**3GPP TSG-RAN4 Meeting #98-eDRAFT R4-2103782**

**Online, , 25th Jan 2021 - 5th Feb 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **37.105** | **CR** | **0222** | **rev** | **1** | **Current version:** | **16.6.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **x** | Core Network |  |

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| ***Title:*** | CR to TS 37.105: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | | | | | | | | | |
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| ***Source to WG:*** | Huawei, China Unicom | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | AASenh\_BS\_LTE\_UTRA-Core, TEI16, MSR\_GSM\_UTRA\_LTE\_NR-Core | | | | |  | ***Date:*** | | | 2021-01-15 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Referring to the Rel-16 WI on MSR\_GSM\_UTRA\_LTE\_NR, the MSR BS specification was extended with additional CS configuration (e.g. UTRA+EUTRA+NR).  WID in RP-190642 captured that only MSR BS specifications are to be affected, i.e. TS 37.104, TS 37.141. Related MSR BS CRs are listed below:   * TS 37.104: R4-1908049 Introduction of requirements for NR + UTRA/GSM combinations * TS 37.141: R4-1910476 Introduction of requirements for NR + UTRA/GSM combinations   Still, the referred WI has also impacted OBUE and blocking requirements, which also impacts the AAS BS specifications.  Therefore, this CR provides modifications to the AAS BS core specification TS 37.105, to reflect modification from the MSR\_GSM\_UTRA\_LTE\_NR WI which were introduced to Rel-16 MSR BS TS 37.104. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | * 6.6.5.2.2, 6.6.5.2.3, 9.7.5.2.2, 9.7.5.2.3: updates to the OBUE applicability table and related OBUE tables headers corrections * 7.4.2.1: conducted general blocking table updated * 7.7.2.1: conducted Tx IMD table updated * 10.5.2.1: OTA general blocking table updated * 10.8.2.1: OTA Tx IMD table updated | | | | | | | | |
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| ***Consequences if not approved:*** | | AAS BS specification would be misaligned with the MSR BS specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.6.5.2.2, 6.6.5.2.3, 7.4.2.1, 7.7.2.1, 9.7.5.2.2, 9.7.5.2.3, 10.5.2.1, 10.8.2.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | |  | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS 37.145-1 CR#0246, TS 37.145-2 CR#0286 | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | In order to make the implementation process transparent, the CR was implemented using separate Track Change ID for the content taken from the source CR to TS 37.104, and separate Track Change ID was used to implement AAS-specific modifications on top of it. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Content of this CR is updated based on R4-2015967. Furthermore, the list of co-sourcing companies was updated.  OBUE table headings were drafted based on related Rel-15 CR in R4-2103885, with additional modifications introduced to reflect content of the original CR in R4-2102563 (e.g. introduction of Rel-16 band n65, options 1 and 2 for OBUE limits). | | | | | | | | |

*------------------------------ Modified section ------------------------------*

##### 6.6.5.2.2 *Basic limits* for Band Categories 1 and 3

For a *TAB connector* operating in Band Category 1 or Band Category 3 the requirement applies outside the *Base Station RF Bandwidth edges*. In addition, for an AAS BS of Wide Area BS class operating in *non-contiguous spectrum*, it applies inside any *sub-block gap*. In addition, for an AAS BS of Wide Area BS class operating in multiple bands, the requirements apply inside any *Inter RF Bandwidth gap*.

For an AAS BS of Medium Range BS class operating in Band Category 1 the requirement applies outside the *Base Station RF Bandwidth edges*. In addition, for an AAS BS of Medium Range BS class operating in *non-contiguous spectrum*, it applies inside any *sub-block gap*. In addition, for an AAS BS of Medium Range BS class operating in multiple bands, the requirements apply inside any *Inter RF Bandwidth gap*.

For an AAS BS of Local Area BS class operating in Band Category 1 the requirement applies outside the *Base Station RF Bandwidth edges*. In addition, for an AAS BS of Local Area BS class operating in *non-contiguous spectrum*, it applies inside any *sub-block gap*. In addition, for an AAS BS Local Area BS class operating in multiple bands, the requirements apply inside any *Inter RF Bandwidth gap*.

Outside the *Base Station RF Bandwidth edges*, *basic limits* are specified in tables 6.6.5.2.2-1 to 6.6.5.2.2-4 below, where:

- Δf is the separation between *the Base Station RF Bandwidth edge* frequency and the nominal -3 dB point of the measuring filter closest to the carrier frequency.

- f\_offset is the separation between the *Base Station RF Bandwidth edge* frequency and the centre of the measuring filter.

- f\_offsetmax is the offset to the frequency ΔfOBUE outside the *downlink operating band*.

- Δfmax is equal to f\_offsetmax minus half of the bandwidth of the measuring filter.

For a *multi-band TAB connector*, inside any *Inter RF Bandwidth gaps* with Wgap < 2×ΔfOBUE MHz, a combined *basic* limit shall be applied which is the cumulative sum of emissions shall not exceed the cumulative sum of the *basic limits* specified at the *Base Station RF Bandwidth edges* on each side of the *Inter-RF Bandwidth gap*. The *basic limit* for *Base Station RF Bandwidth edge* is specified in table 6.6.5.2.2-1 to 6.6.5.2.2-4 below, where in this case:

- Δf is the separation between the *Base Station RF Bandwidth edge* frequency and the nominal -3 dB point of the measuring filter closest to the carrier frequency.

- f\_offset is the separation between the *Base Station RF Bandwidth edge* frequency and the centre of the measuring filter.

- f\_offsetmax is equal to the inter *Base Station RF Bandwidth* gap minus half of the bandwidth of the measuring filter.

- Δfmax is equal to f\_offsetmax minus half of the bandwidth of the measuring filter.

For a *multi-band TAB connector*, the operating band unwanted emission *basic limits* apply also in a supported operating band without any carriers transmitted, in the case where there are carriers transmitted in other operating band(s). In this case where there is no carrier transmitted in an operating band, the operating band unwanted emission limit, as defined in the tables of the present subclause for the largest frequency offset (Δfmax), of a band where there is no carrier transmitted shall apply from 10 MHz below the lowest frequency, up to 10 MHz above the highest frequency of the supported downlink operating band without any carrier transmitted. And no cumulative *basic limits* are applied in the *inter-band gap* between a supported downlink band with carrier(s) transmitted and a supported downlink band without any carrier transmitted.

Inside any *sub-block gap* for a *TAB connector* operating in *non-contiguous spectrum*, a combined *basic* limit shall be applied which is the cumulative sum of the *basic limits* specified for the adjacent sub blocks on each side of the *sub-block gap*. The *basic limit* for each sub block is specified in tables 6.6.5.2.2-1 to 6.6.5.2.2-4 below, where in this case:

- Δf is the separation between the sub block edge frequency and the nominal -3 dB point of the measuring filter closest to the sub block edge.

- f\_offset is the separation between the sub block edge frequency and the centre of the measuring filter.

- f\_offsetmax is equal to the *sub-block gap* bandwidth minus half of the bandwidth of the measuring filter.

- Δfmax is equal to f\_offsetmax minus half of the bandwidth of the measuring filter.

Applicability of Wide Area operating band unwanted emission requirements in tables 6.6.5.2.2-1, 6.6.5.2.2-1a and 6.6.5.2.2-1b is specified in table 6.6.2.1-0.

Note: Option 1 and Option 2 correspond to the Category B option 1/2 operating band unwanted emissions defined in the E-UTRA and NR specifications TS 36.104 [4] and TS 38.104 [27]. Option 2 also corresponds to the UTRA spectrum emission mask as defined in TS 25.104 [2].

Table 6.6.5.2.2-0: Applicability of operating band unwanted emission requirements for BC1 and BC3 Wide Area BS

|  |  |  |
| --- | --- | --- |
| NR band operation | UTRA supported | Applicable requirement table |
| None | Y/N | 6.6.5.2.2-1 (Option 2) |
| In certain regions (NOTE 2), band 1 | N | 6.6.5.2.2-1 (Option 2) |
| Any below 1 GHz | N | 6.6.5.2.2-1a (Option 1) |
| Any above 1 GHz except for certain regions (NOTE 2), band 1 | N | 6.6.2.1-1b (Option 1) |
| NOTE 1: Void  NOTE 2: Applicable only for operation in regions where Category B limits as defined in ITU-R Recommendation SM.329 [14] are used for which category B option 2 operating band unwanted emissions requirements as defined in TS 36.104 [8] and TS 38.104 [27] are applied. | | |

Table 6.6.5.2.2-1: Wide Area BS operating band unwanted emission mask (UEM) in BC1 and BC3 bands applicable for: BS not supporting NR; or BS supporting NR in Band n1 or n65 - option 2

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (NOTE 1, 2) | Measurement bandwidth (NOTE 4) |
| 0 MHz ≤ Δf < 0.2 MHz | 0.015MHz ≤ f\_offset < 0.215MHz | -14 dBm | 30 kHz |
| 0.2 MHz ≤ Δf < 1 MHz | 0.215MHz ≤ f\_offset < 1.015MHz | (Note 6) | 30 kHz |
| (NOTE 3) | 1.015MHz ≤ f\_offset < 1.5 MHz | -26 dBm (Note 6) | 30 kHz |
| 1 MHz ≤ Δf ≤  min(Δfmax, 10 MHz) | 1.5 MHz ≤ f\_offset < min(f\_offsetmax, 10.5 MHz) | -13 dBm (Note 6) | 1 MHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax | -15 dBm (NOTE 5, 6) | 1 MHz |
| NOTE 1: For MSR *TAB connector* supporting *non-contiguous spectrum* operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks on each side of the *sub-block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub-blocks on each side of the *sub-block gap*, where the *basic limit* within *sub-block gaps* shall be -15dBm/MHz (for MSR *multi-band TAB connector*, either this limit or -16dBm/100kHz with correspondingly adjusted f\_offset shall apply for this frequency offset range for operating bands < 1 GHz).  NOTE 2: For MSR *multi-band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or RF Bandwidth shall be scaled according to the measurement bandwidth of the near-end sub-block or RF Bandwidth.  NOTE 6: For MSR *multi-band TAB connector*, either this limit or -16dBm/100kHz with correspondingly adjusted f\_offset shall apply for this frequency offset range for operating bands < 1 GHz. | | | |

Table 6.6.5.2.2-1a: Wide Area BS operating band unwanted emission mask (UEM) in BC1 and BC3 bands below 1 GHz applicable for: BS supporting NR and not supporting UTRA - option 1

