863999999,875 ≤ UTRAN GPS timing of Cell Frames for UP < 4644864000000,0000	chip

7.6.2.1.7.3 Rationale

The UTRAN GPS timing of Cell Frames for UP is independent of bandwidth and hence is proposed to be the same as that in 3.84 Mcps TDD Option in time. The accuracy is in chips and it is adjusted according to the increased in chip rate in 7.68 Mcps TDD Option.

7.6.2.1.8 Node B Synchronisation

Common with 3.84 Mcps TDD.

7.6.2.1.9 SFN-SFN observed time difference

The measurement period shall be 100 ms.

7.6.2.1.9.1 Accuracy requirements

Table 7.6.2.14: SFN-SFN observed time difference accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Range [chips]
SFN-SFN observed time difference	chip	+/-1.0	–2560 ... +2560

7.6.2.1.9.2 Range/mapping

The reporting range for *SFN-SFN observed time difference* is from –2560 ... +2560 chip.

In Table 7.6.2.15 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 7.6.2.15

Reported value	Measured quantity value	Unit
SFN-SFN_TIME _00000	SFN-SFN observed time difference < -2560,0000	chip
SFN-SFN_TIME _00001	-2560,0000 ≤ SFN-SFN observed time difference < -2559,8750	chip
SFN-SFN_TIME _00002	-2559,8750 ≤ SFN-SFN observed time difference < -2559,7500	chip
…	…	…
SFN-SFN_TIME _40959	2559,7500 ≤ SFN-SFN observed time difference < 2559,8750	chip
SFN-SFN_TIME _40960	2559,8750 ≤ SFN-SFN observed time difference < 2560,0000	chip
SFN-SFN_TIME _40961	2560,0000 ≤ SFN-SFN observed time difference	chip

7.6.2.1.9.3 Rationale

The SFN-SFN time difference is independent of bandwidth and hence is proposed to be the same as that in 3.84 Mcps TDD Option in time. The accuracy is in chips and it is adjusted according to the increased in chip rate in 7.68 Mcps TDD Option.

7.6.2.1.10 HS-SICH reception quality

Common with 3.84 Mcps TDD.

7.6.2.2 Performance for UTRAN Measurements in Downlink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate.

7.6.2.2.1 Transmitted carrier power

Common with 3.84 Mcps TDD.

7.6.2.2.2 Transmitted code power

Common with 3.84 Mcps TDD.

7.6.2.2.3 Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission

Common with 3.84 Mcps TDD.

7.7 Test Cases

7.7.1 Purpose

Common with 3.84 Mcps Chip rate TDD option.

7.7.2 Requirement classification for statistical testing

Common with 3.84 Mcps Chip rate TDD option.

7.7.3 Idle Mode

7.7.3.1 Cell Re-Selection

7.7.3.1.1 Scenario 1: TDD/TDD cell re-selection single carrier case

7.7.3.1.1.1 Test Purpose and Environment

This test is to verify the requirement for the cell re-selection delay in the single carrier case reported in section 7.1.2.2.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.3.1.1.2 Rationale

Since the requirement in section 7.1.2.2 and BCH sensitivity in AWGN are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.3.1.2 Scenario 2: TDD/TDD cell re-selection multi carrier case

7.7.3.1.2.1 Test Purpose and Environment

This test is to verify the requirement for the cell re-selection delay in the single carrier case reported in section 7.1.2.2.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.3.1.2.2 Rationale

Since the requirement in section 7.1.2.2 and BCH sensitivity in AWGN are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.3.1.3 Scenario 3: 3.84Mcps TDD cell re-selection for 7.68 Mcps TDD UE

7.7.3.1.3.1 Test Purpose and Environment

This test is to verify the requirement for the 7.68 Mcps TDD OPTION/3.84 Mcps TDD OPTION cell re-selection delay reported in section 7.1.2.

This scenario implies the presence of 1 higher chip rate (7.68 Mcps TDD OPTION) and 1 high chip rate (3.84 Mcps TDD OPTION)) cell as given in Table 7.7.3.1 and 7.7.3.2.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS 25.304.

Cell 1 and cell 2 shall belong to different Location Areas.

Table 7.7.3.1: General test parameters for TDD higher chip rate (7.68 Mcps) to TDD high chip rate (3.84 Mcps) cell re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	7.68 Mcps TDD OPTION cell
	Neighbour cell		Cell2	3.84 Mcps TDD OPTION cell
Final condition	Active cell		Cell2	3.84 Mcps TDD OPTION cell
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-102	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		S	1,28	The value shall be used for all cells in the test.
DRX cycle length		S	1,28	The value shall be used for all cells in the test.
T1		S	30	
T2		S	15	

Table 7.7.3.2: Test parameters for TDD higher chip rate (7.68 Mcps) to TDD high chip rate (3.84 Mcps) cell re-selection

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		8		0		8	
		T1	T2	T 1	T 2	T1	T2	T 1	T 2
UTRA RF Channel Number		Channel 1				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5
PICH_Ec/Ior	dB			-3	-3			-3	-3
OCNS_Ec/Ior		-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	10	7	10	7	7	10	7	10
PCCPCH_RSCP	dBm	-63	-66			-66	-63		
Qoffset1$_{s,n}$	dB	C1, C2: 0				C2, C1: 0			
Qhyst1$_s$	dB	0				0			
Treselection	s	0				0			
Sintersearch	dB	not sent				not sent			
I_{oc}		-70 dBm/7.68 MHz				-70 dBm/3.84 MHz			
Propagation Condition		AWGN							

7.7.3.1.3.2 Test Purpose and Environment

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{evaluateTDD} + T_{SI}$$

where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 7.1.2.1 in section 7.1.2.

T_{SI} Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

7.7.3.1.4 Scenario 4: 3.84 Mcps/7.68 Mcps TDD cell re-selection

7.7.3.1.4.1 Test Purpose and Environment

This test is to verify the requirement for the 3.84 Mcps/7.68 Mcps TDD cell re-selection delay reported in section 7.1.2.

This scenario implies the presence of 1 3.84 Mcps TDD serving cell, and 1 7.68 Mcps TDD cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 3.84Mcps TDD carrier and 1 7.68 Mcps TDD carrier. Test parameters are given in Table 7.7.3.3 and 7.7.3.4. Cell 1 and cell 2 shall belong to different Location Areas.

Table 7.7.3.3: General test parameters for 3.84 Mcps /7.68 Mcps TDD cell re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell 1	3.84 Mcps TDD OPTION cell
	Neighbour cell		Cell 2	7.68 Mcps TDD OPTION cell
Final condition	Active cell		Cell 2	7.68 Mcps TDD OPTION cell
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
$Q_{rxlevmin}$		dBm	-102	
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T_{SI}		S	1,28	The value shall be used for all cells in the test.
DRX cycle length		S	1,28	The value shall be used for all cells in the test.
T1		S	30	
T2		S	15	

Table 7.7.3.4: Cell 1 specific test parameters for 3.84 Mcps TDD/7.68 Mcps TDD cell re-selection

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		8		0		8	
		T1	T2	T 1	T 2	T1	T2	T 1	T 2
UTRA RF Channel Number		Channel 1				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0	5	5	5	5
PICH_Ec/Ior	dB			-3	-3			-3	-3
OCNS_Ec/Ior		-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12	-3,12
$\hat{I}_{or}/I_{oc}$	dB	10	7	10	7	7	10	7	10
PCCPCH_RSCP	dBm	-63	-66			-66	-63		
Qoffset1$_{s,n}$	dB	C1, C2: 0				C2, C1: 0			
Qhyst1$_s$	dB	0				0			
Treselection	s	0				0			
Sintersearch	dB	not sent				not sent			
I_{oc}		-70 dBm/3.84 MHz				-70 dBm/7.68 MHz			
Propagation Condition		AWGN							

7.7.3.1.4.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{evaluateTDD} + T_{SI}$$

where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 7.1.2.1 in section 7.1.2.

T_{SI} Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

7.7.3.1.5 Scenario 5: TDD (7.68 Mcps)/FDD cell re-selection

7.7.3.1.5.1 Test Purpose and Environment

This test is to verify the requirement for the TDD (7.68 Mcps)/FDD cell re-selection delay reported in section 7.1.2.2.

This scenario implies the presence of 1 UTRA TDD and 1 UTRA FDD cell as given in Table 7.7.3.5 and 7.7.3.6. The maximum repetition period of the relevant system information blocks that need to be received by the UE to camp on a cell shall be 1280 ms.

Cell 1 and cell 2 shall belong to different Location Areas.

Table 7.7.3.5: General test parameters for the TDD/FDD cell re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	TDD (7.68 Mcps) cell
	Neighbour cells		Cell2	FDD cell
Final condition	Active cell		Cell2	FDD cell
HCS			Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
DRX cycle length		S	1.28	The value shall be used for all cells in the test.
T1		S	30	During T1 cell 1 better ranked than cell 2
T2		S	15	During T2 cell 2 better ranked than cell 1

Table 7.7.3.6: TDD/FDD cell re-selection

Parameter	Unit	Cell 1				Cell 2	
Timeslot Number		**0**		**8**		**n.a**	**n.a.**
		T1	T2	T 1	T 2	T 1	T 2
UTRA RF Channel Number		Channel 1				Channel 2	
CPICH_Ec/Ior	dB	n.a.		n.a.		-10	-10
PCCPCH_Ec/Ior	dB	-3	-3			-12	-12
SCH_Ec/Ior	dB	-9	-9	-9	-9	-12	-12
SCH_t_{offset}		0	0	0	0	n.a.	n.a.
PICH_Ec/Ior	dB			-3	-3	-15	-15
OCNS_EcIor	dB	-3,12	-3,12	-3,12	-3,12	-0,941	-0,941
$\hat{I}_{or}/I_{oc}$	dB	3	-2	3	-2	-2	3
I_{oc}		-70 dBm/7.68 MHz				-70 dBm/3.84 MHz	
CPICH_RSCP	dBm	n.a.		n.a.		-82	-77
PCCPCH_RSCP	dBm	-70	-75			n.a.	n.a.
Cell_selection_and reselection_quality _measure		CPICH_RSCP				*CPICH_RSCP*	
Qrxlevmin	dBm	-102				-115	
Qoffset1$_{s,n}$	dB	C1, C2: -12				C2, C1: +12	
Qhyst1$_s$	dB	0				0	
Treselection	s	0				0	
Propagation Condition		AWGN				AWGN	

7.7.3.1.5.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as: $T_{evaluateFDD} + T_{SI}$, where:

$T_{evaluateFDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ FDD}$ of 6.4s according to Table 7.1.2.1 in section 7.1.2.

