**3GPP TSG-RAN4 Meeting #107 R4-2308490**

 **Incheon, South Korea, 22– 26 May, 2023**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **36.104** | **CR** | **4974** | **rev** | **-** | **Current version:** | **16.13.0** |  |
|  |
| *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 for TS 36.104: Operating band unwanted emissions for Single RAT multi-band BS  |
|  |  |
| ***Source to WG:*** | Huawei, Hisilicon |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | MB\_MSR\_RF-Core |  | ***Date:*** | 2023-05-15 |
|  |  |  |  |  |
| ***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 canbe 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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | In current specification TS 36.104, Operating band unwanted emissions limits for single RAT NR multi-band BS is not align with that for MSR multi-band BS in 37 series specifications. |
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| ***Summary of change:*** | Add a note：for BS supporting multi-band operation, either this limit or -16dBm/100kHz with correspondingly adjusted f\_offset shall apply for this frequency offset range for operating bands <1GHz |
|  |  |
| ***Consequences if not approved:*** | If not updated correctly, the LTE multi-band BS is not align with the MSR multi-band BS |
|  |  |
| ***Clauses affected:*** | 6.6.3.2.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** | **X** |  |  Test specifications | TS 36.141  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

## **<<Start of Change>>**

#### 6.6.3.2.2 Category B (Option 2)

The limits in this clause are intended for Europe and may be applied regionally for BS operating in band 1, 3, 7, 8, 32, 33, 34, 38, 65 or 69.

For a BS operating in band 1, 3, 7, 8, 32, 33, 34, 38, 65 or 69 emissions shall not exceed the maximum levels specified in Table 6.6.3.2.2-1 below for 5, 10, 15 and 20 MHz channel bandwidth:

Table 6.6.3.2.2-1: Regional Wide Area BS operating band unwanted emission limits in band 1, 3, 7, 8, 32, 33, 34, 38, 65 or 69 for 5, 10, 15 and 20 MHz channel bandwidth for Category B

|  |  |  |  |
| --- | --- | --- | --- |
| 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 8) |
| 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 |  | 30 kHz  |
| (Note 9) | 1.015MHz ≤ f\_offset < 1.5 MHz  | -26 dBm (Note 3) | 30 kHz  |
| 1 MHz ≤ Δf ≤min( 10 MHz, Δfmax)  | 1.5 MHz ≤ f\_offset <min(10.5 MHz, f\_offsetmax) | -13 dBm (Note 3) | 1 MHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax  | -15 dBm (Note 3) (Note 10) | 1 MHz  |
| NOTE 1: For a BS 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 -15dBm/1MHz NOTE 2: For BS supporting multi-band operation with Inter RF Bandwidth gap < 20MHz 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 BS supporting multi-band operation, either this limit or -16dBm/100kHz with correspondingly adjusted f\_offset, whichever is less stringent, shall apply for operating bands <1GHz. |

For a BS operating in band 3, 8 or 65, emissions shall not exceed the maximum levels specified in Table 6.6.3.2.2‑2 below for 3 MHz channel bandwidth:

Table 6.6.3.2.2-2: Regional Wide Area BS operating band unwanted emission limits in band 3, 8 or 65 for 3 MHz channel bandwidth for Category B

|  |  |  |  |
| --- | --- | --- | --- |
| 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 8) |
| 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  |
| 0.15 MHz ≤ Δf < 0.2 MHz | 0.165MHz ≤ f\_offset < 0.215MHz  | -14 dBm | 30 kHz  |
| 0.2 MHz ≤ Δf < 1 MHz | 0.215MHz ≤ f\_offset < 1.015MHz |  | 30 kHz  |
| (Note 9) | 1.015MHz ≤ f\_offset < 1.5 MHz  | -26 dBm (Note 3) | 30 kHz  |
| 1 MHz ≤ Δf ≤6 MHz | 1.5 MHz ≤ f\_offset <6.5 MHz | -13 dBm (Note 3) | 1 MHz  |
| 6 MHz ≤ Δf ≤ Δfmax | 6.5 MHz ≤ f\_offset < f\_offsetmax  | -15 dBm (Note 3) | 1 MHz  |
| NOTE 1: For a BS 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 -15dBm/1MHzNOTE 2: For BS supporting multi-band operation with Inter RF Bandwidth gap < 20MHz 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 BS supporting multi-band operation, either this limit or -16dBm/100kHz with correspondingly adjusted f\_offset, whichever is less stringent, shall apply for operating bands <1GHz. |

For a BS operating in band 3, 8 or 65, emissions shall not exceed the maximum levels specified in Table 6.6.3.2.2‑3 below for 1.4 MHz channel bandwidth:

Table 6.6.3.2.2-3: Regional Wide Area BS operating band unwanted emission limits in band 3, 8 or 65 for 1.4 MHz channel bandwidth for Category B

|  |  |  |  |
| --- | --- | --- | --- |
| 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 8) |
| 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  |
| 0.15 MHz ≤ Δf < 0.2 MHz | 0.165MHz ≤ f\_offset < 0.215MHz  | -14 dBm | 30 kHz  |
| 0.2 MHz ≤ Δf < 1 MHz | 0.215MHz ≤ f\_offset < 1.015MHz |  | 30 kHz  |
| (Note 9) | 1.015MHz ≤ f\_offset < 1.5 MHz  | -26 dBm (Note 3) | 30 kHz  |
| 1 MHz ≤ Δf ≤ 2.8 MHz  | 1.5 MHz ≤ f\_offset < 3.3 MHz | -13 dBm (Note 3) | 1 MHz  |
| 2.8 MHz ≤ Δf ≤ Δfmax | 3.3 MHz ≤ f\_offset < f\_offsetmax  | -15 dBm (Note 3) | 1 MHz  |
| NOTE 1: For a BS 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 -15dBm/1MHz.NOTE 2: For BS supporting multi-band operation with Inter RF Bandwidth gap < 20MHz 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 BS supporting multi-band operation, either this limit or -16dBm/100kHz with correspondingly adjusted f\_offset, whichever is less stringent, shall apply for operating bands <1GHz. |

## **<<End of Change>>**