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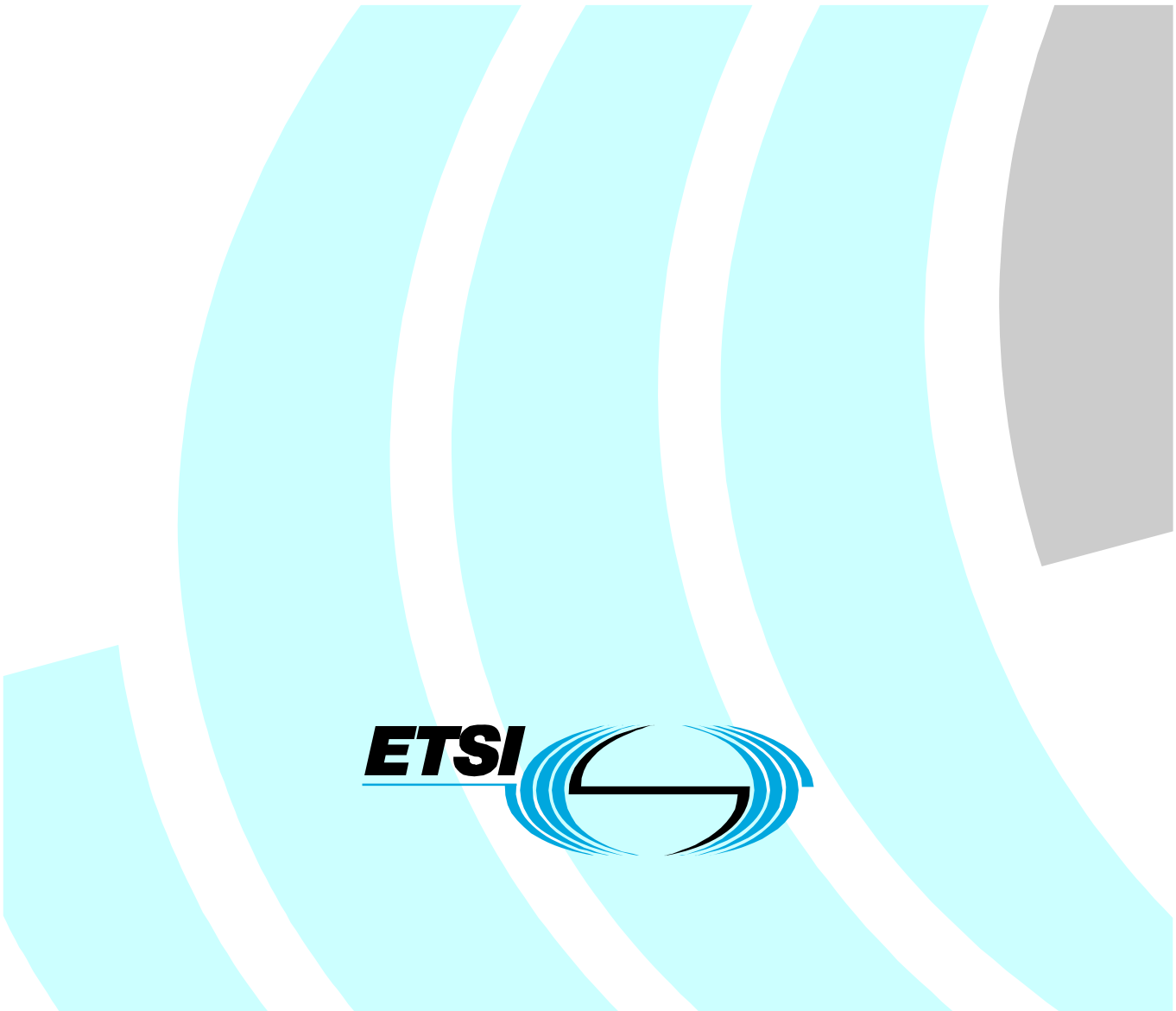
Harmonized European Standard (Telecommunications series)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 14: Harmonized EN for IMT-2000, Evolved Universal Terrestrial Radio Access (E-UTRA) (BS) covering the essential requirements of article 3.2 of the R&TTE Directive



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Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This Harmonized European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the Public Enquiry phase of the ETSI standards Two-step Approval Procedure.

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC [i.1] (as amended) laying down a procedure for the provision of information in the field of technical standards and regulations.

The present document is intended to become a Harmonized Standard, the reference of which will be published in the Official Journal of the European Communities referencing the Directive 1999/5/EC [i.2] of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity ("the R&TTE Directive").

Technical specifications relevant to Directive 1999/5/EC [i.2] are given in annex A.

The present document is part 14 of a multi-part deliverable covering the Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks, as identified below:

Part 1: "Harmonized EN for IMT-2000, introduction and common requirements, covering the essential requirements of article 3.2 of the R&TTE Directive";

Part 2: "Harmonized EN for IMT-2000, CDMA Direct Spread (UTRA FDD and E-UTRA FDD) (UE) covering the essential requirements of article 3.2 of the R&TTE Directive";

Part 3: "Harmonized EN for IMT-2000, CDMA Direct Spread (UTRA FDD and E-UTRA FDD) (BS) covering the essential requirements of article 3.2 of the R&TTE Directive";

Part 4: "Harmonized EN for IMT-2000, CDMA Multi-Carrier (cdma2000) and Evolved CDMA Multi-Carrier Ultra Mobile Broadband (UMB) (UE) covering the essential requirements of article 3.2 of the R&TTE Directive";

Part 5: "Harmonized EN for IMT-2000, CDMA Multi-Carrier (cdma2000) and Evolved CDMA Multi-Carrier Ultra Mobile Broadband (UMB) (BS) covering the essential requirements of article 3.2 of the R&TTE Directive";

Part 6: "Harmonized EN for IMT-2000, CDMA TDD (UTRA TDD and E-UTRA TDD) (UE) covering the essential requirements of article 3.2 of the R&TTE Directive";

Part 7: "Harmonized EN for IMT-2000, CDMA TDD (UTRA TDD and E-UTRA TDD) (BS) covering the essential requirements of article 3.2 of the R&TTE Directive";

Part 8: "Harmonized EN for IMT-2000, TDMA Single-Carrier (UWC 136) (UE) covering essential requirements of article 3.2 of the R&TTE Directive";

Part 9: "Harmonized EN for IMT-2000, TDMA Single-Carrier (UWC 136) (BS) covering essential requirements of article 3.2 of the R&TTE Directive";

Part 10: "Harmonized EN for IMT-2000, FDMA/TDMA (DECT) covering essential requirements of article 3.2 of the R&TTE Directive";

Part 11: "Harmonized EN for IMT-2000, CDMA Direct Spread (UTRA FDD and E-UTRA FDD) (Repeaters) covering the essential requirements of article 3.2 of the R&TTE Directive";

Part 12: "Harmonized EN for IMT-2000, CDMA Multi-Carrier (cdma2000) (Repeaters) covering the essential requirements of article 3.2 of the R&TTE Directive";

Part 13: "Harmonized EN for IMT-2000, Evolved Universal Terrestrial Radio Access (E-UTRA) (UE) covering the essential requirements of article 3.2 of the R&TTE Directive";

Part 14: "Harmonized EN for IMT-2000, Evolved Universal Terrestrial Radio Access (E-UTRA) (BS) covering the essential requirements of article 3.2 of the R&TTE Directive";

Part 15: "Harmonized EN for IMT-2000, Evolved Universal Terrestrial Radio Access (E-UTRA) (FDD Repeaters) covering the essential requirements of article 3.2 of the R&TTE Directive";

Part 16: "Harmonized EN for IMT-2000, Evolved CDMA Multi-Carrier Ultra Mobile Broadband (UMB) (UE) covering the essential requirements of article 3.2 of the R&TTE Directive";

Part 17: "Harmonized EN for IMT-2000, Evolved CDMA Multi-Carrier Ultra Mobile Broadband (UMB) (BS) covering the essential requirements of article 3.2 of the R&TTE Directive".

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	18 months after doa

Introduction

The present document is part of a set of standards developed by ETSI and is designed to fit in a modular structure to cover all radio and telecommunications terminal equipment within the scope of the R&TTE Directive. The modular structure is shown in EG 201 399 [i.3].

1 Scope

The present document applies to the following radio equipment type:

- Base stations for Evolved Universal Terrestrial Radio Access (E-UTRA).

This radio equipment type is capable of operating in all or any part of the operating bands given in table 1-1.

Table 1-1: E-UTRA Base Station operating bands

E-UTRA band	Direction of transmission	E-UTRA Base Station operating bands
1	Transmit	2 110 MHz to 2 170 MHz
	Receive	1 920 MHz to 1 980 MHz
3	Transmit	1 805 MHz to 1 880 MHz
	Receive	1 710 MHz to 1 785 MHz
7	Transmit	2 620 MHz to 2 690 MHz
	Receive	2 500 MHz to 2 570 MHz
8	Transmit	925 MHz to 960 MHz
	Receive	880 MHz to 915 MHz
33	Transmit and Receive	1 900 MHz to 1 920 MHz
34	Transmit and Receive	2 010 MHz to 2 025 MHz
38	Transmit and Receive	2 570 MHz to 2 620 MHz

The present document covers requirements for E-UTRA Base Stations for Release 8.

The present document is intended to cover the provisions of Directive 1999/5/EC [i.2] (R&TTE Directive), article 3.2, which states that "….. radio equipment shall be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communications and orbital resources so as to avoid harmful interference".

In addition to the present document, other ENs that specify technical requirements in respect of essential requirements under other parts of article 3 of the R&TTE Directive may apply to equipment within the scope of the present document.

