## 2.5 Cumulative adjacent channel leakage ratio (CACLR)

The following test requirement applies for the sub-block or Inter RF Bandwidth gap sizes listed in Table 2.5-5/6/6a,

– Inside a sub-block gap within an operating band for a BS operating in non-contiguous spectrum.

– Inside an Inter RF Bandwidth gap for a BS operating in multiple bands, where multiple bands are mapped on the same antenna connector.

The cumulative adjacent channel leakage power ratio (CACLR) in a sub-block gap or Inter RF Bandwidth gap is the ratio of:

a) the sum of the filtered mean power centred on the assigned channel frequencies for the two carriers adjacent to each side of the sub-block gap or Inter RF Bandwidth gap, and

b) the filtered mean power centred on a frequency channel adjacent to one of the respective sub-block edges or Base Station RF Bandwidth edges.

The assumed filter for the adjacent channel frequency is defined in Table 2.5-5/6. Filters on the assigned channels are defined in Table 2.5-7.

For Wide Area category A BS, either the CACLR limits in Table 2.5-5/6 or the absolute limit
of –13dBm/MHz shall apply, whichever is less stringent.

For Wide Area category B BS, either the CACLR limits in Table 2.5-5/6 or the absolute limit
of –15dBm/MHz shall apply, whichever is less stringent.

For Medium Range BS, either the CACLR limits in Table 6.6.2-5/6 or the absolute limit
of –25 dBm/MHz shall apply, whichever is less stringent.

For Local Area BS, either the CACLR limits in Table 6.6.2-5/6 or the absolute limit of –32 dBm/MHz shall apply, whichever is less stringent.

The ACLR requirements in Tables 2.5-5 and 2.5-6 apply to BS that supports E-UTRA, in any operating band, except for Band 46. The ACLR requirements for Band 46 are in Table 2.5-6a.

For operation in non-contiguous spectrum or multiple bands, the CACLR for E-UTRA carriers located on either side of the sub-block gap or Inter RF Bandwidth gap shall be higher than the value specified in Table 2.5-5 or 2.5-6.

TABLE 2.5-5

Base station CACLR in non-contiguous paired spectrum or multiple bands

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sub-block or Inter RF Bandwidth gap size (*Wgap*) where the limit applies | BS adjacent channel centre frequency offset below or above the sub-block edge or the Base Station RF Bandwidth edge (inside the gap) | Assumed adjacent channel carrier | Filter on the adjacent channel frequency and corresponding filter bandwidth | CACLR limit |
| 5 MHz ≤ *Wgap* < 15 MHz | 2.5 MHz | 3.84 Mcps UTRA | RRC (3.84 Mcps) | 44.2 dB |
| 10 MHz < *Wgap* < 20 MHz | 7.5 MHz | 3.84 Mcps UTRA | RRC (3.84 Mcps) | 44.2 dB |
| NOTE – The RRC filter shall be equivalent to the transmit pulse shape filter defined in 3GPP TS 25.104, with a chip rate as defined in this table. |

TABLE 2.5-6

Base station CACLR in non-contiguous unpaired spectrum or multiple bands

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sub-block or Inter RF Bandwidth gap size (*Wgap*) where the limit applies | BS adjacent channel centre frequency offset below or above the sub-block edge or the Base Station RF Bandwidth edge (inside the gap) | Assumed adjacent channel carrier (informative) | Filter on the adjacent channel frequency and corresponding filter bandwidth | CACLR limit |
| 5 MHz ≤ *Wgap* < 15 MHz | 2.5 MHz | 5 MHz E-UTRA carrier | Square (*BWConfig*) | 44.2 dB |
| 10 MHz < *Wgap* < 20 MHz | 7.5 MHz | 5 MHz E-UTRA carrier  | Square (*BWConfig*) | 44.2 dB |

For operation in non-contiguous spectrum in Band 46, the CACLR for E-UTRA carriers located on either side of the sub-block gap shall be higher than the value specified in Table 2.5-6a.

TABLE 2.5-6a

Base station CACLR in non-contiguous spectrum in Band 46

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sub-block gap size (Wgap) where the limit applies | BS adjacent channel centre frequency offset below or above the sub-block edge (inside the gap) | Assumed adjacent channel carrier (informative) | Filter on the adjacent channel frequency and corresponding filter bandwidth | CACLR limit |
| 20 MHz ≤ Wgap < 60 MHz | 10 MHz | 20MHz E-UTRA carrier | Square (BWConfig) | 34.2 dB |
| 40 MHz < Wgap < 80 MHz | 30 MHz | 20MHz E-UTRA carrier  | Square (BWConfig) | 34.2 dB |

TABLE 2.5-7

Filter parameters for the assigned channel

|  |  |
| --- | --- |
| RAT of the carrier adjacent to the sub-block or Inter RF Bandwidth gap  | Filter on the assigned channel frequency and corresponding filter bandwidth |
| E-UTRA | E-UTRA of same BW |

## 2.6 Transmitter 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 OoB emissions. This is measured at the base station antenna connector.

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). For BS capable of multi-band operation where multiple bands are mapped on the same antenna connector, this exclusion applies for each supported operating band. For BS capable of multi-band operation where multiple bands are mapped on separate antenna connectors, the single-band requirements apply and the multi-band exclusions and provisions are not applicable.

Exceptions are the requirements in Table 2.6.4-2, Table 2.6.4-3, Table 2.6.4-4, and specifically stated exceptions in Table 2.6.4-1 that apply also closer than 10 MHz from the downlink operating band. For some operating bands the upper frequency limit is higher than 12.75 GHz.

The requirements shall apply to BS that supports E-UTRA or E-UTRA with NB-IoT in-band/guard band operation or NB-IoT standalone operation.

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.

### 2.6.1 Spurious emissions (category A)

The power of any spurious emission shall not exceed the limits in Table 2.6.1-1.

TABLE 2.6.1-1

BS spurious emission limits, category A

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency range | Maximum level | Measurement bandwidth | Note |
| 9 kHz – 150 kHz | –13 dBm | 1 kHz  | Note 1 |
| 150 kHz – 30 MHz | 10 kHz  | Note 1 |
| 30 MHz – 1 GHz | 100 kHz | Note 1 |
| 1 GHz – 12.75 GHz | 1 MHz | Note 2 |
| 12.75 GHz – 5th harmonic of the upper frequency edge of the DL operating band in GHz | 1 MHz | Notes 2, 3 |
| 12.75 GHz – 26 GHz | 1 MHz | Notes 2, 4 |
| NOTE 1 – Bandwidth as in Recommendation ITU-R SM.329, § 4.1.NOTE 2 – Bandwidth as in Recommendation ITU-R SM.329, § 4.1. Upper frequency as in Recommendation ITU-R SM.329, § 2.5 Table 1.NOTE 3 – Applies only for Bands 22, 42, 43, 48 and 49.NOTE 4 – Applies only for Band 46. |

### 2.6.2 Spurious emissions (category B)

The power of any spurious emission shall not exceed the limits in Table 2.6.2-1.

TABLE 2.6.2-1

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 |
| 12.75 GHz ↔ 5th harmonic of the upper frequency edge of the DL operating band in GHz | –30 dBm | 1 MHz | Notes 2, 3 |
| 12.75 GHz ↔ 26 GHz | –30 dBm | 1 MHz | Notes 2, 4 |
| NOTE 1 – Bandwidth as in Recommendation ITU-R SM.329, § 4.1.NOTE 2 – Bandwidth as in Recommendation ITU-R SM.329, § 4.1. Upper frequency as in Recommendation ITU-R SM.329, § 2.5 Table 1.NOTE 3 – Applies only for Bands 22, 42, 43, 48 and 49.NOTE 4 – Applies only for Band 46. |

### 2.6.3 Protection of the BS receiver of own or different BS

This requirement shall be applied for E-UTRA FDD operation in paired operating bands in order to prevent the receivers of the BSs being desensitized by emissions from a BS transmitter. It is measured at the transmit antenna port for any type of BS which has common or separate Tx/Rx antenna ports.

The power of any spurious emission shall not exceed the limits in Table 2.6.3-1.

TABLE 2.6.3-1

BS spurious emissions limits for protection of the BS receiver

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Frequency range | Maximum level | Measurement bandwidth | Note |
| Wide Area BS | FUL\_low – FUL\_high | –96 dBm | 100 kHz | – |
| Medium Range BS | FUL\_low – FUL\_high | –91 dBm | 100 kHz | – |
| Local Area BS | FUL\_low – FUL\_high | –88 dBm | 100 kHz | – |
| Home BS | FUL\_low – FUL\_high | –88 dBm | 100 kHz | – |

NOTE 1 – For E-UTRA Band 28 BS operating in regions where Band 28 is only partially allocated for E-UTRA operations, this requirement only applies in the UL frequency range of the partial allocation.

### 2.6.4 Co-existence with other systems in the same geographical area

These requirements may be applied for the protection of system operating in frequency ranges other than the E-UTRA or NB-IoT BS operating band. The limits may apply as an optional protection of such systems that are deployed in the same geographical area as the E-UTRA BS, or they may be set by local or regional regulation as a mandatory requirement for an E-UTRA operating band. It is in some cases not stated in the present document whether a requirement is mandatory or under what exact circumstances that a limit applies, since this is set by local or regional regulation. An overview of regional requirements in the present document is given in § 4.3.

