**3GPP TSG-RAN WG4 Meeting #100-e *R4-2120797***

**Electronic meeting, August 16-27, 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **37.141** | **CR** | **<CR#>** | **rev** |  | **Current version:** | **16.11.0** |  |
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| *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 37.141 Maintenance (Rel-16, CAT A) |
|  |  |
| ***Source to WG:*** | MCC, Ericsson |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | TEI14TEI15NR\_newRAT-Perf |  | ***Date:*** | 2021-11-16 |
|  |  |  |  |  |
| ***Category:*** | **A** |  | ***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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | This big CR merges the multiple endorsed draft CRs. The reason for change in each endorsed draft CR is copied below.**R4-2117210 Draft CR to TS 37.141: Correction on tables for Band 23 co-location requirements**Entries for Band 23 were deleted from table for coexistence spurious emission limits but kept in tables for co-location requirements. This would create ambiguity on Band 23 co-location requirements.**R4-2119502 Draft CR to TS 37.141: correction of the OBUE requirements applicability, Rel-15**During the work on the M.2070 recommendation updates based on TS 37.141 OBUE requirements, it was observed that some of the requirements are omitted in the main text. Namely, in the requirements applicability description, the following tables and requirements were not considered: * Table 6.6.2.5.1-4a: LA BS OBUE in BC1 bands > 3 GHz
* Table 6.6.2.5.1-4b: LA BS OBUE in BC1 bands ≤ 3 GHz applicable for: BS with standalone NB-IoT carrier adjacent to the Base Station RF Bandwidth edge

Similar corrections to earlier releases were omitted.**R4-2119276 Maintenance CR for TS 37.141 section 6.6.1.5.5 and 6.6.1.5.6**1. In Table 6.6.1.5.5-1, requirements for n79 is missing and Note for E-UTRA band 22 is not correct;1. In Table 6.6.1.5.6-1, requirement for n79 is missing.
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| ***Summary of change:*** | The summary of change in each each endorsed draft CR is copied below.**R4-2117210 Draft CR to TS 37.141: Correction on tables for Band 23 co-location requirements**Delete the entries for Band 23 from tables for co-location requirements.**R4-2119502 Draft CR to TS 37.141: correction of the OBUE requirements applicability, Rel-15**Correction of the list of OBUE requirement tables**R4-2119276 Maintenance CR for TS 37.141 section 6.6.1.5.5 and 6.6.1.5.6**1. In Table 6.6.1.5.5-1, add requirement for n79 and update Note for E-UTRA 22
2. In Table 6.6.1.5.6-1, add requirement for n79.
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|  |  |
| ***Consequences if not approved:*** | The consequences if not approved for each endorsed draft CR are copied below.**R4-2117210 Draft CR to TS 37.141: Correction on tables for Band 23 co-location requirements**Ambiguity remains and would lead to different interpretations.**R4-2119502 Draft CR to TS 37.141: correction of the OBUE requirements applicability, Rel-15**Some of the OBUE requirements would not be considered as applicable.**R4-2119276 Maintenance CR for TS 37.141 section 6.6.1.5.5 and 6.6.1.5.6**Requirement for n79 is missing and Note for E-UTRA band 22 in Table 6.6.1.5.5-1 is not correct. |
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| ***Clauses affected:*** | **R4-2117210 Draft CR to TS 37.141: Correction on tables for Band 23 co-location requirements**6.6.1.5.6, 7.5.5.2**R4-2119502 Draft CR to TS 37.141: correction of the OBUE requirements applicability, Rel-15**6.6.2.5.1**R4-2119276 Maintenance CR for TS 37.141 section 6.6.1.5.5 and 6.6.1.5.6**6.6.1.5.5 and 6.6.1.5. |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | 37.104 |
| ***affected:*** |  | **X** |  Test specifications |  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications |  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

##### 6.6.1.5.5 Additional spurious emission requirements

These requirements may be applied for the protection of system operating in frequency ranges other than the BS downlink operating band. The limits may apply as an optional protection of such systems that are deployed in the same geographical area as the BS, or they may be set by local or regional regulation as a mandatory requirement for an operating band. It is in some cases not stated in the present document whether a requirement is mandatory or under what exact circumstances that a limit applies, since this is set by local or regional regulation. An overview of regional requirements in the present document is given in clause 4.4.

Some requirements may apply for the protection of specific equipment (UE, MS and/or BS) or equipment operating in specific systems (GSM/EDGE, CDMA, UTRA, E-UTRA, NR, etc.) as listed below. The power of any spurious emission shall not exceed the limits of Table 6.6.1.5.5-1 for a BS where requirements for co-existence with the system listed in the first column apply. For BS capable of multi-band operation, the exclusions and conditions in the Note column of Table 6.6.1.5.5-1 apply for each supported operating band. For BS capable of multi-band operation where multiple bands are mapped on separate antenna connectors, the exclusions and conditions in the Note column of Table 6.6.1.5.5-1 apply for the operating band supported at that antenna connector.

Table 6.6.1.5.5-1: BS Spurious emissions limits for co-existence with systems operating in other frequency bands