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (Note 1, 2) | Measurement bandwidth (Note 4) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz |  | 100 kHz |
| 5 MHz ≤ Δf <  min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset <  min(10.05 MHz, f\_offsetmax) | -14 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | -16 dBm (Note 5) | 100 kHz |
| NOTE 1: For MSR *TAB connector* supporting non-contiguous spectrum operation within any operating band, the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub block gap*, where the contribution from the far-end sub-block or RF Bandwidth shall be scaled according to the measurement bandwidth of the near-end sub-block or *RF Bandwidth*. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the sub-block gap, where the *basic limit* within sub-block gaps shall be -16dBm/100kHz.  NOTE 2: For MSR *multi band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUEthe *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or Base station *RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or RF Bandwidth shall be scaled according to the measurement bandwidth of the near-end sub-block or *RF Bandwidth*. | | | |

Table 6.6.5.2.2-1b: Wide Area BS operating band unwanted emission mask (UEM) in BC1 and BC3 bands above 1 GHz applicable for: BS supporting NR, not operating in band n1 or n65 and not supporting UTRA - option 1

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (Note 1, 2) | Measurement bandwidth (Note 4) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz |  | 100 kHz |
| 5 MHz ≤ Δf <  min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset <  min(10.05 MHz, f\_offsetmax) | -14 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax | -15 dBm (Note 5) | 1MHz |
| NOTE 1: For MSR *TAB connector* supporting non-contiguous spectrum operation within any operating band, the *basic limit* within sub-block gaps is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the *basic limit* within sub-block gaps shall be -15dBm/1MHz.  NOTE 2: For MSR *multi band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUEthe *basic limit* within the Inter RF Bandwidth gaps is calculated as a cumulative sum of contributions from adjacent sub-blocks or *RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or RF Bandwidth shall be scaled according to the measurement bandwidth of the near-end sub-block or *RF Bandwidth.* | | | |

Table 6.6.5.2.2-2: Medium Range BS operating band unwanted emission mask (UEM) in BC1 bands applicable for: BS with maximum output power 31 < Prated,c,cell-10\*log10(NTXU,countedpercell) ≤ 38 dBm and either not supporting NR or supporting both NR and UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (NOTE 1, 2) | Measurement bandwidth (NOTE 4) |
| 0 MHz ≤ Δf < 0.6 MHz | 0.015MHz ≤ f\_offset < 0.615MHz |  | 30 kHz |
| 0.6 MHz ≤ Δf < 1 MHz | 0.615MHz ≤ f\_offset < 1.015MHz |  | 30 kHz |
| (NOTE 3) | 1.015MHz ≤ f\_offset < 1.5 MHz | Prated,c,cell – 10\*log10(NTXU,countedpercell) – 65 dB | 30 kHz |
| 1 MHz ≤ Δf ≤ 2.6 MHz | 1.5 MHz ≤ f\_offset < 3.1 MHz | Prated,c,cell – 10\*log10(NTXU,countedpercell) – 52 dB | 1 MHz |
| 2.6 MHz ≤ Δf ≤ 5 MHz | 3.1 MHz ≤ f\_offset < 5.5 MHz | min(Prated,c,cell – 10\*log10(NTXU,countedpercell) – 52 dB, -15dBm) | 1 MHz |
| 5 MHz ≤ Δf ≤ Δfmax | 5.5 MHz ≤ f\_offset < f\_offsetmax | Prated,c,cell – 10\*log10(NTXU,countedpercell) – 56 dB | 1 MHz |
| NOTE 1: For MSR *TAB connector* supporting *non-contiguous spectrum* operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub-blocks on each side of the *sub-block gap*, where the *basic limit* within *sub-block gaps* shall be (Prated,c,cell-10\*log10(NTXU,countedpercell) - 56 dB) /MHz.  NOTE 2: For MSR multi-band *TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or *Base Station RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *Base Station RF Bandwidth*. | | | |

Table 6.6.5.2.2-2a: Medium Range BS operating band unwanted emission mask (UEM) in BC1 bands applicable for: BS with maximum output power 31 < Prated,c,cell-10\*log10(NTXU,countedpercell) ≤ 38 dBm, supporting NR and not supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (Note 1, 2) | Measurement bandwidth (Note 4) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | Prated,c,cell – 10\*log10(NTXU,countedpercell) – 53 dB - (7/5)\*(f\_offset/MHz-0,05) dB | 100 kHz |
| 5 MHz ≤ Δf < min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset < min(10.05 MHz, f\_offsetmax) | Prated,c,cell – 10\*log10(NTXU,countedpercell) – 60 dB | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | Min(Prated,c,cell – 10\*log10(NTXU,countedpercell) -60 dB, -25 dBm)  (Note 5) | 100 kHz |
| NOTE 1: For MSR *TAB connector* supporting non-contiguous spectrum operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the *basic limit* within sub-block gaps shall be Min(Prated,c,cell – 10\*log10(NTXU,countedpercell) – 60 dB, -25 dBm)/100 kHz.  NOTE 2: For MSR *multi band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUEthe *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or RF Bandwidth on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. | | | |

Table 6.6.5.2.2-3: Medium Range BS operating band unwanted emission mask (UEM) in BC1 bands applicable for: BS with maximum output power Prated,c,cell-10\*log10(NTXU,countedpercell) ≤ 31 dBm and either not supporting NR or supporting both NR and UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (NOTE 1, 2) | Measurement bandwidth (NOTE 4) |
| 0 MHz ≤ Δf < 0.6 MHz | 0.015MHz ≤ f\_offset < 0.615MHz |  | 30 kHz |
| 0.6 MHz ≤ Δf < 1 MHz | 0.615MHz ≤ f\_offset < 1.015MHz |  | 30 kHz |
| (NOTE 3) | 1.015MHz ≤ f\_offset < 1.5 MHz | -34 dBm | 30 kHz |
| 1 MHz ≤ Δf ≤ 5 MHz | 1.5 MHz ≤ f\_offset < 5.5 MHz | -21 dBm | 1 MHz |
| 5 MHz ≤ Δf ≤ Δfmax | 5.5 MHz ≤ f\_offset < f\_offsetmax | -25 dBm | 1 MHz |
| NOTE 1: For MSR *TAB connector* supporting *non-contiguous spectrum* operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub-blocks on each side of the *sub-block gap*, where the *basic limit* within *sub-block gaps* shall be -25 dBm/MHz.  NOTE 2: For MSR *multi-band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or *Base Station RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *Base Station RF Bandwidth*. | | | |

Table 6.6.5.2.2-3a: Medium Range BS operating band unwanted emission mask (UEM) in BC1 bands applicable for: BS with maximum output power Prated,c,cell-10\*log10(NTXU,countedpercell) ≤ 31 dBm, supporting NR and not supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic limit* (Note 1, 2) | Measurement bandwidth (Note 4) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz |  | 100 kHz |
| 5 MHz ≤ Δf < min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset < min(10.05 MHz, f\_offsetmax) | -29 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | -29 dBm (Note 5) | 100 kHz |
| NOTE 1: For MSR *TAB connector* supporting non-contiguous spectrum operation within any operating band the *basic limit*  within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the sub block gap, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the *basic limit* within sub-block gaps shall be -29dBm/100kHz.  NOTE 2: For MSR *multi band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUEthe *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *RF Bandwidth* on each side of the *Inter RF Bandwidth* gap, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. | | | |

Table 6.6.5.2.2-4: Local Area BS operating band unwanted emission mask (UEM) in BC1 bands

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (Note 1, 2) | Measurement bandwidth (NOTE 4) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz |  | 100 kHz |
| 5 MHz ≤ Δf < min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset < min(10.05 MHz, f\_offsetmax) | -37 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | -37 dBm (NOTE 5) | 100 kHz |
| NOTE 1: For MSR *TAB connector* supporting *non-contiguous spectrum* operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the *basic limit* within *sub-block gaps* shall be -37dBm/100 kHz.  NOTE 2: For MSR *multi-band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*. | | | |

NOTE 3: This frequency range ensures that the range of values of f\_offset is continuous.

NOTE 4: As a general rule for the requirements in the present subclause, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, 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.

NOTE 5: The requirement is not applicable when Δfmax < 10 MHz.

##### 6.6.5.2.3 *Basic limit* for Band Category 2

For a *TAB connector* operating in Band Category 2 the requirement applies outside the *Base Station RF Bandwidth edges*. In addition, for a *TAB connector* operating in *non-contiguous spectrum*, it applies inside any *sub-block gap*.

Outside the *Base Station RF Bandwidth edges*, *basic limits* are specified in tables 6.6.5.2.3-1 to 6.6.5.2.3-8 below, where:

- Δf is the separation between the *Base Station RF Bandwidth edge* frequency and the nominal -3dB point of the measuring filter closest to the carrier frequency.

- f\_offset is the separation between the *Base Station RF Bandwidth edge* frequency and the centre of the measuring filter.

- f\_offsetmax is the offset to the frequency ΔfOBUE outside the *downlink operating band*.

- Δfmax is equal to f\_offsetmax minus half of the bandwidth of the measuring filter.

For a *multi-band TAB connector*, inside any *Inter-RF Bandwidth gaps* with Wgap < 2×ΔfOBUE MHz, a combined *basic* limit shall be applied which is the cumulative sum of the *basic limit*s specified at the *Base Station RF Bandwidth edges* on each side of the *Inter-RF Bandwidth gap*. The *basic limit* for *Base Station RF Bandwidth edge* is specified in table 6.6.5.2.3-1 to 6.6.5.2.3-8 below, where in this case:

- Δf is the separation between the *Base Station RF Bandwidth edge* frequency and the nominal -3 dB point of the measuring filter closest to the carrier frequency.

- f\_offset is the separation between the *Base Station RF Bandwidth edge* frequency and the centre of the measuring filter.

- f\_offsetmax is equal to the *Inter RF Bandwidth gap* minus half of the bandwidth of the measuring filter.

- Δfmax is equal to f\_offsetmax minus half of the bandwidth of the measuring filter.

For a *multi-band TAB connector* where multiple bands are mapped on the same antenna connector and where there is no carrier transmitted in an operating band, the operating band unwanted emission limit, as defined in the tables of the present subclause for the largest frequency offset (Δfmax), of a band where there is no carrier transmitted shall apply from 10 MHz below the lowest frequency, up to 10 MHz above the highest frequency of the supported downlink operating band without any carrier transmitted. And no cumulative *basic limits* are applied in the *inter-band gap* between a supported downlink band with carrier(s) transmitted and a supported downlink band without any carrier transmitted.