Some requirements may apply for the protection of specific equipment (UE, MS and/or BS) or equipment operating in specific systems (GSM, CDMA, UTRA, E-UTRA, NR, etc.) as listed below. The power of any spurious emission shall not exceed the limits of Table 2.6.4-1 for a BS where requirements for co-existence with the system listed in the first column apply. For BS capable of multi-band operation the exclusions and conditions in the Note column of Table 2.6.4-1 apply for each supported operating band. For BS capable of multi-band operation where multiple bands are mapped on separate antenna connectors, the exclusions and conditions in the Note column of Table 2.6.4-1 apply for the operating band supported at that antenna connector.

Table 2.6.4-1

BS spurious emissions limits for E-UTRA BS for co-existence with
systems operating in other frequency bands

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| System type for E‑UTRA to co-exist with | Frequency range for co-existence requirement | Maximum level | Measurement bandwidth | Note |
| GSM900 | 921‑960 MHz | –57 dBm | 100 kHz | This requirement does not apply to E-UTRA BS operating in Band 8. |
| 876-915 MHz | –61 dBm | 100 kHz | For the frequency range 880-915 MHz, this requirement does not apply to E-UTRA BS operating in Band 8. |
| DCS1800 | 1 805‑1 880 MHz | –47 dBm | 100 kHz | This requirement does not apply to E-UTRA BS operating in Band 3.  |
| 1 710-1 785 MHz | –61 dBm | 100 kHz | This requirement does not apply to E-UTRA BS operating in Band 3. |
| PCS1900 | 1 930‑1 990 MHz | –47 dBm | 100 kHz | This requirement does not apply to E-UTRA BS operating in frequency Band 2, Band 25, Band 36 or Band 70.  |
| 1 850‑1 910 MHz | –61 dBm | 100 kHz | This requirement does not apply to E-UTRA BS operating in frequency Band 2 or 25. This requirement does not apply to E-UTRA BS operating in frequency Band 35. |
| GSM850 or CDMA850 | 869-894 MHz | –57 dBm | 100 kHz | This requirement does not apply to E-UTRA BS operating in frequency Band 5 or 26. This requirement applies to E-UTRA BS operating in Band 27 for the frequency range 879-894 MHz. |
| 824‑849 MHz | –61 dBm | 100 kHz | This requirement does not apply to E-UTRA BS operating in frequency Band 5 or 26. For E‑UTRA BS operating in Band 27, it applies 3 MHz below the Band 27 downlink operating band. |
| UTRA FDD Band I or E-UTRA Band 1 or NR band n1 | 2 110-2 170 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 1 or 65. |
| 1 920-1 980 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 1 or 65. |
| UTRA FDD Band II or E-UTRA Band 2 or NR band n2 | 1 930-1 990 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 2, 25 or 70.  |
| 1 850-1 910 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 2 or 25. |

Table 2.6.4-1 (*continued*)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| System type for E‑UTRA to co-exist with | Frequency range for co-existence requirement | Maximum level | Measurement bandwidth | Note |
| UTRA FDD Band III or E-UTRA Band 3 or NR band n3 | 1 805-1 880 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 3. |
| 1 710-1 785 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 3 or 9. For E-UTRA BS operating in Band 9, it applies for 1710 MHz to 1749.9 MHz and 1784.9 MHz to 1785 MHz. |
| UTRA FDD Band IV or E-UTRA Band 4 | 2 110-2 155 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 4, 10 or 66. |
| 1 710-1 755 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 4, 10 or 66. |
| UTRA FDD Band V or E-UTRA Band 5 or NR band n5 | 869-894 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 5 or 26. This requirement applies to E-UTRA BS operating in Band 27 for the frequency range 879-894 MHz. |
| 824-849 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 5 or 26. For E‑UTRA BS operating in Band 27, it applies 3 MHz below the Band 27 downlink operating band. |
| UTRA FDD Band VI, XIX or E-UTRA Band 6, 18, 19 | 860-890 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 6, 18, 19.  |
| 815-830 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 18. |
| 830-845 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 6, 19. |
| UTRA FDD Band VII or E-UTRA Band 7 or NR band n7 | 2 620-2 690 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 7. |
| 2 500-2 570 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 7,. |
| UTRA FDD Band VIII or E-UTRA Band 8 or NR band n8 | 925-960 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 8. |
| 880-915 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 8 |
| UTRA FDD Band IX or E-UTRA Band 9 | 1 844.9-1 879.9 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 3 or 9. |
| 1 749.9-1 784.9 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 3 or 9. |
| UTRA FDD Band X or E-UTRA Band 10 | 2 110-2 170 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 4, 10 or 66. |
| 1 710-1 770 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 10 or 66. For E-UTRA BS operating in Band 4, it applies for 1755 MHz to 1770 MHz. |

Table 2.6.4-1 (*continued*)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| System type for E‑UTRA to co-exist with | Frequency range for co-existence requirement | Maximum level | Measurement bandwidth | Note |
| UTRA FDD Band XI or XXIE-UTRA Band 11 or 21 | 1 475.9-1 510.9 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 11, 21, 32, 50, 74 or 75. |
| 1 427.9-1 447.9 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 11 or 74. This requirement does not apply to BS operating in band 32, , 50, 51, 75 or 76. |
| 1 447.9-1 462.9 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 21 or 74. This requirement does not apply to BS operating in band 32, 50 or 75. |
| UTRA FDD Band XII or E-UTRA Band 12 or NR band n12 | 729-746 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 12 or 85. |
| 699-716 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 12 or 85. For E‑UTRA BS operating in Band 29, it applies 1 MHz below the Band 29 downlink operating band (Note 6) |
| UTRA FDD Band XIII or E-UTRA Band 13 | 746-756 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 13. |
| 777-787 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 13. |
| UTRA FDD Band XIV or E-UTRA Band 14 or NR Band n14 | 758-768 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 14. |
| 788-798 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 14 |
| E-UTRA Band 17 | 734-746 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 17. |
| 704-716 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 17. For E‑UTRA BS operating in Band 29, it applies 1 MHz below the Band 29 downlink operating band (Note 6) |
| UTRA FDD Band XX orE-UTRA Band 20 or NR band n20 | 791-821 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 20. |
| 832-862 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 20 or 28. |
| UTRA FDD Band XXII or E-UTRA Band 22 | 3 510-3 590 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 22, 42, 48 or 49. |
| 3 410-3 490 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 22. This requirement does not apply to E-UTRA BS operating in Band 42. |

Table 2.6.4-1 (*continued*)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| System type for E‑UTRA to co-exist with | Frequency range for co-existence requirement | Maximum level | Measurement bandwidth | Note |
|  |  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |
| E-UTRA Band 24 | 1 525-1 559 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 24. |
| 1 626.5-1 660.5 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 24. |
| UTRA FDD Band XXV orE-UTRA Band 25 or NR band n25 | 1 930-1 995 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 2, 25 or 70. |
| 1 850-1 915 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 25. For E-UTRA BS operating in Band 2, it applies for 1910 MHz to 1915 MHz. |
| UTRA FDD Band XXVI or E-UTRA Band 26 or NR Band n26 | 859-894 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 5 or 26. This requirement applies to E-UTRA BS operating in Band 27 for the frequency range 879-894 MHz. |
| 814-849 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 26. For E-UTRA BS operating in Band 5, it applies for 814 MHz to 824 MHz. For E‑UTRA BS operating in Band 27, it applies 3 MHz below the Band 27 downlink operating band. |
| E-UTRA Band 27 | 852-869 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 5, 26 or 27. |
| 807-824 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 27. For E-UTRA BS operating in Band 26, it applies for 807 MHz to 814 MHz. This requirement also applies to E-UTRA BS operating in Band 28, starting 4 MHz above the Band 28 downlink operating band (Note 5). |

Table 2.6.4-1 (*continued*)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| System type for E‑UTRA to co-exist with | Frequency range for co-existence requirement | Maximum level | Measurement bandwidth | Note |
| E-UTRA Band 28 or NR band n28 | 758-803 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 20, 28, 44, 67 or 68. |
| 703-748 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 28. This requirement does not apply to E-UTRA BS operating in Band 44.For E-UTRA BS operating in Band 67, it applies for 703 MHz to 736 MHz. For E-UTRA BS operating in Band 68, it applies for 728 MHz to 733 MHz. |
| E-UTRA Band 29 or NR Band n29 | 717-728 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 29 or 85. |
| E-UTRA Band 30 or NR Band n30 | 2 350-2 360 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 30 or 40. |
| 2 305-2 315 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 30. This requirement does not apply to E-UTRA BS operating in Band 40. |
| E-UTRA Band 31 | 462.5-467.5 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 31, 72 or 73. |
| 452.5-457.5 MHz | –49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 31, 72 or 73. |
| UTRA FDD band XXXII or E-UTRA band 32 | 1 452-1 496 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 11, 21, 32, 50, 74 or 75. |
| UTRA TDD Band a) or E‑UTRA Band 33 | 1 900-1 920 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 33.  |
| UTRA TDD Band a) or E-UTRA Band 34 or NR band n34 | 2 010-2 025 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 34. |
| UTRA TDD Band b) orE-UTRA Band 35 | 1 850-1 910 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 35. |
| UTRA TDD Band b) or E‑UTRA Band 36 | 1 930-1 990 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 2 and 36. |
| UTRA TDD Band c) or E‑UTRA Band 37 | 1 910-1 930 MHz | –52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 37. This unpaired band is defined in Recommendation ITU-R M.1036, but is pending any future deployment. |