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| System type to co-exist with | Frequency range for co-existence requirement | Maximum Level | Measurement Bandwidth | Note |
| GSM900 | 921 ‑ 960 MHz | -57 dBm | 100 kHz | This requirement does not apply to BS operating in band 8 |
|  | 876 - 915 MHz | -61 dBm | 100 kHz | For the frequency range 880-915 MHz, this requirement does not apply to BS operating in band 8, since it is already covered by the requirement in clause 6.6.1.5.4. |
| DCS1800 (Note 3) | 1805 ‑ 1880 MHz | -47 dBm | 100 kHz | This requirement does not apply to BS operating in band 3.  |
|  | 1710 - 1785 MHz | -61 dBm | 100 kHz | This requirement does not apply to BS operating in band 3, since it is already covered by the requirement in clause 6.6.1.5.4. |
| PCS1900 | 1930 ‑ 1990 MHz | -47 dBm | 100 kHz | This requirement does not apply to BS operating in band 2, 25, band 36 or band 70.  |
|  | 1850 ‑ 1910 MHz | -61 dBm | 100 kHz | This requirement does not apply to BS operating in band 2 or 25, since it is already covered by the requirement in clause 6.6.1.5.4. This requirement does not apply to BS operating in band 35. |
| GSM850 or CDMA850 | 869 - 894 MHz | -57 dBm | 100 kHz | This requirement does not apply to BS operating in band 5 or 26. This requirement applies to E-UTRA BS operating in Band 27 for the frequency range 879-894 MHz. |
|  | 824 ‑ 849 MHz | -61 dBm | 100 kHz | This requirement does not apply to BS operating in band 5 or 26, since it is already covered by the requirement in clause 6.6.1.5.4. For BS operating in Band 27, it applies 3 MHz below the Band 27 downlink operating band. |
| UTRA FDD Band I or | 2110 - 2170 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 1 or 65 . |
| E-UTRA Band 1 or NR Band n1 | 1920 - 1980 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 1 or 65, since it is already covered by the requirement in clause 6.6.1.5.4. |
| UTRA FDD Band II or | 1930 - 1990 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 2, 25 or 70.  |
| E-UTRA Band 2 or NR Band n2 | 1850 - 1910 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 2 or 25, since it is already covered by the requirement in clause 6.6.1.5.4 |
| UTRA FDD Band III or | 1805 - 1880 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 3 or 9. |
| E-UTRA Band 3 or NR Band n3(Note 3) | 1710 - 1785 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 3, since it is already covered by the requirement in clause 6.6.1.5.4.For BS operating in band 9, it applies for 1710 MHz to 1749.9 MHz and 1784.9 MHz to 1785 MHz, while the rest is covered in clause 6.6.1.5.4. |
| UTRA FDD Band IV or | 2110 - 2155 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 4, 10 or 66. |
| E-UTRA Band 4 | 1710 - 1755 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 4, 10 or 66, since it is already covered by the requirement in clause 6.6.1.5.4. |
| UTRA FDD Band V orE-UTRA Band 5 or NR Band n5 | 869 - 894 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 5 or 26. This requirement applies to E-UTRA BS operating in Band 27 for the frequency range 879-894 MHz. |
|  | 824 - 849 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 5 or 26, since it is already covered by the requirement in clause 6.6.1.5.4. For BS operating in Band 27, it applies 3 MHz below the Band 27 downlink operating band. |
| UTRA FDD Band VI, XIX or | 860 - 890 MHz  | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 6, 18, 19 |
| E-UTRA Band 6, 18, 19 or NR Band n18 | 815 - 830 MHz  | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 18 since it is already covered by the requirement in clause 6.6.1.5.4. |
|  | 830 - 845 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 6, 19, since it is already covered by the requirement in clause 6.6.1.5.4. |
| UTRA FDD Band VII or | 2620 - 2690 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 7. |
| E-UTRA Band 7 or NR Band n7 | 2500 - 2570 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 7, since it is already covered by the requirement in clause 6.6.1.5.4. |
| UTRA FDD Band VIII or | 925 - 960 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 8. |
| E-UTRA Band 8 or NR Band n8 | 880 - 915 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 8, since it is already covered by the requirement in clause 6.6.1.5.4. |
| UTRA FDD Band IX or | 1844.9 - 1879.9 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 3 or 9. |
| E-UTRA Band 9 | 1749.9 - 1784.9 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 3 or 9, since it is already covered by the requirement in clause 6.6.1.5.4. |
| UTRA FDD Band X or | 2110 - 2170 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 4, 10 or 66. |
| E-UTRA Band 10 | 1710 - 1770 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 10 or 66, since it is already covered by the requirement in clause 6.6.1.5.4. For BS operating in band 4, it applies for 1755 MHz to 1770 MHz, while the rest is covered in clause 6.6.1.5.4.  |
| UTRA FDD Band XI or XXI or | 1475.9 - 1510.9 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 11, 21, 32, 50, 74 or 75. |
| E-UTRA Band 11 or 21 | 1427.9 - 1447.9 MHz  | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 11 or 74, since it is already covered by the requirement in clause 6.6.1.5.4. This requirement does not apply to BS operating in band 32, 50, 51, 75 or 76. |
|  | 1447.9 – 1462.9 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 21 or 74, since it is already covered by the requirement in clause 6.6.1.5.4. This requirement does not apply to BS operating in band 32, 50 or 75. |
| UTRA FDD Band XII or | 729 - 746 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 12 or 85. |
| E-UTRA Band 12 or NR Band n12 | 699 - 716 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 12 or 85, since it is already covered by the requirement in clause 6.6.1.5.4. For BS operating in Band 29, it applies 1 MHz below the Band 29 downlink operating band (Note 7). |
| UTRA FDD Band XIII or | 746 - 756 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 13. |
| E-UTRA Band 13 | 777 - 787 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 13, since it is already covered by the requirement in clause 6.6.1.5.4. |
| UTRA FDD Band XIV or | 758 - 768 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 14. |
| E-UTRA Band 14 or NR Band n14 | 788 - 798 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 14, since it is already covered by the requirement in clause 6.6.1.5.4. |
|  E-UTRA Band 17 | 734 - 746 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 17. |
|  | 704 - 716 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 17, since it is already covered by the requirement in clause 6.6.1.5.4. For BS operating in Band 29, it applies 1 MHz below the Band 29 downlink operating band (Note 7). |
| UTRA FDD Band XX or | 791 - 821 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 20 or 28. |
| E-UTRA Band 20 or NR Band n20 | 832 - 862 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 20, since it is already covered by the requirement in clause 6.6.1.5.4. |
| UTRA FDD Band XXII or | 3510 – 3590 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 22, 42, 48, 49, 77 or 78. |
| E-UTRA Band 22 | 3410 – 3490 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 22, since it is already covered by the requirement in clause 6.6.1.5.4. This requirement does not apply to Band 42, 77 or 78.  |
| E-UTRA Band 24 | 1525 – 1559 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 24. |
|  | 1626.5 – 1660.5 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 24, since it is already covered by the requirement in clause 6.6.1.5.4. |
| UTRA FDD Band XXV or E-UTRA Band 25 or NR Band n25 | 1930 - 1995 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 2, 25 or 70. |
|  | 1850 - 1915 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 25, since it is already covered by the requirement in clause 6.6.1.5.4. For BS operating in band 2, it applies for 1910 MHz to 1915 MHz, while the rest is covered in clause 6.6.1.5.4. |
| UTRA FDD Band XXVI or E-UTRA Band 26 or NR Band n26 | 859 - 894 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 5 or 26. This requirement applies to E-UTRA BS operating in Band 27 for the frequency range 879-894 MHz. |
|  | 814 - 849 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 26, since it is already covered by the requirement in clause 6.6.1.5.4. For BS operating in band 5, it applies for 814 MHz to 824 MHz, while the rest is covered in clause 6.6.1.5.4. For BS operating in Band 27, it applies 3 MHz below the Band 27 downlink operating band. |
| E-UTRA Band 27 | 852 – 869 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 5, 26 or 27. |
|  | 807 – 824 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 27, since it is already covered by the requirement in clause 6.6.1.5.4. For BS operating in Band 26, it applies for 807 MHz to 814 MHz, while the rest is covered in clause 6.6.1.5.4. This requirement also applies to BS operating in Band 28, starting 4 MHz above the Band 28 downlink operating band (Note 6). |
| E-UTRA Band 28 or NR Band n28 | 758 - 803 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 20, 28, 44 or 67. |
|  | 703 - 748 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 28, since it is already covered by the requirement in clause 6.6.1.5.4. This requirement does not apply to BS operating in Band 44. For BS operating in Band 67, it applies for 703-736MHz. For E-UTRA BS operating in Band 68, it applies for 728MHz to 733MHz. |
| E-UTRA Band 29 or NR Band n29 | 717 – 728 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band 29 or 85. |
| E-UTRA Band 30 or NR Band n30 | 2350 - 2360 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 30 or 40. |
|  | 2305 - 2315 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 30, since it is already covered by the requirement in clause 6.6.1.5.4. This requirement does not apply to BS operating in Band 40. |
