**3GPP TSG-RAN4 Meeting #102-e *DRAFT R4-2207475***

**Electronic Meeting, 21 February – 3 March 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **37.105** | **CR** | **XXXX** | **rev** | **-** | **Current version:** | **16.10.0** |  |
|  | | | | | | | | |
| *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:*** | Big CR for TS 37.105 Maintenance (Rel-16, CAT F) | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | MCC, Huawei | | | | | | | | | |
| ***Source to TSG:*** | RAN4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI15, NR\_unlic-Core | | | | |  | ***Date:*** | | | 2021-03-07 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | This big CR merges endorsed draft CR to TS 37.105 in RAN4#102-e. The reason for change in endorsed draft CR is copied below:  **R4-2204447: BS OBUE requirements clarification, rel-16**  In RAN4#101e, corrections of NOTE for OBUE requirement tables for NR specs were agreed. Similar corections are required for MSR specs.  **R4-223643: correction of OTA blocking requirement for co-location with MR BS in NR band n96S**  OTA blocking requirement for co-location with MR BS in NR band n96 is specified in tables 10.6.2.2-1 and 10.6.3.2-1 but not in table 10.6.4.2-1. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The summary of change in endorsed draft CR is copied below.  **R4-2204447: BS OBUE requirements clarification, rel-15**  Added clarification text in NOTE in tables for OBUE requirements.  Deleted unnecessary text in NOTE in tables for OBUE requirements.  **R4-223643: correction of OTA blocking requirement for co-location with MR BS in NR band n96S**  Specify OTA blocking requirement for co-location with MR BS in NR band n96 in table 10.6.4.2-1. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The consequences if not approved for endorsed draft CR are coppied below.  **R4-2204447: BS OBUE requirements clarification, rel-15**  Without the clarification text, how to derive “cumulative sum” is not clear when measurement bandwidthes are different.  Unnecessary text in the NOTE which is never applied could cause misunderstanding.  **R4-223643: correction of OTA blocking requirement for co-location with MR BS in NR band n96S**  OTA blocking requirement for co-location with MR BS in NR band n96 is not specified. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.6.4.3.3, 6.6.5.2.2, 6.6.5.2.3, 9.7.5.2.2, 9.7.5.2.3, 10.6.4.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 37.145-1, 37.145-2 CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

***<Start of change>***

Table 6.6.4.3.3-1: *Basic Limits* for spectrum emission mask values, Prated,c,cell-10\*log10(NTXU,countedpercell) ≥ 34 dBm for 1,28 Mcps TDD

|  |  |  |
| --- | --- | --- |
| Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* | Measurement bandwidth |
| 0.8 MHz ≤ Δf < 1.0 MHz | -20 dBm | 30 kHz |
| 1.0 MHz ≤ Δf < 1.8 MHz |  | 30 kHz |
| (NOTE) | -28 dBm | 30 kHz |
| 1.8 MHz ≤ Δf ≤Δfmax | -13 dBm | 1 MHz |
| NOTE: For a *multi-band TAB connector* with *Inter RF Bandwidth gap* less than 8MHz, the *basic limit* within the *Inter RF Bandwidth gap* is calculated as a cumulative sum of emissions from the two adjacent carriers on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end *RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end *RF Bandwidth*. | | |

Table 6.6.4.3.3-2: *Basic Limits* for spectrum emission mask values, 26 dBm ≤ Prated,c,cell-10\*log10(NTXU,countedpercell) < 34 dBm for 1,28 Mcps TDD

|  |  |  |
| --- | --- | --- |
| Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* | Measurement bandwidth |
| 0.8 MHz ≤ Δf < 1.0 MHz | Prated,c,cell – 10\*log10(NTXU,countedpercell) -54 dB | 30 kHz |
| 1.0 MHz ≤ Δf < 1.8 MHz | Prated,c,cell – 10\*log10(NTXU,countedpercell) -54-10\*(f\_offset-1,015)dB | 30 kHz |
| (NOTE) | Prated,c,cell – 10\*log10(NTXU,countedpercell) -62 dB | 30 kHz |
| 1.8 MHz ≤ Δf ≤Δfmax | Prated,c,cell – 10\*log10(NTXU,countedpercell) - 47 dB | 1 MHz |
| NOTE: For a *multi-band TAB connector* with *Inter RF Bandwidth gap* less than 8MHz, the *basic limit* within the *Inter RF Bandwidth gap* is calculated as a cumulative sum of emissions from the two adjacent carriers on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end *RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end *RF Bandwidth*. | | |