Table 2.6.4-1 (*end*)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| System type for E‑UTRA to co-exist with | Frequency range for co-existence requirement | Maximum level | Measurement bandwidth | Note |
| UTRA TDD Band d) or E‑UTRA Band 38 or NR band n38 | 2 570-2 620 MHz | –52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 38 or 69. |
| UTRA TDD Band f) or E‑UTRA Band 39 or NR band n39 | 1 880-1 920 MHz | –52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 39. |
| UTRA TDD Band e) or E‑UTRA Band 40 or NR band n40 | 2 300-2 400 MHz | –52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 30 or 40. |
| E-UTRA Band 41 or NR band n41 | 2 496-2 690 MHz | –52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 41 or 53. |
| E-UTRA Band 42 | 3 400-3 600 MHz | –52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48, 49 or 52. |
| E-UTRA Band 43 | 3 600-3 800 MHz | –52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 42, 43, 48 or 49. |
| E-UTRA Band 44 | 703-803 MHz | –52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 28 or 44. |
| E-UTRA Band 45 | 1447-1467 MHz | -52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 45. |
| E-UTRA Band 46 or NR Band n46 | 5150-5925 MHz | -52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 46. |
| E-UTRA Band 47 | 5855-5925 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 48 or NR band n48 | 3550-3700 MHz | -52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48 or 49. |
| E-UTRA Band 49 | 3550-3700 MHz | -52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48 or 49. |
| E-UTRA Band 50 or NR band n50 | 1432-1517 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 11, 21, 32, 45, 50, 51, 74, 75 or 76. |
| E-UTRA Band 51 or NR band n51 | 1427-1432 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 50, 51, 75 or 76. |
| E-UTRA Band 52 | 3300-3400 MHz | -52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 42 or 52. |
| E-UTRA Band 53 or NR Band n53 | 2483.5-2495 MHz | -52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 41 or 53. |
| E-UTRA Band 65 or NR band n65 | 2110-2200 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 1 or 65, |
| 1920-2010 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 65.For E-UTRA BS operating in Band 1, it applies for 1980 MHz to 2010 MHz. |
| E-UTRA Band 66 or NR band n66 | 2110-2200 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 4, 10, 23 or 66. |
| 1710-1780 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 66. For E-UTRA BS operating in Band 4, it applies for 1755 MHz to 1780 MHz. For E-UTRA BS operating in Band 10, it applies for 1770 MHz to 1780 MHz. |
| E-UTRA Band 67 | 738-758 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 28 or 67. |
| E-UTRA Band 68 | 753-783 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 28, or 68. |
|  | 698-728 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 68. For E-UTRA BS operating in Band 28, it applies between 698 MHz and 703 MHz. |
| E-UTRA Band 69 | 2570-2620 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 38 or 69. |
| E-UTRA Band 70 or NR band n70 | 1995-2020 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 2, 25 or 70 |
| 1695-1710 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 70, since it is already covered by the requirement in clause 6.6.4.5.3. |
| E-UTRA Band 71 or NR band n71 | 617-652 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 71. |
| 663-698 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 71. |
| E-UTRA Band 72 | 461-466 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 31, 72 or 73. |
| 451-456 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 72. This requirement does not apply to E-UTRA BS operating in band 73. |
| E-UTRA Band 73 | 460-465 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 31, 72 or 73. |
| 450-455 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 73. |
| E-UTRA Band 74 or NR band n74 | 1475-1518 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 11, 21, 32, 50, 74 or 75. |
| 1427-1470 MHz | -49 dBm | 1MHz | This requirement does not apply to E-UTRA BS operating in Band 74. This requirement does not apply to BS operating in band 32, 45, 50, 51, 75 or 76. |
| E-UTRA Band 75 or NR band n75 | 1432-1517 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 11, 21, 32, 45, 50, 51, 74, 75 or 76. |
| E-UTRA Band 76 or NR band n76 | 1427-1432 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 50, 51, 75 or 76. |
| NR band n77 | 3300-4200 MHz | -52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48, 49 or 52. |
| NRband n78 | 3300-3800 MHz | -52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48, 49 or 52. |
| NR Band n79 | 4.4-5.0 GHz | -52 dBm | 1 MHz |  |
| NR Band n80 | 1710-1785 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 3.For E-UTRA BS operating in band 9, it applies for 1710 MHz to 1749.9 MHz and 1784.9 MHz to 1785 MHz. |
| NR Band n81 | 880-915 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 6.6.4.2. |
| NR Band n82 | 832-862 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 20, since it is already covered by the requirement in subclause 6.6.4.2. |
| NR Band n83 | 703-748 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 28 or 44.For E-UTRA BS operating in Band 67, it applies for 703 MHz to 736 MHz. For E-UTRA BS operating in Band 68, it applies for 728 MHz to 733 MHz. |
| NR Band n84 | 1920-1980 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 1 or 65. |
| E-UTRA Band 85 | 728-746 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 12, 29 or 85.  |
| 698-716 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 85. For E‑UTRA BS operating in Band 29, it applies 1 MHz below the Band 29 downlink operating band (Note 6). |
| NR Band n86 | 1710-1780 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 66. For E-UTRA BS operating in Band 4, it applies for 1755 MHz to 1780 MHz. For E-UTRA BS operating in Band 10, it applies for 1770 MHz to 1780 MHz. |
| E-UTRA Band 87 | 420-425 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 87 or 88. |
| 410-415 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 87. |
| E-UTRA Band 88 | 422-427 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 87 or 88. |
| 412-417 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 87 or 88. |
| NR Band n89 | 824-849 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 5 or 26. For E‑UTRA BS operating in Band 27, it applies 3 MHz below the Band 27 downlink operating band. |
| NR Band n91 | 1427-1432 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 50, 51, 75 or 76. |
| 832-862 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 20. |
| NR Band n92 | 1432-1517 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 11, 21, 32, 45, 50, 51, 74, 75 or 76. |
| 832-862 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 20. |
| NR Band n93 | 1427-1432 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 50, 51, 75 or 76. |
| 880-915 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 8. |
| NR Band n94 | 1432-1517 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 11, 21, 32, 45, 50, 51, 74, 75 or 76. |
| 880-915 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 8. |
| NR Band n95 | 2010-2025 MHz | -52 dBm | 1 MHz |  |
| NR Band n96 | 5925-7125 MHz | -52 dBm | 1 MHz | This is not applicable to E-UTRA BS operating in Band 46. |

NOTE 1 – As defined in the scope for spurious emissions in this clause, except for the cases where the noted requirements apply to a BS operating in Band 25, Band 27, Band 28 or Band 29, the co‑existence requirements in Table 2.6.4-1 do not apply for the 10 MHz frequency range immediately outside the downlink operating band (see Table 1-1). Emission limits for this excluded frequency range may be covered by local or regional requirements.

NOTE 2 – Table 2.6.4-1 assumes that two operating bands, where the frequency ranges in Table 1-1 would be overlapping, are not deployed in the same geographical area. For such a case of operation with overlapping frequency arrangements in the same geographical area, special co‑existence requirements may apply that are not covered by the 3GPP specifications.

NOTE 3 – TDD base stations deployed in the same geographical area, that are synchronized and use the same or adjacent operating bands can transmit without additional co-existence requirements. For unsynchronized base stations (except for Band 46), special co-existence requirements may apply that are not covered by the 3GPP specifications.

NOTE 4 – Void.

NOTE 5 – For E-UTRA Band 28 BS, specific solutions may be required to fulfil the spurious emissions limits for E-UTRA BS for co-existence with E-UTRA Band 27 UL operating band.

NOTE 6 – For E-UTRA Band 29 BS, specific solutions may be required to fulfil the spurious emissions limits for E-UTRA BS for co-existence with UTRA Band XII or E-UTRA Band 12 UL operating band, E-UTRA Band 17 UL operating band or E-UTRA Band 85 UL operating band.

The power of any spurious emission shall not exceed the limits of Table 2.6.4-1a for a home BS where requirements for co-existence with a home BS type listed in the first column apply.