| E-UTRA Band 31 | 462.5 – 467.5 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 31, 72 or 73. |
|  | 452.5 – 457.5 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 31, since it is already covered by the requirement in clause 6.6.1.5.4. This requirement does not apply to BS operating in band 72 or 73. |
| UTRA FDD Band XXXII or E-UTRA Band 32 | 1452 - 1496 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 11, 21, 32, 50, 74 or 75. |
| UTRA TDD Band a) or E-UTRA Band 33 | 1900 - 1920 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band 33  |
| UTRA TDD Band a) or E-UTRA Band 34 or NR Band n34 | 2010 - 2025 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band 34 |
| UTRA TDD Band b) or E-UTRA Band 35 | 1850 – 1910 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band 35 |
| UTRA TDD Band b) or E-UTRA Band 36 | 1930 - 1990 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band 2, 25 or 36 |
| UTRA TDD in Band c) or E-UTRA Band 37 | 1910 - 1930 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band 37. This unpaired band is defined in ITU-R M.1036, but is pending any future deployment. |
| UTRA TDD Band d) or E-UTRA Band 38 or NR Band n38 | 2570 – 2620 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band 38 or 69.  |
| UTRA TDD Band f) or E-UTRA Band 39 or NR Band n39 | 1880 – 1920MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band 39 |
| UTRA TDD Band e) or E-UTRA Band 40 or NR Band n40 | 2300 – 2400MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band 30 or 40 |
| E-UTRA Band 41 or NR Band n41 | 2496 – 2690MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band 41 or 53 |
| E-UTRA Band 42 | 3400 – 3600 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band 22, 42, 43, 48, 49, 52, 77 or 78. |
| E-UTRA Band 43 | 3600 – 3800 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band 42, 43, 48, 49, 77 or 78. |
| E-UTRA Band 44 | 703 - 803 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band 28 or 44 |
| E-UTRA Band 45 | 1447 - 1467 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band 45 |
| E-UTRA Band 46 or NR Band n46 | 5150 - 5925 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 47 | 5855 - 5925 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 48 or NR Band n48 | 3550 – 3700 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band 22, 42, 43, 48, 49, 77 or 78 |
| E-UTRA Band 49 | 3550 – 3700 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band 22, 42, 43, 48, 49, 77 or 78 |
| E-UTRA Band 50 or NR Band n50 | 1432 - 1517 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 11, 21, 32, 45, 50, 51, 74, 75 or 76. |
| E-UTRA Band 51 or NR Band n51 | 1427 - 1432 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 50, 51, 75 or 76. |
| E-UTRA Band 52 | 3300 – 3400 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band 42 or 52. |
| E-UTRA Band 53 or NR Band n53 | 2483.5 - 2495 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band 41 or 53. |
| E-UTRA Band 65 or NR Band n65 | 2110 - 2200 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 1 or 65,  |
|  | 1920 - 2010 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 65, since it is already covered by the requirement in clause 6.6.1.5.4.For BS operating in Band 1, it applies for 1980 MHz to 2010 MHz, while the rest is covered in clause 6.6.1.5.4. |
| E-UTRA Band 66 or NR Band n66 | 2110 - 2200 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 4, 10, 23 or 66. |
|  | 1710 - 1780 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 66, since it is already covered by the requirement in clause 6.6.1.5.4. For BS operating in Band 4, it applies for 1755 MHz to 1780 MHz, while the rest is covered in clause 6.6.1.5.4. For BS operating in Band 10, it applies for 1770 MHz to 1780 MHz, while the rest is covered in clause 6.6.1.5.4. |
| E-UTRA Band 67 | 738 – 758 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 28 or 67. |
| E-UTRA Band 68 | 753 -783 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 28 or 68. |
|  | 698-728 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 68, since it is already covered by the requirement in clause 6.6.1.5.4. For BS operating in Band 28, it applies between 698 MHz and 703 MHz, while the rest is covered in clause 6.6.1.5.4. |
| E-UTRA Band 69 | 2570 - 2620 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band 38 or 69. |
| E-UTRA Band 70 or NR Band n70 | 1995 - 2020 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 2, 25 or 70 |
|  | 1695 – 1710 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 70, since it is already covered by the requirement in clause 6.6.1.5.4. |
| E-UTRA Band 71 or NR Band n71 | 617 - 652 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 71. |
|  | 663 – 698 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 71, since it is already covered by the requirement in clause 6.6.1.5.4. |
| E-UTRA Band 72 | 461 - 466 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 31, 72 or 73. |
|  | 451 - 456 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 72, since it is already covered by the requirement in clause 6.6.1.5.4. This requirement does not apply to BS operating in band 73. |
| E-UTRA Band 73 | 460 - 465 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 31, 72 or 73. |
|  | 450 - 455 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 73, since it is already covered by the requirement in clause 6.6.1.5.4. |
| E-UTRA Band 74 or NR Band n74 | 1475 – 1518 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 11, 21, 32, 50, 74 or 75. |
|  | 1427 – 1470 MHz | -49 dBm | 1MHz | This requirement does not apply to BS operating in Band 74, since it is already covered by the requirement in clause 6.6.1.5.4. This requirement does not apply to BS operating in band 32, 45, 50, 51, 75 or 76. |
| E-UTRA Band 75 or NR Band n75 | 1432 - 1517 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band 11, 21, 32, 45, 50, 51, 74, 75 or 76. |
| E-UTRA Band 76 or NR Band n76 | 1427 - 1432 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band 50, 51, 75 or 76. |
| NR Band n77 | 3300 – 4200 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band 22, 42, 43, 48, 49, 52, 77 or 78 |
| NR Band n78 | 3300 – 3800 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band 22, 42, 43, 48, 49, 52, 77 or 78 |
| NR Band n79 | 4400 – 5000 MHz | -52 dBm | 1 MHz |  |
| NR Band n80 | 1710 - 1785 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 3, since it is already covered by the requirement in clause 6.6.1.5.4.For BS operating in band 9, it applies for 1710 MHz to 1749.9 MHz and 1784.9 MHz to 1785 MHz, while the rest is covered in clause 6.6.1.5.4. |
| NR Band n81 | 880 - 915 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 8, since it is already covered by the requirement in clause 6.6.1.5.4. |
| NR Band n82 | 832 - 862 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 20, since it is already covered by the requirement in clause 6.6.1.5.4. |
| NR Band n83 | 703 - 748 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 28, since it is already covered by the requirement in clause 6.6.1.5.4. This requirement does not apply to BS operating in Band 44. For BS operating in Band 67, it applies for 703-736MHz. For BS operating in Band 68, it applies for 728MHz to 733MHz. |
| NR Band n84 | 1920 - 1980 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 1 or 65, since it is already covered by the requirement in clause 6.6.1.5.4. |
| E-UTRA Band 85 | 728 - 746 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band 12, 29 or 85. |
|  | 698 - 716 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 85, since it is already covered by the requirement in clause 6.6.1.5.4. For BS operating in Band 29, it applies 1 MHz below the Band 29 downlink operating band (Note 7). |
| NR Band n86 | 1710 - 1780 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 66, since it is already covered by the requirement in clause 6.6.1.5.4. For BS operating in Band 4, it applies for 1755 MHz to 1780 MHz, while the rest is covered in clause 6.6.1.5.4. For BS operating in Band 10, it applies for 1770 MHz to 1780 MHz, while the rest is covered in clause 6.6.1.5.4. |
| E-UTRA Band 87 | 420 - 425 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 87 or 88. |
|  | 410 – 415 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 87, since it is already covered by the requirement in clause 6.6.1.5.4 |
| E-UTRA Band 88 | 422 - 427 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 87 or 88. |
|  | 412 - 417 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 88, since it is already covered by the requirement in clause 6.6.1.5.4. This requirement does not apply to E-UTRA BS operating in band 87. |
| NR Band n89 | 824 - 849 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band 5 or 26, since it is already covered by the requirement in clause 6.6.1.5.4. For BS operating in Band 27, it applies 3 MHz below the Band 27 downlink operating band. |
| NR Band n91 | 1427 – 1432 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 50, 51, 75 or 76. |
|  | 832 – 862 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 20. |
| NR Band n92 | 1432 – 1517 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 11, 21, 32, 45, 50, 51, 74, 75 or 76.  |
|  | 832 – 862 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 20. |
| NR Band n93 | 1427 – 1432 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 50, 51, 75 or 76.  |
|  | 880 – 915 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 8. |
| NR Band n94 | 1432 – 1517 MHz | -52 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in Band 11, 21, 32, 45, 50, 51, 74, 75 or 76.  |
|  | 880 – 915 MHz | -49 dBm | 1 MHz | This requirement does not apply to E-UTRA BS operating in band 8. |
| NR Band n95 | 2010 - 2025 MHz | -52 dBm | 1 MHz |  |
| NR Band n96 | 5925 - 7125 MHz | -52 dBm | 1 MHz |  |
| NOTE 5: Void |