T_{SI} Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

7.7.3.1.5 Scenario 5: inter RAT cell re-selection

7.7.3.1.5.1 Test Purpose and Environment

This test is to verify the requirement for the UTRA TDD to GSM cell re-selection delay reported in section 7.1.2.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.3.1.5.2 Rationale

Since the requirement in section 7.1.2.2 is common to that in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.4 UTRAN Connected Mode Mobility

7.7.4.1 TDD/TDD Handover

7.7.4.1.1 Handover to intra-frequency cell

7.7.4.1.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the intra-frequency handover delay in CELL_DCH state in the single carrier case reported in section 7.2.1.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.4.1.1.2 Rationale

Since the requirement in section 7.2.1 and BCH sensitivity in AWGN are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.4.1.2 Handover to intra-frequency cell

7.7.4.1.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL_DCH state in the dual carrier case reported in section 7.2.1.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.4.1.2.2 Rationale

Since the requirement in section 7.2.1 and BCH sensitivity in AWGN are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.4.2 TDD/FDD Handover

7.7.4.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the TDD/FDD handover delay in CELL_DCH state reported in section 7.2.2.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.4.2.2 Rationale

Since the requirement in section 7.2.2 and BCH sensitivity in AWGN are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.4.3 TDD/GSM Handover

7.7.4.3.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the UTRA TDD to GSM handover delay reported in section 7.2.3.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.4.3.2 Rationale

Since the requirement in section 7.2.3 and BCH sensitivity in AWGN are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.4.4 Cell Re-selection in CELL_FACH

7.7.4.4.1 Scenario 1: TDD/TDD cell re-selection single carrier case

7.7.4.4.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_FACH state in the single carrier case reported in section 7.2.4.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.4.4.1.2 Rationale

Since the requirement in section 7.2.4 and BCH sensitivity in AWGN are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.4.4.2 Scenario 2: TDD/TDD cell re-selection multi carrier case

7.7.4.4.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_FACH state in the multi carrier case reported in section 7.2.4.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.4.4.2.2 Rationale

Since the requirement in section 7.2.4 and BCH sensitivity in AWGN are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.4.5 Cell Re-selection in CELL_PCH

7.7.4.5.1 Scenario 1: TDD/TDD cell re-selection single carrier case

7.7.4.5.1.1 Test Purpose and Environment

This test is to verify the requirement for the cell re-selection delay in CELL_PCH state in section 7.2.5.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.4.5.1.2 Rationale

Since the requirement in section 7.2.5 and BCH sensitivity in AWGN are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.4.5.2 Scenario 2: TDD/TDD cell re-selection multi carrier case

7.7.4.5.1.1 Test Purpose and Environment

This test is to verify the requirement for the cell re-selection delay in CELL_PCH state in section 7.2.5.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.4.5.1.2 Rationale

Since the requirement in section 7.2.5 and BCH sensitivity in AWGN are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.4.6 Cell Re-selection in URA_PCH

7.7.4.6.1 Scenario 1: TDD/TDD cell re-selection single carrier case

7.7.4.6.1.1 Test Purpose and Environment

This test is to verify the requirement for the cell re-selection delay in URA_PCH state in section 7.2.6.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.4.6.1.2 Rationale

Since the requirement in section 7.2.6 and BCH sensitivity in AWGN are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.4.6.2 Scenario 2: TDD/TDD cell re-selection multi carrier case

7.7.4.6.2.1 Test Purpose and Environment

This test is to verify the requirement for the cell re-selection delay in URA_PCH state in section 7.2.6.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.4.6.2.2 Rationale

Since the requirement in section 7.2.6 and BCH sensitivity in AWGN are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.5 RRC Connection Control

7.7.5.1 RRC re-establishment delay

7.7.5.1.1 RRC re-establishment delay to a known target cell

7.7.5.1.1.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay to a known target cell is within the specified limits. This test will partly verify the requirements in section 7.3.1.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.5.1.1.2 Rationale

Since the requirement in section 7.3.1 is common with that in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.5.1.2 RRC re-establishment delay to an unknown target cell

7.7.5.1.2.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay to an unknown target cell is within the specified limits. This test will partly verify the requirements in section 7.3.1.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.5.1.2.2 Rationale

Since the requirement in section 7.3.1 is common with that in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.5.2 Transport format combination selection in UE

7.7.5.2.1 Test Purpose and Environment

The purpose is to verify the UE blocks (stops using) a currently used TFC when the UE output power is not sufficient to support that TFC. This test will verify the general requirement on TFC selection in section 7.3.2.

7.7.5.2.1.1 Interactive or Background, PS, UL: 64 kbps

The test will verify the general requirement on TFC selection in section 7.3.2 for a 64 kbps UL reference RAB intended for packet data services, similar to the Interactive or Background, PS as defined in TS 34.108 and multiplexed to a 3.4 kbps DCCH.

The test parameters are given in Table 7.7.5.1, 7.7.5.2, 7.7.5.3 and Table 7.7.5.4 below. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively.

Details on the UL reference RAB in table 7.7.5.2 is similar to that in TS 34.108 section "Interactive or background / UL:64 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH" with the exception that the Spreading Factor is 32 here instead of 16.

Table 7.7.5.1: General test parameters

Parameter	Unit	Value	Comment
TFCS size		10	
TFCS		UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3, UL_TFC4, UL_TFC5, UL_TFC6, UL_TFC7, UL_TFC8, UL_TFC9	Gain factors for TFC0 to TFC9 shall be set to 1.
Power Control		On	
Active cell		Cell 1	
Maximum allowed UL TX power	dBm	0	Value of IE "Maximum allowed UL Tx power
Primary CCPCH Tx power	dBm	18	Value of IE "Primary CCPCH Tx power"
UL timeslot interference	dBm	-80	Value of IE "UL timeslot interference" This value shall apply to all timeslots
α		1	IE "Alpha" either not sent or explicitly set to value
UL target SIR	dB	6	
DPCH constant offset	dB	adjustable	Value of IE "DPCH constant power
T1	s	10	
T2	s	10	

Table 7.7.5.2: Transport channel parameters for UL reference RAB, Interactive or Background and DCCH

Parameter	Unit	64 kbps RAB	DCCH 3.4kbps
Transport Channel Number		1	2
Transmission Time Interval	Ms	20	40
Type of Error Protection		Turbo coding	Convolutional coding
Coding Rate		1/3	
Size of CRC	bits	16	
Transport Block Size	bits	336	148
Transport Block Set Size	bits	336*B (B=0,1,2,3,4)	148*B (B=0,1)
Transport Format Set	bits		
TF0		0x336	0x148
TF1		1x336	1x148
TF2		2x336	N/A
TF3		3x336	N/A
TF4		4x336	N/A

Table 7.7.5.3: UL TFCI

TFCI	(64 kbps RAB, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF0, TF1)
UL_TFC2	(TF1, TF0)
UL_TFC3	(TF1, TF1)
UL_TFC4	(TF2, TF0)
UL_TFC5	(TF2, TF1)
UL_TFC6	(TF3, TF0)
UL_TFC7	(TF3, TF1)
UL_TFC8	(TF4, TF0)
UL_TFC9	(TF4, TF1)

Table 7.7.5.4: Physical channel parameters

Parameter	Unit	Value
UL timeslot		7
Burst type		1
Resource units		{(spreading factor 32 x 1 code) + (spreading factor 8 x 1 code)} x 1 time slot
TFCI	Bits	16
TPC	Bits	2
Frame allocation		Continuous

The test shall be performed in AWGN channel propagation conditions. The P-CCPCH in the DL shall be transmitted in timeslot 0.

The amount of available user data shall be sufficient to allow uplink transmission at the highest bit rate (UL_TFC8 or UL_TFC9) during the entire test and it shall be ensured that the UE is using UL_TFC8 or UL_TFC9 at the end of T1.

The test shall be performed in the following way:

Before time period T1:

The allowed TFCS according to table 7.7.5.1 shall be signalled to the UE.

During time period T1:

With the received P-CCPCH power level set to –60 dBm, the value of the DPCH constant value shall be adjusted such that the mean UE output power is -10 dBm. These conditions are held steady during period T1.

During time period T2:

At the beginning of time period T2, the received P-CCPCH power level shall be decreased by 20 dB.

7.7.5.2.2 Test Purpose and Environment

The UE shall have stopped using UL_TFC8 and UL_TFC9 within 170 ms from beginning of time period T2.

The rate of correct TFC selections observed during repeated tests shall be at least 90%.

NOTE: The delay from the begining of T2 can be expressed as:

$$T_{detect\_block} + T_{notify} + T_{modify} + T_{L1\_proc} + T_{align\_TTI} + T_{offset}$$

where:

T_{detect_block}	Equal to 30 ms, the time needed to detect that UL_TFC8 and UL_TFC9 can no longer be supported. This defines the maximum time to detect that the *Elimination* criterion is fulfilled for UL_TFC8 and UL_TFC9.
T_{notify}	Equal to 15 ms, the time allowed for MAC to indicate to higher layers that UL_TFC8 and UL_TFC9 can no longer be supported.
T_{modify}	Equal to $MAX(T_{adapt\_max}, T_{TTI}) = MAX(0, 40)=40ms$
T_{adapt_max}	Equals to 0 ms for the case without codec.
T_{TTI}	See section 7.3.2. Equals 40 ms in the test case.
T_{L1_proc}	Equals 35 ms.
T_{align_TTI}	Align with the longest uplink TTI where the new TFC can be selected. The worst case equals 40ms in this test case.
T_{offset}	Equal to 10 ms, the maximum time between reception of the DL beacon timeslot and the UL DPCH timeslot.

7.7.6 Timing characteristics

7.7.6.1 Timing Advance

7.7.6.1.1 Test Purpose and Environment

Common with 3.84 Mcps Chip rate TDD option.

7.7.6.1.2 Test Requirements

The UE shall apply the signalled Timing Advance value to the UL DPCH transmission timing at the designated activation time, i.e the beginning of time period T2. The Timing Advance adjustment accuracy shall be within the limits specified in section 7.4.1.

The rate of correct Timing Advance adjustments observed during repeated tests shall be at least 90%.