NOTE: A list of such ENs is included on the web site http://www.newapproach.org.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
  - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
  - for informative references.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

[1] ETSI EN 301 908-1 (V4.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 1: Harmonized EN for IMT-2000, introduction and common requirements, covering the essential requirements of article 3.2 of the R&TTE Directive".

[2] ETSI TS 136 141 (V8.1.0): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) conformance testing (3GPP TS 36.141 version 8.1.0 Release 8)".

[3] ETSI TR 100 028 (all parts) (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

[4] ITU-R Recommendation SM.329-10 (2003): "Unwanted emissions in the spurious domain".

[5] ETSI TS 125 104 (V8.5.0): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) radio transmission and reception (FDD) (3GPP TS 25.104 version 8.5.0 Release 8)".

[6] ETSI TS 125 105 (V8.2.0): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) radio transmission and reception (TDD) (3GPP TS 25.105 version 8.2.0 Release 8)".

[7] ETSI TS 136 104 (V8.4.0): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception (3GPP TS 36.104 version 8.4.0 Release 8)".

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area**.** For non-specific references, the latest version of the referenced document (including any amendments) applies.

[i.1] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations.

[i.2] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE Directive).

[i.3] ETSI EG 201 399: "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive".

[i.4] ETSI TR 102 215 (V1.3.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Recommended approach, and possible limits for measurement uncertainty for the measurement of radiated electromagnetic fields above 1 GHz".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

carrier: modulated waveform conveying the E-UTRA or UTRA (WCDMA) physical channels

channel bandwidth: RF bandwidth supporting a single E-UTRA RF carrier with the transmission bandwidth configured in the uplink or downlink of a cell

NOTE: The channel bandwidth is measured in MHz and is used as a reference for transmitter and receiver RF requirements.

channel edge: lowest and highest frequency of the E-UTRA carrier, separated by the channel bandwidth

downlink operating band: part of the operating band designated for downlink (BS transmit)

DL RS power: resource element power of Downlink Reference Symbol

maximum output power: mean power level per carrier of the base station measured at the antenna connector in a specified reference condition

maximum throughput: maximum achievable throughput for a reference measurement channel

mean power: when applied to E-UTRA transmission this is the power measured in the channel bandwidth of the carrier

NOTE: The period of measurement shall be at least one subframe (1ms), unless otherwise stated.

multi-carrier transmission configuration: set of one or more contiguous carriers that a BS is able to transmit simultaneously according to the manufacturer's specification

operating band: frequency range (paired or unpaired) that is defined with a specific set of technical requirements, in which E-UTRA operates

NOTE: The operating band(s) for an E-UTRA BS is declared by the manufacturer according to the designations in table 1-1.

output power: mean power of one carrier of the base station, delivered to a load with resistance equal to the nominal load impedance of the transmitter

rated output power: rated output power of the base station is the mean power level per carrier that the manufacturer has declared to be available at the antenna connector

throughput: number of payload bits successfully received per second for a reference measurement channel in a specified reference condition

transmission bandwidth: bandwidth of an instantaneous transmission from a UE or BS, measured in Resource Block units

transmission bandwidth configuration: highest transmission bandwidth allowed for uplink or downlink in a given channel bandwidth, measured in Resource Block units

transmitter OFF period: time period during which the BS transmitter is not allowed to transmit

transmitter ON period: time period during which the BS transmitter is transmitting data and/or reference symbols, i.e. data subframes or DwPTS

transmitter transient period: time period during which the transmitter is changing from the OFF period to the ON period or vice versa

uplink operating band: part of the operating band designated for uplink (BS receive)

3.2 Symbols

For the purposes of the present document, the following symbols apply:

$BW_{Channel}$	Channel bandwidth
BW_{Config}	Transmission bandwidth configuration, expressed in MHz, where $BW_{Config} = N_{RB} \times 180$ kHz in the uplink and BWConfig = 15 kHz + $N_{RB} \times 180$ kHz in the downlink
f	Frequency
Δf	Separation between the channel edge frequency and the nominal -3 dB point of the measuring filter closest to the carrier frequency
Δf_{max}	The largest value of Δf used for defining the requirement
F_C	Carrier centre frequency
f_offset	Separation between the channel edge frequency and the centre of the measuring filter
f_offset_{max}	The maximum value of f_offset used for defining the requirement
F_{DL_low}	The lowest frequency of the downlink operating band
F_{DL_high}	The highest frequency of the downlink operating band
F_{UL_low}	The lowest frequency of the uplink operating band (see table 1-1)
F_{UL_high}	The highest frequency of the uplink operating band (see table 1-1)
Iuant	E-Node B internal logical interface between the implementation specific O&M function and the RET antennas and TMAs control unit function of the E-Node B
N_{RB}	Transmission bandwidth configuration, expressed in units of Resource Blocks
p	Antenna port number
Pmax	Maximum output power
$P_{REFSENS}$	Reference sensitivity power level

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACLR	Adjacent Channel Leakage Ratio
ACS	Adjacent Channel Selectivity
B	Bottom RF channel (for testing purposes)
BS	Base Station
BTS	Base Transceiver Station (for GSM)
BW	Bandwidth
CW	Continuous Wave
DC	Direct Current
EARFCN	E-UTRA Absolute Radio Frequency Channel Number
E-TM	E-UTRA Test Model
EUT	Equipment Under Test
E-UTRA	Evolved UMTS Terrestrial Radio Access
FDD	Frequency Division Duplex
FRC	Fixed Reference Channel
ITU-R	International Telecommunication Union - Radiocommunication
M	Middle RF channel (for testing purposes)
MIMO	Multiple Input Multiple Output
MS	Mobile Station (for GSM)
RB	Resource Block
RF	Radio Frequency
RMS	Root Mean Square
RRC	Root Raised Cosine
RX	Receive
T	Top RF channel (for testing purposes)
TDD	Time Division Duplex
TX	Transmit
UE	User Equipment
UMTS	Universal Mobile Telecommunications System
UTRA	UMTS Terrestrial Radio Access

4 Technical requirements specifications

4.1 Environmental profile

The technical requirements of the present document apply under the environmental profile for operation of the equipment, which shall be declared by the supplier. The equipment shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the declared operational environmental profile.

For guidance on how a supplier can declare the environmental profile, see annex C.

4.2 Conformance requirements

The requirements in the present document are based on the assumption that the operating band (e.g. band 1, 3, 7 and 8) is shared between systems of the IMT-2000 family (for band 3 and 8 also GSM) or systems having compatible characteristics.

4.2.1 Introduction

To meet the essential requirement under article 3.2 of Directive 1999/5/EC [i.2] (R&TTE Directive) for IMT-2000 Base Station equipment (BS) seven essential parameters in addition to those in EN 301 908-1 [1] have been identified. Table 4.2.1-1 provides a cross reference between these seven essential parameters and the corresponding nine technical requirements for equipment within the scope of the present document.

Table 4.2.1-1: Cross references

Essential parameter	Corresponding technical requirements
Spectrum emissions mask	4.2.2 Operating band unwanted emissions
	4.2.3 Adjacent Channel Leakage power Ratio (ACLR)
Conducted spurious emissions from the transmitter antenna connector	4.2.4 Transmitter spurious emissions
Accuracy of maximum output power	4.2.5 Base station maximum output power
Intermodulation attenuation of the transmitter	4.2.6 Transmit intermodulation
Conducted spurious emissions from the receiver antenna connector	4.2.7 Receiver spurious emissions
Impact of interference on receiver performance	4.2.8 Blocking characteristics
	4.2.9 Receiver intermodulation characteristics
Receiver adjacent channel selectivity	4.2.10 Adjacent Channel Selectivity (ACS) and narrow-band blocking

4.2.2 Operating band unwanted emissions

4.2.2.1 Definition

Unwanted emissions consist of out-of-band emissions and spurious emissions (ITU-R Recommendation SM.329-10 [4]). 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. 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. The out-of-band emissions requirement for the BS transmitter is specified both in terms of Adjacent Channel Leakage power Ratio (ACLR) and Operating band unwanted emissions.

The Operating band unwanted emission limits are defined for all unwanted emissions from 10 MHz below the lowest frequency of the downlink operating band up to 10 MHz above the highest frequency of the downlink operating band (see table 1-1).

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

4.2.2.2 Limit

Emissions shall not exceed the maximum levels specified in the tables below, where:

- Δf is the separation between the channel edge frequency and the nominal -3 dB point of the measuring filter closest to the carrier frequency.
- f_offset is the separation between the channel edge frequency and the centre of the measuring filter.
- f_offset_{max} is the offset to the frequency 10 MHz outside the downlink operating band.
- Δf_{max} is equal to f_offset_{max} minus half of the bandwidth of the measuring filter.

For E-UTRA BS operating in band 8, emissions shall not exceed the maximum levels specified in tables 4.2.2.2-1 to 4.2.2.2-3.