NOTE 1: As defined in the scope for spurious emissions in this clause, except for the cases where the noted requirements apply to a BS operating in Band 25, Band 27, Band 28 or Band 29, the co-existence requirements in Table 6.6.1.5.5-1 do not apply for the 10 MHz frequency range immediately outside the downlink operating band (see Tables 4.4-1 and 4.4-2). Emission limits for this excluded frequency range may be covered by local or regional requirements.

NOTE 2: Table 6.6.1.5.5-1 assumes that two operating bands, where the frequency ranges in Table 4.4-1 or Table 4.4-2 would be overlapping, are not deployed in the same geographical area. For such a case of operation with overlapping frequency arrangements in the same geographical area, special co-existence requirements may apply that are not covered by the 3GPP specifications.

NOTE 3: For the protection of DCS1800, UTRA Band III, E-UTRA Band 3 or NR Band n3 in China, the frequency ranges of the downlink and uplink protection requirements are 1805 – 1850 MHz and 1710 – 1755 MHz respectively.

NOTE 4: TDD base stations deployed in the same geographical area, that are synchronized and use the same or adjacent operating bands can transmit without additional co-existence requirements. For unsynchronized base stations(except in Band 46), special co-existence requirements may apply that are not covered by the 3GPP specifications.

NOTE 6: For Band 28 BS, specific solutions may be required to fulfil the spurious emissions limits for BS for co-existence with Band 27 UL operating band.

NOTE 7: For Band 29 BS, specific solutions may be required to fulfil the spurious emissions limits for BS for co-existence with UTRA Band XII or E-UTRA Band 12 or NR Band n12 UL operating band or E-UTRA Band 17 UL operating band or E-UTRA Band 85 UL operating band.

The following requirement may be applied for the protection of PHS. This requirement is also applicable at specified frequencies falling between ΔfOBUE below the lowest BS transmitter frequency of the downlink operating band and ΔfOBUE above the highest BS transmitter frequency of the downlink operating band.