7.7.7 UE Measurement Procedures

7.7.7.1 TDD intra frequency measurements

7.7.7.1.1 Event 1G triggered reporting in AWGN propagation conditions

7.7.7.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 7.5.1.2 and section 7.6.1.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.7.1.1.2 Rationale

Since the requirement in section 7.5.1.2 and 7.6.1 are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.7.1.2 Event 1H and 1I triggered reporting in AWGN propagation conditions

7.7.7.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of event 1H and event 1I. This test will partly verify the requirements in section 7.5.1.2 and section 7.6.1.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.7.1.2.2 Rationale

Since the requirement in section 7.5.1.2 and 7.6.1 are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.7.1.3 Correct reporting of neighbours in fading propagation condition

7.7.7.1.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs sufficient layer 1 filtering of the P-CCPCH RSCP measurement which is the base for Event 1G evaluation. This test is performed in fading propagation conditions and will partly verify the requirements in section 7.5.1.2.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.7.1.3.2 Rationale

Since the requirement in section 7.5.1.2 is common with that in 3.84 Mcps Chip rate TDD option, the test case and requirements proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.7.2 TDD inter frequency measurements

7.7.7.2.1 Correct reporting of neighbours in AWGN propagation conditions

7.7.7.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements. The test will partly verify the requirements in section 7.5.1.2 and section 7.6.1.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.7.2.1.2 Rationale

Since the requirement in section 7.5.1.2 and 7.6.1 are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.7.3 FDD measurements

7.7.7.3.1 Correct reporting of FDD neighbours in AWGN propagation conditions

7.7.7.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of events when measuring on UTRA FDD cells. This test will partly verify the requirements in section 7.5.1.2 and section 7.6.1.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.7.3.1.2 Rationale

Since the requirement in section 7.5.1.2 and 7.6.1 are common with those in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.7.4 GSM measurements

7.7.7.4.1 Correct reporting of GSM neighbours in AWGN propagation conditions

7.7.7.4.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing GSM measurements. This test will partly verify the requirements in section 7.5.1.2. The requirements are also applicable for a UE not requiring idle intervals to perform GSM measurements.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.7.4.1.2 Rationale

Since the requirement in section 7.5.1.2 is common with that in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.8 Measurement Performance Requirements

Unless explicitly stated:

- Measurement channel is 12.2 kbps as defined in section 5.5.1. This measurement channel is used both in active cell and cells to be measured.
- Cell 1 is the active cell.
- Single task reporting.
- Power control is active.

7.7.8.1 Measurement Performance for UE

7.7.8.1.1 P-CCPCH RSCP

7.7.8.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the P-CCPCH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 7.6.1.1.1.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.8.1.1.2 Rationale

Since the requirement in section 7.6.1.1.1 is common with that in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.8.1.2 CPICH RSCP

7.7.8.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 7.6.1.1.2 and applies to UE's supporting this capability.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.8.1.2.2 Rationale

Since the requirement in section 7.6.1.1.2 is common with that in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.8.1.3 Timeslot ISCP

7.7.8.1.3.1 Test Purpose and Environment

The purpose of this test is to verify that the Timeslot ISCP measurement accuracy is within the specified limits. This test will verify the requirements in section 7.6.1.1.3.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.8.1.3.2 Rationale

Since the requirement in section 7.6.1.1.3 is common with that in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.8.1.4 UTRA Carrier RSSI

7.7.8.1.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UTRA Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 7.6.1.1.4.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.8.1.4.2 Rationale

Since the requirement in section 7.6.1.1.4 is common with that in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.8.1.5 GSM carrier RSSI

7.7.8.1.5.1 Test Purpose and Environment

The purpose of this test is to verify that the GSM Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 7.6.1.1.5.

The test case and requirements are common with 3.84 Mcps Chip rate TDD option.

7.7.8.1.5.2 Rationale

Since the requirement in section 7.6.1.1.5 is common with that in 3.84 Mcps Chip rate TDD option, the test case and requirements are proposed to be common with those in 3.84 Mcps Chip rate TDD option.

7.7.8.1.6 SFN-SFN observed time difference

7.7.8.1.6.1 SFN-SFN observed time difference type 1

Common with 3.84 Mcps TDD Option.

7.7.8.1.6.2 SFN-SFN observed time difference type 2

Common with 3.84 Mcps TDD Option.

7.7.8.1.6.3 Rationale

The SFN-SFN observed time difference requirement in section 7.6.1.1.8 is common with 3.84 Mcps TDD Option. Hence the test case and requirements are proposed to be common with those in 3.84 Mcps TDD Option.

7.7.8.1.7 SFN-CFN observed time difference

Common with 3.84 Mcps TDD Option.

7.7.8.1.7.1 Rationale

The SFN-CFN observed time difference requirement in section 7.6.1.1.10 is common with 3.84 Mcps TDD Option. Hence the test case and requirements are proposed to be common with those in 3.84 Mcps TDD Option.

7.8 FDD Issues

[Editor's Note: relates to TS 25.133. Covers issues related to measurement of TDD cells, handover and cell re-selection to TDD cells. Specification impacts are likely to be related solely to UEs that support both FDD and the 7.68Mcps TDD option].

8 Base Station Conformance Testing

8.1 Frequency bands and channel arrangement

8.1.1 General

Common with 3.84 Mcps Chip rate TDD option.

8.1.2 Frequency bands

Common with 3.84 Mcps Chip rate TDD option (Release 6). The 2.6 GHz band is FFS.

8.1.3 TX-RX frequency separation

Common with 3.84 Mcps Chip rate TDD option.

8.1.4 Channel arrangement

8.1.4.1 Channel spacing

The nominal channel spacing is 10 MHz, but this can be adjusted to optimise performance in a particular deployment scenario.

8.1.4.2 Channel raster

Common with 3.84 Mcps Chip rate TDD option.

8.1.5 Channel number

Common with 3.84 Mcps Chip rate TDD option.

8.2 Transmitter Characteristics

8.2.1 General

Common with 3.84Mcps TDD option.

8.2.2 Maximum output power

Common with 3.84Mcps TDD option.

8.2.3 Frequency stability

Common with 3.84Mcps TDD option.

8.2.4 Output power dynamics

8.2.4.1 Inner loop power control

Common with 3.84Mcps TDD option.

8.2.4.2 Power control steps

8.2.4.2.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.2.4.2.2 Minimum Requirements

Common with 3.84Mcps TDD option.

8.2.4.2.3 Test purpose

Common with 3.84Mcps TDD option.

8.2.4.2.4 Method of test

8.2.4.2.4.1 Initial conditions

Common with 3.84Mcps TDD option.

8.2.4.2.4.2 Procedure

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

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

(3) Measure the code domain power of the active DPCH over the 4928 active chips of each even time slot TS i (this excludes the guard period) by applying the global in-channel Tx test method described in Annex C of TS 25.142 [12].

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

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

8.2.4.2.4.3 Rationale

The number of active chips in 7.68 Mcps TDD Option is twice that of 3.84 Mcps TDD Option.

8.2.4.2.5 Test Requirements

Common with 3.84Mcps TDD option.

8.2.4.3 Power control dynamic range

8.2.4.3.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.2.4.3.2 Minimum Requirements

Common with 3.84Mcps TDD option.

8.2.4.3.3 Test purpose

Common with 3.84Mcps TDD option.

8.2.4.3.4 Method of test

8.2.4.3.4.1 Initial conditions

Common with 3.84Mcps TDD option.

8.2.4.3.4.2 Procedure

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

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

(3) Measure the code domain power of the active DPCH over the 4928 active chips of an even time slot TS i (this excludes the guard period) by applying the global in-channel Tx test method described in Annex C of TS 25.142 [12].

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

(5) Measure the code domain power of the active DPCH over the 4928 active chips of an even time slot TS i (this excludes the guard period) by applying the global in-channel Tx test method described in Annex C TS 25.142 [12].

(6) Determine the power control dynamic range by calculating the difference between the maximum code domain power measured in step (3) and the minimum code domain power measured in step (5).

(7) Configure the BS transmitter to enable power control steps of 2 dB and of 3 dB, respectively, and repeat steps (2) to (6).

8.2.4.3.4.3 Rationale

The number of active chips in 7.68 Mcps TDD Option is twice that of 3.84 Mcps TDD Option.

8.2.4.3.3 Test Requirements

Common with 3.84Mcps TDD option.

8.2.4.4 Minimum output power

8.2.4.4.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.2.4.4.2 Minimum Requirements

Common with 3.84Mcps TDD option.

8.2.4.4.3 Test purpose

Common with 3.84Mcps TDD option.

8.2.4.4.4 Method of test

8.2.4.4.4.1 Initial conditions

Common with 3.84Mcps TDD option.

8.2.4.4.4.2 Procedure

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

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

(3) Measure the power of the BS output signal over the 4928 active chips of an even and non zero time slot TS i (this excludes the guard period), and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.

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

8.2.4.4.4.3 Rationale

The number of active chips in 7.68 Mcps TDD Option is twice that of 3.84 Mcps TDD Option.

8.2.4.4.5 Test Requirements

Common with 3.84Mcps TDD option.

8.2.4.5 Primary CCPCH power

8.2.4.5.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.2.4.5.2 Minimum Requirements

Common with 3.84Mcps TDD option.

8.2.4.5.3 Test purpose

Common with 3.84Mcps TDD option.

8.2.4.5.4 Method of test

Common with 3.84Mcps TDD option.

8.2.4.5.5 Test Requirements

Common with 3.84Mcps TDD option.

8.2.4.6 Differential accuracy of Primary CCPCH power

8.2.4.6.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.2.4.6.2 Minimum Requirements

Common with 3.84Mcps TDD option.

8.2.4.6.3 Test purpose

Common with 3.84Mcps TDD option.

8.2.4.6.4 Method of test

Common with 3.84Mcps TDD option.

8.2.4.6.5 Test Requirements

Common with 3.84Mcps TDD option.

8.2.5 Transmit ON/OFF power

8.2.5.1 Transmit OFF power

8.2.5.1.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.2.5.1.2 Minimum Requirements

The transmit OFF power shall be less than –76 dBm.

8.2.5.1.2.1 Rationale

This is to conform to the requirements in Section 6.2.5.1.1.

8.2.5.1.3 Test purpose

Common with 3.84Mcps TDD option.

8.2.5.1.4 Method of test

Common with 3.84Mcps TDD option.

8.2.5.1.5 Test Requirements

Common with 3.84Mcps TDD option.

8.2.5.2 Transmit ON/OFF power

8.2.5.2.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.2.5.2.2 Minimum Requirements

The transmit power level versus time should meet the mask specified in Figure 8.2.5.1.

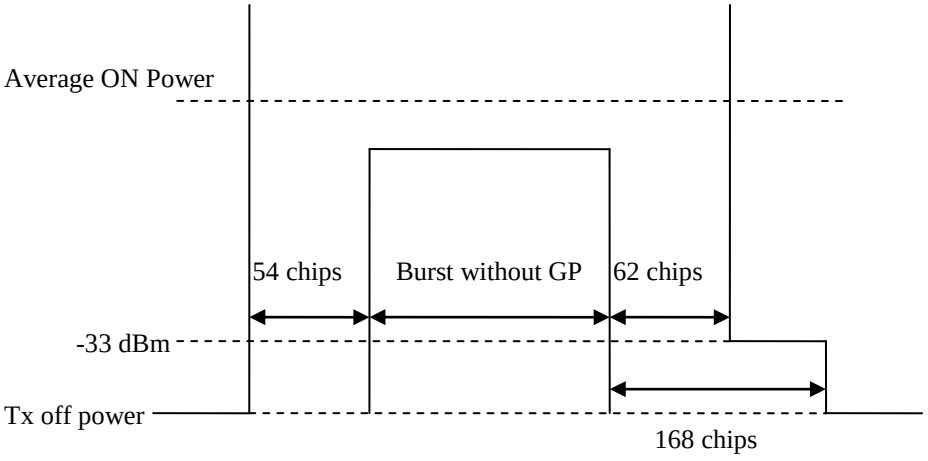

Figure 8.2.5.1. Transmit ON/OFF template

8.2.5.2.3 Test purpose

Common with 3.84Mcps TDD option.