Table 4.2.2.2-1: General operating band unwanted emission limits for 1,4 MHz channel bandwidth (E-UTRA bands < 1 GHz)

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Test requirement	Measurement bandwidth
0 MHz ≤ Δf < 1,4 MHz	0,05 MHz ≤ f_offset < 1,45 MHz	$+0{,}5\,dBm - \frac{10}{1{,}4}\cdot\left(\frac{f\_offset}{MHz} - 0{,}05\right)dB$	100 kHz
1,4 MHz ≤ Δf < 2,8 MHz	1,45 MHz ≤ f_offset < 2,85 MHz	-9,5 dBm	100 kHz
2,8 MHz ≤ Δf ≤ Δf_{max}	2,85 MHz ≤ f_offset < f_offset_{max}	-16 dBm	100 kHz

Table 4.2.2.2-2: General operating band unwanted emission limits for 3 MHz channel bandwidth (E-UTRA bands < 1 GHz)

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Test requirement	Measurement bandwidth
0 MHz ≤ Δf < 3 MHz	0,05 MHz ≤ f_offset < 3,05 MHz	$-3{,}5\,dBm - \frac{10}{3}\cdot\left(\frac{f\_offset}{MHz} - 0{,}05\right)dB$	100 kHz
3 MHz ≤ Δf < 6 MHz	3,05 MHz ≤ f_offset < 6,05 MHz	-13,5 dBm	100 kHz
6 MHz ≤ Δf ≤ Δf_{max}	6,05 MHz ≤ f_offset < f_offset_{max}	-16 dBm	100 kHz

Table 4.2.2.2-3: General operating band unwanted emission limits for 5 MHz, 10 MHz, 15 Mhz and 20 MHz channel bandwidth (E-UTRA bands < 1 GHz)

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Test requirement	Measurement bandwidth
0 MHz ≤ Δf < 5 MHz	0,05 MHz ≤ f_offset < 5,05 MHz	$-5.5\,dBm - \frac{7}{5}\cdot\left(\frac{f\_offset}{MHz} - 0.05\right)dB$	100 kHz
5 MHz ≤ Δf < 10 MHz	5,05 MHz ≤ f_offset < 10,05 MHz	-12,5 dBm	100 kHz
10 MHz ≤ Δf ≤ Δf_{max}	10,05 MHz ≤ f_offset < f_offset_{max}	-16 dBm	100 kHz

For E-UTRA BS operating in Bands 1, 3, 7, 33, 34 and 38, emissions shall not exceed the maximum levels specified in tables 4.2.2.2-4 to 4.2.2.2-6.

Table 4.2.2.2-4: General operating band unwanted emission limits for 1,4 MHz channel bandwidth (E-UTRA bands > 1 GHz)

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Test requirement	Measurement bandwidth
0 MHz ≤ Δf < 1,4 MHz	0,05 MHz ≤ f_offset < 1,45 MHz	$+0,5\,dBm-\frac{10}{1,4}\cdot\left(\frac{f\_offset}{MHz}-0,05\right)dB$	100 kHz
1,4 MHz ≤ Δf < 2,8 MHz	1,45 MHz ≤ f_offset < 2,85 MHz	-9,5 dBm	100 kHz
2,8 MHz ≤ Δf ≤ Δf_{max}	3,3 MHz ≤ f_offset < f_offset_{max}	-15 dBm	1 MHz

Table 4.2.2.2-5: General operating band unwanted emission limits for 3 MHz channel bandwidth (E-UTRA bands > 1 GHz)

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Test requirement	Measurement bandwidth
0 MHz ≤ Δf < 3 MHz	0,05 MHz ≤ f_offset < 3,05 MHz	$-3,5\,dBm-\frac{10}{3}\cdot\left(\frac{f\_offset}{MHz}-0,05\right)dB$	100 kHz
3 MHz ≤ Δf < 6 MHz	3,05 MHz ≤ f_offset < 6,05 MHz	-13,5 dBm	100 kHz
6 MHz ≤ Δf ≤ Δf_{max}	6,5 MHz ≤ f_offset < f_offset_{max}	-15 dBm	1 MHz

Table 4.2.2.2-6: General operating band unwanted emission limits for 5 MHz, 10 MHz, 15 MHz and 20 MHz channel bandwidth (E-UTRA bands > 1 GHz)

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_offset	Test requirement	Measurement bandwidth
0 MHz ≤ Δf < 5 MHz	0,05 MHz ≤ f_offset < 5,05 MHz	$-5,5\,dBm-\frac{7}{5}\cdot\left(\frac{f\_offset}{MHz}-0,05\right)dB$	100 kHz
5 MHz ≤ Δf < 10 MHz	5,05 MHz ≤ f_offset < 10,05 MHz	-12,5 dBm	100 kHz
10 MHz ≤ Δf ≤ Δf_{max}	10,5 MHz ≤ f_offset < f_offset_{max}	-15 dBm	1 MHz

4.2.2.3 Conformance

Conformance tests described in clause 5.3.1 shall be carried out.

4.2.3 Adjacent Channel Leakage power Ratio (ACLR)

4.2.3.1 Definition

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

The requirements shall apply whatever the type of transmitter considered (single carrier or multi-carrier). It applies for all transmission modes foreseen by the manufacturer's specification. For a multi-carrier BS, the requirement applies for the adjacent channel frequencies below the lowest carrier frequency transmitted by the BS and above the highest carrier frequency transmitted by the BS for each supported multi-carrier transmission configuration.

4.2.3.2 Limits

The ACLR is defined with a square filter of bandwidth equal to the transmission bandwidth configuration of the transmitted signal (BW_{Config}) centered on the assigned channel frequency and a filter centered on the adjacent channel frequency according to the tables below.

Either the ACLR limits in the tables below or the absolute limit of -15 dBm/MHz apply, whichever is less stringent.

For operation in paired spectrum, the ACLR shall be higher than the value specified in table 4.2.3.2-1.

Table 4.2.3.2-1: Base Station ACLR in paired spectrum

E-UTRA transmitted signal channel bandwidth $BW_{Channel}$ (MHz)	BS adjacent channel centre frequency offset below the first or above the last carrier centre frequency transmitted	Assumed adjacent channel carrier (informative)	Filter on the adjacent channel frequency and corresponding filter bandwidth	ACLR limit
1,4, 3,0, 5, 10, 15, 20	$BW_{Channel}$	E-UTRA of same BW	Square (BW_{Config})	44,2 dB
	2 x $BW_{Channel}$	E-UTRA of same BW	Square (BW_{Config})	44,2 dB
	$BW_{Channel}$/2 + 2,5 MHz	3,84 Mcps UTRA	RRC (3,84 Mcps)	44,2 dB
	$BW_{Channel}$/2 + 7,5 MHz	3,84 Mcps UTRA	RRC (3,84 Mcps)	44,2 dB
NOTE 1: $BW_{Channel}$ and BW_{Config} are the channel bandwidth and transmission bandwidth configuration of the E-UTRA transmitted signal on the assigned channel frequency. NOTE 2: The RRC filter shall be equivalent to the transmit pulse shape filter defined in TS 125 104 [5], with a chip rate as defined in this table.				

For operation in unpaired spectrum, the ACLR shall be higher than the value specified in table 4.2.3.2-2.

Table 4.2.3.2-2: Base Station ACLR in unpaired spectrum with synchronized operation

E-UTRA transmitted signal channel bandwidth $BW_{Channel}$ (MHz)	BS adjacent channel centre frequency offset below the first or above the last carrier centre frequency transmitted	Assumed adjacent channel carrier (informative)	Filter on the adjacent channel frequency and corresponding filter bandwidth	ACLR limit
1,4, 3	$BW_{Channel}$	E-UTRA of same BW	Square (BW_{Config})	44,2 dB
	$2 \times BW_{Channel}$	E-UTRA of same BW	Square (BW_{Config})	44,2 dB
	$BW_{Channel}$ /2 + 0,8 MHz	1,28 Mcps UTRA	RRC (1,28 Mcps)	44,2 dB
	$BW_{Channel}$ /2 + 2,4 MHz	1,28 Mcps UTRA	RRC (1,28 Mcps)	44,2 dB
5, 10, 15, 20	$BW_{Channel}$	E-UTRA of same BW	Square (BW_{Config})	44,2 dB
	$2 \times BW_{Channel}$	E-UTRA of same BW	Square (BW_{Config})	44,2 dB
	$BW_{Channel}$/2 + 0,8 MHz	1,28 Mcps UTRA	RRC (1,28 Mcps)	44,2 dB
	$BW_{Channel}$/2 + 2,4 MHz	1,28 Mcps UTRA	RRC (1,28 Mcps)	44,2 dB
	$BW_{Channel}$/2 + 2,5 MHz	3,84 Mcps UTRA	RRC (3,84 Mcps)	44,2 dB
	$BW_{Channel}$/2 + 7,5 MHz	3,84 Mcps UTRA	RRC (3,84 Mcps)	44,2 dB
	$BW_{Channel}$/2 + 5 MHz	7,68 Mcps UTRA	RRC (7,68 Mcps)	44,2 dB
	$BW_{Channel}$/2 + 15 MHz	7,68 Mcps UTRA	RRC (7,68 Mcps)	44,2 dB
NOTE 1: $BW_{Channel}$ and BW_{Config} are the channel bandwidth and transmission bandwidth configuration of the E-UTRA transmitted signal on the assigned channel frequency. NOTE 2: The RRC filter shall be equivalent to the transmit pulse shape filter defined in TS 125 105 [6], with a chip rate as defined in this table.				

4.2.3.3 Conformance

Conformance tests described in clause 5.3.2 shall be carried out.

4.2.4 Transmitter spurious emissions

4.2.4.1 Definition

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 transmitter spurious emission limits apply from 9 kHz to 12,75 GHz, excluding the frequency range from 10 MHz below the lowest frequency of the downlink operating band up to 10 MHz above the highest frequency of the downlink operating band (see table 1-1).

The requirements shall apply whatever the type of transmitter considered (single carrier or multi-carrier). It applies for all transmission modes foreseen by the manufacturer's specification. Unless otherwise stated, all requirements are measured as mean power (RMS).

4.2.4.2 Limits

4.2.4.2.1 Spurious emissions

The power of any spurious emission shall not exceed the limits in table 4.2.4.2.1-1.