The power of any spurious emission shall not exceed:

Table 6.6.1.5.5-2: BS Spurious emissions limits for BS for co-existence with PHS

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency range | Maximum Level | Measurement Bandwidth | Note |
| 1884.5 ‑ 1915.7 MHz | -41 dBm | 300 kHz | Applicable for co-existence with PHS system operating in 1884.5-1915.7MHz  |
| NOTE: The requirement is not applicable in China. |

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

For Band 41 NR operation, the additional BS spurious emissions limits shall be applied to the sum of the emission power over all *antenna connectors.*

The power of any spurious emission shall not exceed:

Table 6.6.1.5.5-3: Additional BS Spurious emissions limits for BS operating in Band 41

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency range | Maximum Level | Measurement Bandwidth | Note |
| 2505MHz – 2535MHz | -42dBm | 1 MHz |  |
| NOTE: This requirement applies for carriers allocated within 2545-2645 MHz. |

In addition to the requirements in clauses 6.6.1.5.1 to 6.6.1.5.4 and above in the present clause, the BS may have to comply with the applicable emission limits established by FCC Title 47 [8], when deployed in regions where those limits are applied, and under the conditions declared by the manufacturer.

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

The power of any spurious emission shall not exceed:

Table 6.6.1.5.5-4: Additional BS Spurious emissions limits for Band 30

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency range | Maximum Level | Measurement Bandwidth | Note |
| 2200MHz – 2345MHz | -45dBm | 1 MHz |  |
| 2362.5MHz – 2365MHz | -25dBm | 1 MHz |  |
| 2365MHz – 2367.5MHz | -40dBm | 1 MHz |  |
| 2367.5MHz – 2370MHz | -42dBm | 1 MHz |  |
| 2370MHz – 2395MHz | -45dBm | 1 MHz |  |

In certain regions the following requirement may apply to E-UTRA BS operating in Band 45. Emissions shall not exceed the maximum levels specified in Table 6.6.1.5.5-5.

Table 6.6.1.5.5-5: Emissions limits for protection of adjacent band services

|  |  |  |  |
| --- | --- | --- | --- |
| Operating Band | Filter centre frequency, Ffilter  | Maximum Level [dBm] | Measurement Bandwidth |
|  | Ffilter = 1467.5 | -20 | 1 MHz |
|  | Ffilter = 1468.5 | -23 | 1 MHz |
| 45 | Ffilter = 1469.5 | -26 | 1 MHz |
|  | Ffilter = 1470.5 | -33 | 1 MHz |
|  | Ffilter = 1471.5 | -40 | 1 MHz |
|  | 1472.5 MHz ≤ Ffilter ≤ 1491.5 MHz | -47 | 1 MHz |

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

Table 6.6.1.5.5-6: Additional BS Spurious emissions limits for Band 48

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency range | Maximum Level | Measurement Bandwidth | Note |
| 3530MHz – 3720MHz | -25dBm | 1 MHz | Applicable 10MHz from the assigned channel edge  |
| 3100MHz – 3530MHz3720MHz – 4200MHz | -40dBm | 1 MHz |  |

##### 6.6.1.5.6 Co-location with other Base Stations

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

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

The power of any spurious emission shall not exceed the limits of Table 6.6.1.5.6-1 for a BS where requirements for co-location with a BS type listed in the first column apply, depending on the declared Base Station class. For BS capable of multi-band operation, the exclusions and conditions in the Note column of Table 6.6.1.5.6-1 apply for each supported operating band. For BS capable of multi-band operation where multiple bands are mapped on separate antenna connectors, the exclusions and conditions in the Note column of Table 6.6.1.5.6-1 apply for the operating band supported at that antenna connector.

Table 6.6.1.5.6-1: BS Spurious emissions limits for BS co-located with another BS