Inside any *sub-block gap* for a *TAB connector* operating in *non-contiguous spectrum*, a combined *basic* limit shall be applied which is the cumulative sum of the *basic limit* specified for the adjacent sub blocks on each side of the *sub-block gap*. The *basic limit* for each sub block is specified in tables 6.6.5.2.3-1 to 6.6.5.2.3-8 below, where in this case:

- Δf is the separation between the sub block edge frequency and the nominal -3 dB point of the measuring filter closest to the sub block edge.

- f\_offset is the separation between the sub block edge frequency and the centre of the measuring filter.

- f\_offsetmax is equal to the *sub-block gap* bandwidth minus half of the bandwidth of the measuring filter.

- Δfmax is equal to f\_offsetmax minus half of the bandwidth of the measuring filter.

Applicability of Wide Area operating band unwanted emission requirements in Tables 6.6.5.2.31, 6.6.5.2.3-1a and 6.6.5.2.3-1b is specified in table 6.6.5.2.3-0.

Note: Option 1 and option 2 correspond to the Category B option 1/2 operating band unwanted emissions defined in the E-UTRA and NR specifications TS 36.104 [4] and TS 38.104 [27]. Option 2 also corresponds to the UTRA spectrum emission mask as defined in TS 25.104 [2].

Table 6.6.5.2.3-0: Applicability of operating band unwanted emission requirements for BC2 Wide Area BS

|  |  |  |
| --- | --- | --- |
| NR band operation | UTRA supported | Applicable requirement table |
| None | Y/N | 6.6.5.2.3-1 (option 2) |
| In certain regions (NOTE 2), bands 3, 8 | N | 6.6.5.2.3-1 (option 2) |
| Any below 1 GHz except for certain regions (NOTE 2), band 8 | N | 6.6.5.2.3-1a (option 1) |
| Any above 1 GHz except for certain regions (NOTE 2), band 3 | N | 6.6.5.2.3-1b (option 1) |
| NOTE 1: Void  NOTE 2: Applicable only for operation in regions where Category B limits as defined in ITU-R Recommendation SM.329 [14] are used for which category B option 2 operating band unwanted emissions requirements as defined in TS 36.104 [8] and TS 38.104 [27] are applied. | | |

Table 6.6.5.2.3-1: Wide Area BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS not supporting NR; or BS supporting NR in Band n3 or n8 – option 2

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (NOTE 2, 3) | Measurement bandwidth (NOTE 10) |
| 0 MHz ≤ Δf < 0.2 MHz  (NOTE 1) | 0.015 MHz ≤ f\_offset < 0.215 MHz | -14 dBm | 30 kHz |
| 0.2 MHz ≤ Δf < 1 MHz | 0.215 MHz ≤ f\_offset < 1.015 MHz | (Note 13) | 30 kHz |
| (NOTE 9) | 1.015 MHz ≤ f\_offset < 1.5 MHz | -26 dBm (Note 13 | 30 kHz |
| 1 MHz ≤ Δf ≤  min(Δfmax, 10 MHz) | 1.5 MHz ≤ f\_offset < min(f\_offsetmax, 10.5 MHz) | -13 dBm (Note 13) | 1 MHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax | -15 dBm (NOTE 11, 13) | 1 MHz |
| NOTE 1: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 6.6.5.2.3-2 apply for 0 MHz ≤ Δf < 0.15 MHz.  NOTE 2: For MSR *TAB connector* supporting *non-contiguous spectrum* operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks on each side of the *sub-block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub-blocks on each side of the *sub-block gap*, where the *basic limit* within *sub-block gaps* shall be -15dBm/MHz (for MSR *multi-band TAB connector*, either this limit or -16dBm/100kHz with correspondingly adjusted f\_offset shall apply for this frequency offset range for operating bands < 1 GHz).  NOTE 3: For a MSR *multi-band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUE operation the *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or *Base Station RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *Base Station RF Bandwidth*.  NOTE 13: For MSR *multi-band TAB connector*, either this limit or -16dBm/100kHz with correspondingly adjusted f\_offset shall apply for this frequency offset range for operating bands < 1 GHz. | | | |

Table 6.6.5.2.3-1a: Wide Area BS operating band unwanted emission mask (UEM) in BC2 bands below 1 GHz applicable for: BS supporting NR, not operating in band n8 and not supporting UTRA – option 1

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic limit* (Note 1, 2) | Measurement bandwidth (Note 10) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz |  | 100 kHz |
| 5 MHz ≤ Δf <  min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset <  min(10.05 MHz, f\_offsetmax) | -14 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | -16 dBm (Note 11) | 100 kHz |
| NOTE 1: For MSR *TAB connector* supporting non-contiguous spectrum operation within any operating band, the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the sub block gap, where the contribution from the far-end sub-block or *RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *RF Bandwidth*. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the *basic limit* within sub-block gaps shall be -16dBm/100kHz.  NOTE 2: For MSR *multi band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUEthe *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or RF Bandwidth on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or *RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *RF Bandwidth.*  NOTE 3: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 6.6.5.2.3-2 apply for 0 MHz ≤ Δf < 0.15 MHz. | | | |

Table 6.6.5.2.3-1b: Wide Area BS operating band unwanted emission mask (UEM) in BC2 bands above 1 GHz applicable for: BS supporting NR, not operating in band n3 and not supporting UTRA – option 1

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic limit* (Note 1, 2) | Measurement bandwidth (Note 10) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz |  | 100 kHz |
| 5 MHz ≤ Δf <  min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset <  min(10.05 MHz, f\_offsetmax) | -14 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax | -15 dBm (Note 11) | 1MHz |
| NOTE 1: For MSR *TAB connectors* supporting non-contiguous spectrum operation within any operating band, the *basic limit*  within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the *basic limit* within sub-block gaps shall be -15dBm/1MHz.  NOTE 2: For MSR *multi band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUEthe *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or *RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *RF Bandwidth.*  NOTE 3: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 6.6.5.2.3-2 apply for 0 MHz ≤ Δf < 0.15 MHz. | | | |

Table 6.6.5.2.3-2: Wide Area BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS operating with E-UTRA 1.4 or 3 MHz carriers adjacent to the *Base Station RF Bandwidth edge*

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (NOTE 5, 6) | Measurement bandwidth (NOTE 10) |
| 0 MHz ≤ Δf < 0.05 MHz | 0.015 MHz ≤ f\_offset < 0.065 MHz |  | 30 kHz |
| 0.05 MHz ≤ Δf < 0.15 MHz | 0.065 MHz ≤ f\_offset < 0.165 MHz |  | 30 kHz |
| NOTE 4: The limits in this table only apply for operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge.*  NOTE 5: For MSR *TAB connector* supporting *non-contiguous spectrum* operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*.  NOTE 6: For a MSR *multi-band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*. | | | |

Table 6.6.5.2.3-3: Medium Range BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS with maximum output power 31 < Prated,c,cell-10\*log10(NTXU,countedpercell) ≤ 38 dBm and either not supporting NR or supporting NR with UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (NOTE 2, 3) | Measurement bandwidth (NOTE 10) |
| 0 MHz ≤ Δf < 0.6 MHz  (NOTE 1) | 0.015MHz ≤ f\_offset < 0.615MHz | Prated,c,cell – 10\*log10(NTXU,countedpercell) - 58 dB - (5/3)\*(f\_offset/MHz-0,015) dB | 30 kHz |
| 0.6 MHz ≤ Δf < 1 MHz | 0.615MHz ≤ f\_offset < 1.015MHz | Prated,c,cell – 10\*log10(NTXU,countedpercell) - 53 dB - 15\*(f\_offset/MHz-0,215) dB | 30 kHz |
| (NOTE 9) | 1.015MHz ≤ f\_offset < 1.5 MHz | Prated,c,cell – 10\*log10(NTXU,countedpercell) - 65 dB | 30 kHz |
| 1 MHz ≤ Δf ≤ 2.8 MHz | 1.5 MHz ≤ f\_offset < 3.3 MHz | Prated,c,cell – 10\*log10(NTXU,countedpercell) - 52 dB | 1 MHz |
| 2.8 MHz ≤ Δf ≤ 5 MHz | 3.3 MHz ≤ f\_offset < 5.5 MHz | min(Prated,c,cell – 10\*log10(NTXU,countedpercell) - 52 dB, -15dBm) | 1 MHz |
| 5 MHz ≤ Δf ≤ Δfmax | 5.5 MHz ≤ f\_offset < f\_offsetmax | Prated,c,cell – 10\*log10(NTXU,countedpercell) - 56 dB | 1 MHz |
| NOTE 1: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 6.6.5.2.3-5 apply for 0 MHz ≤ Δf < 0.15 MHz.  NOTE 2: For a MSR *TAB connector* supporting *non-contiguous spectrum* operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub-blocks on each side of the *sub-block gap*, where the *basic limit* within *sub-block gaps* shall be (Prated,c,cell-10\*log10(NTXU,countedpercell) - 56 dB)/MHz.  NOTE 3: For a MSR *multi-band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of *the Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or *Base Station RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *Base Station RF Bandwidth*. | | | |

Table 6.6.5.2.3-3a: Medium Range BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS with maximum output power 31 < Prated,c,cell-10\*log10(NTXU,countedpercell) ≤ 38 dBm, supporting NR and not supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic limit* (Note 1, 2) | Measurement bandwidth (Note 10) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | Prated,c,cell – 10\*log10(NTXU,countedpercell)-53 dB - (7/5)\*(f\_offset/MHz-0,05) dB | 100 kHz |
| 5 MHz ≤ Δf < min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset < min(10.05 MHz, f\_offsetmax) | Prated,c,cell – 10\*log10(NTXU,countedpercell) – 60 dB | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | Min(Prated,c,cell – 10\*log10(NTXU,countedpercell) – 60 dB, -25 dBm)  (Note 11) | 100 kHz |
| NOTE 1: For MSR *TAB connectors* supporting non-contiguous spectrum operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the *basic limit* within sub-block gaps shall be Min(Prated,c,cell – 10\*log10(NTXU,countedpercell) -60 dB, -25 dBm) /100 kHz.  NOTE 2: For MSR *multi band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *RF Bandwidth* on each side of *the Inter RF Bandwidth gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block.  NOTE 3: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 6.6.5.2.3-5 apply for 0 MHz ≤ Δf < 0.15 MHz. | | | |

Table 6.6.5.2.3-4: Medium Range BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS with maximum output power Prated,c,cell-10\*log10(NTXU,countedpercell ≤ 31 dBm and either not supporting NR or supporting NR with UTRA and/or GSM