8.2.5.2.4 Method of test

8.2.5.2.4.1 Initial conditions

Common with 3.84Mcps TDD option.

8.2.5.2.4.2 Procedure

(1) Measure the RRC filtered mean power of the BS output signal chipwise (i.e. averaged over time intervals of one chip duration) over the period starting 130 chips before the start of the odd time slots TS i (receive time slots of the BS), and ending 54 chips before the next even time slot (transmit time slot of the BS) starts.

8.2.5.2.4.3 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 of TS 25.142 [12] and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D TS 25.142 [12].

Each value of the power measured according to subclause 8.2.5.2.4.2 shall be below – 32,3 dBm in the period from 64 chips to 168 chips after the burst and below – 77 dBm in the period where the Tx OFF power specification is applicable.

8.2.5.2.4.4 Rationale

The Transmit ON/OFF template has the same timing characteristics as that in 3.84 Mcps TDD Option. However, the template is defined in chips and since 7.68 Mcps TDD Option has twice the number of chips, the timing intervals are twice that of 3.84 Mcps TDD Option.

8.2.6 Output RF spectrum emissions

8.2.6.1 Occupied bandwidth

8.2.6.1.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.2.6.1.2 Minimum Requirements

The occupied bandwidth shall be less than 10 MHz based on a chip rate of 7,68 Mcps.

8.2.6.1.3 Test purpose

Common with 3.84Mcps TDD option.

8.2.6.1.4 Method of test

8.2.6.1.4.1 Initial conditions

Common with 3.84Mcps TDD option.

8.2.6.1.4.2 Procedure

(1) Measure the power of the transmitted signal with a measurement filter of bandwidth 30 kHz. The characteristic of the filter shall be approximately Gaussian (typical spectrum analyzer filter). The centre frequency of the filter

shall be stepped in contiguous 30 kHz steps from a minimum frequency, which shall be (15 – 0,015) MHz below the assigned channel frequency of the transmitted signal, up to a maximum frequency, which shall be (15 – 0,015) MHz above the assigned channel frequency of the transmitted signal. The time duration of each step shall be sufficiently long to capture one active time slot. The measured power shall be recorded for each step.

(2) Determine the total output power by accumulating the recorded power measurement results of all steps.

(3) Sum up the recorded power measurement results, starting from the step at the minimum frequency defined in (1) up to the step at a lower limit frequency by which this sum is equal to or greater than 0.5 % of the total output power determined in (2). This limit frequency is recorded as "Lower Frequency".

(4) Sum up the recorded power measurement results, starting from the step at the maximum frequency defined in (1) down to the step at an upper limit frequency by which this sum is equal to or greater than 0.5 % of the total output power determined in (2). This limit frequency is recorded as "Upper Frequency".

(5) Calculate the occupied bandwidth as the difference between the "Upper Frequency" obtained in (3) and the "Lower Frequency" obtained in (4).

8.2.6.1.4.3 Test Requirements

The occupied bandwidth calculated in step (5) of subclause 8.2.6.1.4.2 shall be less than 10 MHz.

8.2.6.2 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.

8.2.6.2.1 Spectrum emission mask

8.2.6.2.1.1 Definition and applicability

The spectrum emission mask specifies the limit of the transmitter out of band emissions at frequency offsets from the assigned channel frequency of the wanted signal between 5 MHz and 25 MHz.

The mask defined in subclause 8.2.6.2.1.2 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.

8.2.6.2.1.2 Minimum Requirements

For regions where this subclause applies, the requirement shall be met by a base station transmitting on a single RF carrier configured in accordance with the manufacturer's specification. Emissions shall not exceed the maximum level specified in tables 8.2.6.1 to 8.2.6.4 in the frequency range of f_offset from 5,015 MHz to f_offset_{max} from the carrier frequency, where:

- f_offset is the separation between the carrier frequency and the centre of the measurement filter
- f_offset_{max} is either 25 MHz or the offset to the UMTS Tx band edge as defined in subclause 8.1.2, whichever is the greater.

Table 8.2.6.1: Spectrum emission mask values, BS maximum output power P ≥ 43 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
5.015MHz ≤ f_offset < 5.215MHz	-17 dBm	30 kHz
5.215MHz ≤ f_offset < 6.015MHz	$-17dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 5.215 \right) dB$	30 kHz
6.015MHz ≤ f_offset < 6.5MHz	-29 dBm	30 kHz
6.5MHz ≤ f_offset < f_offset_{max}	-16 dBm	1 MHz
5.015MHz ≤ f_offset < 5.215MHz	-17 dBm	30 kHz

Table 8.2.6.2: Spectrum emission mask values, BS maximum output power 39 ≤ P < 43 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
5.015MHz ≤ f_offset < 5.215MHz	-17 dBm	30 kHz
5.215MHz ≤ f_offset < 6.015MHz	$-17dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 5.215 \right) dB$	30 kHz
6.015MHz ≤ f_offset < 6.5MHz	-29 dBm	30 kHz
6.5MHz ≤ f_offset < 15.5MHz	-16 dBm	1 MHz
15.5MHz ≤ f_offset < f_offset_{max}	P - 59 dB	1 MHz

Table 8.2.6.3: Spectrum emission mask values, BS maximum output power 31 ≤ P < 39 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
5.015MHz ≤ f_offset < 5.215MHz	P - 56 dB	30 kHz
5.215MHz ≤ f_offset < 6.015MHz	$P - 56dB - 15 \cdot \left(\frac{f\_offset}{MHz} - 5.215 \right) dB$	30 kHz
6.015MHz ≤ f_offset < 6.5MHz	P – 68 dB	30 kHz
6.5MHz ≤ f_offset < 15.5MHz	P – 55 dB	1 MHz
15.5MHz ≤ f_offset < f_offset_{max}	P - 59 dB	1 MHz

Table 8.2.6.4: Spectrum emission mask values, BS maximum output power P < 31 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
5.015MHz ≤ f_offset < 5.215MHz	-25 dBm	30 kHz
5.215MHz ≤ f_offset < 6.015MHz	$-25dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 5.215 \right) dB$	30 kHz
6.015MHz ≤ f_offset < 6.5MHz	-37 dBm	30 kHz
6.5MHz ≤ f_offset < 15.5MHz	-24 dBm	1 MHz
15.5MHz ≤ f_offset < f_offset_{max}	-28 dBm	1 MHz

The normative reference for this requirement is 6.2.6.2.1.

8.2.6.2.1.3 Test purpose

Common with 3.84Mcps TDD option.

8.2.6.2.1.4 Method of test

8.2.6.2.1.4.1 Initial conditions

Common with 3.84Mcps TDD option.

8.2.6.2.1.4.2 General test conditions

Common with 3.84Mcps TDD option.

8.2.6.2.1.4.3 Procedure

Measure the power of the BS spectrum emissions by applying measurement filters with bandwidths as specified in the relevant table in subclause 8.2.6.2.1.2. The characteristic of the filters shall be approximately Gaussian (typical spectrum analyzer filters). The centre frequency of the filter shall be stepped in contiguous steps over the ranges of frequency offsets f_offset as given in the tables. The step width shall be equal to the respective measurement bandwidth. The time duration of each step shall be sufficiently long to capture one active time slot.

For frequency offsets of the measurement filter centre frequency in the range 6,5 MHz ≤ f_offset < f_offset_{max}, the measurement shall be performed by applying filters with measurement bandwidth of 50 kHz or less and integrating the measured results over the nominal measurement bandwidth 1 MHz specified in the tables in subclause 8.2.6.2.1.2.

This procedure is applicable to 16QAM capable BS.

8.2.6.2.1.4.4 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 of TS 25.142 [12] and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D of TS 25.142 [12].

The spectrum emissions measured according to subclause 8.2.6.2.1.4.3 (including 16QAM capable BS) shall not exceed the maximum level specified in Tables 8.2.6.5 to 8.2.6.8 for the appropriate BS maximum output power

Table 8.2.6.5: Test Requirements for spectrum emission mask values, BS maximum output power P ≥ 43 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
5.015MHz ≤ f_offset < 5.215MHz	-15.5 dBm	30 kHz
5.215MHz ≤ f_offset < 6.015MHz	$-15.5dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 5.215 \right) dB$	30 kHz
6.015MHz ≤ f_offset < 6.5MHz	-27.5 dBm	30 kHz
6.5MHz ≤ f_offset < f_offset_{max}	-14.5 dBm	1 MHz
15.5MHz ≤ f_offset < f_offset_{max}	-14.5 dBm	1 MHz

Table 8.2.6.6: Test Requirements for spectrum emission mask values, BS maximum output power 39 ≤ P < 43 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
5.015MHz ≤ f_offset < 5.215MHz	-15.5 dBm	30 kHz
5.215MHz ≤ f_offset < 6.015MHz	$-15.5dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 5.215 \right) dB$	30 kHz
6.015MHz ≤ f_offset < 6.5MHz	-27.5 dBm	30 kHz
6.5MHz ≤ f_offset < 15.5MHz	-14.5 dBm	1 MHz
15.5MHz ≤ f_offset < f_offset_{max}	P – 57.5 dB	1 MHz

Table 8.2.6.7: Test Requirements for spectrum emission mask values, BS maximum output power 31 ≤ P < 39 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
5.015MHz ≤ f_offset < 5.215MHz	P – 54.5 dB	30 kHz
5.215MHz ≤ f_offset < 6.015MHz	$P - 54.5dB - 15 \cdot \left(\frac{f\_offset}{MHz} - 5.215 \right) dB$	30 kHz
6.015MHz ≤ f_offset < 6.5MHz	P – 66.5 dB	30 kHz
6.5MHz ≤ f_offset < 15.5MHz	P – 53.5 dB	1 MHz
15.5MHz ≤ f_offset < f_offset_{max}	P – 57.5 dB	1 MHz

Table 8.2.6.8: Test Requirements for spectrum emission mask values, BS maximum output power P < 31 dBm

Frequency offset of measurement filter centre frequency, f_offset	Maximum level	Measurement bandwidth
5.015MHz ≤ f_offset < 5.215MHz	-23.5 dBm	30 kHz
5.215MHz ≤ f_offset < 6.015MHz	$-23.5dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 5.215 \right) dB$	30 kHz
6.015MHz ≤ f_offset < 6.5MHz	-35.5 dBm	30 kHz
6.5MHz ≤ f_offset < 15.5MHz	-22.5 dBm	1 MHz
15.5MHz ≤ f_offset < f_offset_{max}	-26.5 dBm	1 MHz

8.2.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)

8.2.6.2.2.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.2.6.2.2.2 Minimum Requirements

8.2.6.2.2.2.1 Minimum requirement

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 8.2.6.9.