Table 6.6.4.3.3-3: *Basic Limits* for spectrum emission mask values, Prated,c,cell-10\*log10(NTXU,countedpercell) < 26 dBm for 1,28 Mcps TDD

|  |  |  |
| --- | --- | --- |
| Frequency offset of measurement filter centre frequency, f\_offset | *Basic Limit* | Measurement bandwidth |
| 0.8 MHz≤ Δf < 1.0 MHz | -28 dBm | 30 kHz |
| 1.0 MHz≤ Δf < 1.8 MHz |  | 30 kHz |
| (NOTE) | -36 dBm | 30 kHz |
| 1.8 MHz≤ Δf ≤Δfmax | -21 dBm | 1 MHz |
| NOTE: For a *multi-band TAB connector* with *Inter RF Bandwidth gap* less than 8MHz, the *basic limit* within the *Inter RF Bandwidth gap* is calculated as a cumulative sum of emissions from the two adjacent carriers on each side of the *Inter RF Bandwidth gap*, where the contribution from the far-end *RF Bandwidth* shall be scaled according to the measurement bandwidth of the near-end *RF Bandwidth*. | | |

***<Next change>***

Table 6.6.5.2.2-1a: WA BS OBUE in BC1 and BC3 bands ≤ 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*. 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*. | | | |

***<Next change>***

Table 6.6.5.2.2-2a: MR BS OBUE 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*. 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*. | | | |

***<Next change>***

Table 6.6.5.2.2-3a: MR BS OBUE 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. 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. | | | |

***<Next change>***

Table 6.6.5.2.3-1a: WA BS OBUE in BC2 bands ≤ 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. 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.*  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. | | | |

***<Next change>***

Table 6.6.5.2.3-3a: MR BS OBUE 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*. 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*.  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. | | | |

***<Next change>***

Table 6.6.5.2.3-4a: MR BS OBUE 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*. 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*.  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. | | | |

***<Next change>***

Table 9.7.5.2.2-1a: WA BS OBUE in BC1 and BC3 bands ≤ 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*. 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*.  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. | | | |

***<Next change>***

Table 9.7.5.2.2-2a: MR BS OBUE 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*. 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*. | | | |

***<Next change>***

Table 9.7.5.2.2-3a: MR BS OBUE 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. 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. | | | |

***<Next change>***

Table 9.7.5.2.3-1a: WA BS OBUE in BC2 bands ≤ 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. 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.*  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. | | | |

***<Next change>***

Table 9.7.5.2.3-3a: MR BS OBUE 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*. 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*.  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. | | | |

***<Next change>***

Table 9.7.5.2.3-4a: MR BS OBUE 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*. 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*.  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. | | | |

***<Next change>***

10.6.4.2 Co-location minimum requirement

This additional blocking requirement may be applied for the protection of *AAS BS receivers* when E-UTRA BS, NR BS, UTRA BS, CDMA BS or GSM/EDGE BS operating in a different frequency band are co-located with an AAS BS.

The requirement is a co-location requirement. The interferer power levels are specified at the *co-location reference antenna* conducted input. The interfering power is specified per supported polarization.

The requirement is valid over *minSENS RoAoA*.

When the wanted and an interfering signal using the parameters in table 10.6.2.2-1 for co-location with UTRA or E-UTRA systems and table 10.6.4.2-1 for co-location with GSM systems, 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.