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (NOTE 2, 3) | Measurement bandwidth (NOTE 10) |
| 0 MHz ≤ Δf < 0.6 MHz  (NOTE 1) | 0.015MHz ≤ f\_offset < 0.615MHz |  | 30 kHz |
| 0.6 MHz ≤ Δf < 1 MHz | 0.615MHz ≤ f\_offset < 1.015MHz |  | 30 kHz |
| (NOTE 9) | 1.015MHz ≤ f\_offset < 1.5 MHz | -34 dBm | 30 kHz |
| 1 MHz ≤ Δf ≤ 5 MHz | 1.5 MHz ≤ f\_offset < 5.5 MHz | -21 dBm | 1 MHz |
| 5 MHz ≤ Δf ≤ Δfmax | 5.5 MHz ≤ f\_offset < f\_offsetmax | -25 dBm | 1 MHz |
| NOTE 1: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 6.6.5.2.3-6 apply for 0 MHz ≤ Δf < 0.15MHz.  NOTE 2: For a MSR *TAB connector* supporting *non-contiguous spectrum* operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub-blocks on each side of the *sub-block gap*, where the *basic limit* within *sub-block gaps* shall be -25dBm/MHz.  NOTE 3: For a MSR *multi-band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or *Base Station RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *Base Station RF Bandwidth*. | | | |

Table 6.6.5.2.3-4a: Medium Range BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS with maximum output power Prated,c,cell-10\*log10(NTXU,countedpercell) ≤ 31 dBm, supporting NR and not supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic limit* (Note 1, 2) | Measurement bandwidth (Note 10) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz |  | 100 kHz |
| 5 MHz ≤ Δf < min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset < min(10.05 MHz, f\_offsetmax) | -29 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | -29 dBm (Note 11) | 100 kHz |
| NOTE 1: For MSR *TAB connectors* supporting non-contiguous spectrum operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the *basic limit* within sub-block gaps shall be -29dBm/100kHz.  NOTE 2: For MSR *multi band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUEthe *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block.  NOTE 3: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 6.6.5.2.3-5 apply for 0 MHz ≤ Δf < 0.15 MHz. | | | |

Table 6.6.5.2.3-5: Medium Range BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS with maximum output power 31 < Prated,c,cell-10\*log10(NTXU,countedpercell) ≤ 38 dBm and operating E-UTRA 1.4 or 3 MHz carriers adjacent to the *Base Station RF Bandwidth edge*

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (NOTE 5, 6) | Measurement bandwidth (NOTE 10) |
| 0 MHz ≤ Δf < 0.05 MHz | 0.015 MHz ≤ f\_offset < 0.065 MHz | Prated,c,cell-10\*log10(NTXU,countedpercell)-38dB-60\*(f\_offset/MHz-0,015)dB | 30 kHz |
| 0.05 MHz ≤ Δf < 0.15 MHz | 0.065 MHz ≤ f\_offset < 0.165 MHz | Prated,c,cell-10\*log10(NTXU,countedpercell)-41dB-160\*(f\_offset/MHz-0,065)dB | 30 kHz |
| NOTE 4: The limits in this table only apply for operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*.  NOTE 5: For a MSR *TAB connector* supporting *non-contiguous spectrum* operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*.  NOTE 6: For a MSR *multi-band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*. | | | |

Table 6.6.5.2.3-6: Medium Range BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS with maximum output power Prated,c,cell-10\*log10(NTXU,countedpercell) ≤ 31 dBm and operating E-UTRA 1.4 or 3 MHz carriers adjacent to the *Base Station RF Bandwidth edge*

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (NOTE 5, 6) | Measurement bandwidth (NOTE 10) |
| 0 MHz ≤ Δf < 0.05 MHz | 0.015 MHz ≤ f\_offset < 0.065 MHz |  | 30 kHz |
| 0.05 MHz ≤ Δf < 0.15 MHz | 0.065 MHz ≤ f\_offset < 0.165 MHz |  | 30 kHz |
| NOTE 4: The limits in this table only apply for operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*.  NOTE 5: For a MSR *TAB connector* supporting *non-contiguous spectrum* operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*.  NOTE 6: For a MSR *multi-band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*. | | | |

Table 6.6.5.2.3-7: Local Area BS operating band unwanted emission mask (UEM) in BC2 bands

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (NOTE 2, 3) | Measurement bandwidth (NOTE 10) |
| 0 MHz ≤ Δf < 5 MHz  (NOTE 1) | 0.05 MHz ≤ f\_offset < 5.05 MHz |  | 100 kHz |
| 5 MHz ≤ Δf < min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset < min(10.05 MHz, f\_offsetmax) | -37 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | -37 dBm (NOTE 11) | 100 kHz |
| NOTE 1: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 6.6.5.2.3-8 apply for 0 MHz ≤ Δf < 0.16 MHz.  NOTE 2: For a MSR *TAB connector* supporting *non-contiguous spectrum* operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the *basic limit* within *sub-block gaps* shall be -37dBm/100 kHz.  NOTE 3: For a MSR *multi-band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*. | | | |

Table 6.6.5.2.3-8: Local Area BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS operating with E-UTRA 1.4 or 3 MHz carriers adjacent to the *Base Station RF Bandwidth edge*

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* (NOTE 5, 6) | Measurement bandwidth (NOTE 10) |
| 0 MHz ≤ Δf < 0.05 MHz | 0.015 MHz ≤ f\_offset < 0.065 MHz |  | 30 kHz |
| 0.05 MHz ≤ Δf < 0.16 MHz | 0.065 MHz ≤ f\_offset < 0.175 MHz |  | 30 kHz |
| NOTE 4: The limits in this table only apply for operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*.  NOTE 5: For a MSR *TAB connector* supporting *non-contiguous spectrum* operation within any operating band the *basic limit* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*.  NOTE 6: For a MSR *multi-band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *basic limit* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*. | | | |

The following notes are common to all subclauses in 6.6.5.2.3:

NOTE 9: This frequency range ensures that the range of values of f\_offset is continuous.

NOTE 10: As a general rule for the requirements in the present subclause, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, 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.

NOTE 11: The requirement is not applicable when Δfmax < 10 MHz.

NOTE 12: All limits in table 6.6.5.2.3‑1, table 6.6.5.2.3‑3, table 6.6.5.2.3‑4 and table 6.6.5.2.3‑7 are identical to the corresponding limits for Band Category 1 and 3.

*------------------------------ Next modified section ------------------------------*

### 7.4.2 Minimum requirement for MSR operation

#### 7.4.2.1 General minimum requirement

For the general blocking requirement, the interfering signal shall be a UTRA FDD signal as specified in 3GPP TS 37.104 [9], annex A.1 for a UTRA, E-UTRA or NR (≤ 20 MHz) wanted signal. The interfering signal shall be a 20 MHz E-UTRA signal for NR wanted signal channel bandwidth greater than 20MHz.

The requirement is applicable outside the *Base Station RF Bandwidth* or *Radio Bandwidth*. The interfering signal offset is defined relative to the *Base Station RF Bandwidth* *edges* or *Radio Bandwidth* edges applicable to each *TAB connector*.

For *TAB connector* supporting operation in *non-contiguous spectrum*, the requirement applies in addition inside any *sub-block gap*, in case the *sub-block gap* size is at least 15 MHz. The interfering signal offset is defined relative to the *sub-block* edges inside the *sub-block gap*.

For *multi-band TAB connectors*, the requirement applies in addition inside any *Inter RF Bandwidth gap* at those connectors, in case the gap size is at least 15 MHz. The interfering signal offset is defined relative to the *Base Station RF Bandwidth* *edges* inside the *Inter RF Bandwidth gap*.

For the wanted and interfering signal coupled to the *TAB connector*, using the parameters in tables 7.4.2.1‑1 and 7.4.2.1‑2, the following requirements shall be met:

- For any E-UTRA carrier, the throughput shall be ≥ 95 % of the *maximum throughput* of the reference measurement channel defined in 3GPP TS 36.104 [8], subclause 7.2.1.

- For any UTRA FDD carrier, the BER shall not exceed 0,001 for the reference measurement channel defined in 3GPP TS 25.104 [6], subclause 7.2.1.

- For any UTRA TDD carrier, the BER shall not exceed 0,001 for the reference measurement channel defined in 3GPP TS 25.105 [7], subclause 7.2.1.2.

- For any NR carrier, the throughput shall be ≥ 95% of the maximum throughput of the reference measurement channel defined for *BS type 1-H* in TS 38.104 [28], subclause 7.2.2.For *multi-band TAB connectors*, the requirement applies according to table 7.4.2.1-1 at those connectors for the in-band blocking frequency ranges of each supported operating band.

Table 7.4.2.1-1: General blocking requirement

| Base Station Type | Mean power of interfering signal [dBm] | Wanted Signal mean power [dBm]  (NOTE 1) | Centre Frequency of Interfering Signal | Interfering signal centre frequency minimum offset from the *Base Station RF Bandwidth edge* or edge of *sub-block* inside a gap (MHz) |
| --- | --- | --- | --- | --- |
| Wide Area BS | -40 + y (NOTE 7) | PREFSENS + x dB  (NOTE 2) | FUL\_low - ΔfOOB to FUL\_high + ΔfOOB(Note 7) | ±(7.5+z) (NOTE 9) |
| Medium Range BS | -35 + y (NOTE 7) | PREFSENS + x dB  (NOTE 3,5) |
| Local Area BS | -30 + y (NOTE 7) | PREFSENS + x dB  (NOTE 4,5) |
| NOTE 1: PREFSENS depends on the RAT, the BS class and on the *channel bandwidth*, see subclause 7.2.2.  NOTE 2: For WA BS, "x" is equal to 6 in case of NR or E-UTRA or UTRA wanted signals.  NOTE 3: For MR BS supporting UTRA, "x" is equal to 6 in case of UTRA wanted signals, 9 in case of NR or E-UTRA wanted signal.  NOTE 4: For LA BS supporting UTRA, "x" is equal to 11 in case of NR or E-UTRA wanted signal, 6 in case of UTRA wanted signal.  NOTE 5: For a BS not supporting UTRA, x is equal to 6 for all BS classes if NR is supported, otherwise “x” is equal to 9 for MR BS or 11 for LA BS if NR is not supported.  NOTE 6: For a BS capable of multi-band operation, "x" in Note 2, 3, 4, 5 applies in case of interfering signals that are in the in-band blocking frequency range of the operating band where the wanted signal is present or in an adjacent or overlapping band. For other in-band blocking frequency ranges of the interfering signal for the supported operating bands, "x" is equal to 1.4 dB.  NOTE 7: For a BS that supports NR but does not support UTRA, "y" is equal to -3 for the WA and MR BS class and -5 for the LA BS class. For all other cases, “y” is equal to zero for all BS classes.  NOTE 8: The downlink frequency range of an FDD operating band is excluded from the general blocking requirement.  NOTE 9: For NR wanted signal channel bandwidth greater than 20 MHz, z = 22.5. For all other cases, z = 0. | | | | |

*------------------------------ Unchanged part omitted ------------------------------*

*------------------------------ Next modified section ------------------------------*

### 7.7.2 Minimum requirement for MSR operation

#### 7.7.2.1 General intermodulation minimum requirement

Interfering signals shall be a CW signal and an E-UTRA or UTRA signal as specified in 3GPP TS 37.104 [9], annex A.