Table 2.6.4-1a

Home BS spurious emissions limits for co-existence with home BS
 operating in other frequency bands

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of coexistence BS | Frequency range for co-location requirement | Maximum level | Measurement bandwidth | Note |
| UTRA FDD Band I or E‑UTRA Band 1 | 1 920-1 980 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 1 or 65. |
| UTRA FDD Band II or E-UTRA Band 2 | 1 850-1 910 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 2 or 25. |
| UTRA FDD Band III or E-UTRA Band 3 | 1 710-1 785 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 3. For home BS operating in Band 9, it applies for 1 710 MHz to 1 749.9 MHz and 1 784.9 MHz to 1 785 MHz. |
| UTRA FDD Band IV or E-UTRA Band 4 | 1 710-1 755 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 4, 10 or 66.  |
| UTRA FDD Band V or E-UTRA Band 5 | 824-849 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 5 or 26. |
| UTRA FDD Band VI, XIX or E-UTRA Band 6, 18, 19 | 815-830 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 18. |
|  | 830-845 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 6, 19. |
| UTRA FDD Band VII or E-UTRA Band 7 | 2 500-2 570 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 7 |
| UTRA FDD Band VIII or E-UTRA Band 8 | 880-915 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 8. |
| UTRA FDD Band IX or E-UTRA Band 9 | 1 749.9-1 784.9 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 3 or 9 |
| UTRA FDD Band X or E-UTRA Band 10 | 1 710-1 770 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 10 or 66. For home BS operating in Band 4, it applies for 1755 MHz to 1770 MHz. |
| UTRA FDD Band XI, XXI or E-UTRA Band 11, 21 | 1 427.9-1 447.9 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 11 or 74. This requirement does not apply to Home BS operating in band 32, 50, 51, 75 or 76. |
|  | 1 447.9-1 462.9 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 21 or 74. This requirement does not apply to Home BS operating in band 32,50 or 75. |

Table 2.6.4-1a (*continued*)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of coexistence BS | Frequency range for co-location requirement | Maximum level | Measurement bandwidth | Note |
| UTRA FDD Band XII or E-UTRA Band 12 | 699-716 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 12 or 85. For home BS operating in Band 29, it applies 1 MHz below the Band 29 downlink operating band (Note 5). |
| UTRA FDD Band XIII or E-UTRA Band 13 | 777-787 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 13. |
| UTRA FDD Band XIV or E-UTRA Band 14 | 788-798 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 14. |
| E-UTRA Band 17 | 704-716 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 17. For home BS operating in Band 29, it applies 1 MHz below the Band 29 downlink operating band (Note 5). |
| UTRA FDD Band XX or E-UTRA Band 20 | 832-862 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 20. |
| UTRA FDD Band XXII or E-UTRA Band 22 | 3 410-3 490 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 22. This requirement does not apply to home BS operating in Band 42. |
|  |  |  |  |  |
| E-UTRA Band 24 | 1 626.5-1 660.5 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 24. |
| UTRA FDD Band XXV or E-UTRA Band 25 | 1 850-1 915 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 25. |
| UTRA FDD Band XXVI or E-UTRA Band 26 | 814-849 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 26. For home BS operating in Band 5, it applies for 814 MHz to 824 MHz. |
| E-UTRA Band 27 | 807-824 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 27. For home BS operating in Band 26, it applies for 807 MHz to 814 MHz. This requirement also applies to E‑UTRA BS operating in Band 28, starting 4 MHz above the Band 28 downlink operating band (Note 4). |
| E-UTRA Band 28 | 703-748 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 28. This requirement does not apply to home BS operating in Band 44. For E-UTRA BS operating in Band 67, it applies for 703 MHz to 736 MHz. For E-UTRA BS operating in Band 68, it applies for 728 MHz to 733 MHz. |
| E-UTRA Band 30 | 2 305-2 315 MHz | –71 dBm | 100 kHz | This requirement does not apply to Home BS operating in band 30. This requirement does not apply to Home BS operating in Band 40. |
| UTRA TDD Band a) or E-UTRA Band 33 | 1 900-1 920 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 33. |

Table 2.6.4-1a (*end*)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of coexistence BS | Frequency range for co-location requirement | Maximum level | Measurement bandwidth | Note |
| UTRA TDD Band a) or E-UTRA Band 34 | 2 010-2 025 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 34. |
| UTRA TDD Band b) or E-UTRA Band 35 | 1 850-1 910 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 35. |
| UTRA TDD Band b) or E-UTRA Band 36 | 1 930-1 990 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 2 and 36. |
| UTRA TDD Band c) or E-UTRA Band 37 | 1 910-1 930 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 37. This unpaired band is defined in Recommendation ITU-R M.1036, but is pending any future deployment. |
| UTRA TDD Band d) or E-UTRA Band 38 | 2 570-2 620 MHz | –71 dBm | 100 kHz | This requirement does not apply to home BS operating in Band 38. |
| UTRA TDD Band f) or E-UTRA Band 39 | 1 880-1 920MHz | –71 dBm | 100 kHz | This is not applicable to home BS operating in Band 39. |
| UTRA TDD Band e) or E-UTRA Band 40 | 2 300-2 400MHz | –71 dBm | 100 kHz | This is not applicable to home BS operating in Band 40. |
| E-UTRA Band 41 | 2 496-2 690 MHz | –71 dBm | 100 kHz | This is not applicable to home BS operating in Band 41. |
| E-UTRA Band 42 | 3 400-3 600 MHz | –71 dBm | 100 kHz | This is not applicable to home BS operating in Band 22, 42, 43, 48 or 52. |
| E-UTRA Band 43 | 3 600-3 800 MHz | –71 dBm | 100 kHz | This is not applicable to home BS operating in Band 42, 43 or 48. |
| E-UTRA Band 44 | 703-803 MHz | –71 dBm | 100 kHz | This is not applicable to home BS operating in Band 28 or 44. |
| E-UTRA Band 48 | 3550-3700 MHz | -71 dBm | 100 kHz | This is not applicable to Home BS operating in Band 22, 42, 43 or 48. |
| E-UTRA Band 50 | 1432-1517 MHz | -71 dBm | 100 kHz | This requirement does not apply to Home BS operating in Band 11, 21, 32, 50, 51, 74, 75 or 76. |
| E-UTRA Band 51 | 1427-1432 MHz | -71 dBm | 100 kHz | This requirement does not apply to Home BS operating in Band 50, 51, 75 or 76. |
| E-UTRA Band 52 | 3300-3400 MHz | -71 dBm | 100 kHz | This is not applicable to Home BS operating in Band 42 or 52. |
| E-UTRA Band 65 | 1920-2010 MHz | -71 dBm | 100 kHz | This requirement does not apply to Home BS operating in band 65.For Home BS operating in Band 1, it applies for 1980 MHz to 2010 MHz. |
| E-UTRA Band 66 | 1710 - 1780 MHz | -71 dBm | 100 kHz | This requirement does not apply to Home BS operating in band 66. For Home BS operating in Band 4, it applies for 1755 MHz to 1780 MHz. For Home BS operating in Band 10, it applies for 1770 MHz to 1780 MHz. |
| E-UTRA Band 68 | 698-728 MHz | -71 dBm | 100 kHz | This requirement does not apply to Home BS operating in band 68. For Home BS operating in Band 28, it applies between 698 MHz and 703 MHz.  |
| E-UTRA Band 70 | 1695-1710 MHz | -71 dBm | 100 kHz | This requirement does not apply to Home BS operating in band 70.  |
| E-UTRA Band 71 | 663-698 MHz | -71 dBm | 100 kHz | This requirement does not apply to Home BS operating in band 71. |
| E-UTRA Band 74 | 1427-1470 MHz | -71 dBm | 100 kHz | This requirement does not apply to Home BS operating in Band 74. This requirement does not apply to BS operating in band 32, 50, 51, 75 or 76. |
| E-UTRA Band 85 | 698-716 MHz | -71 dBm | 100 kHz | This requirement does not apply to Home BS operating in band 85. For Home BS operating in Band 29, it applies 1 MHz below the Band 29 downlink operating band (Note 5).  |

NOTE 1 – As defined in the scope for spurious emissions in this clause, except for the cases where the noted requirements apply to a BS operating in Band 27, Band 28 or Band 29, the coexistence requirements in Table 2.6.4-1a do not apply for the 10 MHz frequency range immediately outside the home BS transmit frequency range of a downlink operating band (see Table 1-1). Emission limits for this excluded frequency range may be covered by local or regional requirements.

NOTE 2 – Table 2.6.4-1a assumes that two operating bands, where the frequency ranges in Table 1-1 would be overlapping, are not deployed in the same geographical area. For such a case of operation with overlapping frequency arrangements in the same geographical area, special co-existence requirements may apply that are not covered by these specifications.

NOTE 3 – TDD base stations deployed in the same geographical area, that are synchronized and use the same or adjacent operating bands can transmit without additional co-existence requirements. For unsynchronized base stations, special co-existence requirements may apply that are not covered by these specifications.

NOTE 4 – For E-UTRA Band 28 BS, specific solutions may be required to fulfil the spurious emissions limits for E-UTRA BS for co-existence with E-UTRA Band 27 UL operating band.

NOTE 5 – For E-UTRA Band 29 BS, specific solutions may be required to fulfil the spurious emissions limits for E-UTRA BS for co-existence with UTRA Band XII or E-UTRA Band 12 UL operating band, E-UTRA Band 17 UL operating band or E-UTRA Band 85 UL operating band.

Additional co-existence requirements in Table 2.6.4-1b may apply for some regions.