Table 8.2.6.9: BS ACLR limits

BS adjacent channel offset below the first or above the last carrier frequency used	ACLR limit
10 MHz	45 dB
20 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 subclause 6.2.6.2.2.1.

8.2.6.2.2.2.2 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 8.2.6.10 and 8.2.6.11.

Table 8.2.6.10: Adjacent channel leakage power limits for operation in the same geographic area with unsynchronised TDD (7.68 Mcps TDD and 3.84 Mcps 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	7.5 MHz	- 29 dBm	3,84 MHz
Wide Area BS	12.5 MHz	- 29 dBm	3,84 MHz
Wide Area BS	17.5 MHz	- 29 dBm	3,84 MHz
Wide Area BS	22.5 MHz	- 29 dBm	3,84 MHz
Local Area BS	7.5 MHz	-16 dBm	3,84 MHz
Local Area BS	12.5 MHz	-26 dBm	3,84 MHz
Local Area BS	17.5 MHz	-26 dBm	3,84 MHz
Local Area BS	22.5 MHz	-26 dBm	3,84 MHz

Table 8.2.6.11: 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 below the first or above the last carrier frequency used	Maximum Level	Measurement Bandwidth
Wide Area BS	5.8 MHz	- 29 dBm	1.28 MHz
Wide Area BS	7.4 MHz	- 29 dBm	1.28 MHz
Local Area BS	5.8 MHz	- 16 dBm	1.28 MHz
Local Area BS	7.4 MHz	- 16 dBm	1.28 MHz

NOTE: The requirements in Table 8.2.6.10 and 8.2.6.11 for the Wide Area BS are based on a coupling loss of 74 dB between the unsynchronised TDD base stations . The requirement in Table 8.2.6.10 and 8.2.6.11 for the Local Area BS ACLR1 are based on a coupling loss of 87 dB between unsynchronised Wide Area and Local Area TDD base stations. The requirement in Table 8.2.6.10 and 8.2.6.11 for the Local Area BS ACLR2 are based on a coupling loss of 77 dB and 87 dB between unsynchronised Wide Area and Local Area 3.84 Mcps TDD and 1.28 Mcps TDD base stations respectively.

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 the same geographic area.

The normative reference for this requirement is subclause 6.2.6.2.2.2.

NOTE: The necessary dynamic range to very the conformance requirements specified in table 8.2.6.10 and 8.2.6.11 is at the limits of the capability of state-of-art measuring equipment.

8.2.6.2.2.3 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 8.2.6.12.

Table 8.2.6.12: 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	± 7.5 MHz	-36 dBm	3,84 MHz
Wide Area BS	± 12.5 MHz	-36 dBm	3,84 MHz
Wide Area BS	± 17.5 MHz	-39 dBm	3,84 MHz
Wide Area BS	± 22.5 MHz	-43 dBm	3,84 MHz
Local Area BS	± 7.5 MHz	-23 dBm	3,84 MHz
Local Area BS	± 12.5 MHz	-33 dBm	3,84 MHz
Local Area BS	± 17.5 MHz	-36 dBm	3,84 MHz
Local Area BS	± 22.5 MHz	-40 dBm	3,84 MHz

NOTE: The requirements in Table 8.2.6.12 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 8.2.6.12 for the Local Area BS ACLR1 (± 10 MHz channel offset) are based on a relaxed coupling loss of 87 dB between TDD and FDD base stations. The requirements for the Local Area BS ACLR2 (± 20 MHz channel offset) are based on a relaxed coupling loss of 77 dB between TDD and FDD base stations.

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 subclause 6.2.6.2.2.3.

8.2.6.2.2.2.4 Additional requirement in case of co-siting with unsynchronized TDD BS operating on an adjacent channels

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 8.2.6.13 and 8.2.6.14.

Table 8.2.6.13: Adjacent channel leakage power limits in case of co-siting with unsynchronised TDD (7.68 Mcps TDD and 3.84 Mcps 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	7.5 MHz	-73 dBm	3.84 MHz
Wide Area BS	12.5 MHz	-73 dBm	3.84 MHz
Wide Area BS	17.5 MHz	-73 dBm	3.84 MHz
Wide Area BS	22.5 MHz	-73 dBm	3.84 MHz
Local Area BS	7.5 MHz	-31 dBm	3.84 MHz
Local Area BS	12.5 MHz	-31 dBm	3.84 MHz
Local Area BS	17.5 MHz	-31 dBm	3.84 MHz
Local Area BS	22.5 MHz	-31 dBm	3.84 MHz

Table 8.2.6.14: Adjacent channel leakage power limits in case of co-siting with unsynchronised 1.28 Mcps 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	5.8 MHz	-73 dBm	1.28 MHz
Wide Area BS	7.4 MHz	-73 dBm	1.28 MHz
Local Area BS	5.8 MHz	-34 dBm	1.28 MHz
Local Area BS	7.4 MHz	-34 dBm	1.28 MHz

NOTE: The requirements in Table 8.2.6.13 and 8.2.6.14 for the Wide Area BS are based on a minimum coupling loss of 30 dB between unsynchronised TDD base stations. The requirements in Table 8.2.6.13 and 8.2.6.14 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.

The normative reference for this requirement is subclause 6.2.6.2.2.4.

NOTE: The necessary dynamic range of the measuring equipment to verify the conformance requirements specified in table 8.2.6.13 and 8.2.6.14 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.

8.2.6.2.2.5 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 8.2.6.15.

Table 8.2.6.15: 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	± 7.5 MHz	-80 dBm	3,84 MHz
Wide Area BS	± 12.5 MHz	-80 dBm	3,84 MHz
Wide Area BS	± 17.5 MHz	-80 dBm	3,84 MHz
Wide Area BS	± 22.5 MHz	-80 dBm	3,84 MHz

NOTE: The requirements in Table 8.2.6.15 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 subclause 6.2.6.2.2.5.

8.2.6.2.3 Test purpose

Common with 3.84Mcps TDD option.

8.2.6.2.4 Method of test

8.2.6.2.4.1 Initial conditions

Common with 3.84Mcps TDD option.

8.2.6.2.4.2 Procedure

1) Measure the RRC filtered mean power centered on the lowest assigned channel frequency over the 4928 active chips of the even time slots TS i (this excludes the guard period).

2) Average over TBD time slots.

3) Measure the RRC filtered mean power at the first lower adjacent RF channel (center frequency 10 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).

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 20 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 RRC filtered mean power at the first higher adjacent RF channel (center frequency 10 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).

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 20 MHz above the highest assigned channel frequency of the transmitted signal).

This procedure is applicable to 16QAM capable BS.

8.2.6.2.2.5 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 of TS 25.142 [12] and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D of TS 25.142 [12].

The ACLR calculated in steps (5) and (10) of subclause 8.2.6.2.2.4.2 shall be equal or greater than the limits given in table 8.2.6.16. 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, the adjacent channel leakage power measured according to steps (4) and (9) of subclause 8.2.6.2.2.4.2 shall not exceed the maximum levels specified in table 8.2.6.17 to 8.2.6.22.

Table 8.2.6.16: BS ACLR Test Requirements

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

Table 8.2.6.17: Adjacent channel leakage power Test Requirements for operation in the same geographic area with unsynchronised TDD (7.68 Mcps TDD and 3.84 Mcps 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	7.5 MHz	- 25 dBm	3,84 MHz
Wide Area BS	12.5 MHz	- 25 dBm	3,84 MHz
Wide Area BS	17.5 MHz	- 25 dBm	3,84 MHz
Wide Area BS	22.5 MHz	- 25 dBm	3,84 MHz
Local Area BS	7.5 MHz	-15,2 dBm	3,84 MHz
Local Area BS	12.5 MHz	-25,2 dBm	3,84 MHz
Local Area BS	17.5 MHz	-25,2 dBm	3,84 MHz
Local Area BS	22.5 MHz	-25,2 dBm	3,84 MHz

Table 8.2.6.18: 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 below the first or above the last carrier frequency used	Maximum Level	Measurement Bandwidth
Wide Area BS	5.8 MHz	- 28 dBm	1.28 MHz
Wide Area BS	7.4 MHz	- 28 dBm	1.28 MHz
Local Area BS	5.8 MHz	- 15,2 dBm	1.28 MHz
Local Area BS	7.4 MHz	- 15,2 dBm	1.28 MHz

Table 8.2.6.19: 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	± 7.5 MHz	-[36 dBm – TT]	3,84 MHz
Wide Area BS	± 12.5 MHz	-32 dBm	3,84 MHz
Wide Area BS	± 17.5 MHz	-35 dBm	3,84 MHz
Wide Area BS	± 22.5 MHz	-39 dBm	3,84 MHz
Local Area BS	± 7.5 MHz	-22,2 dBm	3,84 MHz
Local Area BS	± 12.5 MHz	-32,2 dBm	3,84 MHz
Local Area BS	± 17.5 MHz	-35,2 dBm	3,84 MHz
Local Area BS	± 22.5 MHz	-39,2 dBm	3,84 MHz

Table 8.2.6.20: Adjacent channel leakage power Test Requirements in case of co-siting with unsynchronised TDD (7.68 Mcps TDD and 3.84 Mcps 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	7.5 MHz	-[73 dBm – TT]	3.84 MHz
Wide Area BS	12.5 MHz	-[73 dBm – TT]	3.84 MHz
Wide Area BS	17.5 MHz	-[73 dBm – TT]	3.84 MHz
Wide Area BS	22.5 MHz	-[73 dBm – TT]	3.84 MHz
Local Area BS	7.5 MHz	-30 dBm	3.84 MHz
Local Area BS	12.5 MHz	-30 dBm	3.84 MHz
Local Area BS	17.5 MHz	-30 dBm	3.84 MHz
Local Area BS	22.5 MHz	-30 dBm	3.84 MHz

Table 8.2.6.21: Adjacent channel leakage power limits in case of co-siting with unsynchronised 1.28 Mcps 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	5.8 MHz	-[73 dBm – TT]	1.28 MHz
Wide Area BS	7.4 MHz	-[73 dBm – TT]	1.28 MHz
Local Area BS	5.8 MHz	-33 dBm	1.28 MHz
Local Area BS	7.4 MHz	-33 dBm	1.28 MHz

Table 8.2.6.22: 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

8.2.6.2.3 Spurious emissions

8.2.6.2.3.1 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 7.68 Mcps TDD option, either requirement applies at frequencies within the specified frequency ranges which are more than 25 MHz under the first carrier frequency used or more than 25 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.