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Type of co-located BS | Frequency range for co-location requirement | Maximum Level(WA BS) | Maximum Level(MR BS) | Maximum Level(LA BS) | Measurement Bandwidth | Note |
| GSM900 | 876-915 MHz | -98 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| DCS1800 | 1710 - 1785 MHz | -98 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| PCS1900 | 1850 - 1910 MHz | -98 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| GSM850 or CDMA850 | 824 - 849 MHz | -98 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band I or E-UTRA Band 1 or NR Band n1 | 1920 - 1980 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band II or E-UTRA Band 2 or NR Band n2 | 1850 - 1910 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band III or E-UTRA Band 3 or NR Band n3 | 1710 - 1785 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band IV or E-UTRA Band 4 | 1710 - 1755 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band V or E-UTRA Band 5 or NR Band n5 | 824 - 849 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band VI, XIX or E-UTRA Band 6, 19 | 830 - 845 MHz  | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band VII or E-UTRA Band 7 or NR Band n7 | 2500 - 2570 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band VIII or E-UTRA Band 8 or NR Band n8 | 880 - 915 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band IX or E-UTRA Band 9 | 1749.9 - 1784.9 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band X or E-UTRA Band 10 | 1710 - 1770 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XI or E-UTRA Band 11 | 1427.9 - 1447.9 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 50, 51, 75 or 76 |
| UTRA FDD Band XII orE-UTRA Band 12 or NR Band n12 | 699 - 716 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XIII orE-UTRA Band 13 | 777 - 787 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XIV orE-UTRA Band 14 or NR Band n14 | 788 - 798 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 17 | 704 - 716 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 18 or NR Band n18 | 815 - 830 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XX orE-UTRA Band 20 or NR Band n20 | 832 - 862 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XXI or E-UTRA Band 21 | 1447.9 – 1462.9 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 32, 50 or 75 |
| UTRA FDD Band XXII or E-UTRA Band 22 | 3410 – 3490 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 42, 77 or 78 |
|  |  |  |  |  |  |  |
| E-UTRA Band 24 | 1626.5 – 1660.5 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XXV or E-UTRA Band 25 or NR Band n25 | 1850 - 1915 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA FDD Band XXVI or E-UTRA Band 26 or NR Band n26 | 814 - 849 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 27 | 807 - 824 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 28 or NR Band n28 | 703 – 748 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 44 |
| E-UTRA Band 30 or NR Band n30 | 2305 - 2315 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 40 |
| E-UTRA Band 31 | 452.5 – 457.5 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| UTRA TDD Band a) or E-UTRA Band 33 | 1900 - 1920 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 33  |
| UTRA TDD Band a) or E-UTRA Band 34 or NR Band n34 | 2010 - 2025 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 34 |
| UTRA TDD Band b) or E-UTRA Band 35 | 1850 – 1910 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 35 |
| UTRA TDD Band b) or E-UTRA Band 36 | 1930 - 1990 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 2 and 36 |
| UTRA TDD Band c) or E-UTRA Band 37 | 1910 - 1930 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 37. This unpaired band is defined in ITU-R M.1036, but is pending any future deployment. |
| UTRA TDD Band d) or E-UTRA Band 38 or NR Band n38 | 2570 – 2620 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 38.  |
| UTRA TDD Band f) or E-UTRA Band 39 or NR Band n39 | 1880 – 1920MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 33 and 39 |
| UTRA TDD Band e) or E-UTRA Band 40 or NR Band n40 | 2300 – 2400MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 30 or 40 |
| E-UTRA Band 41 or NR Band n41 | 2496 – 2690MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 41 or 53 |
| E-UTRA Band 42 | 3400 – 3600 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 22, 42, 43, 48, 49, 52 77 or 78. |
| E-UTRA Band 43 | 3600 – 3800 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 42, 43, 48, 49 77 or 78. |
| E-UTRA Band 44 | 703 – 803 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 28 or 44 |
| E-UTRA Band 45 | 1447 – 1467 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 45 |
| E-UTRA Band 46 or NR Band n46 | 5150 – 5925 MHz | N/A | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 48 or NR Band n48 | 3550 – 3700 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 42, 43, 48, 49, 77 or 78 |
| E-UTRA Band 49 | 3550 – 3700 MHz | N/A | N/A | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 42, 43, 48, 49, 77 or 78 |
| E-UTRA Band 50 or NR Band n50 | 1432 – 1517 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 11, 21, 32, 51, 74, 75 or 76 |
| E-UTRA Band 51 or NR Band n51 | 1427 – 1432 MHz | N/A | N/A | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 50, 75 or 76 |
| E-UTRA Band 52 | 3300 – 3400 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 42 or 52. |
| E-UTRA Band 53 or NR Band n53 | 2483.5 – 2495 MHz | N/A | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 41 or 53 |
| E-UTRA Band 65 or NR Band n65 | 1920 - 2010 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 66 or NR Band n66 | 1710 – 1780 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 68 | 698 – 728 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 70 or NR Band n70 | 1695 – 1710 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 71 or NR Band 71 | 663 – 698 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 72 | 451 – 456 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 73 | 450 – 455 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 74 or NR Band n74 | 1427 – 1470 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 50 or 51 |
| NR Band n77 | 3300 – 4200 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 22, 42, 43, 48, 49, 52, 77 or 78 |
| NR Band n78 | 3300 – 3800 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 22, 42, 43, 48, 49, 52, 77 or 78 |
| NR Band n79 | 4400 – 5000 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n80 | 1710 – 1785 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n81 | 880 – 915 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n82 | 832 – 862 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n83 | 703 – 748 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz | This is not applicable to BS operating in Band 44 |
| NR Band n84 | 1920 – 1980 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 85 | 698 - 716 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n86 | 1710 – 1780 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 87 | 410 - 415 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| E-UTRA Band 88 | 412 - 417 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n89 | 824 - 849 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n91 | 832 – 862 MHz | N/A | N/A | -88 dBm | 100 kHz |  |
| NR Band n92 | 832 – 862 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n93 | 880 – 915 MHz | N/A | N/A | -88 dBm | 100 kHz |  |
| NR Band n94 | 880 – 915 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n95 | 2010 - 2025 MHz | -96 dBm | -91 dBm | -88 dBm | 100 kHz |  |
| NR Band n96 | 5925 - 7125 MHz | N/A | -90dBm | -87 dBm | 100 kHz |  |

NOTE 1: As defined in the scope for spurious emissions in this clause, the co-location requirements in Table 6.6.1.5.6-1 do not apply for the ΔfOBUE frequency range immediately outside the BS transmit frequency range of a downlink operating band (see Tables 4.4-1 and 4.4-2). The current state-of-the-art technology does not allow a single generic solution for co-location with other system on adjacent frequencies for 30 dB BS-BS minimum coupling loss. However, there are certain site-engineering solutions that can be used. These techniques are addressed in TR 25.942 [14].

NOTE 2: Table 6.6.1.5.6-1 assumes that two operating bands, where the corresponding BS transmit and receive frequency ranges in Table 4.4-1 or Table 4.4-2 would be overlapping, are not deployed in the same geographical area. For such a case of operation with overlapping frequency arrangements in the same geographical area, special co-location requirements may apply that are not covered by the 3GPP specifications.

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

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*End of change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next changed section\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 6.6.2.5 Test requirement

##### 6.6.2.5.1 Test requirements for Band Categories 1 and 3

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

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

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

Outside the Base Station RF Bandwidth edges, emissions shall not exceed the maximum levels specified in Tables 6.6.2.5.1-1 to 6.6.2.5.1-4b 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 BS operating in multiple bands, inside any Inter RF Bandwidth gaps with Wgap < 2\* ΔfOBUE, emissions shall not exceed the cumulative sum of the test requirements specified at the Base Station RF Bandwidth edges on each side of the Inter RF Bandwidth gap. The test requirement for Base Station RF Bandwidth edge is specified in Table 6.6.2.5.1-1 to 6.6.2.5.1-4b 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 BS capable of multi-band operation where multiple bands are mapped on the same antenna connector, the operating band unwanted emission limits apply also in a supported operating band without any carriers transmitted, in the case where there are carriers transmitted in other supported 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 clause for the largest frequency offset (Δfmax), of a band where there are no carriers transmitted shall apply from ΔfOBUE below the lowest frequency, up to ΔfOBUE above the highest frequency of the supported downlink operating band without any carrier transmitted. And no cumulative limits are applied in the inter-band gap between a supported downlink band with carrier(s) transmitted and a downlink band without any carrier transmitted.

Inside any sub-block gap for a BS operating in non-contiguous spectrum, emissions shall not exceed the cumulative sum of the test requirements specified for the adjacent sub blocks on each side of the sub block gap. The test requirement for each sub block is specified in Tables 6.6.2.5.1-1 to 6.6.2.5.1-4b 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 frequency.

- 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.

For Band 41 NR operation in Japan, the operating band unwanted emissions limits shall be applied to the sum of the emission power over all *antenna connectors.*

Applicability of Wide Area operating band unwanted emission requirements in Tables 6.6.2.5.1-1/1a, 6.6.2.5.1-1c and 6.6.2.5.1-1d/1e is specified in Table 6.6.2.5.1-0.

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 [5] and TS 38.104 [27]. Option 2 also corresponds to the UTRA spectrum emission mask as defined in TS 25.104 [3].