Table 2.6.4-1b

BS spurious emissions limits for E-UTRA BS for co-existence with systems operating in Band 46

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| System type for E-UTRA to co-exist with | Frequency range for co-existence requirement | Maximum Level | Measurement Bandwidth | Note |
| E-UTRA Band 46a | 5150-5250 MHz | -40 dBm | 1 MHz | This is only applicable to E-UTRA BS operating in Band 46c or 46d. |
| E-UTRA Band 46b | 5250-5350 MHz | -40 dBm | 1 MHz | This is only applicable to E-UTRA BS operating in Band 46c or 46d. |
| E-UTRA Band 46c | 5470-5725 MHz | -40 dBm | 1 MHz | This is only applicable to E-UTRA BS operating in Band 46a or 46b. |
| E-UTRA Band 46d | 5725-5925 MHz | -40 dBm | 1 MHz | This is only applicable to E-UTRA BS operating in Band 46a or 46b. |

NOTE 1 – This requirement may apply to E-UTRA BS operating in certain regions.

The following requirement may be applied for the protection of personal handyphone system (PHS). This requirement is also applicable at specified frequencies falling between 10 MHz below the lowest BS transmitter frequency of the downlink operating band and 10 MHz above the highest BS transmitter frequency of the downlink operating band (see Table 1-1).

The power of any spurious emission shall not exceed:

Table 2.6.4-2

E-UTRA BS spurious emissions limits for BS for co-existence with PHS

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency range | Maximum level | Measurement bandwidth | Note |
| 1 884.5‑1 915.7 MHz | –41 dBm | 300 kHz | Applicable when co-existence with PHS system operating in 1 884.5-1 915.7 MHz  |

The following requirement shall be applied to BS operating in Bands 13 and 14 to ensure that appropriate interference protection is provided to 700 MHz public safety operations. This requirement is also applicable at the frequency range from 10 MHz below the lowest frequency of the BS transmitter operating band up to 10 MHz above the highest frequency of the BS transmitter operating band. The power of any spurious emission shall not exceed:

Table 2.6.4-3

BS spurious emissions limits for protection of 700 MHz public safety operations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operating band | Band | Maximum level | Measurement bandwidth | Note |
| 13 | 763-775 MHz | –46 dBm | 6.25 kHz | – |
| 13 | 793-805 MHz | –46 dBm | 6.25 kHz | – |
| 14 | 769-775 MHz | –46 dBm | 6.25 kHz | – |
| 14 | 799-805 MHz | –46 dBm | 6.25 kHz | – |

The following requirement shall be applied to BS operating in Band 26 to ensure that appropriate interference protection is provided to 800 MHz public safety operations. This requirement is also applicable at the frequency range from 10 MHz below the lowest frequency of the BS downlink operating band up to 10 MHz above the highest frequency of the BS downlink operating band.

The power of any spurious emission shall not exceed:

Table 2.6.4-5

BS spurious emissions limits for protection of 800 MHz public safety operations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operating band | Frequency range | Maximum level | Measurement bandwidth | Note |
| 26 | 851-859 MHz | –13 dBm | 100 kHz | Applicable for offsets > 37.5kHz from the channel edge |

The following requirement may apply to E-UTRA BS operating in Band 41 in certain regions. This requirement is also applicable at the frequency range from 10 MHz below the lowest frequency of the BS downlink operating band up to 10 MHz above the highest frequency of the BS downlink operating band.

The power of any spurious emission shall not exceed:

Table 2.6.4-6

Additional E-UTRA BS spurious emissions limits for Band 41

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency range | Maximum level | Measurement bandwidth | Note |
| 2 505 MHz–2 535 MHz | –42dBm | 1 MHz | – |
|  |  |  |  |
| NOTE – This requirement applies for 10 or 20 MHz E-UTRA carriers allocated within 2 545-2 645 MHz. |

The following requirement may apply to E-UTRA BS operating in Band 30 in certain regions. This requirement is also applicable at the frequency range from 10 MHz below the lowest frequency of the BS downlink operating band up to 10 MHz above the highest frequency of the BS downlink operating band.

The power of any spurious emission shall not exceed:

TABLE 2.6.4-7

Additional E-UTRA BS spurious emissions limits for Band 30

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency range | Maximum level | Measurement bandwidth | Note |
| 2 200 MHz-2 345 MHz | –45 dBm | 1 MHz |  |
| 2 362.5 MHz-2 365 MHz | –25 dBm | 1 MHz |  |
| 2 365 MHz-2 367.5 MHz | –40 dBm | 1 MHz |  |
| 2 367.5 MHz-2 370 MHz | –42 dBm | 1 MHz |  |
| 2 370 MHz-2 395 MHz | –45 dBm | 1 MHz |  |

In addition for Band 46 operation, the BS may have to comply with the applicable spurious emission limits established regionally, when deployed in regions where those limits apply and under the conditions declared by the manufacturer. The regional requirements may be in the form of conducted power, power spectral density, EIRP and other types of limits. In case of regulatory limits based on EIRP, assessment of the EIRP level is described in Annex H of TS 36.104.

The following requirement may apply to E-UTRA BS operating in Band 48 and Band 49 in certain regions. The power of any spurious emission shall not exceed:

Table 2.6.4-8

Additional E-UTRA BS spurious emissions limits for Band 48 and Band 49

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency range | Maximum Level | Measurement Bandwidth | Note |
| 3 530 MHz – 3 720 MHz | -25dBm | 1 MHz | Applicable 10MHz from the assigned channel edge  |
| 3 100 MHz – 3 530 MHz3 720 MHz – 4 200 MHz | -40dBm | 1 MHz |  |

### 2.6.5 Co-location with other base stations

These requirements may be applied for the protection of other BS receivers when GSM900, DCS1800, PCS1900, GSM850, CDMA850, UTRA FDD, UTRA TDD, E-UTRA and/or NR BS are co‑located with an E-UTRA or NB-IoT BS.

The requirements assume a 30 dB coupling loss between transmitter and receiver and are based on co-location with base stations of the same class.

The power of any spurious emission shall not exceed the limits of Table 2.6.5-1 for a wide area BS where requirements for co-location with a BS type listed in the first column apply. For BS capable of multi-band operation, the exclusions and conditions in the Note column of Table 2.6.5-1 apply for each supported operating band. For BS capable of multi-band operation where multiple bands are mapped on separate antenna connectors, the exclusions and conditions in the Note column of Table 2.6.5-1 apply for the operating band supported at that antenna connector.

TABLE 2.6.5-1

BS spurious emissions limits for wide area BS co-located with another BS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of co-located BS | Frequency range for co-location requirement | Maximum level | Measurement bandwidth | Note |
| Macro GSM900 | 876-915 MHz | –98 dBm | 100 kHz | – |
| Macro DCS1800 | 1 710-1 785 MHz | –98 dBm | 100 kHz | – |
| Macro PCS1900 | 1 850-1 910 MHz | –98 dBm | 100 kHz | – |
| Macro GSM850 or CDMA850 | 824-849 MHz | –98 dBm | 100 kHz | – |
| WA UTRA FDD Band I or E-UTRA Band 1 or NR band n1 | 1 920-1 980 MHz | –96 dBm | 100 kHz | – |
| WA UTRA FDD Band II or E-UTRA Band 2 or NR band n2 | 1 850-1 910 MHz | –96 dBm | 100 kHz | – |
| WA UTRA FDD Band III or E-UTRA Band 3 or NR band n3 | 1 710-1 785 MHz | –96 dBm | 100 kHz | – |
| WA UTRA FDD Band IV or E-UTRA Band 4 | 1 710-1 755 MHz | –96 dBm | 100 kHz | – |
| WA UTRA FDD Band V or E-UTRA Band 5 or NR band n5 | 824-849 MHz | –96 dBm | 100 kHz | – |
| WA UTRA FDD Band VI, XIX or E-UTRA Band 6, 19 | 830-845 MHz | –96 dBm | 100 kHz | – |
| WA UTRA FDD Band VII or E-UTRA Band 7 or NR band n7 | 2 500-2 570 MHz | –96 dBm | 100 kHz | – |
| WA UTRA FDD Band VIII or E-UTRA Band 8 or NR band n8 | 880-915 MHz | –96 dBm | 100 kHz | – |
| WA UTRA FDD Band IX or E-UTRA Band 9 | 1 749.9-1 784.9 MHz | –96 dBm | 100 kHz | – |
| WA UTRA FDD Band X or E-UTRA Band 10 | 1 710-1 770 MHz | –96 dBm | 100 kHz | – |
| WA UTRA FDD Band XI or E-UTRA Band 11 | 1 427.9-1 447.9 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 50 or 75 |
| WA UTRA FDD Band XII or E-UTRA Band 12 or NR band n12 | 699-716 MHz | –96 dBm | 100 kHz | – |
| WA UTRA FDD Band XIII or E-UTRA Band 13 | 777-787 MHz | –96 dBm | 100 kHz | – |
| WA UTRA FDD Band XIV or E-UTRA Band 14 or NR band n14 | 788-798 MHz | –96 dBm | 100 kHz | – |
| WA E-UTRA Band 17 | 704-716 MHz | –96 dBm | 100 kHz | – |
| WA E-UTRA Band 18 | 815-830 MHz | –96 dBm | 100 kHz | – |
| WA UTRA FDD Band XX E-UTRA Band 20 or NR band n20 | 832-862 MHz | –96 dBm | 100 kHz | – |
|  |  |  |  |  |
| WA UTRA FDD Band XXI or E-UTRA Band 21 | 1 447.9-1 462.9 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 32, 50 or 75 |
| WA UTRA FDD Band XXII or E-UTRA Band 22 | 3 410-3 490 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42 |