8.2.6.2.3.2 Minimum Requirements

8.2.6.2.3.2.1 Mandatory requirements

Common with 3.84Mcps TDD option.

8.2.6.2.3.2.2 Co-existence with GSM 900

Common with 3.84Mcps TDD option.

8.2.6.2.3.2.3 Co-existence with DCS 1800

Common with 3.84Mcps TDD option.

8.2.6.2.3.2.4 Co-existence with UTRA FDD

Common with 3.84Mcps TDD option.

8.2.6.2.3.2.5 Co-existence with unsynchronized TDD

This requirement may be applied for the protection of TDD BS receivers in geographic areas in which unsynchronised TDD is deployed. The RRC filtered mean power of any spurious emission shall not exceed the maximum level given in table 8.2.6.23 and 8.2.6.24.

Table 8.2.6.23: BS Spurious emissions limits for operation in same geographic area with unsynchronised TDD (7.68 Mcps TDD and 3.84 Mcps TDD)

BS Class	Band	Maximum Level	Measurement Bandwidth
Wide Area BS	1900 – 1920 MHz	–39 dBm	3,84 MHz
Wide Area BS	2010 – 2025 MHz	–39 dBm	3,84 MHz
Wide Area BS	2570 – 2620 MHz	-39 dBm	3,84 MHz
Local Area BS	1900 – 1920 MHz	–36 dBm	3,84 MHz
Local Area BS	2010 – 2025 MHz	–36 dBm	3,84 MHz
Local Area BS	2570 – 2620 MHz	-36 dBm	3,84 MHz

Table 8.2.6.24: BS Spurious emissions limits for operation in same geographic area with unsynchronised 1,28 Mcps TDD

BS Class	Band	Maximum Level	Measurement Bandwidth
Wide Area BS	1900 – 1920 MHz	–39 dBm	1,28 MHz
Wide Area BS	2010 – 2025 MHz	–39 dBm	1,28 MHz
Wide Area BS	2570 – 2620 MHz	–39 dBm	1,28 MHz
Local Area BS	1900 – 1920 MHz	–36 dBm	1,28 MHz
Local Area BS	2010 – 2025 MHz	–36 dBm	1,28 MHz
Local Area BS	2570 – 2620 MHz	–36 dBm	1,28 MHz

NOTE: The requirements in Table 8.2.6.23 and 8.2.6.24 for the Wide Area BS are based on a minimum coupling loss of 67 dB between unsynchronised TDD base stations. The requirements in Table 8.2.6.23 and 8.2.6.24 for the Local Area BS are based on a coupling loss of 70 dB between unsynchronised Wide Area and Local Area TDD base stations.

The normative reference for this requirement is 6.2.6.3.5.1.

This requirement may be applied for the protection of TDD BS receivers when unsynchronised TDD BS are co-located. The RRC filtered mean power of any spurious emission in case of co-location shall not exceed the limits specified in table 8.2.6.25 and 8.2.6.26

Table 8.2.6.25: BS Spurious emissions limits for co-location with unsynchronised TDD (7.68 Mcps TDD and 3.84 Mcps TDD)

BS Class	Band	Maximum Level	Measurement Bandwidth
Wide Area BS	1900 – 1920 MHz	–76 dBm	3,84 MHz
Wide Area BS	2010 – 2025 MHz	–76 dBm	3,84 MHz
Wide Area BS	2570 – 2620 MHz	-76 dBm	3,84 MHz
Local Area BS	1900 – 1920 MHz	–36 dBm	3,84 MHz
Local Area BS	2010 – 2025 MHz	–36 dBm	3,84 MHz
Local Area BS	2570 – 2620 MHz	-36 dBm	3,84 MHz

Table 8.2.6.26: BS Spurious emissions limits for co-location with unsynchronised 1,28 Mcps TDD

BS Class	Band	Maximum Level	Measurement Bandwidth
Wide Area BS	1900 – 1920 MHz	–76 dBm	1,28 MHz
Wide Area BS	2010 – 2025 MHz	–76 dBm	1,28 MHz
Wide Area BS	2570 – 2620 MHz	–76 dBm	1,28 MHz
Local Area BS	1900 – 1920 MHz	–37 dBm	1,28 MHz
Local Area BS	2010 – 2025 MHz	–37 dBm	1,28 MHz
Local Area BS	2570 – 2620 MHz	–37 dBm	1,28 MHz

NOTE: The requirements in Table 8.2.6.25 and 8.2.6.26 for the Wide Area BS are based on a minimum coupling loss of 30 dB between unsynchronised TDD base stations. The requirements in Table 8.2.6.25 and 8.2.6.26 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.

The normative reference for this requirement is subclause 6.2.6.3.5.2.

8.2.6.2.3.3 Test purpose

The test purpose is to verify the ability of the BS to limit the interference caused by unwanted transmitter effects to other systems operating at frequencies which are more than 25 MHz away from of the UTRA band used.

8.2.6.2.3.4 Method of test

8.2.6.2.3.4.1 Initial conditions

Common with 3.84Mcps TDD option.

8.2.6.2.3.4.2 Procedure

Measure the power of the spurious emissions by applying measurement filters with bandwidths as specified in subclause 8.2.6.2.3.2. The characteristics of the measurement filter with the bandwidth 7,68MHz shall be RRC with roll-off α = 0,22. The characteristics of the measurement filters with bandwidths 100 kHz and 1 MHz shall be approximately Gaussian (typical spectrum analyzer filter). The center frequency of the filter shall be stepped in contiguous steps over the frequency bands as given in the tables. The step width shall be equal to the respective measurement bandwidth. The time duration of each step shall be sufficiently long to capture one active time slot.

8.2.6.2.3.5 Test Requirements

Common with 3.84Mcps TDD option.

8.2.7 Transmit intermodulation

8.2.7.1 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 CDMA modulated interference signal is injected into the antenna connector at a mean power level of 30 dB lower than that of the mean power 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.

The carrier frequency of the interference signal shall be ±10 MHz, ±20 MHz and ±30 MHz offset from the subject signal carrier frequency, but excluding interference carrier frequencies outside of the UTRA frequency bands specified in 8.1.2.

8.2.7.2 Minimum Requirements

Common with 3.84Mcps TDD option.

8.2.7.3 Test purpose

Common with 3.84Mcps TDD option.

8.2.7.4 Method of test

Common with 3.84Mcps TDD option but with the WCDMA interfering signal at ±10 MHz, ±20 MHz and ±30 MHz offset from the carrier frequency of the wanted signal.

8.2.7.5 Test Requirements

Common with 3.84Mcps TDD option.

8.2.8 Transmit Modulation

8.2.8.1 Modulation accuracy

8.2.8.1.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.2.8.1.2 Minimum Requirements

Common with 3.84Mcps TDD option.

8.2.8.1.3 Test purpose

Common with 3.84Mcps TDD option.

8.2.8.1.4 Method of test

Common with 3.84Mcps TDD option.

8.2.8.1.5 Test Requirements

Common with 3.84Mcps TDD option.

8.2.8.2 Peak code domain error

8.2.8.2.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.2.8.2.2 Minimum Requirements

Common with 3.84Mcps TDD option.

8.2.8.2.3 Test purpose

Common with 3.84Mcps TDD option.

8.2.8.2.4 Method of test

Common with 3.84Mcps TDD option.

8.2.8.2.5 Test Requirements

Common with 3.84Mcps TDD option.

8.3 Receiver Characteristics

8.3.1 General

Common with 3.84Mcps TDD option.

8.3.2 Reference sensitivity level

8.3.2.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.3.2.2 Minimum Requirements

Using the reference measurement channel specified in subclase 8.5.1.2.1, the reference sensitivity level and performance of the BS shall be as specified in table 8.3.2.1

Table 8.3.2.1: Minimum Requirements for BS reference sensitivity level

BS class	Reference measurement channel data rate	BS reference sensitivity level	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 subclause 6.3.2.1.

8.3.2.3 Test purpose

Common with 3.84Mcps TDD option.

8.3.2.4 Method of test

Common with 3.84Mcps TDD option.

8.3.2.5 Test Requirements

Common with 3.84Mcps TDD option.

8.3.3 Dynamic range

8.3.3.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.3.3.2 Minimum Requirements

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

Table 8.3.3.1: Minimum Requirements for Dynamic Range

Parameter		Level	Unit
Reference measurement channel data rate		12,2	kbit/s
Wanted signal mean power	Wide Area BS	-79	dBm
	Local Area BS	-65	dBm
Interfering AWGN signal	Wide Area BS	-70	dBm/7,68 MHz
	Local Area BS	-56	dBm/7,68 MHz

The normative reference for this requirement is subclause 6.3.3.1.

8.3.3.3 Test purpose

Common with 3.84Mcps TDD option.

8.3.3.4 Method of test

Common with 3.84Mcps TDD option.

8.3.3.5 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 of TS 25.142 [12] and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D of TS 25.142 [12].

For any BS Rx port tested, the measured BER shall not exceed 0,001 for the parameters specified in table 8.3.3.2.

Table 8.3.3.2: Test Requirements for Dynamic Range

Parameter		Level	Unit
Reference measurement channel data rate		12,2	kbit/s
Wanted signal mean power	Wide Area BS	-77,8	dBm
	Local Area BS	-63.8	dBm
Interfering AWGN signal	Wide Area BS	-70	dBm/7,68 MHz
	Local Area BS	-56	dBm/7,68 MHz

8.3.4 Adjacent Channel Selectivity (ACS)

8.3.4.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.3.4.2 Minimum Requirements

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 8.3.4.1.

Table 8.3.4.1: Parameters of the wanted signal and the interfering signal for ACS testing

Parameter		Level	Unit
Reference measurement channel data rate		12,2	kbit/s
Wanted signal mean power	Wide Area BS	-103	dBm
	Local Area BS	-89	dBm
Interfering signal mean power	Wide Area BS	-49	dBm
	Local Area BS	-35	dBm
Fuw (modulated)		10	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 subclause 6.3.4.1.

8.3.4.3 Test purpose

Common with 3.84Mcps TDD option.

8.3.4.4 Method of test

8.3.4.4.1 Initial conditions

Common with 3.84Mcps TDD option.

8.3.4.4.2 Procedure

(1) Set the center frequency of the interfering signal to 10 MHz above the assigned channel frequency of the wanted signal.

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

(3) Set the center frequency of the interfering signal to 10 MHz 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).

8.3.4.5 Test Requirements

Common with 3.84Mcps TDD option.