Table 6.6.2.5.1-0: Applicability of operating band unwanted emission requirements for BC1 and BC3 Wide Area BS

|  |  |  |
| --- | --- | --- |
| NR Band operation | Standalone NB-IoT carrier adjacent to the BS RF bandwidth edge or UTRA supported | Applicable requirement table |
| None | Y/N | 6.6.2.5.1-1/1a (option 2) |
| In certain regions (NOTE 2), bands 1, 7, 38, 65 | N | 6.6.2.5.1-1/1a (option 2) |
| Any | Y | 6.6.2.5.1-1/1a (option 2) |
| Any below 1GHz | N | 6.6.2.5.1-1c (option 1) |
| Any above 1GHz except for, in certain regions (NOTE 2), bands 1, 7, 38, 65 | N | 6.6.2.5.1-1d/1e (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 [13] are used for which category B option 2 operating band unwanted emissions requirements as defined in TS 36.104 [5] and TS 38.104 [27] are applied. |

Table 6.6.2.5.1-1: WA BS OBUE in BC1 and BC3 bands ≤ 3 GHz - option 2

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Test requirement (Note 1, 2) | Measurement bandwidth (Note 6) |
| 0 MHz ≤ Δf < 0.2 MHz | 0.015MHz ≤ f\_offset < 0.215MHz  | -12.5 dBm | 30 kHz  |
| 0.2 MHz ≤ Δf < 1 MHz | 0.215MHz ≤ f\_offset < 1.015MHz |  (Note 4) | 30 kHz  |
| (Note 5) | 1.015MHz ≤ f\_offset < 1.5 MHz  | -24.5 dBm (Note 4) | 30 kHz  |
| 1 MHz ≤ Δf ≤min(Δfmax, 10 MHz)  | 1.5 MHz ≤ f\_offset < min(f\_offsetmax, 10.5 MHz) | -11.5 dBm (Note 4) | 1 MHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax  | -15 dBm (Note 4, 7) | 1 MHz  |
| NOTE 1: For MSR BS supporting non-contiguous spectrum operation within any operating band the test 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 test requirement within sub-block gaps shall be -15dBm/MHz (for MSR 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).NOTE2: For MSR BS supporting multi-band operation with Inter RF Bandwidth gap < 2×ΔfOBUE the test 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 a standalone NB-IoT carrier adjacent to the Base Station RF Bandwidth edge, the limits in Table 6.6.2.5.1-1b apply for 0 MHz ≤ Δf < 0.15 MHz.NOTE 4: For MSR 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. |

Table 6.6.2.5.1-1a: WA BS OBUE in BC1 and BC3 bands > 3 GHz - option 2

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Test requirement (Note 1, 2) | Measurement bandwidth (Note 4) |
| 0 MHz ≤ Δf < 0.2 MHz | 0.015MHz ≤ f\_offset < 0.215MHz  | -12.2 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  | -24.2 dBm | 30 kHz  |
| 1 MHz ≤ Δf ≤min(Δfmax, 10 MHz)  | 1.5 MHz ≤ f\_offset < min(f\_offsetmax, 10.5 MHz) | -11.2 dBm | 1 MHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax  | -15 dBm (Note 7) | 1 MHz  |
| NOTE 1: For MSR BS supporting non-contiguous spectrum operation within any operating band the test 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 test requirement within sub-block gaps shall be -15dBm/MHz.NOTE2: For MSR BS supporting multi-band operation with Inter RF Bandwidth gap < 2×ΔfOBUE the test 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. |

Table 6.6.2.5.1-1b: WA BS OBUE in BC1 and BC3 bands ≤ 3 GHz applicable for: BS with standalone NB-IoT carrier 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 1, 2, 3, 4) | Measurement bandwidth (Note 6) |
| 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 a standalone NB-IoT carrier adjacent to the Base Station RF Bandwidth edge.NOTE 2: For MSR 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.NOTE 3: For MSR BS supporting multi-band operation 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 4: In case the carrier adjacent to the RF bandwidth edge is a standalone NB-IoT carrier, the value of X = PNB-IoTcarrier – 43, where PNB-IoTcarrier is the power level of the standalone NB-IoT carrier adjacent to the RF bandwidth edge. In other cases, X = 0. |

Table 6.6.2.5.1-1c: WA BS OBUE in BC1 and BC3 bands ≤ 1 GHz - option 1

|  |  |  |  |
| --- | --- | --- | --- |
| 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 6) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | - 5.5dBm - 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) | -12.5 dBm | 100 kHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax  | -16 dBm (Note 7) | 100 kHz  |
| NOTE 1: For MSR 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 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 -16dBm/100kHz.NOTE 2: For MSR BS supporting multi-band operation 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. |

Table 6.6.2.5.1-1d: WA BS OBUE in BC1 and BC3 bands > 1 GHz and ≤ 3 GHz - option 1

|  |  |  |  |
| --- | --- | --- | --- |
| 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 6) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | - 5.5dBm - 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) | -12.5 dBm | 100 kHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax  | -15 dBm (Note 7) | 1MHz  |
| NOTE 1: For MSR 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 MSR BS supporting multi-band operation 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. |

Table 6.6.2.5.1-1e: WA BS OBUE in BC1 and BC3 bands above 3 GHz - option 1

|  |  |  |  |
| --- | --- | --- | --- |
| 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 6) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | - 5.2dBm - 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) | -12.2 dBm | 100 kHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax  | -15 dBm (Note 7) | 1MHz  |
| NOTE 1: For MSR 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 MSR BS supporting multi-band operation 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. |