TABLE 2.6.5-1 (*continued*)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of co-located BS | Frequency range for co-location requirement | Maximum level | Measurement bandwidth | Note |
| WA E-UTRA Band 23 | 2 000-2 020 MHz | –96 dBm | 100 kHz | – |
|  |  |  |  |  |
| WA UTRA FDD Band XXV orE-UTRA Band 25 or NR Band n25 | 1850-1915 MHz | –96 dBm | 100 kHz | – |
| WA UTRA FDD Band XXVI or E-UTRA Band 26 or NR Band n26 | 814-849 MHz | –96 dBm | 100 kHz | – |
| WA E-UTRA Band 27 | 807-824 MHz | –96 dBm | 100 kHz | – |
| WA E-UTRA Band 28 or NR Band n28 | 703-748 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 44 |
| WA E-UTRA Band 30 or NR Band n30 | 2 305-2 315 MHz  | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 40 |
| WA E-UTRA Band 31 | 452.5-457.5 MHz | –96 dBm | 100 kHz |  |
| WA UTRA TDD Band a) or E-UTRA Band 33 | 1 900-1 920 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 33 |
| WA UTRA TDD Band a) or E-UTRA Band 34 or NR band n34 | 2 010-2 025 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 34 |
| WA UTRA TDD Band b) or E-UTRA Band 35 | 1 850-1 910 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 35 |
| WA UTRA TDD Band b) or E-UTRA Band 36 | 1 930-1 990 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Bands 2 and 36 |
| WA UTRA TDD Band c) or E-UTRA Band 37 | 1 910-1 930 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 37. This unpaired band is defined in ITU-R M.1036, but is pending any future deployment. |
| WA UTRA TDD Band d) or E-UTRA Band 38 or NR band n38 | 2 570-2 620 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 38. |
| WA UTRA TDD Band f) or E-UTRA Band 39 or NR band n39 | 1 880-1 920 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Bands 33 and 39 |
| WA UTRA TDD Band e) or E-UTRA Band 40 or NR band n40 | 2 300-2 400 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 30 or 40 |
| WA E-UTRA Band 41 or NR band n41 | 2 496-2 690 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 41 |
| WA E-UTRA Band 42 | 3 400-3 600 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48 or 52 |

TABLE 2.6.5-1 (*end*)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of co-located BS | Frequency range for co-location requirement | Maximum level | Measurement bandwidth | Note |
| WA E-UTRA Band 43 | 3 600-3 800 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42, 43 or 48 |
| WA E-UTRA Band 44 | 703-803 MHz | –96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 28 or 44 |
| WA E-UTRA Band 45 | 1447-1467 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 45 |
| WA E-UTRA Band 48 or NR band n48 | 3550-3700 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42, 43 or 48 |
| WA E-UTRA Band 50 or NR band n50 | 1432-1517 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 11, 21, 32, 74 or 75 |
| WA E-UTRA Band 52 | 3300-3400 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42 or 52 |
| WA E-UTRA Band 65 or NR band n65 | 1920-2010 MHz | -96 dBm | 100 kHz | – |
| WA E-UTRA Band 66 or NR band n66 | 1710-1780 MHz | -96 dBm | 100 kHz | – |
| WA E-UTRA Band 68 | 698-728 MHz | -96 dBm | 100 kHz | – |
| WA E-UTRA Band 70 or NR band n70 | 1695-1710 MHz | -96 dBm | 100 kHz | – |
| WA E-UTRA Band 71 or NR band n71 | 663-698 MHz | -96 dBm | 100 kHz | – |
| WA E-UTRA Band 72 | 451-456 MHz | -96 dBm | 100 kHz | – |
| WA E-UTRA Band 73 | 450-455 MHz | -96 dBm | 100 kHz | – |
| WA E-UTRA Band 74 or NR band n74 | 1427-1470 MHz | -96 dBm | 100 kHz | This is not applicabe to E-UTRA BS operating in Band 50 |
| WA NR band n77 | 3300-4200 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48 or 52 |
| WA NR band n78 | 3300-3800 Mz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48 or 52 |
| WA NR Band n79 | 4.4-5.0 GHz | -96 dBm | 100 kHz | – |
| WA NR Band n80 | 1710-1785 MHz | -96 dBm | 100 kHz | – |
| WA NR Band n81 | 880-915 MHz | -96 dBm | 100 kHz | – |
| WA NR Band n82 | 832-862 MHz | -96 dBm | 100 kHz | – |
| WA NR Band n83 | 703-748 MHz | -96 dBm | 100 kHz | – |
| WA NR Band n84 | 1920-1980 MHz | -96 dBm | 100 kHz | – |
| WA E-UTRA Band 85 | 698-716 MHz | -96 dBm | 100 kHz | – |
| WA NR Band n86 | 1710-1780 MHz | -96 dBm | 100 kHz | – |
| WA E-UTRA Band 87 | 410-415 MHz | -96 dBm | 100 kHz | – |
| WA E-UTRA Band 88 | 412-417 MHz | -96 dBm | 100 kHz | – |
| WA NR Band n89 | 824-849 MHz | -96 dBm | 100 kHz | – |
| WA NR Band n92 | 832-862 MHz | -96 dBm | 100 kHz | – |
| WA NR Band n94 | 880-915 MHz | -96 dBm | 100 kHz | – |
| WA NR Band n95 | 2010-2025 MHz | -96 dBm | 100 kHz | – |

The power of any spurious emission shall not exceed the limits of Table 2.6.5-2 for a local area BS where requirements for co-location with a BS type listed in the first column apply. For BS capable of multi-band operation, the exclusions and conditions in the Note column of Table 2.6.5-2 apply for each supported operating band. For BS capable of multi-band operation where multiple bands are mapped on separate antenna connectors, the exclusions and conditions in the Note column of Table 2.6.5-2 apply for the operating band supported at that antenna connector.

TABLE 2.6.5-2

BS spurious emissions limits for local area BS co-located with another BS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of co-located BS | Frequency range for co-location requirement | Maximum level | Measurement bandwidth | Note |
| Pico GSM900 | 876-915 MHz | –70 dBm | 100 kHz | – |
| Pico DCS1800 | 1 710-1 785 MHz | –80 dBm | 100 kHz | – |
| Pico PCS1900 | 1 850-1 910 MHz | –80 dBm | 100 kHz | – |
| Pico GSM850 | 824-849 MHz | –70 dBm | 100 kHz | – |
| LA UTRA FDD Band I or E-UTRA Band 1 or NR band n1 | 1 920-1 980 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band II or E-UTRA Band 2 or NR band n2 | 1 850-1 910 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band III or E-UTRA Band 3 or NR band n3 | 1 710-1 785 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band IV or E-UTRA Band 4 | 1 710-1 755 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band V or E-UTRA Band 5 or NR band n5 | 824-849 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band VI, XIX or E-UTRA Band 6, 19 | 830-845 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band VII or E-UTRA Band 7 or NR band n7 | 2 500-2 570 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band VIII or E-UTRA Band 8 or NR band n8 | 880-915 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band IX or E-UTRA Band 9 | 1 749.9-1 784.9 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band X or E-UTRA Band 10 | 1 710-1 770 MHz | –88 dBm | 100 kHz | – |

TABLE 2.6.5-2 (*continued*)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of co-located BS | Frequency range for co-location requirement | Maximum level | Measurement bandwidth | Note |
| LA UTRA FDD Band XI or E-UTRA Band 11 | 1 427.9-1 447.9 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 50, 51, 75 or 76 |
| LA UTRA FDD Band XII or E-UTRA Band 12 or NR band n12 | 699-716 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band XIII or E-UTRA Band 13 | 777-787 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band XIV or E-UTRA Band 14 or NR band n14 | 788-798 MHz | –88 dBm | 100 kHz | – |
| LA E-UTRA Band 17 | 704-716 MHz | –88 dBm | 100 kHz | – |
| LA E-UTRA Band 18 | 815-830 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band XX or E-UTRA Band 20 or NR band n20 | 832-862 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band XXI or E-UTRA Band 21 | 1 447.9-1 462.9 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 32, 50 or 75 |
| LA UTRA FDD Band XXII or E-UTRA Band 22 | 3 410-3 490 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42 |
| LA E-UTRA Band 23 | 2 000-2 020 MHz | –88 dBm | 100 kHz | – |
| LA E-UTRA Band 24 | 1 626.5-1 660.5 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band XXV or E-UTRA Band 25 or NR band n25 | 1 850-1 915 MHz | –88 dBm | 100 kHz | – |
| LA UTRA FDD Band XXVI or E-UTRA Band 26 or NR band n26 | 814-849 MHz | –88 dBm | 100 kHz | – |
| LA E-UTRA Band 27 | 807-824 MHz | –88 dBm | 100 kHz | – |
| LA E-UTRA Band 28 or NR band n28 | 703-748 MHz | –88 dBm | 100 KHz | This is not applicable to E-UTRA BS operating in Band 44 |
| LA E-UTRA Band 30 or NR band n30 | 2 305-2 315 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 40 |
| LA E-UTRA Band 31 | 452.5-457.5 MHz | –88 dBm | 100 kHz |  |
| LA UTRA TDD Band a) or E-UTRA Band 33 | 1 900-1 920 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 33  |
| LA UTRA TDD Band a) or E-UTRA Band 34 or NR band n34 | 2 010-2 025 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 34 |
| LA UTRA TDD Band b) or E-UTRA Band 35 | 1 850-1 910 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 35 |
| LA UTRA TDD Band b) or E-UTRA Band 36 | 1 930-1 990 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Bands 2 and 36 |