Table 4.2.4.2.1-1: BS Spurious emissions limits, Category B

Frequency range	Maximum Level	Measurement Bandwidth	Note
9 kHz ↔ 150 kHz	-36 dBm	1 kHz	Note 1
150 kHz ↔ 30 MHz	-36 dBm	10 kHz	Note 1
30 MHz ↔ 1 GHz	-36 dBm	100 kHz	Note 1
1 GHz ↔ 12,75 GHz	-30 dBm	1 MHz	Note 2
NOTE 1: Bandwidth as in ITU-R Recommendation SM.329-10 [4], section 4.1. NOTE 2: Bandwidth as in ITU-R Recommendation SM.329-10 [4], section 4.1. Upper frequency as in ITU-R Recommendation SM.329-10 [4], section 2.5 table 1-1.			

4.2.4.2.2 Co-existence with other systems

This requirement shall be applied for the protection of UE/MS and BS/BTS receivers of other systems.

The power of any spurious emission shall not exceed the limit specified in table 4.2.4.2.2-1.

Table 4.2.4.2.2-1: Spurious emissions limits for protection of other systems

Protected system	Frequency range for co-existence requirement	Maximum Level	Measurement Bandwidth	Note
GSM900	921 MHz to 960 MHz	-57 dBm	100 kHz	This requirement does not apply to E-UTRA BS operating in band 8.
	876 MHz to 915 MHz	-61 dBm	100 kHz	For the frequency range 880 MHz to 915 MHz, this requirement does not apply to E-UTRA BS operating in band 8, since it is already covered by the requirement in clause 4.2.4.2.3.
DCS1800	1 805 MHz to 1 880 MHz	-47 dBm	100 kHz	This requirement does not apply to E-UTRA BS operating in band 3.
	1 710 MHz to 1 785 MHz	-61 dBm	100 kHz	This requirement does not apply to E-UTRA BS operating in band 3, since it is already covered by the requirement in clause 4.2.4.2.3.
UTRA FDD band I, E-UTRA band 1	2 110 MHz to 2 170 MHz	-52 dBm	1 MHz	This requirement does not apply to E-UTRA BS operating in band 1.
	1 920 MHz to 1 980 MHz	-49 dBm	1 MHz	This requirement does not apply to E-UTRA BS operating in band 1, since it is already covered by the requirement in clause 4.2.4.2.3.
UTRA FDD band III, E-UTRA band 3	1 805 MHz to 1 880 MHz	-52 dBm	1 MHz	This requirement does not apply to E-UTRA BS operating in band 3.
	1 710 to 1 785 MHz	-49 dBm	1 MHz	This requirement does not apply to E-UTRA BS operating in band 3, since it is already covered by the requirement in clause 4.2.4.2.3.
UTRA FDD band VII, E-UTRA band 7	2 620 MHz to 2 690 MHz	-52 dBm	1 MHz	This requirement does not apply to E-UTRA BS operating in band 7.
	2 500 MHz to 2 570 MHz	-49 dBm	1 MHz	This requirement does not apply to E-UTRA BS operating in band 7, since it is already covered by the requirement in clause 4.2.4.2.3.
UTRA FDD band VIII, E-UTRA band 8	925 MHz to 960 MHz	-52 dBm	1 MHz	This requirement does not apply to E-UTRA BS operating in band 8.
	880 MHz to 915 MHz	-49 dBm	1 MHz	This requirement does not apply to E-UTRA BS operating in band 8, since it is already covered by the requirement in clause 4.2.4.2.3.
UTRA FDD band XV	2 600 MHz to 2 620 MHz	-52 dBm	1 MHz	This requirement does not apply to E-UTRA BS operating in band 7 or band 38.
	1 900 MHz to 1 920 MHz	-49 dBm	1 MHz	This requirement does not apply to E-UTRA BS operating in band 33.
UTRA FDD band XVI	2 585 MHz to 2 600 MHz	-52 dBm	1 MHz	This requirement does not apply to E-UTRA BS operating in band 7 or band 38.
	2 010 MHz to 2 025 MHz	-49 dBm	1 MHz	This requirement does not apply eto E-UTRA BS operating in band 34.
UTRA TDD in band a), E-UTRA band 33	1 900 MHz to 1 920 MHz	-52 dBm	1 MHz	This requirement does not apply to E-UTRA BS operating in band 33.
UTRA TDD in band a), E-UTRA band 34	2 010 MHz to 2 025 MHz	-52 dBm	1 MHz	This requirement does not apply eto E-UTRA BS operating in band 34.
UTRA TDD in band d), E-UTRA band 38	2 570 MHz to 2 620 MHz	-52 dBm	1 MHz	This requirement does not apply to E-UTRA BS operating in band 38. For operation in band 7, see note 2.

NOTE 1: Where the table has two entries for the same or overlapping frequency ranges, both limits shall be applied.
NOTE 2: As set out in the definition in clause 4.2.4.1, the co-existence requirements in this table do not apply for the 10 MHz frequency range immediately outside the downlink operating band (see table 1-1). This is also the case when the downlink operating band is adjacent to the Band for the protected system in the table.

4.2.4.2.3 Protection of the BS receiver of own or different BS

This requirement shall be applied in order to prevent the receivers of the BSs being desensitized by emissions from a BS transmitter.

The power of any spurious emission shall not exceed the limit specified in table 4.2.4.2.3-1.

Table 4.2.4.2.3-1: BS emissions limits for Spurious protection of the BS receiver

Frequency range	Maximum Level	Measurement Bandwidth	Note
$F_{UL\_low} - F_{UL\_high}$	-96 dBm	100 kHz	
NOTE: F_{UL_low} are F_{UL_high} are the lowest and highest frequency of the E-UTRA BS uplink operating band respectively.			

4.2.4.3 Conformance

Conformance tests described in clause 5.3.3 shall be carried out.

4.2.5 Base station maximum output power

4.2.5.1 Definition

Maximum output power, P_{max}, of the Base Station is the mean power level per carrier measured at the antenna connector during the transmitter ON period in a specified reference condition.

4.2.5.2 Limit

In normal conditions, the Base Station maximum output power shall remain within +2,7 dB and -2,7 dB of the manufacturer's rated output power.

In extreme conditions, the Base Station maximum output power shall remain within +3,2 dB and -3,2 dB of the manufacturer's rated output power.

4.2.5.3 Conformance

Conformance tests described in clause 5.3.4 shall be carried out.

4.2.6 Transmitter intermodulation

4.2.6.1 Definition

The transmitter intermodulation requirement 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 own transmit signal and an interfering signal reaching the transmitter via the antenna. The requirement applies during the transmitter ON period and the transmitter transient period.

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

4.2.6.2 Limit

The transmitter intermodulation level is the power of the intermodulation products when an interfering signal is injected into an antenna connector at a mean power level of 30 dB lower than that of the mean power of the wanted signal. The wanted signal channel bandwidth $BW_{Channel}$ shall be the maximum bandwidth supported by the base station.

In the frequency range relevant for this test, the transmit intermodulation level shall not exceed the unwanted emission requirements of clauses 4.2.2.2, 4.2.3.2 and 4.2.4.2 in the presence of an interfering signal according to table 4.2.6.2-1.

Table 4.2.6.2-1: Interfering and wanted signals for the Transmitter intermodulation requirement

Parameter	Value
Wanted signal	E-UTRA signal of maximum channel bandwidth $BW_{Channel}$
Interfering signal type	E-UTRA signal of channel bandwidth 5 MHz
Interfering signal level	Mean power level 30 dB below the mean power of the wanted signal
Interfering signal centre frequency offset from wanted signal carrier centre frequency	$BW_{Channel}$/2 - 12,5 MHz $BW_{Channel}$/2 - 7,5 MHz $BW_{Channel}$/2 - 2,5 MHz $BW_{Channel}$/2 + 2,5 MHz $BW_{Channel}$/2 + 7,5 MHz $BW_{Channel}$/2 + 12,5 MHz
NOTE: Interfering signal positions that are partially or completely outside of the downlink operating band of the base station are excluded from the requirement.	

The measurements for unwanted emission requirement due to intermodulation can be limited to the frequency ranges of all third and fifth order intermodulation products, excluding the channel bandwidths of the wanted and interfering signals.

4.2.6.3 Conformance

Conformance tests described in clause 5.3.5 shall be carried out.

4.2.7 Receiver spurious emissions

4.2.7.1 Definition

The spurious emissions power is the power of emissions generated or amplified in a receiver that appear at the BS receiver antenna connector. The requirements apply to all BS with separate RX and TX antenna ports. The test shall be performed when both TX and RX are on, with the TX port terminated.

For TDD BS with common RX and TX antenna port the requirement applies during the Transmitter OFF period. For FDD BS with common RX and TX antenna port the transmitter spurious emission as specified in clause 4.2.4 is valid.

4.2.7.2 Limit

The power of any spurious emission shall not exceed the levels in table 4.2.7.2-1.

In addition to the requirements in table 4.2.7.2-1, the power of any spurious emission shall not exceed the limits specified in clauses 4.2.4.2.2 and 4.2.4.2.3.

Table 4.2.7.2-1: General spurious emission test requirement

Frequency range	Maximum level	Measurement Bandwidth	Note
30 MHz to 1 GHz	-57 dBm	100 kHz	
1 GHz to 12,75 GHz	-47 dBm	1 MHz	
NOTE: The frequency range between $2,5 \times BW_{Channel}$ below the first carrier frequency and $2,5 \times BW_{Channel}$ above the last carrier frequency transmitted by the BS, where $BW_{Channel}$ is the channel bandwidth according to TS 136 141 [2], table 5.6-1, may be excluded from the requirement. However, frequencies that are more than 10 MHz below the lowest frequency of the downlink operating band or more than 10 MHz above the highest frequency of the downlink operating band (see table 1-1) shall not be excluded from the requirement.			