The requirement is applicable outside the *Base Station RF Bandwidth* or *Radio Bandwidth*. The interfering signal offset is defined relative to the *Base Station RF Bandwidth* *edges* or *Radio Bandwidth* edges.

For *multi-band TAB connectors*, the requirement applies in addition inside any *Inter RF Bandwidth gap* at those connectors, in case the gap size is at least twice as wide as the UTRA/E-UTRA interfering signal centre frequency offset from the *Base Station RF Bandwidth* *edge*. The interfering signal offset is defined relative to the *Base Station RF Bandwidth* *edges* inside the *Inter RF Bandwidth gap*.

For the wanted signal at the assigned channel frequency and two interfering signals coupled to the *TAB connector*, using the parameters in tables 7.7.2.1-1 and 7.7.2.1-2, the following requirements shall be met:

- For any E-UTRA carrier, the throughput shall be ≥ 95 % of the *maximum throughput* of the reference measurement channel defined in 3GPP TS 36.104 [8], subclause 7.2.1.

- For any UTRA FDD carrier, the BER shall not exceed 0,001 for the reference measurement channel defined in 3GPP TS 25.104 [6], subclause 7.2.1.

- For any UTRA TDD carrier, the BER shall not exceed 0,001 for the reference measurement channel defined in 3GPP TS 25.105 [7], subclause 7.2.1.2.

- For any NR carrier, the throughput shall be ≥ 95% of the maximum throughput of the reference measurement channel defined for *BS type 1-H* in TS 38.104 [28], subclause 7.2.2

Table 7.7.2.1-1: General intermodulation requirement

| Base Station Type | Mean power of interfering signals [dBm] | Wanted Signal mean power [dBm] | Type of interfering signals |
| --- | --- | --- | --- |
| Wide Area BS | -48 + y (NOTE 6) | PREFSENS +x dB (NOTE 2) | See table 7.7.2.1-2 |
| Medium Range BS | -44 + y (NOTE 6) | PREFSENS +x dB (NOTE 3, 5) |
| Local Area BS | -38 + y (NOTE 6) | PREFSENS +x dB (NOTE 4, 5) |
| NOTE 1: PREFSENS depends on the RAT, the BS class and on the *channel bandwidth*, see subclause 7.2.2.  NOTE 2: For WA BS, "x" is equal to 6 in case of NR or E-UTRA or UTRA wanted signals.  NOTE 3: For MR BS supporting UTRA, "x" is equal to 6 in case of UTRA wanted signals, 9 in case of NR or E-UTRA wanted signal.  NOTE 4: For LA BS supporting UTRA, "x" is equal to 12 in case of NR or E-UTRA wanted signals, 6 in case of UTRA wanted signal.  NOTE 5: For a BS not supporting UTRA, x is equal to 6 for all BS classes if NR is supported, or x is equal to 9 for MR and 12 for LA BS if NR is not supported.  NOTE 6: For a BS that supports NR but not UTRA; "y" is equal to -4 for the WA BS class, -3 for the MR BS class and -6 for the LA BS class. For all other cases, “y” is equal to zero for all BS classes. | | | |

*------------------------------ Unchanged part omitted ------------------------------*

*------------------------------ Next modified section ------------------------------*

#### 9.7.5.2 Minimum requirement for MSR operation

##### 9.7.5.2.1 General

The MSR operating band unwanted emission minimum requirements are given in subclauses 9.7.5.2.2, 9.7.5.2.3, and 9.7.5.2.4.

##### 9.7.5.2.2 Minimum requirements for Band Categories 1 and 3

For an MSR RIB operating in BC1 or BC3 bands, the minimum requirements are specified in tables 9.7.5.2.2-1 to 9.7.5.2.2-4, dependent on BS class and output power.

Applicability of Wide Area operating band unwanted emission requirements in tables 9.7.5.2.2-1, 9.7.5.2.2-1a and 9.7.5.2.2-1b is specified in table 9.7.5.2.2-0.

Table 9.7.5.2.2-0: Applicability of operating band unwanted emission requirements for BC1 and BC3 Wide Area BS

|  |  |  |
| --- | --- | --- |
| NR band operation | UTRA supported (NOTE 1) | Applicable requirement table |
| None | Y/N | 9.7.5.2.2-1 |
| In certain regions (NOTE 2), bands 3, 8 | N | 9.7.5.2.2-1 |
| Any below 1 GHz except for certain regions (NOTE 2), band 8 | N | 9.7.5.2.2-1a |
| Any above 1 GHz except for certain regions (NOTE 2), band 3 | N | 9.7.5.2.2-1b |
| NOTE 1: NR operation with UTRA is not supported in this version of specification.  NOTE 2: Applicable only for operation in regions where Category B limits as defined in ITU-R Recommendation SM.329 [14] are used for which category B option 2 operating band unwanted emissions requirements as defined in TS 36.104 [8] and TS 38.104 [27] are applied. | | |

Table 9.7.5.2.2-1: Wide Area BS operating band unwanted emission mask (UEM) in BC1 and BC3 bands applicable for: BS not supporting NR; or BS supporting NR in Band n1 or n65

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency offset of measurement filter ‑3dB point, Δf** | **Frequency offset of measurement filter centre frequency, f\_offset** | **Minimum requirement (NOTE 1, 2)** | **Measurement bandwidth (NOTE 4)** |
| 0 MHz ≤ Δf < 0.2 MHz | 0.015MHz ≤ f\_offset < 0.215MHz | -5 dBm | 30 kHz |
| 0.2 MHz ≤ Δf < 1 MHz | 0.215MHz ≤ f\_offset < 1.015MHz |  | 30 kHz |
| (NOTE 3) | 1.015MHz ≤ f\_offset < 1.5 MHz | -17 dBm | 30 kHz |
| 1 MHz ≤ Δf ≤  min(Δfmax, 10 MHz) | 1.5 MHz ≤ f\_offset < min(f\_offsetmax, 10.5 MHz) | -4 dBm | 1 MHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax | -6 dBm (NOTE 5) | 1 MHz |
| NOTE 1: For MSR RIB supporting *non-contiguous spectrum* operation within any operating band the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks on each side of the *sub-block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub-blocks on each side of the *sub-block gap*, where the *minimum requirement* within *sub-block gaps* shall be -6dBm/MHz.  NOTE2: For MSR *multi-band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *minimum requirement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or RF Bandwidth shall be scaled according to the measurement bandwidth of the near-end sub-block or RF Bandwidth. | | | |

Table 9.7.5.2.2-1a: Wide Area BS operating band unwanted emission mask (UEM) in BC1 and BC3 bands below 1 GHz applicable for: BS supporting NR and not supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Minimum requirement(Note 1, 2) | Measurement bandwidth (Note 4) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz |  | 100 kHz |
| 5 MHz ≤ Δf <  min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset <  min(10.05 MHz, f\_offsetmax) | -5 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | -7 dBm (Note 5) | 100 kHz |
| NOTE 1: For MSR *RIB* supporting non-contiguous spectrum operation within any operating band, the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub block gap*, where the contribution from the far-end sub-block or RF Bandwidth shall be scaled according to the measurement bandwidth of the near-end sub-block or *RF Bandwidth*. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the sub-block gap, where the *minimum requirement* within sub-block gaps shall be -7dBm/100kHz.  NOTE 2: For MSR *multi band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *minimum requirement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or Base station *RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or RF Bandwidth shall be scaled according to the measurement bandwidth of the near-end sub-block or *RF Bandwidth*.  NOTE 3: For operation with an E-UTRA 1.4 or 3MHz carrier adjacent to the Base Station RF Bandwidth edge, the limits in Table 6.6.2.2-2 apply for 0 MHz ≤ Δf < 0.15 MHz. | | | |

Table 9.7.5.2.2-1b: Wide Area BS operating band unwanted emission mask (UEM) in BC1 and BC3 bands above 1 GHz applicable for: BS supporting NR, not operating in band n1 or n65 and not supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Minimum requirement(Note 1, 2) | Measurement bandwidth (Note 4) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz |  | 100 kHz |
| 5 MHz ≤ Δf <  min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset <  min(10.05 MHz, f\_offsetmax) | -5 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax | -6 dBm (Note 5) | 1MHz |
| NOTE 1: For MSR *RIB* supporting non-contiguous spectrum operation within any operating band, the *minimum requirement* within sub-block gaps is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the *minimum requirement* within sub-block gaps shall be -6dBm/1MHz.  NOTE 2: For MSR *multi band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *basic limit* within the Inter RF Bandwidth gaps is calculated as a cumulative sum of contributions from adjacent sub-blocks or *RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or RF Bandwidth shall be scaled according to the measurement bandwidth of the near-end sub-block or *RF Bandwidth.*  NOTE 3: For operation with an E-UTRA 1.4 or 3MHz carrier adjacent to the Base Station RF Bandwidth edge, the limits in Table 6.6.2.2-2 apply for 0 MHz ≤ Δf < 0.15 MHz. | | | |

Table 9.7.5.2.2-2: Medium Range BS operating band unwanted emission mask (UEM) in BC1 bands applicable for: BS with maximum output power 40 < Prated,c,TRP ≤ 47 dBm and not supporting NR

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency offset of measurement filter ‑3dB point, Δf** | **Frequency offset of measurement filter centre frequency, f\_offset** | **Minimum requirement (NOTE 1, 2)** | **Measurement bandwidth (NOTE 4)** |
| 0 MHz ≤ Δf < 0.6 MHz | 0.015MHz ≤ f\_offset < 0.615MHz | Prated,c,TRP - 58dB - (5/3)\*(f\_offset-0,015) dB | 30 kHz |
| 0.6 MHz ≤ Δf < 1 MHz | 0.615MHz ≤ f\_offset < 1.015MHz | Prated,c,TRP - 53dB - 15\*(f\_offset-0,015) dB | 30 kHz |
| (NOTE 3) | 1.015MHz ≤ f\_offset < 1.5 MHz | Prated,c,TRP – 65 dB | 30 kHz |
| 1 MHz ≤ Δf ≤ 2.6 MHz | 1.5 MHz ≤ f\_offset < 3.1 MHz | Prated,c,TRP –52 dB | 1 MHz |
| 2.6 MHz ≤ Δf ≤ 5 MHz | 3.1 MHz ≤ f\_offset < 5.5 MHz | min(Prated,c,TRP – 52 dB, -6dBm) | 1 MHz |
| 5 MHz ≤ Δf ≤ Δfmax | 5.5 MHz ≤ f\_offset < f\_offsetmax | Prated,c,TRP –56 dB | 1 MHz |
| NOTE 1: For MSR RIB supporting *non-contiguous spectrum* operation within any operating band the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub-blocks on each side of the *sub-block gap*, where the *minimum requirement* within *sub-block gaps* shall be (Prated,c,TRP - 56 dB) /MHz.  NOTE 2: For MSR multi-band *RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *minimum requirement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or *Base Station RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *Base Station RF Bandwidth*. | | | |