TABLE 2.6.5-2 (*end*)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of co-located BS | Frequency range for co-location requirement | Maximum level | Measurement bandwidth | Note |
| LA UTRA TDD Band c) or E-UTRA Band 37 | 1 910-1 930 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 37. This unpaired band is defined in ITU-R M.1036, but is pending any future deployment. |
| LA UTRA TDD Band d) or E-UTRA Band 38 or NR band n38 | 2 570-2 620 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 38.  |
| LA UTRA TDD Band f) or E-UTRA Band 39 or NR band n39 | 1 880-1 920 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Bands 33 and 39 |
| LA UTRA TDD Band e) or E-UTRA Band 40 or NR band n40 | 2 300-2 400 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 30 or 40 |
| LA E-UTRA Band 41 or NR band n41 | 2 496-2 690 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 41 or 53 |
| LA E-UTRA Band 42 | 3 400-3 600 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48, 49 or 52 |
| LA E-UTRA Band 43 | 3 600-3 800 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42, 43, 48 or 49 |
| LA E-UTRA Band 44 | 703-803 MHz | –88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 28 or 44 |
| LA E-UTRA Band 45 | 1447-1467 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 45 |
| LA E-UTRA Band 46 or NR Band n46 | 5150-5925 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 46 |
| LA E-UTRA Band 48 or NR band n48 | 3550-3700 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42, 43, 48 or 49 |
| LA E-UTRA Band 49 | 3550-3700 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42, 43, 48 or 49 |
| LA E-UTRA Band 50 or NR band n50 | 1432-1517 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 11, 21, 32, 51, 74, 75 or 76 |
| LA E-UTRA Band 51 or NR band n51 | 1427-1432 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 50, 75 or 76 |
| LA E-UTRA Band 52 | 3300-3400 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42 or 52 |
| LA E-UTRA Band 53 or NR Band n53 | 2483.5-2495 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 41 or 53 |
| LA E-UTRA Band 65 or NR band n65 | 1920-2010 MHz | -88 dBm | 100 kHz | – |
| LA E-UTRA Band 66 or NR band n66 | 1710-1780 MHz | -88 dBm | 100 kHz | – |
| LA E-UTRA Band 68 | 698-728 MHz | -88 dBm | 100 kHz | – |
| LA E-UTRA Band 70 or NR band n70 | 1695-1710 MHz | -88 dBm | 100 kHz | – |
| LA E-UTRA Band 71 or NR band n71 | 663-698 MHz | -88 dBm | 100 kHz | – |
| LA E-UTRA Band 72 | 451-456 MHz | -88 dBm | 100 kHz | – |
| LA E-UTRA Band 73 | 450-455 MHz | -88 dBm | 100 kHz | – |
| LA E-UTRA Band 74 or NR band n74 | 1427-1470 MHz | -88 dBm | 100 kHz | This is not applicabe to E-UTRA BS operating in Band 50 or 51 |
| LA NR band n77 | 3300-4200 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48, 49 or 52 |
| LA NR band n78 | 3300-3800 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48, 49 or 52 |
| LA NR Band n79 | 4.4-5.0 GHz | -88 dBm | 100 kHz | – |
| LA NR Band n80 | 1710-1785 MHz | -88 dBm | 100 kHz | – |
| LA NR Band n81 | 880-915 MHz | -88 dBm | 100 kHz | – |
| LA NR Band n82 | 832-862 MHz | -88 dBm | 100 kHz | – |
| LA NR Band n83 | 703-748 MHz | -88 dBm | 100 kHz | – |
| LA NR Band n84 | 1920-1980 MHz | -88 dBm | 100 kHz | – |
| LA E-UTRA Band 85 | 698-716 MHz | -88 dBm | 100 kHz | – |
| LA NR Band n86 | 1920-1980 MHz | -88 dBm | 100 kHz | – |
| LA E-UTRA Band 87 | 410-415 MHz | -88 dBm | 100 kHz | – |
| LA E-UTRA Band 88 | 412-417 MHz | -88 dBm | 100 kHz | – |
| LA NR Band n89 | 824-849 MHz | -88 dBm | 100 kHz | – |
| LA NR Band n91 | 832-862 MHz | -88 dBm | 100 kHz | – |
| LA NR Band n92 | 832-862 MHz | -88 dBm | 100 kHz | – |
| LA NR Band n93 | 880-915 MHz | -88 dBm | 100 kHz | – |
| LA NR Band n94 | 880-915 MHz | -88 dBm | 100 kHz | – |
| LA NR Band n95 | 2010-2025 MHz | -88 dBm | 100 kHz | – |
| LA NR Band n96 | 5925-7125 MHz | -87 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 46 |

The power of any spurious emission shall not exceed the limits of Table 2.6.5-3 for a medium range BS where requirements for co-location with a BS type listed in the first column apply. For BS capable of multi-band operation, the exclusions and conditions in the Note column of Table 2.6.5-3 apply for each supported operating band. For BS capable of multi-band operation where multiple bands are mapped on separate antenna connectors, the exclusions and conditions in the Note column of Table 2.6.5-3 apply for the operating band supported at that antenna connector.

TABLE 2.6.5-3

BS spurious emissions limits for Medium range BS co-located with another BS

| Type of co-located BS | Frequency range for co-location requirement | Maximum level | Measurement bandwidth | Note |
| --- | --- | --- | --- | --- |
| Micro/MR GSM900 | 876-915 MHz | –91 dBm | 100 kHz | – |
| Micro/MR DCS1800 | 1 710-1 785 MHz | –91 dBm | 100 kHz | – |
| Micro/MR PCS1900 | 1 850-1 910 MHz | –91 dBm | 100 kHz | – |
| Micro/MR GSM850 | 824-849 MHz | –91 dBm | 100 kHz | – |
| MR UTRA FDD Band I or E-UTRA Band 1 or NR band n1 | 1 920-1 980 MHz | –91 dBm | 100 kHz | – |
| MR UTRA FDD Band II or E-UTRA Band 2 or NR band n2 | 1 850-1 910 MHz | –91 dBm | 100 kHz | – |
| MR UTRA FDD Band III or E-UTRA Band 3 or NR band n3 | 1 710-1 785 MHz | –91 dBm | 100 kHz | – |
| MR UTRA FDD Band IV or E-UTRA Band 4 | 1 710-1 755 MHz | –91 dBm | 100 kHz | – |
| MR UTRA FDD Band V or E-UTRA Band 5 or NR band n5 | 824-849 MHz | –91 dBm | 100 kHz | – |
| MR UTRA FDD Band VI, XIX or E-UTRA Band 6, 19 | 830-850 MHz | –91 dBm | 100 kHz | – |
| MR UTRA FDD Band VII or E-UTRA Band 7 | 2 500-2 570 MHz | –91 dBm | 100 KHz | – |
| MR UTRA FDD Band VIII or E-UTRA Band 8 or NR band n8 | 880-915 MHz | –91 dBm | 100 KHz | – |
| MR UTRA FDD Band IX or E-UTRA Band 9 | 1 749.9-1 784.9 MHz | –91 dBm | 100 KHz | – |
| MR UTRA FDD Band X or E-UTRA Band 10 | 1 710-1 770 MHz | –91 dBm | 100 kHz | – |
| MR UTRA FDD Band XI or E-UTRA Band 11 | 1 427.9-1 447.9 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 50 or 75 |
| MR UTRA FDD Band XII or E-UTRA Band 12 or NR band n12 | 699-716 MHz | –91 dBm | 100 kHz | – |
| MR UTRA FDD Band XIII or E-UTRA Band 13 | 777-787 MHz | –91 dBm | 100 kHz | – |
| MR UTRA FDD Band XIV or E-UTRA Band 14 or NR Band n14 | 788-798 MHz | –91 dBm | 100 kHz | – |
| MR E-UTRA Band 17 | 704-716 MHz | –91 dBm | 100 kHz | – |
| MR E-UTRA Band 18 | 815-830 MHz | –91 dBm | 100 KHz | – |
| MR UTRA FDD Band XX or E-UTRA Band 20 or NR band n20 | 832-862 MHz | –91 dBm | 100 KHz | – |
| MR UTRA FDD Band XXI or E-UTRA Band 21 | 1 447.9-1 462.9 MHz | –91 dBm | 100 KHz | This is not applicable to E-UTRA BS operating in Band 32, 50 or 75 |
| MR UTRA FDD Band XXII or E-UTRA Band 22 | 3 410-3 490 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42 |
| MR E-UTRA Band 23 | 2 000-2 020 MHz | –91 dBm | 100 kHz | – |