4.2.7.3 Conformance

Conformance tests described in clause 5.3.6 shall be carried out.

4.2.8 Blocking characteristics

4.2.8.1 Definition

The blocking characteristics is a measure of the receiver ability to receive a wanted signal at its assigned channel in the presence of an unwanted interferer, which are either a 1,4 MHz, 3 MHz or 5 MHz E-UTRA signal for in-band blocking or a CW signal for out-of-band blocking. The interfering E-UTRA signal shall be as specified in TS 136 141 [2], annex C.

4.2.8.2 Limit

The throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channel, with a wanted and an interfering signal coupled to BS antenna input using the parameters in tables 4.2.8.2-1 and 4.2.8.2-2. The reference measurement channel for the wanted signal is identified in table 7.2-1 of TS 136 141 [2] for each channel bandwidth and further specified in annex A of TS 136 141 [2].

Table 4.2.8.2-1: Blocking performance requirement

Operating Band	Centre Frequency of Interfering Signal (MHz) (see note 1)	Interfering Signal mean power (dBm)	Wanted Signal mean power (dBm) (see note 2)	Interfering signal centre frequency minimum frequency offset from the channel edge of the wanted signal (MHz)	Type of Interfering Signal
1, 3, 7, 33, 34, 38	(F_{UL_low} -20) to (F_{UL_high} +20)	-43	$P_{REFSENS}$ + 6 dB	See table 4.2.8.2-2	See table 4.2.8.2-2
	1 to (F_{UL_low} -20) (F_{UL_high} +20) to 12 750	-15	$P_{REFSENS}$ + 6 dB	-	CW carrier
8	(F_{UL_low} -20) to (F_{UL_high} +10)	-43	$P_{REFSENS}$ + 6 dB	See table 4.2.8.2-2	See table 4.2.8.2-2
	1 to (F_{UL_low} -20) (F_{UL_high} +10) to 12 750	-15	$P_{REFSENS}$ + 6 dB	-	CW carrier
NOTE 1: F_{UL_low} and F_{UL_high} are the lowest and highest frequencies of the uplink operting band, as defined in table 1-1. NOTE 2: $P_{REFSENS}$ depends on the channel bandwidth as specified in TS 136 141 [2], clause 7.2.					

Table 4.2.8.2-2: Interfering signals for Blocking performance requirement

E-UTRA channel BW (MHz)	Interfering signal centre frequency minimum offset to the channel edge of the wanted signal (MHz)	Type of interfering signal
1,4	2,1	1,4 MHz E-UTRA signal
3	4,5	3 MHz E-UTRA signal
5	7,5	5 MHz E-UTRA signal
10	7,5	5 MHz E-UTRA signal
15	7,5	5 MHz E-UTRA signal
20	7,5	5 MHz E-UTRA signal

4.2.8.3 Conformance

Conformance tests described in clause 5.3.7 shall be carried out.

4.2.9 Receiver intermodulation characteristics

4.2.9.1 Definition

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 receive a wanted signal on its assigned channel frequency in the presence of two interfering signals which have a specific frequency relationship to the wanted signal. Interfering signals shall be a CW signal and an E-UTRA signal as specified in TS 136 141 [2], annex C.

4.2.9.2 Limit

The throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channel, with a wanted signal at the assigned channel frequency and two interfering signals with the conditions specified in tables 4.2.9.2-1 and 4.2.9.2-2 for intermodulation performance and in table 4.2.9.2-3 for narrowband intermodulation performance. The reference measurement channel for the wanted signal is identified in table 7.2-1 of TS 136 141 [2] for each channel bandwidth and further specified in annex A of TS 136 141 [2].

Table 4.2.9.2-1: Intermodulation performance requirement

Wanted signal mean power (dBm)	Interfering signal mean power	Type of interfering signal
$P_{REFSENS}$ + 6 dB (see note)	-52 dBm	See table 4.2.9.2-2
NOTE: $P_{REFSENS}$ depends on the channel bandwidth as specified in TS 136 141 [2], clause 7.2.		

Table 4.2.9.2-2: Interfering signal for Intermodulation performance requirement

E-UTRA channel bandwidth (MHz)	Interfering signal centre frequency offset from the carrier edge of the wanted signal (MHz)	Type of interfering signal
1,4	2,1	CW
	4,9	1,4 MHz E-UTRA signal
3	4,5	CW
	10,5	3 MHz E-UTRA signal
5	7,5	CW
	17,5	5 MHz E-UTRA signal
10	7,5	CW
	17,7	5 MHz E-UTRA signal
15	7,5	CW
	18	5 MHz E-UTRA signal
20	7,5	CW
	18,2	5 MHz E-UTRA signal

Table 4.2.9.2-3: Narrowband intermodulation performance requirement

E-UTRA channel bandwidth (MHz)	Wanted signal mean power (dBm)	Interfering signal mean power (dBm)	Interfering RB centre frequency offset from the channel edge of the wanted signal (kHz)	Type of interfering signal
1,4	$P_{REFSENS}$ + 6 dB (see note)	-52	270	CW
		-52	790	1,4 MHz E-UTRA signal, 1 RB (see note 2)
3	$P_{REFSENS}$ + 6 dB (see note)	-52	275	CW
		-52	790	3,0 MHz E-UTRA signal, 1 RB (see note 2)
5	$P_{REFSENS}$ + 6 dB (see note)	-52	360	CW
		-52	1 060	5 MHz E-UTRA signal, 1 RB (see note 2)
10	$P_{REFSENS}$ + 6 dB (see notes 1 and 3)	-52	415	CW
		-52	1 420	5 MHz E-UTRA signal, 1 RB (see note 2)
15	$P_{REFSENS}$ + 6 dB (see notes 1 and 3)	-52	380	CW
		-52	1 600	5 MHz E-UTRA signal, 1 RB (see note 2)
20	$P_{REFSENS}$ + 6 dB (see notes 1 and 3)	-52	345	CW
		-52	1 780	5 MHz E-UTRA signal, 1 RB (see note 2)

NOTE 1: $P_{REFSENS}$ is related to the channel bandwidth as specified in TS 136 141 [2], clause 7.2.
NOTE 2: Interfering signal consisting of one resource block positioned at the stated offset.
NOTE 3: This requirement shall apply only for a FRC A1-3 (see TS 136 141 [2], clause A.1) mapped to the frequency range at the channel edge adjacent to the interfering signals.

4.2.9.3 Conformance

Conformance tests described in clause 5.3.8 shall be carried out.

4.2.10 Adjacent Channel Selectivity (ACS) and narrow-band blocking

4.2.10.1 Definition

Adjacent Channel Selectivity (ACS) is a measure of the receiver's ability to receive a wanted signal at its assigned channel frequency in the presence of an adjacent channel signal with a specified centre frequency offset of the interfering signal to the channel edge of a victim system. The interfering signal shall be an E-UTRA signal as specified in TS 136 141 [2], annex C.

4.2.10.2 Limit

The throughput shall be $\geq$ 95 % of the maximum throughput of the reference measurement channel, with a wanted and an interfering signal coupled to the BS antenna input as specified in table 4.2.10.2-2 for narrowband blocking and table 4.2.10.2-3 for ACS. The reference measurement channel for the wanted signal is identified in table 7.2-1 of TS 136 141 [2] for each channel bandwidth and further specified in annex A of TS 136 141 [2].

Table 4.2.10.2-1: Narrowband blocking requirement

Wanted signal mean power (dBm)	Interfering signal mean power	Type of interfering signal
$P_{REFSENS}$ + 6 dB (see note)	-49 dBm	See table 4.2.10.2-2

NOTE: $P_{REFSENS}$ depends on the channel bandwidth as specified in TS 136 141 [2], clause 7.2.

Table 4.2.10.2-2: Interfering signal for Narrowband blocking requirement

E-UTRA Assigned BW (MHz)	Interfering RB centre frequency offset to the channel edge of the wanted signal (kHz)	Type of interfering signal
1,4	252,5 + m × 180, m = 0, 1, 2, 3, 4, 5	1,4 MHz E-UTRA signal, 1 RB (see note)
3	247,5 + m × 180, m = 0, 1, 2, 3, 4, 7, 10, 13	3 MHz E-UTRA signal, 1 RB (see note)
5	342,5 + m × 180, m = 0, 1, 2, 3, 4, 9, 14, 19, 24	5 MHz E-UTRA signal, 1 RB (see note)
10	347,5 + m × 180, m = 0, 1, 2, 3, 4, 9, 14, 19, 24	5 MHz E-UTRA signal, 1 RB (see note)
15	352,5 + m × 180, m = 0, 1, 2, 3, 4, 9, 14, 19, 24	5 MHz E-UTRA signal, 1 RB (see note)
20	342,5 + m × 180, m = 0, 1, 2, 3, 4, 9, 14, 19, 24	5 MHz E-UTRA signal, 1 RB (see note)
NOTE: Interfering signal consisting of one resource block adjacent to the wanted signal.		

Table 4.2.10.2-3: Adjacent channel selectivity

E-UTRA channel bandwidth (MHz)	Wanted signal mean power (dBm)	Interfering signal mean power (dBm)	Interfering signal centre frequency offset from the channel edge of the wanted signal (MHz)	Type of interfering signal
1,4	$P_{REFSENS}$ + 11 dB (see note)	-52	0,7025	1,4 MHz E-UTRA signal
3	$P_{REFSENS}$ + 8 dB (see note)	-52	1,5075	3 MHz E-UTRA signal
5	$P_{REFSENS}$ + 6 dB (see note)	-52	2,5075	5 MHz E-UTRA signal
10	$P_{REFSENS}$ + 6 dB (see note)	-52	2,5025	5 MHz E-UTRA signal
15	$P_{REFSENS}$ + 6 dB (see note)	-52	2,5125	5 MHz E-UTRA signal
20	$P_{REFSENS}$ + 6 dB (see note)	-52	2,5025	5 MHz E-UTRA signal
NOTE: $P_{REFSENS}$ depends on the channel bandwidth as specified in TS 136 141 [2], clause 7.2.				