8.3.5 Blocking characteristics

8.3.5.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.3.5.2 Minimum Requirements

8.3.5.2.1 General requirements

The static reference performance as specified in clause 8.3.2 shall be met with a wanted and an interfering signal coupled to the BS antenna input using the parameters specified in tables 8.3.5.1 to 8.3.5.6.

Table 8.3.5.1: Blocking requirements for Wide Area BS in operating bands defined in subclause 4.2 a) of TS 25.142 [12]

Center 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	-40 dBm	-103 dBm	20 MHz	WCDMA signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-40 dBm	-103 dBm	20 MHz	WCDMA signal with one code
1920 – 1980 MHz	-40 dBm	-103 dBm	20 MHz	WCDMA signal with one code
1 – 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz	-15 dBm	-103 dBm	—	CW carrier

Table 8.3.5.2: Blocking requirements for Wide Area BS in operating bands defined in subclause 4.2 b) of TS 25.142 [12]

Center frequency of interfering signal	Interfering signal mean power	Wanted signal mean power	Minimum offset of interfering signal	Type of interfering signal
1850 – 1990 MHz	-40 dBm	-103 dBm	20 MHz	WCDMA signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-40 dBm	-103 dBm	20 MHz	WCDMA signal with one code
1 – 1830 MHz, 2010 – 12750 MHz	-15 dBm	-103 dBm	—	CW carrier

Table 8.3.5.3: Blocking requirements for Wide Area BS in operating bands defined in subclause 4.2 c) of TS 25.142 [12]

Center frequency of interfering signal	Interfering signal mean power	Wanted signal mean power	Minimum offset of interfering signal	Type of interfering signal
1910 – 1930 MHz	-40 dBm	-103 dBm	20 MHz	WCDMA signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-40 dBm	-103 dBm	20 MHz	WCDMA signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	-103 dBm	—	CW carrier

Table 8.3.5.4: Blocking requirements for Local Area BS in operating bands defined in subclause 4.2 a) of TS 25.142 [12]

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	–89 dBm	20 MHz	WCDMA signal with one code
1880 – 1900 MHz, 1990 – 2010 MHz, 2025 – 2045 MHz	-30 dBm	–89 dBm	20 MHz	WCDMA signal with one code
1920 – 1980 MHz	-30 dBm	–89 dBm	20 MHz	WCDMA signal with one code
1 – 1880 MHz, 1980 – 1990 MHz, 2045 – 12750 MHz	-15 dBm	–89 dBm	—	CW carrier

Table 8.3.5.5: Blocking requirements for Local Area BS in operating bands defined in subclause 4.2 b) of TS 25.142 [12]

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	–89 dBm	20 MHz	WCDMA signal with one code
1830 – 1850 MHz, 1990 – 2010 MHz	-30 dBm	–89 dBm	20 MHz	WCDMA signal with one code
1 – 1830 MHz, 2010 – 12750 MHz	-15 dBm	–89 dBm	—	CW carrier

Table 8.3.5.6: Blocking requirements for Local Area BS in operating bands defined in subclause 4.2 c) of TS 25.142 [12]

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	–89 dBm	20 MHz	WCDMA signal with one code
1890 – 1910 MHz, 1930 – 1950 MHz	-30 dBm	–89 dBm	20 MHz	WCDMA signal with one code
1 – 1890 MHz, 1950 – 12750 MHz	-15 dBm	–89 dBm	—	CW carrier

The normative reference for this requirement is subclause 6.3.5.1.

8.3.5.2.2 Co-location with GSM900 and/or DCS 1800

Common with 3.84Mcps TDD option.

8.3.5.2.3 Co-location with UTRA-FDD

Common with 3.84Mcps TDD option.

8.3.5.3 Test purpose

The test stresses the ability of the BS receiver to withstand high-level interference from unwanted signals at frequency offsets of 20 MHz or more, without undue degradation of its sensitivity.

8.3.5.4 Method of test

8.3.5.4.1 Initial conditions

Common with 3.84Mcps TDD option.

8.3.5.4.2 Procedure

(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 = 20 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 subclause 8.3.5.2. The type of the interfering signal is either equivalent to a continuous wideband CDMA signal with one code of chip frequency 7,68 Mchip/s, filtered by an RRC transmit pulse-shaping filter with roll-off α = 0,22, or a CW signal; see subclause 8.3.5.2.

(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).

8.3.5.5 Test Requirements

Common with 3.84Mcps TDD option.

8.3.6 Intermodulation characteristics

8.3.6.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.3.6.2 Minimum Requirements

The static reference performance as specified in clause 8.3.2 should be met when the following signals are coupled to the BS antenna input.

- A wanted signal at the assigned channel frequency, with mean power 6 dB above the static reference level.
- Two interfering signals with the parameters specified in table 8.3.6.1.

Table 8.3.6.1: Parameters of the interfering signals for intermodulation characteristics testing

Interfering Signal mean power		Offset	Type of Interfering Signal
Wide Area BS	Local Area BS		
- 48 dBm	- 38 dBm	20 MHz	CW signal
- 48 dBm	- 38 dBm	40 MHz	WCDMA signal with one code

The normative reference for this requirement is subclause 6.3.6.1.

8.3.6.3 Test purpose

Common with 3.84Mcps TDD option.

8.3.6.4 Method of test

8.3.6.4.1 Initial conditions

Test environment: normal; see subclause 5.9.1 of TS 25.142 [12].

RF channels to be tested: B, M and T; see subclause 5.3 of TS 25.142 [12].

(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 subclause 8.5.1.2.1. 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 8.3.2.2.

(4) Set the first signal generator to produce a CW signal with a level measured at the BS antenna connector as specified in table 8.3.6.1.

(5) Set the second signal generator to produce an interfering signal equivalent to a wideband CDMA signal with one code of chip frequency 7,68 MHz, filtered by an RRC transmit pulse-shaping filter with roll-off α = 0,22. The level of the signal measured at the BS antenna connector shall be set as specified in table 8.3.6.1.

8.3.6.4.2 Procedure

(1) The frequency of the first and the second signal generator shall be set to 20 MHz and 40 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 20 MHz and 40 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).

8.3.6.5 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 of TS 25.142 [12] and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D of TS 25.142 [12].

The BER measured according subclause 8.3.6.4.2 to shall not exceed 0,001.

8.3.7 Spurious emissions

8.3.7.1 Definition and applicability

Common with 3.84Mcps TDD option.

8.3.7.2 Minimum Requirements

The power of any spurious emission shall not exceed the values given in table 8.3.7.1.

Table 8.3.7.1: Receiver spurious emission requirements

Band	Maximum level	Measurement Bandwidth	Note
30 MHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1.9 GHz and 1.98 GHz – 2.01 GHz	-47 dBm	1 MHz	With the exception of frequencies between 25MHz below the first carrier frequency and 25MHz above the last carrier frequency used by the BS.
1.9 GHz – 1.98 GHz and 2.01 GHz – 2.025 GHz	-75 dBm	7.68 MHz	With the exception of frequencies between 25MHz below the first carrier frequency and 25MHz above the last carrier frequency used by the BS.
2.025 GHz – 12.75 GHz	-47 dBm	1 MHz	With the exception of frequencies between 25MHz below the first carrier frequency and 25MHz above the last carrier frequency used by the BS.

In addition to the requirements in table 8.3.7.1, the co-existence requirements for co-located base stations specified in subclause 6.2.6.3.2, 6.2.6.3.3, 6.2.6.3.4 and 6.2.6.3.5 may also be applied.

The normative reference for this requirement is subclause 6.3.7.1.

8.3.7.3 Test purpose

Common with 3.84Mcps TDD option.

8.3.7.4 Method of test

8.3.7.4.1 Initial conditions

Common with 3.84Mcps TDD option.

8.3.7.4.2 Procedure

(1) Measure the power of the spurious emissions by applying the measuring equipment with the settings as specified in table 8.3.7.2. The characteristics of the measurement filter with the bandwidth 7,68 MHz shall be RRC with roll-off α = 0,22. The characteristics of the measurement filters with bandwidths 100 kHz and 1 MHz shall be approximately Gaussian (typical spectrum analyzer filter). The center frequency of the filters shall be stepped in contiguous steps over the frequency bands as specified in table 8.3.7.2. The time duration of each step shall be sufficiently long to capture one even (transmit) time slot.

(2) If the BS is equipped with more than one Rx port, interchange the connections of the BS Rx ports and repeat the measurement according to (1).

Table 8.3.7.2: Measurement equipment settings

Stepped frequency range	Measurement bandwidth	Step width	Note	Detection mode
30 MHz – 1 GHz	100 kHz	100 kHz		true RMS
1 GHz – 1,900 GHz	1 MHz	1 MHz	With the exception of frequencies between 25 MHz below the first carrier frequency and 25 MHz above the last carrier frequency used by the BS	
1,900 GHz – 1,980 GHz	7,68 MHz	200 kHz		
1,980 GHz – 2,010 GHz	1 MHz	1 MHz		
2,010 GHz – 2,025 GHz	7,68 MHz	200 kHz		
2,025 GHz – 12,75 GHz	1 MHz	1 MHz		

8.3.7.5 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 of TS 25.142 [12] and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D of TS 25.142 [12].

The spurious emissions measured according to subclause 8.3.7.4.2 shall not exceed the limits specified in subclause 8.3.7.2.

8.4 Performance Requirements

8.4.1 General

Performance requirements for the BS are specified for the measurement channels defined in 8.5.1 and the propagation conditions in 8.5.2. The requirements only apply to those measurement channels that are supported by the base station. All Bit Error Ratio (BER) and Block Error ratio (BLER) measurements shall be carried out according to the general rules for statistical testing defined in ITU-T Recommendation O.153 [13] and Annex F of TS 25.142 [12].

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 of TS 25.142 [12].

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.

8.4.2 Demodulation in static propagation conditions

8.4.2.1 Demodulation of DCH

8.4.2.1.1 Definition and applicability

Common with 3.84 Mcps TDD option.

8.4.2.1.2 Minimum Requirements

For the parameters specified in table 8.4.2.1, the BLER should not exceed the piece-wise linear BLER curve specified in table 8.4.2.2. These requirements are applicable for TFCS size 16.

Table 8.4.2.1: Parameters in static propagation conditions

Parameters		Unit	Test 1
Number of $DPCH_o$			14
$\frac{DPCH_o\_E_c}{I_{or}}$		dB	-12
I_{oc}	Wide Area BS	dBm/7.68 MHz	-89
	Local Area BS	dBm/7.68 MHz	-74
Cell Parameter*			0,1
DPCH Channelization Codes*		C(k,Q)	C(1, 16)
$DPCH_o$ Channelization Codes*		C(k,Q)	C(i, 32) 3≤ i ≤16
Information Data Rate		kbps	12.2
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.			