TABLE 2.6.5-3 (*continued*)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of co-located BS | Frequency range for co-location requirement | Maximum level | Measurement bandwidth | Note |
| MR E-UTRA Band 24 | 1 626.5-1 660.5 MHz | –91 dBm | 100 KHz | – |
| MR UTRA FDD Band XXV or E-UTRA Band 25 or NR band n25 | 1 850-1 915 MHz | –91 dBm | 100 kHz | – |
| MR UTRA FDD Band XXVI or E-UTRA Band 26 or NR band n26 | 814-849 MHz | –91 dBm | 100 kHz | – |
| MR E-UTRA Band 27 | 807-824 MHz | –91 dBm | 100 kHz | – |
| MR E-UTRA Band 28 or NR band n28 | 703-748 MHz | –91 dBm | 100 KHz | This is not applicable to E-UTRA BS operating in Band 44 |
| MR E-UTRA Band 30 or NR band n30 | 2 305-2 315 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 40 |
| MR E-UTRA Band 31 | 452.5-457.5 MHz | –91 dBm | 100 kHz |  |
| MR E-UTRA Band 33 | 1 900-1 920 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 33  |
| MR E-UTRA Band 34 or NR band n34 | 2 010-2 025 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 34 |
| MR E-UTRA Band 35 | 1 850-1 910 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 35 |
| MR E-UTRA Band 36 | 1 930-1 990 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Bands 2 and 36 |
| MR E-UTRA Band 37 | 1 910-1 930 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 37. This unpaired band is defined in ITU-R M.1036, but is pending any future deployment. |
| MR E-UTRA Band 38 or NR band n38 | 2 570-2 620 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 38.  |
| MR E-UTRA Band 39 or NR band n39 | 1 880-1 920 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Bands 33 and 39 |
| MR E-UTRA Band 40 or NR band n40 | 2 300-2 400 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 30 or 40 |
| MR E-UTRA Band 41 or NR band n41 | 2 496-2 690 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 41 or 53 |
| MR E-UTRA Band 42 | 3 400-3 600 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48 or 52 |

TABLE 2.6.5-3 (*end*)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of co-located BS | Frequency range for co-location requirement | Maximum level | Measurement bandwidth | Note |
| MR E-UTRA Band 43 | 3 600-3 800 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42, 43 or 48 |
| MR E-UTRA Band 44 | 703-803 MHz | –91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 28 or 44 |
| MR E-UTRA Band 45 | 1447-1467 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 45 |
| MR E-UTRA Band 46 or NR Band n46 | 5150-5925 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 46 |
| MR E-UTRA Band 48 or NR band n48 | 3550-3700 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42, 43 or 48 |
| MR E-UTRA Band 50 or NR band n50 | 1432-1517 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 11, 21, 32, 51, 74, 75 or 76 |
| MR E-UTRA Band 52 | 3300-3400 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42 or 52 |
| MR E-UTRA Band 53 or NR Band n53 | 2483.5-2495 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 41 or 53 |
| MR E-UTRA Band 65 or NR band n65 | 1920-2010 MHz | -91 dBm | 100 kHz | – |
| MR E-UTRA Band 66 or NR band n66 | 1710-1780 MHz | -91 dBm | 100 kHz | – |
| MR E-UTRA Band 68 | 698-728 MHz | -91 dBm | 100 kHz | – |
| MR E-UTRA Band 70 or NR band n70 | 1695-1710 MHz | -91 dBm | 100 kHz | – |
| MR E-UTRA Band 71 | 663-698 MHz | -91 dBm | 100 kHz | – |
| MR E-UTRA Band 72 | 451-456 MHz | -91 dBm | 100 kHz | – |
| MR E-UTRA Band 73 | 450-455 MHz | -91 dBm | 100 kHz | – |
| MR E-UTRA Band 74 or NR band n74 | 1427-1470 MHz | -91 dBm | 100 kHz | This is not applicabe to E-UTRA BS operating in Band 50 |
| MR NR band n77 | 3300-4200 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48 or 52 |
| MR NR band n78 | 3300-3800 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48 or 52 |
| MR NR Band n79 | 4.4-5.0 GHz | -91 dBm | 100 kHz | – |
| MR NR Band n80 | 1710-1785 MHz | -91 dBm | 100 kHz | – |
| MR NR Band n81 | 880-915 MHz | -91 dBm | 100 kHz | – |
| MR NR Band n82 | 832-862 MHz | -91 dBm | 100 kHz | – |
| MR NR Band n83 | 703-748 MHz | -91 dBm | 100 kHz | – |
| MR NR Band n84 | 1920-1980 MHz | -91 dBm | 100 kHz | – |
| MR E-UTRA Band 85 | 698-716 MHz | -91 dBm | 100 kHz | – |
| MR NR Band n86 | 1710-1780 MHz | -91 dBm | 100 kHz | – |
| MR E-UTRA Band 87 | 410-415 MHz | -91 dBm | 100 kHz | – |
| MR E-UTRA Band 88 | 412-417 MHz | -91 dBm | 100 kHz | – |
| MR NR Band n89 | 824-849 MHz | -91 dBm | 100 kHz | – |
| MR NR Band n92 | 832-862 MHz | -91 dBm | 100 kHz | – |
| MR NR Band n94 | 880-915 MHz | -91 dBm | 100 kHz | – |
| MR NR Band n95 | 2010-2025 MHz | -91 dBm | 100 kHz | – |
| MR NR Band n96 | 5925-7125 MHz | -90 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 46 |

NOTE 1 – As defined in the scope for spurious emissions in this clause, the co-location requirements in Table 2.6.5-1 to Table 2.6.5-3 do not apply for the 10 MHz frequency range immediately outside the BS transmit frequency range of a downlink operating band (see Table 1-1). The current state-of-the-art technology does not allow a single generic solution for co-location with other system on adjacent frequencies for 30dB BS-BS minimum coupling loss.

However, there are certain site-engineering solutions that can be used. These techniques are addressed in 3GPP TR 25.942.

NOTE 2 – Tables 2.6.5-1 to 2.6.5-3 assume that two operating bands, where the corresponding eNode B transmit and receive frequency ranges in Table 1-1 would be overlapping, are not deployed in the same geographical area. For such a case of operation with overlapping frequency arrangements in the same geographical area, special co-location requirements may apply that are not covered by this specifications.

NOTE 3 – Co-located TDD base stations that are synchronized and using the same or adjacent operating band can transmit without special co-locations requirements. For unsynchronized base stations, special co-location requirements may apply that are not covered by these specifications.

## 2.7 Receiver spurious emissions

The power of any spurious emission shall not exceed the levels in Table 2.7-1.

In addition to the requirements in Table 2.7‑1, the power of any spurious emission shall not exceed the levels specified for Protection of the E-UTRA FDD BS receiver of own or different BS in § 2.6.3 and for Co-existence with other systems in the same geographical area in § 2.6.4. In addition, the co-existence requirements for co-located base stations specified in § 2.6.5 may also be applied.

Unless otherwise stated, a BS declared to be capable of E-UTRA with NB-IoT in-band and guard band operations is only required to pass the receiver spurious emissions tests for E-UTRA with guard band operation; it is not required to perform the receiver spurious emissions tests again for E-UTRA with in-band operation.

TABLE 2.7-1

General spurious emission test requirement

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency range | Maximum level | Measurement bandwidth | Note |
| 30 MHz‑1 GHz | –57 dBm | 100 kHz | – |
| 1 GHz‑12.75 GHz | −47 dBm | 1 MHz | – |
| 12.75 GHz – 5th harmonic of the upper frequency edge of the UL operating band in GHz | −47 dBm | 1 MHz | Applies only for Bands 22, 42, 43, 48 and 49. |
| 12.75 GHz‑26 GHz | −47 dBm | 1 MHz | Applies only for Band 46. |
| NOTE – The frequency range between 2.5 \* *BWChannel* below the first carrier frequency and 2.5 \* *BWChannel* above the last carrier frequency transmitted by the BS, where *BWChannel* is the channel bandwidth, may be excluded from the requirement. However, frequencies that are more than 10 MHz below the lowest frequency of any of the BS supported downlink operating band or more than 10 MHz above the highest frequency of any of the BS supported downlink operating band (see Table 1-1) shall not be excluded from the requirement.For BS capable of multi-band operation, the excluded frequency range applies for all supported operating bands. For BS capable of multi-band operation where multiple bands are mapped on separate antenna connectors, the single-band requirements apply and the excluded frequency range is only applicable for the operating band supported on each antenna connector. |

**<End of change>**

**References**

[1] RP-210747, " Revision of Recommendations ITU-R M.2070 and ITU-R M.2071 on Unwanted Emissions of IMT-Advanced", ITU-R Working Party 5D.