4.2.10.3 Conformance

Conformance tests described in clause 5.3.9 shall be carried out.

5 Testing for compliance with technical requirements

5.1 Environmental conditions for testing

Tests defined in the present document shall be carried out at representative points within the boundary limits of the declared operational environmental profile.

Where technical performance varies subject to environmental conditions, tests shall be carried out under a sufficient variety of environmental conditions (within the boundary limits of the declared operational environmental profile) to give confidence of compliance for the affected technical requirements.

Normally it should be sufficient for all tests to be conducted using normal test conditions except where otherwise stated. For guidance on the use of other test conditions to be used in order to show compliance reference can be made to TS 136 141 [2], annex D.

Many tests in the present document are performed with appropriate frequencies in the bottom, middle and top of the operating band of the BS. These are denoted as RF channels B (bottom), M (middle) and T (top) and are defined in TS 136 141 [2], clause 4.7.

The measurement system required for each test is described in TS 136 141 [2], annex I.

5.2 Interpretation of the measurement results

The interpretation of the results recorded in a test report for the measurements described in the present document shall be as follows:

- the measured value related to the corresponding limit will be used to decide whether an equipment meets the requirements of the present document;
- the value of the measurement uncertainty for the measurement of each parameter shall be included in the test report;
- the recorded value of the measurement uncertainty shall be, for each measurement, equal to or lower than the figures in table 5.2-1.

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated and shall correspond to an expansion factor (coverage factor) k = 1,96 (which provide confidence levels of respectively 95 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)). Principles for the calculation of measurement uncertainty are contained in TR 100 028 [3] or TR 102 215 [i.4].

Table 5.2-1 is based on such expansion factors.

Table 5.2-1: Maximum measurement uncertainty

Parameter	Condition	Uncertainty
Operating band unwanted emissions		±1,5 dB
Adjacent Channel Leakage power Ratio (ACLR)	ACLR Absolute power	±0,8 dB ±2,0 dB
Transmitter spurious emissions	For "Spurious emissions" 9 kHz < f ≤ 4 GHz 4 GHz < f ≤ 12,75 GHz For co-existence requirements (> -60 dBm) For co-existence requirements (≤ -60 dBm) For protection of the BS receiver	 ±2,0 dB ±4,0 dB ±2,0 dB ±3,0 dB ±3,0 dB
Base station maximum output power		±0,7 dB
Transmitter intermodulation	For Operating band unwanted emissions For ACLR For "Spurious emissions": f ≤ 2,2 GHz 2,2 GHz < f ≤ 4 GHz f > 4 GHz For co-existence requirements Interference signal	±2,5 dB ±2,2 dB ±2,5 dB ±2,8 dB ±4,5 dB ±2,8 dB ±1,0 dB
Receiver spurious emissions	30 MHz ≤ f ≤ 4 GHz 4 GHz < f ≤ 12,75 GHz	±2,0 dB ±4,0 dB
Blocking characteristics	In-band blocking, using modulated interferer Out of band blocking, using CW interferer: 1 MHz < $f_{interferer}$ ≤ 3 GHz 3 GHz < $f_{interferer}$ ≤ 12,75 GHz	±1,6 dB ±1,3 dB ±3,2 dB
Receiver intermodulation characteristics		±1,8 dB

Parameter	Condition	Uncertainty
Adjacent Channel Selectivity (ACS) and narrow-band blocking		±1,4 dB
NOTE 1: For RF tests, it should be noted that the uncertainties in table 5.2-1 apply to the test system operating into a nominal 50 Ω load and do not include system effects due to mismatch between the EUT and the Test System.		
NOTE 2: Annex G of TR 100 028-2 [3] provides guidance for the calculation of the uncertainty components relating to mismatch.		
NOTE 3: If the test system for a test is known to have a measurement uncertainty greater than that specified in table 5.2-1, this equipment can still be used, provided that an adjustment is made follows: any additional uncertainty in the test system over and above that specified in table 5.2-1 is used to tighten the test requirements - making the test harder to pass (for some tests, e.g. receiver tests, this may require modification of stimulus signals). This procedure will ensure that a test system not compliant with table 5.2-1 does not increase the probability of passing an EUT that would otherwise have failed a test if a test system compliant with table 5.2-1 had been used.		

5.3 Essential radio test suites

This clause describes the test suites for E-UTRA (FDD and TDD).

5.3.1 Operating band unwanted emissions

5.3.1.1 Initial conditions

Test environment: normal, see TS 136 141 [2], clause D.2.

RF channels to be tested: B, M and T, see clause 5.1.

1) Connect the signal analyzer to the base station RF output port as shown in TS 136 141 [2], clause I.1.1.

   As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity, efficiency and avoiding e.g. carrier leakage, the resolution bandwidth may be smaller than 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.

2) Detection mode: true RMS.

5.3.1.2 Procedure

1) Set the BS transmission at maximum total power (Pmax) as specified by the supplier. Channel set-up shall be according to E-TM 1.1 in TS 136 141 [2].

2) Step the centre frequency of the measurement filter in contiguous steps and measure the emission within the specified frequency ranges with the specified measurement bandwidth.

3) Repeat the test with the channel set-up according to E-TM 1.2 in TS 136 141 [2].

The results obtained shall be compared to the limits in clause 4.2.2.2 in order to prove compliance.

5.3.2 Adjacent Channel Leakage power Ratio (ACLR)

5.3.2.1 Initial conditions

Test environment: normal, see TS 136 141 [2], clause D.2.

RF channels to be tested: B, M and T with multiple carriers if supported; see clause 5.1.

1) Connect measurement device to the base station RF output port as shown in TS 136 141 [2], clause I.1.1.

2) The measurement device characteristics shall be:

   - measurement filter bandwidth: defined in clause 4.2.3.2;
   - detection mode: true RMS voltage or true average power.

3) Set the base station to transmit a signal according to E-TM1 in TS 136 141 [2]. The mean power at the RF output port shall be the maximum output power as specified by the manufacturer.

4) Set carrier frequency within the frequency band supported by BS.

5.3.2.2 Procedure

1) Measure Adjacent channel leakage power ratio for the frequency offsets both side of channel frequency as specified in table 4.2.3.2-1 (Paired spectrum case) or table 4.2.3.2-2 (Unpaired spectrum case) respectively. In multiple carrier case only offset frequencies below the lowest and above the highest carrier frequency transmitted shall be measured.

2) Repeat the test with the channel set-up according to E-TM1.2 in TS 136 141 [2].

The results obtained shall be compared to the limits in clause 4.2.3.2 in order to prove compliance.

5.3.3 Transmitter spurious emissions

5.3.3.1 Initial conditions

Test environment: normal, see TS 136 141 [2], clause D.2.

RF channels to be tested: B, M and T, see clause 5.1.

1) Connect the BS antenna connector to a measurement receiver according to TS 136 141 [2], clause I.1.1 using an attenuator or a directional coupler if necessary.

2) Measurements shall use a measurement bandwidth in accordance to the conditions in TS 136 104 [7], clause 6.6.4.

3) Detection mode: true RMS.

4) Configure the BS with transmitters active at their maximum output power.

5.3.3.2 Procedure

1) Set the BS to transmit a signal according to E-TM1.1 in TS 136 141 [2] at the manufacturer's specified maximum output power.

2) Measure the emission at the specified frequencies with specified measurement bandwidth and note that the measured value does not exceed the specified value.

The results obtained shall be compared to the limits in clause 4.2.4.2 in order to prove compliance.

5.3.4 Base station maximum output power

5.3.4.1 Initial conditions

Test environment: normal, see TS 136 141 [2], clause D.2.

RF channels to be tested: B, M and T, see clause 5.1.

In addition, on one EARFCN only, the test shall be performed under extreme power supply as defined in TS 136 141 [2], clause D.3.

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

1) Connect the power measuring equipment to the base station RF output port as shown in TS 136 141 [2], clause I.1.1.

5.3.4.2 Procedure

1) Set the base station to transmit a signal according to E-TM1.1 in TS 136 141 [2].

2) Measure the mean power at the RF output port.

The results obtained shall be compared to the limits in clause 4.2.5.2 in order to prove compliance.

5.3.5 Transmitter intermodulation

5.3.5.1 Initial conditions

Test environment: normal, see TS 136 141 [2], clause D.2.

RF channels to be tested: B, M and T, see clause 5.1.

Connect the signal analyzer to the base station RF output port as shown in TS 136 141 [2], clause I.1.2.

5.3.5.2 Procedures

1) Generate the wanted signal according to E-TM1.1 in TS 136 141 [2] at specified maximum BS output power.

2) Generate the interfering signal according to E-TM1.1 in TS 136 141 [2], with 5 MHz channel bandwidth and centre frequency offset of $BW_{Channel}$ /2 + 2,5 MHz relative to the wanted signal, but exclude interference frequencies that are outside of the downlink frequency band for E-UTRA specified in table 1-1.

3) Adjust ATT1 so that level of the E-UTRA modulated interfering signal is as defined in clause 4.2.6.2.

4) Perform the unwanted emission tests as specified in clauses 5.3.1 and 5.3.2, for all third and fifth order intermodulation products which appear in the frequency ranges defined in clauses 5.3.1 and 5.3.2. The width of the intermodulation products shall be taken into account.