**Table 10.6.4.2-1: E-UTRA additional OTA blocking requirement for co-location with BS in other frequency bands**

| **Type of co-located BS** | **Centre Frequency of Interfering Signal [MHz]** | **Interfering Signal mean power for WA BS [dBm]** | **Interfering Signal mean power for MR BS [dBm]** | **Interfering Signal mean power for LA BS [dBm]** | **Wanted Signal mean power [dBm]** | **Type of Interfering Signal** |
| --- | --- | --- | --- | --- | --- | --- |
| GSM850 or CDMA850 | 869 - 894 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| GSM900 | 921 - 960 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| DCS1800 | 1805 - 1880  (NOTE 4) | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| PCS1900 | 1930 - 1990 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band I or E-UTRA Band 1 or NR band n1 | 2110 - 2170 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band II or E-UTRA Band 2 or NR band n2 | 1930 - 1990 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band III or E-UTRA Band 3 or NR band n3 | 1805 - 1880  (NOTE 4) | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band IV or E-UTRA Band 4 | 2110 - 2155 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band V or E-UTRA Band 5 or NR band n5 | 869 - 894 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band VI or E-UTRA Band 6 | 875 - 885 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band VII or E-UTRA Band 7 or NR band n7 | 2620 - 2690 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band VIII or E-UTRA Band 8 or NR band n8 | 925 - 960 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band IX or E-UTRA Band 9 | 1844.9 - 1879.9 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band X or E-UTRA Band 10 | 2110 - 2170 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XI or E-UTRA Band 11 | 1475.9 - 1495.9 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XII or E-UTRA Band 12 or NR band n12 | 729 - 746 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XIIII or E-UTRA Band 13 | 746 - 756 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XIV or E-UTRA Band 14 or NR band n14 | 758 - 768 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 17 | 734 - 746 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 18 or NR Band n18 | 860 - 875 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XIX or E-UTRA Band 19 | 875 - 890 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XX or E-UTRA Band 20 or NR band 20 | 791 - 821 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XXI or E-UTRA Band 21 | 1495.9 - 1510.9 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XXII or E-UTRA Band 22 | 3510 - 3 590 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 24 | 1525 - 1559 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XXV or E-UTRA Band 25 or NR band n25 | 1930 - 1995 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XXVI or E-UTRA Band 26 or NR band n26 | 859 - 894 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 27 | 852 – 869 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 28 or or NR band n28 | 758 – 803 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 29 or NR Band n29 | 717 - 728 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 30 or NR band n30 | 2350 - 2360 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 31 | 462.5 - 467.5 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 31 | 462.5 - 467.5 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA FDD Band XXXII or E-UTRA Band 32 | 1452 - 1496  (NOTE-5) | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band a) or E-UTRA TDD Band 33 | 1900 - 1920 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band a) or E-UTRA TDD Band 34 or NR band n34 | 2010 - 2025 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band b) or E-UTRA TDD Band 35 | 1850 - 1910 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band b) or E-UTRA TDD Band 36 | 1930 - 1990 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band c) or E-UTRA TDD Band 37 | 1910 - 1930 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band d) or E-UTRA Band 38 or NR band n38 | 2570 - 2620 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band f) or E-UTRA Band 39 or NR band n39 | 1880 - 1920 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| UTRA TDD Band e) or E-UTRA Band 40 or NR band n40 | 2300 - 2400 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 41 or NR band n41 | 2496 - 2690 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 42 | 3400 - 3600 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 43 | 3600 - 3800 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 44 | 703 - 803 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 45 | 1447 - 1467 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 46 or NR Band n46 | 5150 - 5925 | N/A | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 48 or NR Band n48 | 3550 – 3700 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 49 | 3550 – 3700 | N/A | N/A | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 50 or NR band n50 | 1432 – 1517 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 51 or or NR band n51 | 1427– 1432 | N/A | N/A | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 53 or NR band n53 | 2483.5 - 2495 | N/A | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 65 or NR band n65 | 2110 – 2200 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 66 or or NR band n66 | 2110 – 2200 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 67 | 738 - 758 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 68 | 753 - 783 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 69 | 2570-2620 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 70 or or NR band n70 | 1995 - 2020 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 71 or or NR band n71 | 617 - 652 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 72 | 461 - 466 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 73 | 460 - 465 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 74 or NR band n74 | 1475 - 1518 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 75 or or NR band n75 | 1432 - 1517 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 76 or or NR band n76 | 1427 - 1432 | N/A | N/A | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| NR band n77 | 3300 - 4200 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| NR band n78 | 3300 - 3800 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| NR band n79 | 4400 - 5000 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 85 | 728 – 746 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 87 | 420 - 425 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| E-UTRA Band 88 | 422 - 427 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| NR band n91 | 1427 - 1432 | N/A | N/A | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| NR band n92 | 1432 - 1517 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| NR band n93 | 1427 - 1432 | N/A | N/A | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| NR band n94 | 1432 - 1517 | +46 | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| NR band n96 | 5925 - 7125 | N/A | +38 | +24 | EISminSENS + x dB (NOTE 1) | CW carrier |
| NOTE 1: EISminSENS depends on the BS class and on the *channel bandwidth*, see subclause 10.2.  NOTE 2: Except for a BS operating in Band 13, these requirements do not apply when the interfering signal falls within any of the supported *uplink operating band* or in the ΔfOOB immediately outside any of the supported *uplink operating band*. For a BS operating in band 13 the requirements do not apply when the interfering signal falls within the frequency range 768 - 797 MHz.  NOTE 3: Some combinations of bands may not be possible to co-site based on the requirements above. The current state-of-the-art technology does not allow a single generic solution for co-location of UTRA TDD or E-UTRA TDD or NR TDD with E-UTRA FDD or NR FDD on adjacent frequencies with closely spaced antennas. However, there are certain site-engineering solutions that can be used. These techniques are addressed in 3GPP TR 25.942 [12].  NOTE 4: In China, the blocking requirement for co-location with DCS1800 and Band III BS is only applicable in the frequency range 1805 - 1850 MHz.  NOTE 5: For an AAS BS operating in band 11, 21, or 74 the requirement for co-location with Band 32 applies for interfering signal within the frequency range 1475.9 - 1495.9 MHz. | | | | | | | |

***<End of change>***