Table 8.4.2.2: Performance requirements in AWGN channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	-2.0	10^{-2}

The normative reference for this requirement is in subclause 6.4.1.1.1.

8.4.2.1.3 Test purpose

Common with 3.84 Mcps TDD option.

8.4.2.1.4 Method of test

8.4.2.1.4.1 Initial conditions

Test environment: normal; see subclause 5.9.1 of TS 25.142 [12].

RF channels to be tested: B, M and T; see subclause 5.3 of TS 25.142 [12].

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 32, 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 8.4.2.1.

8.4.2.1.4.2 Procedure

(1) Adjust the power of the band-limited white noise source in such a way that its power spectral density measured at the BS antenna connector takes on the value I_{oc} as specified in table 8.4.2.1.

(2) For a given test defined by the information data rate and the BLER objective, set the power of each $DPCH_0$ measured at the BS antenna connector during the active time slots to the value specified in table 8.4.2.3.

(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 8.5.1. 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 8.4.2.3.

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

Table 8.4.2.3: 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}	14	-103,0	-88	$DPCH_1$	16	-100,0	-85,0

8.4.2.1.5 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 of TS 25.142 [12] and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D of TS 25.142 [12].

The BLER measured according to subclause 8.4.2.1.4.2 shall not exceed the limits specified in table 8.4.2.2.

8.4.3 Demodulation of DCH in multipath fading conditions

8.4.3.1 Multipath fading Case 1

8.4.3.1.1 Definition and applicability

Common with 3.84 Mcps TDD option.

8.4.3.1.2 Minimum Requirements

For the parameters specified in table 8.4.3.1, the BLER should not exceed the piece-wise linear BLER curve specified in table 8.4.3.2. These requirements are applicable for TFCS size 16.

Table 8.4.3.1: Parameters in multipath Case 1 channel

Parameters		Unit	Test 1
Number of $DPCH_o$			14
$\frac{DPCH_o \_ E_c}{I_{or}}$		dB	-12
I_{oc}	Wide Area BS	dBm/7.68 MHz	-89
	Local Area BS	dBm/7.68 MHz	-74
Cell Parameter*			0,1
DPCH Channelization Codes*		C(k,Q)	C(1, 16)
$DPCH_o$ Channelization Codes*		C(k,Q)	C(i, 32) 3≤ i ≤16
Information Data Rate		Kbps	12.2
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.			

Table 8.4.3.2: Performance requirements in multipath Case 1 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	6.5	10^{-2}

The normative reference for this requirement is in subclause 6.4.2.1.1.

8.4.3.1.3 Test purpose

Common with 3.84 Mcps TDD option.

8.4.3.1.4 Method of test

8.4.3.1.4.1 Initial conditions

Test environment: normal; see subclause 5.9.1 of TS 25.142 [12].

RF channels to be tested: B, M and T; see subclause 5.3 of TS 25.142 [12].

(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 32, 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 8.4.3.1.

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

8.4.3.1.4.2 Procedure

(1) Adjust the power of the band-limited white noise source in such a way that its power spectral density measured at the BS antenna connector takes on the value I_{oc} as specified in table 8.4.3.1.

(2) For a given test defined by the information data rate and the BLER objective, set the power of each $DPCH_0$ measured at the BS antenna connector during the active time slots to the value specified in table 8.4.3.3.

(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 8.5.1. 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 8.4.3.1.

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

Table 8.4.3.3: 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}	14	-94,5	-79,5	$DPCH_1$	16	-91,5	-76,5

8.4.3.1.5 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 of TS 25.142 [12] and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D of TS 25.142 [12].

The BLER measured according to subclause 8.4.3.1.4.2 shall not exceed the limits specified in table 8.4.3.2.

8.4.3.2 Multipath fading Case 2

8.4.3.2.1 Definition and applicability

Common with 3.84 Mcps TDD option.

8.4.3.2.2 Minimum Requirements

For the parameters specified in table 8.4.3.4, the BLER should not exceed the piece-wise linear BLER curve specified in table 8.4.3.5. These requirements are applicable for TFCS size 16.

Table 8.4.3.4: Parameters in multipath Case 2 channel

Parameters	Unit	Test 1
Number of $DPCH_o$		6
$\frac{DPCH_o\_E_c}{I_{or}}$	dB	-9
I_{oc}	dBm/7.68 MHz	-89
Cell Parameter*		0,1
DPCH Channelization Codes*	C(k,Q)	C(1, 16)
$DPCH_o$ Channelization Codes*	C(k,Q)	C(i, 32) 3≤ i ≤8
Information Data Rate	kbps	12.2
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.		

Table 8.4.3.5: Performance requirements in multipath Case 2 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	1	10^{-2}

The normative reference for this requirement is in subclause 6.4.2.2.1.

8.4.3.2.3 Test purpose

Common with 3.84 Mcps TDD option.

8.4.3.2.4 Method of test

8.4.3.2.4.1 Initial conditions

Test environment: normal; see subclause 5.9.1 of TS 25.142 [12].

RF channels to be tested: B, M and T; see subclause 5.3 of TS 25.142 [12].

(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 32, 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 8.4.3.4.

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

8.4.3.2.4.2 Procedure

(1) Adjust the power of the band-limited white noise source in such a way that its power spectral density measured at the BS antenna connector takes on the value I_{oc} as specified in table 8.4.3.4.

(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 8.4.3.6.

(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 8.5.1. 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 8.4.3.6.

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

Table 8.4.3.6: Parameters of $DPCH_0$ and the wanted signal

Test Number	BLER objective	Number of $DPCH_0$	Power of each $DPCH_0$ measured at the BS antenna connector [dBm]	Parameters of the wanted signal		
				DPCH	SF	Power measured at the BS antenna connector [dBm]
1	10^{-2}	6	-97	$DPCH_1$	16	-94

8.4.3.2.5 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 of TS 25.142 [12] and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D of TS 25.142 [12].

The BLER measured according to subclause 8.4.3.2.4.2 shall not exceed the limits specified in table 8.4.3.5.

8.4.3.3 Multipath fading Case 3

8.4.3.3.1 Definition and applicability

Common with 3.84 Mcps TDD option.

8.4.3.3.2 Minimum Requirements

For the parameters specified in table 8.4.3.7, the BLER should not exceed the piece-wise linear BLER curve specified in table 8.4.3.8. These requirements are applicable for TFCS size 16.

Table 8.4.3.7: Parameters in multipath Case 3 channel

Parameters	Unit	Test 1
Number of $DPCH_0$		6
$\frac{DPCH_o\_E_c}{I_{or}}$	dB	-9
I_{oc}	dBm/7.68 MHz	-89
Cell Parameter*		0,1
DPCH Channelization Codes*	C(k,Q)	C(1, 16)
$DPCH_0$ Channelization Codes*	C(k,Q)	C(i, 32) 3≤ i ≤8
Information Data Rate	kbps	12.2
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.		

Table 8.4.3.8: Performance requirements in multipath Case 3 channel.

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	-0.1	10^{-2}

The normative reference for this requirement is in subclause 6.4.2.3.1.

8.4.3.3.3 Test purpose

Common with 3.84 Mcps TDD option.

8.4.3.3.4 Method of test

8.4.3.3.4.1 Initial conditions

Test environment: normal; see subclause 5.9.1 of TS 25.142 [12].

RF channels to be tested: B, M and T; see subclause 5.3 of TS 25.142 [12].

(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 32, 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 8.4.3.7.

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

8.4.3.3.4.2 Procedure

(1) Adjust the power of the band-limited white noise source in such a way that its power spectral density measured at the BS antenna connector takes on the value I_{oc} as specified in table 8.4.3.7.

(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 8.4.3.9.

(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 8.5.1. 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 8.4.3.9.

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

Table 8.4.3.9: Parameters of $DPCH_0$ and the wanted signal

Test Number	BLER objective	Number of $DPCH_0$	Power of each $DPCH_0$ measured at the BS antenna connector [dBm]	Parameters of the wanted signal		
				DPCH	SF	Power measured at the BS antenna connector [dBm]
1	10^{-2}	6	-98,1	$DPCH_1$	16	-95,1

8.4.3.3.5 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 of TS 25.142 [12] and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D of TS 25.142 [12].

The BLER measured according to subclause 8.4.3.3.4.2 shall not exceed the limits specified in table 8.4.3.8.

8.5 Measurement channels and propagation conditions

8.5.1 Measurement Channels

8.5.1.1 General

8.5.1.2 Reference measurement channel

8.5.1.2.1 UL reference measurement channel (12.2 kbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

8.5.1.2.2 UL reference measurement channel (64 kbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

8.5.1.2.3 UL reference measurement channel (144 kbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

8.5.1.2.4 UL reference measurement channel (384 kbps)

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

8.5.1.2.5 RACH reference measurement channel

Common with 3.84Mcps TDD option but with twice the Spreading Factor.

8.5.2 Propagation Conditions

8.5.2.1 Static propagation conditions

Common with 3.84Mcps TDD option.

8.5.2.2 Multi-path fading propagation conditions

Common with 3.84Mcps TDD option.

9 Electromagnetic compatibility

9.1 Test conditions

9.1.1 General

Common with 3.84 Mcps Chip rate TDD option.

9.1.2 Arrangements for establishing a communication link

Common with 3.84 Mcps Chip rate TDD option.

9.1.3 Narrow band responses on receivers

Responses on receivers or duplex transceivers occurring during the test at discrete frequencies, which are narrow band responses (spurious responses), are identified by the following method:

- If during an immunity test the quantity being monitored goes outside the specified tolerances, it is necessary to establish whether the deviation is due to an unwanted effect on the receiver of the UE or on the test system (narrow band response) or to a wide band (EMC) phenomenon. Therefore, the test shall be repeated with the UARFCN increased or decreased by 50 (DL / UL).

- if the deviation does not disappear, the procedure is repeated with the UARFCN increased or decreased by 100 from the original value (DL / UL);

- if the deviation does not disappear with the increased and/or decreased UARFCN, the phenomenon is considered wide band and therefore an EMC problem and the equipment fails the test.

Narrow band responses are disregarded.

The procedure above does not apply to conducted immunity tests in the frequency range 150 kHz to 80 MHz.

9.1.4 Receiver exclusion band

Common with 3.84 Mcps Chip rate TDD option.

9.2 Performance criteria

Common with 3.84 Mcps Chip rate TDD option.

9.3 Applicability overview tables

Common with 3.84 Mcps Chip rate TDD option.

Annex A (informative): Change History

Table A.1: Change History

TSG	Doc	CR	R	Title	Cat	Curr	New	WI
RP-32				Approval of release of this specification, as v7.0.0			7.0.0	
RP-33	RP-060530	0001		7.68 Mcps TDD Option UE Spectrum Emission Mask	F	7.0.0	7.1.0	TEI7