5) Perform the Transmitter spurious emissions test as specified in clause 5.3.3, for all third and fifth order intermodulation products which appear in the frequency ranges defined in clause 5.3.3. The width of the intermodulation products shall be taken into account.

6) Verify that the emission level does not exceed the required level with the exception of interfering signal frequencies.

7) Repeat the test for interfering signal centre frequency offset of $-BW_{Channel}$ /2 - 2,5 MHz but exclude interfering signal frequencies that are outside of the downlink operating band for E-UTRA specified in table 1-1.

8) Repeat the test for interfering signal centre frequency offsets of $\pm(BW_{Channel}$ /2 + 7,5 MHz) and $\pm(BW_{Channel}$ /2 + 12,5 MHz) but exclude interfering signal frequencies that are outside of the downlink operating band for E-UTRA specified in table 1-1.

NOTE: The third order intermodulation products are centred at 2F1±F2 and 2F2±F1. The fifth order intermodulation products are centred at 3F1±2F2, 3F2±2F1, 4F1±F2, and 4F2±F1 where F1 represents the wanted signal centre frequency and F2 represents the interfering signal centre frequency.
The width of intermodulation products are:

- $(n \times BW_{Channel} + m \times 5$ MHz) for the nF1 ± mF2 products;
- $(n \times 5$ MHz + $m \times BW_{Channel})$ for the nF2 ± mF1 products.

The results obtained shall be compared to the limits in clause 4.2.6.2 in order to prove compliance.

5.3.6 Receiver spurious emissions

5.3.6.1 Initial conditions

Test environment: normal, see TS 136 141 [2], clause D.2.

RF channels to be tested: M, see clause 5.1.

1) Connect a measurement receiver to the BS antenna connector as shown in TS 136 141 [2], clause I.2.6.
2) Enable the BS receiver.
3) Terminate the BS Tx antenna connector as shown in TS 136 141 [2], clause I.2.6.

5.3.6.2 Procedure

1) Start BS transmission according to E-TM 1.1 in TS 136 141 [2] at Pmax.
2) Set measurement equipment parameters as specified in table 4.2.7.2-1.
3) Measure the spurious emissions over each frequency range described in clause 4.2.7.2.
4) Repeat the test using diversity antenna connector if available.

The results obtained shall be compared to the limits in clause 4.2.7.2 in order to prove compliance.

5.3.7 Blocking characteristics

5.3.7.1 Initial conditions

Test environment: normal, see TS 136 141 [2], clause D.2.

RF channels to be tested: M see clause 5.1. The BS shall be configured to operate as close to the centre of the operating band (see table 1-1) as possible.

1) Connect the signal generator for the wanted signal and the signal generator for the interfering signal to the antenna connector of one Rx port according to as shown in TS 136 141 [2], clause I.2.5.
2) Terminate any other Rx port not under test.
3) Start to transmit according to reference measurement channel in clause A.1 to the BS under test. The level of the wanted signal measured at the BS antenna connector shall be set to the level specified in clause 4.2.8.2.

5.3.7.2 Procedure

1) Adjust the signal generators to the type of interfering signals, levels and the frequency offsets as specified in tables 4.2.8.2-1 and 4.2.8.2-2. The E-UTRA interfering signal shall be swept with a step size of 1 MHz starting from the minimum offset to the channel edges of the wanted signal as specified in table 4.2.8.2-2. The CW interfering signal shall be swept with a step size of 1 MHz within the range specified in table 4.2.8.2-1.
   a) In the frequency range (F_{UL_low} - 20) MHz to (F_{UL_high} + 20) MHz the requirement shall be tested with the lowest and the highest bandwidth supported by the BS.
   b) In the frequency ranges 1 MHz to (F_{UL_low} - 20) MHz and (F_{UL_high} + 20) MHz to 12 750 MHz the requirement shall be tested only with the lowest bandwidth supported by the BS.
2) Measure the throughput of the wanted signal at the BS receiver according to TS 136 141 [2], annex E.
3) Interchange the connections of the BS Rx ports and repeat the measurements according to steps 1) to 2).

The results obtained shall be compared to the limits in clause 4.2.8.2 in order to prove compliance.

5.3.8 Receiver intermodulation characteristics

5.3.8.1 Initial conditions

Test environment: normal, see TS 136 141 [2], clause D.2.

RF channels to be tested: B, M and T, see clause 5.1.

1) Set-up the measurement system as shown in TS 136 141 [2], clause I.2.7.

5.3.8.2 Procedures

1) Generate the wanted signal and adjust the signal level to the BS under test to the level specified in table 4.2.9.2-1.

2) Adjust the signal generators to the type of interfering signals, levels and the frequency offsets as specified in table 4.2.9.2-2 for intermodulation requirement and table 4.2.9.2-3 for narrowband intermodulation requirement.

3) Adjust the signal generators to obtain the specified level of interfering signal at the BS input.

4) Measure the throughput according to TS 136 141 [2], annex E.

5) Repeat the whole test for the port which was terminated.

The results obtained shall be compared to the limits in clause 4.2.9.2 in order to prove compliance.

5.3.9 Adjacent Channel Selectivity (ACS) and narrow-band blocking

5.3.9.1 Initial conditions

Test environment: normal, see TS 136 141 [2], clause D.2.

RF channels to be tested: B, M and T, see clause 5.1.

1) Set-up the measurement system as shown in TS 136 141 [2], clause I.2.4.

5.3.9.2 Procedure for Adjacent Channel Selectivity

1) Generate the wanted signal and adjust the input level to the base station under test to the level specified in table 4.2.10.2-3.

2) Set-up the interfering signal at the adjacent channel frequency and adjust the interfering signal level at the base station input to the level defined in table 4.2.10.2-3.

3) Measure the throughput according to TS 136 141 [2], annex E.

4) Repeat the test for the port, which was terminated.

5.3.9.3 Procedure for narrow-band blocking

1) Generate the wanted signal and adjust the input level to the base station under test to the level specified in table 4.2.10.2-1.

2) Adjust the interfering signal level at the base station input to the level defined in table 4.2.10.2-1. Set-up and sweep the interfering RB centre frequency offset to the channel edge of the wanted signal according to table 4.2.10.2-2.

3) Measure the throughput according to TS 136 141 [2], annex E.

4) Repeat the test for the port, which was terminated.

The results obtained shall be compared to the limits in clause 4.2.10.2 in order to prove compliance.

Annex A (normative): HS Requirements and conformance Test specifications Table (HS-RTT)

The HS Requirements and conformance Test specifications Table (HS-RTT) in table A.1 serves a number of purposes, as follows:

- it provides a statement of all the requirements in words and by cross reference to (a) specific clause(s) in the present document or to (a) specific clause(s) in (a) specific referenced document(s);
- it provides a statement of all the test procedures corresponding to those requirements by cross reference to (a) specific clause(s) in the present document or to (a) specific clause(s) in (a) specific referenced document(s);
- it qualifies each requirement to be either:
  - Unconditional: meaning that the requirement applies in all circumstances; or
  - Conditional: meaning that the requirement is dependant on the manufacturer having chosen to support optional functionality defined within the schedule.
- in the case of Conditional requirements, it associates the requirement with the particular optional service or functionality;
- it qualifies each test procedure to be either:
  - Essential: meaning that it is included with the Essential Radio Test Suite and therefore the requirement shall be demonstrated to be met in accordance with the referenced procedures;
  - Other: meaning that the test procedure is illustrative but other means of demonstrating compliance with the requirement are permitted.

Table A.1: HS Requirements and conformance Test specifications Table (HS-RTT)

Harmonized Standard EN 301 908-14 The following requirements and test specifications are relevant to the presumption of conformity under the article 3.2 of the R&TTE Directive						
Requirement			**Requirement Conditionality**		**Test Specification**	
No	**Description**	**Reference: Clause No**	**U/C**	**Condition**	**E/O**	**Reference: Clause No**
1	Operating band unwanted emissions	4.2.2	U		E	5.3.1
2	Adjacent Channel Leakage power Ratio (ACLR)	4.2.3	U		E	5.3.2
3	Transmitter spurious emissions	4.2.4	U		E	5.3.3
4	Base station maximum output power	4.2.5	U		E	5.3.4
5	Transmit intermodulation	4.2.6	U		E	5.3.5
6	Receiver spurious emissions	4.2.7	U		E	5.3.6
7	Blocking characteristics	4.2.8	U		E	5.3.7
8	Receiver intermodulation characteristics	4.2.9	U		E	5.3.8
9	Adjacent Channel Selectivity (ACS) and narrow-band blocking	4.2.10	U		E	5.3.9

Key to columns:

Requirement:

No A unique identifier for one row of the table which may be used to identify a requirement or its test specification.

Description A textual reference to the requirement.

Clause Number Identification of clause(s) defining the requirement in the present document unless another document is referenced explicitly.

Requirement Conditionality:

U/C Indicates whether the requirement is to be *unconditionally* applicable (U) or is *conditional* upon the manufacturers claimed functionality of the equipment (C).

Condition Explains the conditions when the requirement shall or shall not be applicable for a technical requirement which is classified "conditional".

Test Specification:

E/O Indicates whether the test specification forms part of the Essential Radio Test Suite (E) or whether it is one of the Other Test Suite (O).

NOTE: All tests whether "E" or "O" are relevant to the requirements. Rows designated "E" collectively make up the Essential Radio Test Suite; those designated "O" make up the Other Test Suite; for those designated "X" there is no test specified corresponding to the requirement. The completion of all tests classified "E" as specified with satisfactory outcomes is a necessary condition for a presumption of conformity. Compliance with requirements associated with tests classified "O" or "X" is a necessary condition for presumption of conformity, although conformance with the requirement may be claimed by an equivalent test or by manufacturer's assertion supported by appropriate entries in the technical construction file.