Table 9.7.5.2.2-2a: Medium Range BS operating band unwanted emission mask (UEM) in BC1 bands applicable for: BS with maximum output power 40 < Prated,c,TRP ≤ 47 dBm BS, supporting NR and not supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | *Minimum requirement* (Note 1, 2) | Measurement bandwidth (Note 4) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | Prated,c,TRP – 53 dB - (7/5)\*(f\_offset-0,05) dB | 100 kHz |
| 5 MHz ≤ Δf < min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset < min(10.05 MHz, f\_offsetmax) | Prated,c,TRP – 60 dB | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | Min(Prated,c,TRP – 60 dB, -16 dBm) (Note 4) | 100 kHz |
| NOTE 1: For MSR *RIB* supporting non-contiguous spectrum operation within any operating band the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the *minimum requirement* within sub-block gaps shall be Min(Prated,c,TRP – 60 dB, -16 dBm)/100 kHz.  NOTE 2: For MSR *multi band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *minimum requriement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or RF Bandwidth on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. | | | |

Table 9.7.5.2.2-3: : Medium Range BS operating band unwanted emission mask (UEM) in BC1 bands applicable for: BS with maximum output power Prated,c,TRP ≤ 40 dBm and not supporting NR

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency offset of measurement filter ‑3dB point, Δf** | **Frequency offset of measurement filter centre frequency, f\_offset** | **Minimum requirement (NOTE 1, 2)** | **Measurement bandwidth (NOTE 4)** |
| 0 MHz ≤ Δf < 0.6 MHz | 0.015MHz ≤ f\_offset < 0.615MHz |  | 30 kHz |
| 0.6 MHz ≤ Δf < 1 MHz | 0.615MHz ≤ f\_offset < 1.015MHz |  | 30 kHz |
| (NOTE 3) | 1.015MHz ≤ f\_offset < 1.5 MHz | -25 dBm | 30 kHz |
| 1 MHz ≤ Δf ≤ 5 MHz | 1.5 MHz ≤ f\_offset < 5.5 MHz | -12 dBm | 1 MHz |
| 5 MHz ≤ Δf ≤ Δfmax | 5.5 MHz ≤ f\_offset < f\_offsetmax | -16 dBm | 1 MHz |
| NOTE 1: For MSR RIB supporting *non-contiguous spectrum* operation within any operating band the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub-blocks on each side of the *sub-block gap*, where the *minimum requirement* within *sub-block gaps* shall be -16 dBm/MHz.  NOTE 2: For MSR *multi-band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *minimum requirement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or *Base Station RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *Base Station RF Bandwidth*. | | | |

Table 9.7.5.2.2-3a: Medium Range BS operating band unwanted emission mask (UEM) in BC1 bands applicable for: BS with maximum output power Prated,c,TRP ≤ 40 dBm, supporting NR and not supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Minimum requirement (Note 1, 2) | Measurement bandwidth (Note 4) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | -13 dBm – 7/5(f\_offset/MHz – 0.05) dB | 100 kHz |
| 5 MHz ≤ Δf < min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset < min(10.05 MHz, f\_offsetmax) | -20 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | -20 dBm (Note 4) | 100 kHz |
| NOTE 1: For MSR *RIB*  supporting non-contiguous spectrum operation within any operating band the *minimum requriement*  within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the sub block gap, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the *minimum requirement* within sub-block gaps shall be -20 dBm/100 kHz.  NOTE 2: For MSR *multi band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *minimum requirement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *RF Bandwidth* on each side of the *Inter RF Bandwidth* gap, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. | | | |

Table 9.7.5.2.2-4: Local Area BS operating band unwanted emission mask (UEM) in BC1 bands

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency offset of measurement filter ‑3dB point, Δf** | **Frequency offset of measurement filter centre frequency, f\_offset** | **Minimum requirement (NOTE 1, 2)** | **Measurement bandwidth (NOTE 4)** |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz |  | 100 kHz |
| 5 MHz ≤ Δf < min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset < min(10.05 MHz, f\_offsetmax) | -28 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | -28 dBm (NOTE 5) | 100 kHz |
| NOTE 1: For MSR RIB supporting *non-contiguous spectrum* operation within any operating band the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the *minimum requirement* within *sub-block gaps* shall be -28dBm/100 kHz.  NOTE 2: For MSR *multi-band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *minimum requirement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*. | | | |

NOTE 3: This frequency range ensures that the range of values of f\_offset is continuous.

NOTE 4: As a general rule for the requirements in the present subclause, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, 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.

NOTE 5: The requirement is not applicable when Δfmax < 10 MHz.

##### 9.7.5.2.3 *Minimum requirement* for Band Category 2

For an MSR RIB operating in BC2 bands, the minimum requirements are specified in tables 9.7.5.2.3-1 to 9.7.5.2.3-8.

Applicability of Wide Area operating band unwanted emission requirements in tables 9.7.5.2.3-1, 9.7.5.2.3-1a and 9.7.5.2.3-1b is specified in table 9.7.5.2.3-0.

Table 9.7.5.2.3-0: Applicability of operating band unwanted emission requirements for BC1 and BC3 Wide Area BS

|  |  |  |
| --- | --- | --- |
| NR band operation | UTRA supported (NOTE 1) | Applicable requirement table |
| None | Y/N | 9.7.5.2.3-1 |
| In certain regions (NOTE 2), bands 3, 8 | N | 9.7.5.2.3-1 |
| Any below 1 GHz except for certain regions (NOTE 2), band 8 | N | 9.7.5.2.3-1a |
| Any above 1 GHz except for certain regions (NOTE 2), band 3 | N | 9.7.5.2.3-1b |
| NOTE 1: NR operation with UTRA is not supported in this version of specification.  NOTE 2: Applicable only for operation in regions where Category B limits as defined in ITU-R Recommendation SM.329 [14] are used for which category B option 2 operating band unwanted emissions requirements as defined in TS 36.104 [8] and TS 38.104 [27] are applied. | | |

Table 9.7.5.2.3-1: Wide Area BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS not supporting NR; or BS supporting NR in Band n3 or n8

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency offset of measurement filter ‑3dB point, Δf** | **Frequency offset of measurement filter centre frequency, f\_offset** | **Minimum requirement (NOTE 2, 3)** | **Measurement bandwidth (NOTE 10)** |
| 0 MHz ≤ Δf < 0.2 MHz  (NOTE 1) | 0.015 MHz ≤ f\_offset < 0.215 MHz | -5 dBm | 30 kHz |
| 0.2 MHz ≤ Δf < 1 MHz | 0.215 MHz ≤ f\_offset < 1.015 MHz |  | 30 kHz |
| (NOTE 9) | 1.015 MHz ≤ f\_offset < 1.5 MHz | -17 dBm | 30 kHz |
| 1 MHz ≤ Δf ≤  min(Δfmax, 10 MHz) | 1.5 MHz ≤ f\_offset < min(f\_offsetmax, 10.5 MHz) | -4 dBm | 1 MHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax | -6 dBm (NOTE 11) | 1 MHz |
| NOTE 1: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 9.7.5.2.3-2 apply for 0 MHz ≤ Δf < 0.15 MHz.  NOTE 2: For MSR RIB supporting *non-contiguous spectrum* operation within any operating band the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks on each side of the *sub-block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub-blocks on each side of the *sub-block gap*, where the *minimum requirement* within *sub-block gaps* shall be -6dBm/MHz.  NOTE 3: For a MSR *multi-band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE operation the *minimum requirement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or *Base Station RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *Base Station RF Bandwidth*. | | | |

Table 9.7.5.2.3-1a: Wide Area BS operating band unwanted emission mask (UEM) in BC2 bands below 1 GHz applicable for: BS supporting NR, not operating in band n8 and not supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Minimum requirement (Note 1, 2) | Measurement bandwidth (Note 10) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | 2 dBm – 7/5(f\_offset/MHz – 0.05) dB | 100 kHz |
| 5 MHz ≤ Δf <  min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset <  min(10.05 MHz, f\_offsetmax) | -5 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | -7 dBm (Note 11) | 100 kHz |
| NOTE 1: For MSR *RIB* supporting non-contiguous spectrum operation within any operating band, the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the sub block gap, where the contribution from the far-end sub-block or *RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *RF Bandwidth*. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the minimum requirement within sub-block gaps shall be -7 dBm/100 kHz.  NOTE 2: For MSR *multi band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the minimum requirement within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or RF Bandwidth on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or *RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *RF Bandwidth.*  NOTE 3: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 9.7.5.2.3-2 apply for 0 MHz ≤ Δf < 0.15 MHz. | | | |

Table 9.7.5.2.3-1b: Wide Area BS operating band unwanted emission mask (UEM) in BC2 bands above 1 GHz applicable for: BS supporting NR, not operating in band n3 and not supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Minimum requirement (Note 1, 2) | Measurement bandwidth (Note 10) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | 2 dBm – 7/5(f\_offset/MHz – 0.05) dB | 100 kHz |
| 5 MHz ≤ Δf <  min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset <  min(10.05 MHz, f\_offsetmax) | -5 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax | -7 dBm (Note 11) | 1MHz |
| NOTE 1: For MSR *RIBs* supporting non-contiguous spectrum operation within any operating band, the minimum requirement within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the minimum requirement within sub-block gaps shall be -7dBm/1MHz.  NOTE 2: For MSR *multi band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the minimum requirement within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or *RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *RF Bandwidth.*  NOTE 3: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 9.7.5.2.3-2 apply for 0 MHz ≤ Δf < 0.15 MHz. | | | |

Table 9.7.5.2.3-2: Wide Area BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS operating with E-UTRA 1.4 or 3 MHz carriers adjacent to the *Base Station RF Bandwidth edge*

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency offset of measurement filter ‑3dB point, Δf** | **Frequency offset of measurement filter centre frequency, f\_offset** | **Minimum requirement (NOTE 2, 3)** | **Measurement bandwidth (NOTE 10)** |
| 0 MHz ≤ Δf < 0.05 MHz | 0.015 MHz ≤ f\_offset < 0.065 MHz |  | 30 kHz |
| 0.05 MHz ≤ Δf < 0.15 MHz | 0.065 MHz ≤ f\_offset < 0.165 MHz |  | 30 kHz |
| NOTE 1: The limits in this table only apply for operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge.*  NOTE 2: For MSR RIB supporting *non-contiguous spectrum* operation within any operating band the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*.  NOTE 3: For a MSR *multi-band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *minimum requirement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*.  NOTE 4: (Void) | | | |

Table 9.7.5.2.3-3: Medium Range BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS with maximum output power 40 < Prated,c,TRP ≤ 47 dBm and not supporting NR

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency offset of measurement filter ‑3dB point, Δf** | **Frequency offset of measurement filter centre frequency, f\_offset** | **Minimum requirement (NOTE 2, 3)** | **Measurement bandwidth (NOTE 10)** |
| 0 MHz ≤ Δf < 0.6 MHz  (NOTE 1) | 0.015MHz ≤ f\_offset < 0.615MHz | Prated,c,TRP-58dB-(5/3)\*(f\_offset-0,015)dB | 30 kHz |
| 0.6 MHz ≤ Δf < 1 MHz | 0.615MHz ≤ f\_offset < 1.015MHz | Prated,c,TRP-53dB-15\*(f\_offset-0,215)dB | 30 kHz |
| (NOTE 9) | 1.015MHz ≤ f\_offset < 1.5 MHz | Prated,c,TRP  - 65 dB | 30 kHz |
| 1 MHz ≤ Δf ≤ 2.8 MHz | 1.5 MHz ≤ f\_offset < 3.3 MHz | Prated,c,TRP  - 52 dB | 1 MHz |
| 2.8 MHz ≤ Δf ≤ 5 MHz | 3.3 MHz ≤ f\_offset < 5.5 MHz | Prated,c,TRP  - 52 dB, -6dBm) | 1 MHz |
| 5 MHz ≤ Δf ≤ Δfmax | 5.5 MHz ≤ f\_offset < f\_offsetmax | Prated,c,TRP  - 56 dB | 1 MHz |
| NOTE 1: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 9.7.5.2.3-5 apply for 0 MHz ≤ Δf < 0.15 MHz.  NOTE 2: For a MSR RIB supporting *non-contiguous spectrum* operation within any operating band the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub-blocks on each side of the *sub-block gap*, where the *minimum requirement* within *sub-block gaps* shall be (Prated,c,TRP - 56 dB)/MHz.  NOTE 3: For a MSR *multi-band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *minimum requirement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of *the Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or *Base Station RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *Base Station RF Bandwidth*. | | | |

Table 9.7.5.2.3-3a: Medium Range BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS with maximum output power 40 < Prated,c,TRP ≤ 47 dBm, supporting NR and not supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Minimum requirement (Note 1, 2) | Measurement bandwidth (Note 10) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | Prated,c,TRP – 53 dB - (7/5)\*(f\_offset-0,05) dB | 100 kHz |
| 5 MHz ≤ Δf < min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset < min(10.05 MHz, f\_offsetmax) | Prated,c,TRP – 60 dB | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | Min(Prated,c,TRP – 60 dB, -16 dBm) (Note 11) | 100 kHz |
| NOTE 1: For MSR *RIBs* supporting non-contiguous spectrum operation within any operating band the minimum requirement within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the minimum requirement within sub-block gaps shall be Min(Prated,c,TRP -60 dB, -16 dBm)/100 kHz.  NOTE 2: For MSR *multi band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the minimum requirement within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *RF Bandwidth* on each side of *the Inter RF Bandwidth gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block.  NOTE 3: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 9.7.5.2.3-5 apply for 0 MHz ≤ Δf < 0.15 MHz. | | | |

Table 9.7.5.2.3-4: Medium Range BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS with maximum output power Prated,c,TRP ≤ 40 dBm and not supporting NR

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency offset of measurement filter ‑3dB point, Δf** | **Frequency offset of measurement filter centre frequency, f\_offset** | **Minimum requirement (NOTE 2, 3)** | **Measurement bandwidth (NOTE 10)** |
| 0 MHz ≤ Δf < 0.6 MHz  (NOTE 1) | 0.015MHz ≤ f\_offset < 0.615MHz |  | 30 kHz |
| 0.6 MHz ≤ Δf < 1 MHz | 0.615MHz ≤ f\_offset < 1.015MHz |  | 30 kHz |
| (NOTE 9) | 1.015MHz ≤ f\_offset < 1.5 MHz | -25 dBm | 30 kHz |
| 1 MHz ≤ Δf ≤ 5 MHz | 1.5 MHz ≤ f\_offset < 5.5 MHz | -12 dBm | 1 MHz |
| 5 MHz ≤ Δf ≤ Δfmax | 5.5 MHz ≤ f\_offset < f\_offsetmax | -16 dBm | 1 MHz |
| NOTE 1: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 6.6.2.2-6 apply for 0 MHz ≤ Δf < 0.15MHz.  NOTE 2: For a MSR RIB supporting *non-contiguous spectrum* operation within any operating band the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub-blocks on each side of the *sub-block gap*, where the *minimum requirement* within *sub-block gaps* shall be -16dBm/MHz.  NOTE 3: For a MSR *multi-band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *minimum requirement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block or *Base Station RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end sub-block or *Base Station RF Bandwidth*. | | | |

Table 9.7.5.2.3-4a: Medium Range BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS maximum output power Prated,c,TRP ≤ 40 dBm, supporting NR and not supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Minimum requirement (Note 1, 2) | Measurement bandwidth (Note 10) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | -13 dBm – 7/5(f\_offset/MHz – 0.05) dB | 100 kHz |
| 5 MHz ≤ Δf < min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset < min(10.05 MHz, f\_offsetmax) | -20 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | -20 dBm (Note 11) | 100 kHz |
| NOTE 1: For MSR *RIBs* supporting non-contiguous spectrum operation within any operating band the minimum requirement within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub block gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the minimum requirement within sub-block gaps shall be -20 dBm/100 kHz.  NOTE 2: For MSR *multi band TAB connector* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the minimum requirement within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *RF Bandwidth* on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end sub-block shall be scaled according to the measurement bandwidth of the near-end sub-block.  NOTE 3: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 9.7.5.2.3-6 apply for 0 MHz ≤ Δf < 0.15 MHz. | | | |

Table 9.7.5.2.3-5: Medium Range BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS with maximum output power 40 < Prated,c,TRP ≤ 47 dBm and operating with E-UTRA 1.4 or 3 MHz carriers adjacent to the *Base Station RF Bandwidth edge*

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency offset of measurement filter ‑3dB point, Δf** | **Frequency offset of measurement filter centre frequency, f\_offset** | **Minimum requirement (NOTE 2, 3)** | **Measurement bandwidth (NOTE 10)** |
| 0 MHz ≤ Δf < 0.05 MHz | 0.015 MHz ≤ f\_offset < 0.065 MHz | Prated,c,TRP-38dB-60\*(f\_offset-0,015)dB | 30 kHz |
| 0.05 MHz ≤ Δf < 0.15 MHz | 0.065 MHz ≤ f\_offset < 0.165 MHz | Prated,c,TRP-41dB-160\*(f\_offset-0,065)dB | 30 kHz |
| NOTE 1: The limits in this table only apply for operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*.  NOTE 2: For a MSR RIB supporting *non-contiguous spectrum* operation within any operating band the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*.  NOTE 3: For a MSR *multi-band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *minimum requirement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*. | | | |

Table 9.7.5.2.3-6: Medium Range BS operating band unwanted emission mask (UEM) in BC2 bands applicable for: BS with maximum output power Prated,c,TRP ≤ 40 dBm and operating E-UTRA 1.4 or 3 MHz carriers adjacent to the *Base Station RF Bandwidth edge*

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency offset of measurement filter ‑3dB point, Δf** | **Frequency offset of measurement filter centre frequency, f\_offset** | **Minimum requirement (NOTE 2, 3)** | **Measurement bandwidth (NOTE 10)** |
| 0 MHz ≤ Δf < 0.05 MHz | 0.015 MHz ≤ f\_offset < 0.065 MHz |  | 30 kHz |
| 0.05 MHz ≤ Δf < 0.15 MHz | 0.065 MHz ≤ f\_offset < 0.165 MHz |  | 30 kHz |
| NOTE 1: The limits in this table only apply for operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*.  NOTE 2: For a MSR RIB supporting *non-contiguous spectrum* operation within any operating band the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*.  NOTE 3: For a MSR *multi-band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *minimum requirement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*.  NOTE 4: (Void) | | | |

Table 9.7.5.2.3-7: Local Area BS operating band unwanted emission mask (UEM) in BC2 bands

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency offset of measurement filter ‑3dB point, Δf** | **Frequency offset of measurement filter centre frequency, f\_offset** | **Minimum requirement (NOTE 2, 3)** | **Measurement bandwidth (NOTE 10)** |
| 0 MHz ≤ Δf < 5 MHz  (NOTE 1) | 0.05 MHz ≤ f\_offset < 5.05 MHz |  | 100 kHz |
| 5 MHz ≤ Δf < min(10 MHz, Δfmax) | 5.05 MHz ≤ f\_offset < min(10.05 MHz, f\_offsetmax) | -28 dBm | 100 kHz |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | -28 dBm (NOTE 11) | 100 kHz |
| NOTE 1: For operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*, the limits in table 9.7.5.2.3-8 apply for 0 MHz ≤ Δf < 0.16 MHz.  NOTE 2: For a MSR RIB supporting *non-contiguous spectrum* operation within any operating band the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*. Exception is f ≥ 10MHz from both adjacent sub blocks on each side of the *sub-block gap*, where the *minimum requirement* within *sub-block gaps* shall be -28dBm/100 kHz.  NOTE 3: For a MSR *multi-band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *minimum requirement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*. | | | |

Table 9.7.5.2.3-8: Local Area BS operating band unwanted emission mask (UEM) for operation in BC2 bands applicable for: BS operating with E-UTRA 1.4 or 3 MHz carriers adjacent to the *Base Station RF Bandwidth edge*

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Minimum requirement (NOTE 2, 3) | Measurement bandwidth (NOTE 10) |
| 0 MHz ≤ Δf < 0.05 MHz | 0.015 MHz ≤ f\_offset < 0.065 MHz |  | 30 kHz |
| 0.05 MHz ≤ Δf < 0.16 MHz | 0.065 MHz ≤ f\_offset < 0.175 MHz |  | 30 kHz |
| NOTE 1: The limits in this table only apply for operation with an E-UTRA 1.4 or 3 MHz carrier adjacent to the *Base Station RF Bandwidth edge*.  NOTE 2: For a MSRRIB supporting *non-contiguous spectrum* operation within any operating band the *minimum requirement* within *sub-block gaps* is calculated as a cumulative sum of contributions from adjacent sub blocks on each side of the *sub-block gap*.  NOTE 3: For a MSR *multi-band RIB* with *Inter RF Bandwidth gap* < 2×ΔfOBUE the *minimum requirement* within the *Inter RF Bandwidth gaps* is calculated as a cumulative sum of contributions from adjacent sub-blocks or *Base Station RF Bandwidth* on each side of the *Inter RF Bandwidth gap*.  NOTE 4: (Void) | | | |

The following notes are common to all subclauses in 9.7.5.2.3:

NOTE 9: This frequency range ensures that the range of values of f\_offset is continuous.