Clause Number Identification of clause(s) defining the test specification in the present document unless another document is referenced explicitly. Where no test is specified (that is, where the previous field is "X") this field remains blank.

Annex B (normative): Base Station configurations

B.1 Receiver diversity

For the tests in clause 5 of the present document, the test requirement applies at each receiver antenna connector separately, with the remaining receiver(s) disabled or their antenna connectors being terminated.

B.2 Duplexers

The requirements of the present document shall be met with a duplexer fitted, if a duplexer is supplied as part of the BS. If the duplexer is supplied as an option by the manufacturer, sufficient tests should be repeated with and without the duplexer fitted to verify that the BS meets the requirements of the present document in both cases.

The following tests shall be performed with the duplexer fitted, and without it fitted if this is an option:

1) clause 5.3.4, base station output power, for the highest static power step only, if this is measured at the antenna connector;

2) clause 5.3.3, transmitter spurious emissions; outside the BS transmit band;

3) clause 5.3.5, transmit intermodulation; for the testing of conformance, the carrier frequencies should be selected to minimize intermodulation products from the transmitters falling in receive channels.

The remaining tests may be performed with or without the duplexer fitted.

NOTE 1: When performing receiver tests with a duplexer fitted, it is important to ensure that the output from the transmitters does not affect the test apparatus. This can be achieved using a combination of attenuators, isolators and filters.

NOTE 2: When duplexers are used, intermodulation products will be generated, not only in the duplexer but also in the antenna system. The intermodulation products generated in the antenna system are not controlled by the specifications, and may degrade during operation (e.g. due to moisture ingress). Therefore, to ensure continued satisfactory operation of a BS, an operator will normally select EARFCNs to minimize intermodulation products falling on receive channels. For testing of complete conformance, an operator may specify the EARFCNs to be used.

B.3 Power supply options

If the BS is supplied with a number of different power supply configurations, it may not be necessary to test RF parameters for each of the power supply options, provided that it can be demonstrated that the range of conditions over which the equipment is tested is at least as great as the range of conditions due to any of the power supply configurations.

This applies particularly if a BS contains a DC rail which can be supplied either externally or from an internal mains power supply. In this case, the conditions of extreme power supply for the mains power supply options can be tested by testing only the external DC supply option. The range of DC input voltages for the test should be sufficient to verify the performance with any of the power supplies, over its range of operating conditions within the BS, including variation of mains input voltage, temperature and output current.

B.4 Ancillary RF amplifiers

The requirements of the present document shall be met with the ancillary RF amplifier fitted. At tests according to clause 5, the ancillary amplifier is connected to the BS by a connecting network (including any cable(s), attenuator(s), etc.) with applicable loss to make sure the appropriate operating conditions of the ancillary amplifier and the BS. The applicable connecting network loss range is declared by the manufacturer. Other characteristics and the temperature dependence of the attenuation of the connecting network are neglected. The actual attenuation value of the connecting network is chosen for each test as one of the applicable extreme values. The lowest value is used unless otherwise stated.

Sufficient tests should be repeated with the ancillary amplifier fitted and, if it is optional, without the ancillary RF amplifier to verify that the BS meets the requirements of the present document in both cases.

When testing, the following tests shall be repeated with the optional ancillary amplifier fitted according to table B.4-1, where x denotes that the test is applicable.

Table B.4-1: Tests applicable to Ancillary RF Amplifiers

	Clause	TX amplifier only	RX amplifier only	TX/RX amplifiers combined (see note)
Receiver Tests	5.3.9 (Narrowband blocking)		X	X
	5.3.7		X	X
	5.3.6		X	X
	5.3.8		X	
Transmitter Tests	5.3.4	X		X
	5.3.2	X		X
	5.3.3	X		X
	5.3.5	X		X
NOTE: Combining can be by duplex filters or any other network. The amplifiers can either be in RX or TX branch or in both. Either one of these amplifiers could be a passive network.				

In test according to clause 5.3.4, the highest applicable attenuation value is applied.

B.5 BS using antenna arrays

A BS may be configured with a multiple antenna port connection for some or all of its transceivers or with an antenna array related to one cell (not one array per transceiver). This clause applies to a BS which meets at least one of the following conditions:

- the transmitter output signals from one or more transceiver appear at more than one antenna port; or
- there is more than one receiver antenna port for a transceiver or per cell and an input signal is required at more than one port for the correct operation of the receiver thus the outputs from the transmitters as well as the inputs to the receivers are directly connected to several antennas (known as "aircombining"); or

NOTE: Diversity reception does not meet this requirement.

- transmitters and receivers are connected via duplexers to more than one antenna.

In case of diversity or spatial multiplexing, multiple antennas are not considered as an antenna array.

If a BS is used, in normal operation, in conjunction with an antenna system which contains filters or active elements which are necessary to meet the E-UTRA requirements, the conformance tests may be performed on a system comprising the BS together with these elements, supplied separately for the purposes of testing. In this case, it must be demonstrated that the performance of the configuration under test is representative of the system in normal operation, and the conformance assessment is only applicable when the BS is used with the antenna system.

For conformance testing of such a BS, the following procedure may be used.

B.5.1 Receiver tests

For each test, the test signals applied to the receiver antenna connectors shall be such that the sum of the powers of the signals applied equals the power of the test signal(s) specified in the test.

An example of a suitable test configuration is shown in figure B.5.1-1.

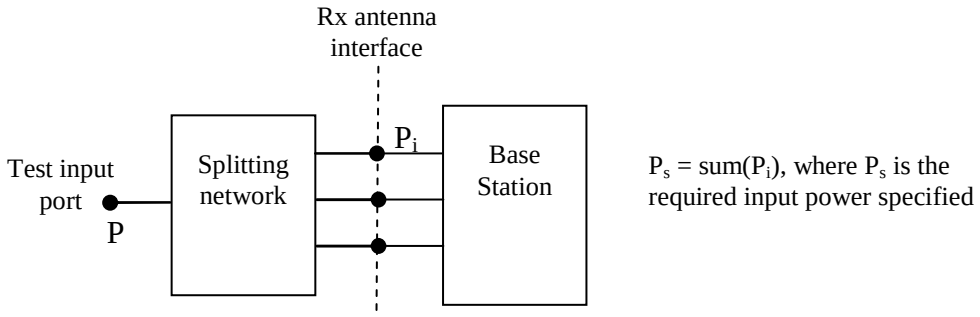

Figure B.5.1-1: Receiver test set-up

For spurious emissions from the receiver antenna connector, the test may be performed separately for each receiver antenna connector.

B.5.2 Transmitter tests

For each test, the test signals applied to the transmitter antenna connectors **(P_i)** shall be such that the sum of the powers of the signals applied equals the power of the test signal(s) **(P_s)** specified in the test. This may be assessed by separately measuring the signals emitted by each antenna connector and summing the results, or by combining the signals and performing a single measurement. The characteristics (e.g. amplitude and phase) of the combining network should be such that the power of the combined signal is maximized.

An example of a suitable test configuration is shown in figure B.5.2-1.

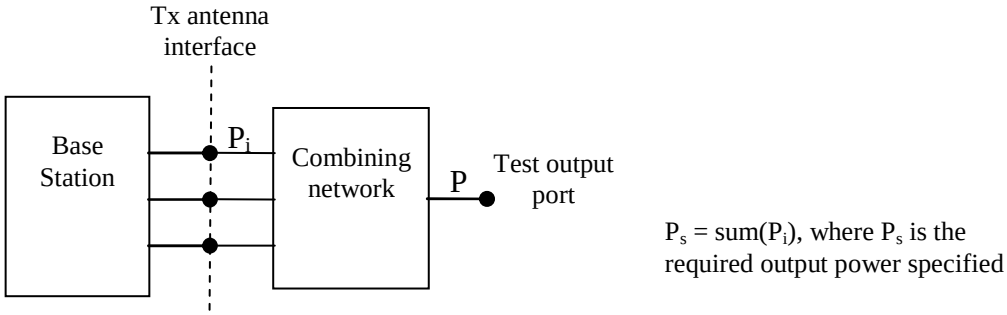

Figure B.5.2-1: Transmitter test set-up

For Intermodulation attenuation, the test may be performed separately for each transmitter antenna connector.

B.6 Transmit diversity and MIMO transmission

Unless otherwise stated, for the tests in clause 5, the signal shall be measured at both main and diversity transmitters antenna connectors, with the remaining antenna connector being terminated.

B.7 BS with integrated Iuant BS modem

Unless otherwise stated, for the tests in the present document, the integrated Iuant BS modem shall be switched off. Spurious emissions according to clauses 5.3.3 and 5.3.6 shall be measured only for frequencies above 20 MHz with the integrated Iuant BS modem switched on.

Annex C (informative): Environmental profile specification

The following environmental conditions may be declared by the supplier:

- barometric pressure: minimum and maximum;
- temperature: minimum and maximum;
- relative humidity: minimum and maximum;
- power supply: lower and upper voltage limit.

When operating outside the boundary limits of the declared operational environmental profile the equipment should not make ineffective use of the radio frequency spectrum so as to cause harmful interference.

Annex D (informative): The EN title in the official languages

The enlargement of the European Union (EU) resulted in a requirement from the EU for a larger number of languages for the translation of the titles of Harmonized Standards and mandated ENs that are to be listed in the Official Journal to support the implementation of this legislation.

For this reason the title translation concerning the present document can be consulted via the e-approval application.

Annex E (informative): Bibliography

- Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC (text with EEA relevance (EMC Directive).
- Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (LV Directive).
- Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive).

History

Document history			
V4.1.1	April 2009	Public Enquiry	PE 20090828: 2009-04-30 to 2009-08-28