NOTE 10: As a general rule for the requirements in the present subclause, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, 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.

NOTE 11: The requirement is not applicable when Δfmax < 10 MHz.

NOTE 12: All limits in table 9.7.5.2.3‑1, table 9.7.5.2.3‑3, table 9.7.5.2.3‑4 and table 9.7.5.2.3‑7 are identical to the corresponding limits for Band Category 1 and 3.

*------------------------------ Next modified section ------------------------------*

### 10.5.2 Minimum requirement for MSR operation

#### 10.5.2.1 General minimum requirement

For the general blocking requirement, the interfering signal shall be a UTRA FDD signal as specified in 3GPP TS 37.104 [9], annex A for a UTRA, E-UTRA or NR (≤ 20 MHz) wanted signal. The interfering signal shall be a 20 MHz E-UTRA signal for NR wanted signal channel bandwidth greater than 20MHz.

The requirement is applicable outside the *Base Station RF Bandwidth* or *Radio Bandwidth*. The interfering signal offset is defined relative to the *Base Station RF Bandwidth* *edges* or *Radio Bandwidth* edges applicable to each RIB.

For RIB supporting operation in *non-contiguous spectrum*, the requirement applies in addition inside any *sub-block gap*, in case the *sub-block gap* size is at least 15 MHz. The interfering signal offset is defined relative to the *sub-block* edges inside the *sub-block gap*.

For *multi-band RIBs*, the requirement applies in addition inside any *Inter RF Bandwidth gap*, in case the gap size is at least 15 MHz. The interfering signal offset is defined relative to the *Base Station RF Bandwidth* *edges* inside the *Inter RF Bandwidth gap*.

For the wanted and interfering signal at the RIB, using the parameters in tables 7.4.2.1‑1 and 7.4.2.1‑2, the following requirements shall be met:

- For any E-UTRA carrier, the throughput shall be ≥ 95 % of the *maximum throughput* of the reference measurement channel defined in 3GPP TS 36.104 [8], subclause 7.2.1.

- For any UTRA FDD carrier, the BER shall not exceed 0,001 for the reference measurement channel defined in 3GPP TS 25.104 [6], subclause 7.2.1.

- For any NR carrier, the throughput shall be ≥ 95% of the maximum throughput of the reference measurement channel defined for *BS type 1-O* in TS 38.104 [28], subclause 10.3.2

The OTA levels are applied referenced to 2 antenna gain offsets ΔOTAREFSENS and ΔminSENS.

For *multi-band RIBs*, the requirement applies according to table 10.5.2.1-1 for the in-band blocking frequency ranges of each supported operating band.

Table 10.5.2.1-1: General blocking requirement

| Base Station Type | Mean power of interfering signal [dBm] | Wanted Signal mean power [dBm]  (NOTE 1) | Centre Frequency of Interfering Signal | Interfering signal centre frequency minimum offset from the *Base Station RF Bandwidth edge* or edge of *sub-block* inside a gap [MHz] |
| --- | --- | --- | --- | --- |
| Wide Area BS | -40 + y - ΔOTAREFSENS  (NOTE 7) | EISREFSENS + x dB  (NOTE 2,) | FUL\_low - ΔfOOB to FUL\_high + ΔfOOB | (±7.5+z) (NOTE 9) |
| -40 + y - ΔminSENS  (NOTE 7) | EISminSENS + x dB (NOTE 2) |
| Medium Range BS | -35 + y - ΔOTAREFSENS  (NOTE 7) | EISREFSENS + x dB  (NOTE 3, 5) |
| -35 + y - ΔminSENS  (NOTE 7) | EISminSENS + x dB (NOTE 3, 5) |
| Local Area BS | -30 + y - ΔOTAREFSENS  (NOTE 7) | EISREFSENS + x dB (NOTE 4, 5) |
| -30 + y - ΔminSENS  (NOTE 7) | EISminSENS + x dB (NOTE 4, 5) |
| NOTE 1: EISREFSENS and EISminSENS depend on the RAT, the BS class and on the *channel bandwidth*, see subclauses 10.3 and 10.2.  NOTE 2: For WA BS, "x" is equal to 6 in case of NR or E-UTRA or UTRA wanted signals.  NOTE 3: For MR BS supporting UTRA, "x" is equal to 6 in case of UTRA wanted signals, 9 in case of NR or E-UTRA wanted signal.  NOTE 4: For LA BS supporting UTRA, "x" is equal to 11 in case of NR or E-UTRA wanted signal, 6 in case of UTRA wanted signal.  NOTE 5: For a BS not supporting UTRA, x is equal to 6 for all BS classes if NR is supported, otherwise “x” is equal to 9 for MR BS or 11 for LA BS if NR is not supported.  NOTE 6: For a BS capable of multi-band operation, "x" in Note 2, 3, 4, 5 applies in case of interfering signals that are in the in-band blocking frequency range of the operating band where the wanted signal is present or in an adjacent or overlapping band. For other in-band blocking frequency ranges of the interfering signal for the supported operating bands, "x" is equal to 1.4 dB.  NOTE 7: For a BS that supports NR but does not support UTRA, "y" is equal to -3 for the WA and MR BS class and -5 for the LA BS class. For all other cases, “y” is equal to zero for all BS classes.  NOTE 8: The downlink frequency range of an FDD operating band is excluded from the general blocking requirement.  NOTE 9: For NR wanted signal channel bandwidth greater than 20 MHz, z = 22.5. For all other cases, z = 0. | | | | |

Table 10.5.2.1-2: (Void)

NOTE: The requirement in table 10.5.2.1-1 assumes that two operating bands, where the *downlink operating band* (see subclause 4.5 in 3GPP TS 37.104 [9]) of one band would be within the in-band blocking region of the other band, are not deployed in the same geographical area.

*------------------------------ Unchanged part omitted ------------------------------*

*------------------------------ Next modified section ------------------------------*

#### 10.8.2.1 General intermodulation minimum requirement

Interfering signals shall be a CW signal and an E-UTRA or UTRA signal as specified in 3GPP TS 37.104 [9], annex A.

The requirement is applicable outside the *Base Station RF Bandwidth* or *Radio Bandwidth*. The interfering signal offset is defined relative to the *Base Station RF Bandwidth* *edges* or *Radio Bandwidth* edges.

For *multi-band RIBs*, the requirement applies in addition inside any *Inter RF Bandwidth gap*, in case the gap size is at least twice as wide as the UTRA/E-UTRA interfering signal centre frequency offset from the *Base Station RF Bandwidth* *edge*. The interfering signal offset is defined relative to the *Base Station RF Bandwidth* *edges* inside the *Inter RF Bandwidth gap*.

For the wanted signal at the assigned channel frequency and two interfering signals at the RIB, using the parameters in tables 10.8.2.1-1 and 10.8.2.1-2, the following requirements shall be met:

- For any E-UTRA carrier, the throughput shall be ≥ 95 % of the *maximum throughput* of the reference measurement channel defined in 3GPP TS 36.104 [8], subclause 7.2.1.

- For any UTRA FDD carrier, the BER shall not exceed 0,001 for the reference measurement channel defined in 3GPP TS 25.104 [6], subclause 7.2.1.

- For any NR carrier, the throughput shall be ≥ 95% of the maximum throughput of the reference measurement channel defined for *BS type 1-O* in TS 38.104 [28], subclause 10.3.2

The OTA levels are applied referenced to 2 antenna gain offsets ΔOTAREFSENS and ΔminSENS.

Table 10.8.2.1-1: General intermodulation requirement

|  |  |  |  |
| --- | --- | --- | --- |
| Base Station Type | Mean power of interfering signals [dBm] | Wanted Signal mean power [dBm]  (NOTE 1) | Type of interfering signals |
| Wide Area BS | -48 + y - ΔOTAREFSENS  (NOTE 6) | EISREFSENS +x dB (NOTE 2) | See table 10.8.2.1-2 |
| -48 + y – ΔmnSENS  (NOTE 6) | EISminSENS + x dB (NOTE 2) |
| Medium Range BS | -44 + y - ΔOTAREFSENS  (NOTE 6) | EISREFSENS + x dB (NOTE 3, 5) |
| -44 + y – ΔminSENS  (NOTE 6) | EISminSENS + x dB (NOTE 3, 5) |
| Local Area BS | -38 + y- ΔOTAREFSENS  (NOTE 6) | EISREFSENS +x dB (NOTE 4, 5) |
| -38 + y – ΔminSENS  (NOTE 6) | EISminSENS + x dB (NOTE 4, 5) |
| NOTE 1: EISREFSENS and EISminSENS depend on the RAT, the BS class and on the *channel bandwidth*, see subclauses 10.3 and 10.2.  NOTE 2: For WA BS, "x" is equal to 6 in case of NR or E-UTRA or UTRA wanted signals.  NOTE 3: For MR BS supporting UTRA, "x" is equal to 6 in case of UTRA wanted signals, 9 in case of NR or E-UTRA wanted signal.  NOTE 4: For LA BS supporting UTRA, "x" is equal to 12 in case of NR or E-UTRA wanted signals, 6 in case of UTRA wanted signal.  NOTE 5: For a BS not supporting UTRA, x is equal to 6 for all BS classes if NR is supported, or x is equal to 9 for MR and 12 for LA BS if NR is not supported.  NOTE 6: For a BS that supports NR but not UTRA; "y" is equal to -4 for the WA BS class, -3 for the MR BS class and -6 for the LA BS class. For all other cases, “y” is equal to zero for all BS classes. | | | |

*------------------------------ Unchanged part omitted ------------------------------*

*----------------------------- End of modified section ------------------------------*