Table 6.6.2.5.1-2: MR BS OBUE in BC1 bands ≤ 3 GHz applicable for: BS with maximum output power 31 < PRated,c ≤ 38 dBm and not supporting NR; or BS with maximum output power 31 < PRated,c ≤ 38 dBm, supporting NR, and supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Test requirement (Note 1, 2) | Measurement bandwidth (Note 6) |
| 0 MHz ≤ Δf < 0.6 MHz | 0.015MHz ≤ f\_offset < 0.615MHz  | PRated,c - 56.5dB - 7/5(f\_offset/MHz-0.015)dB  | 30 kHz  |
| 0.6 MHz ≤ Δf < 1 MHz | 0.615MHz ≤ f\_offset < 1.015MHz | PRated,c - 51.5dB - 15(f\_offset/MHz-0.215)dB  | 30 kHz  |
| (Note 5) | 1.015MHz ≤ f\_offset < 1.5 MHz  | PRated,c – 63.5 dB | 30 kHz  |
| 1 MHz ≤ Δf ≤ 2.6 MHz | 1.5 MHz ≤ f\_offset < 3.1 MHz | PRated,c – 50.5 dB | 1 MHz  |
| 2.6 MHz ≤ Δf ≤ 5 MHz | 3.1 MHz ≤ f\_offset < 5.5 MHz | min(PRated,c – 50.5 dB, -13.5dBm) | 1 MHz |
| 5 MHz ≤ Δf ≤ min(Δfmax, 10MHz) | 5.5 MHz ≤ f\_offset < min (f\_offsetmax, 10.5 MHz) | PRated,c – 54.5 dB | 1 MHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax | PRated,c -56dB (Note 7) | 1MHz |
| NOTE 1: For MSR BS supporting non-contiguous spectrum operation within any operating band the test 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 test requirement within sub-block gaps shall be (PRated,c – 56 dB)/MHz.NOTE2: For MSR BS supporting multi-band operation with Inter RF Bandwidth gap < 2×ΔfOBUE the test 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 a standalone NB-IoT carrier adjacent to the Base Station RF Bandwidth edge, the limits in Table 6.6.2.5.1-2b apply for 0 MHz ≤ Δf < 0.15 MHz. |

Table 6.6.2.5.1-2a: MR BS OBUE in BC1 bands > 3 GHz applicable for: BS with maximum output power 31 < PRated,c ≤ 38 dBm and not supporting NR; or BS with maximum output power 31 < PRated,c ≤ 38 dBm supporting NR, and supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Test requirement (Note 1, 2) | Measurement bandwidth (Note 6) |
| 0 MHz ≤ Δf < 0.6 MHz | 0.015MHz ≤ f\_offset < 0.615MHz  | PRated,c - 56.2dB - 7/5(f\_offset/MHz-0.015)dB  | 30 kHz  |
| 0.6 MHz ≤ Δf < 1 MHz | 0.615MHz ≤ f\_offset < 1.015MHz | PRated,c - 51.2dB - 15(f\_offset/MHz-0.215)dB  | 30 kHz  |
| (Note 5) | 1.015MHz ≤ f\_offset < 1.5 MHz  | PRated,c – 63.2 dB | 30 kHz  |
| 1 MHz ≤ Δf ≤ 2.6 MHz | 1.5 MHz ≤ f\_offset < 3.1 MHz | PRated,c – 50.2 dB | 1 MHz  |
| 2.6 MHz ≤ Δf ≤ 5 MHz | 3.1 MHz ≤ f\_offset < 5.5 MHz | min(PRated,c – 50.2 dB, -13.2dBm) | 1 MHz |
| 5 MHz ≤ Δf ≤ min(Δfmax, 10MHz) | 5.5 MHz ≤ f\_offset < min(f\_offsetmax ,10.5MHz) | PRated,c – 54.2 dB | 1 MHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax | PRated,c -56dB (Note 7) | 1MHz |
| NOTE 1: For MSR BS supporting non-contiguous spectrum operation within any operating band the test 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 test requirement within sub-block gaps shall be (PRated,c – 56 dB)/MHz.NOTE2: For MSR BS supporting multi-band operation with Inter RF Bandwidth gap < 2×ΔfOBUE the test 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. |

Table 6.6.2.5.1-2b: MR BS OBUE in BC1 bands ≤ 3 GHz applicable for: BS with maximum output power 31 < PRated ≤ 38 dBm and with standalone NB-IoT carrier 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 1, 2, 3) | Measurement bandwidth (Note 7) |
| 0 MHz ≤ Δf < 0.05 MHz(Note 1) | 0.015 MHz ≤ f\_offset < 0.065 MHz  | PRated,c - 36.5dB - 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 - 39.5dB - 160(f\_offset/MHz-0.065)dB  | 30 kHz  |
| NOTE 1: The limits in this table only apply for operation with a standalone NB-IoT carrier adjacent to the Base Station RF Bandwidth edge.NOTE 2: For MSR 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.NOTE 3: For MSR BS supporting multi-band operation 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. |

Table 6.6.2.5.1-2c: MR BS OBUE in BC1 bands ≤ 3 GHz applicable for: BS with maximum output power 31 < PRated,c ≤ 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 | Minimum requirement (Note 1, 2) | Measurement bandwidth (Note 6) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | PRated,c – 51.5dB - 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-58.5dB | 100 kHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | Min(PRated,c-60dB, -25dBm) (Note 7) | 100 kHz |
| NOTE 1: For MSR 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 Min(PRated,c-60dB, -25dBm)/100kHz.NOTE 2: For MSR BS supporting multi-band operation 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 a standalone NB-IoT carrier adjacent to the Base Station RF Bandwidth edge, the limits in Table 6.6.2.5.1-2b apply for 0 MHz ≤ Δf < 0.15 MHz. |

Table 6.6.2.5.1-2d: MR BS OBUE in BC1 bands >3 GHz applicable for: BS with maximum output power 31 < PRated,c ≤ 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 | Minimum requirement (Note 1, 2) | Measurement bandwidth (Note 6) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | PRated,c – 51.2dB - 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-58.2dB | 100 kHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | Min(PRated,c-60dB, -25dBm) (Note 7) | 100 kHz |
| NOTE 1: For MSR 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 Min(PRated,c-60dB, -25dBm)/100kHz.NOTE 2: For MSR BS supporting multi-band operation 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 6.6.2.5.1-3: MR BS OBUE in BC1 bands ≤ 3 GHz applicable for: BS with maximum output power PRated,c ≤ 31 dBm and not supporting NR; or BS with maximum output power PRated,c ≤ 31 dBm supporting NR, and supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Test requirement (Note 1, 2) | Measurement bandwidth (Note 6) |
| 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 5) | 1.015MHz ≤ f\_offset < 1.5 MHz  | -32.5 dBm | 30 kHz  |
| 1 MHz ≤ Δf ≤ 5 MHz | 1.5 MHz ≤ f\_offset < 5.5 MHz | -19.5 dBm | 1 MHz  |
| 5 MHz ≤ Δf ≤ min(Δfmax,10MHz) | 5.5 MHz ≤ f\_offset < min(f\_offsetmax,10.5MHz)  | -23.5 dBm | 1 MHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax | -25 dBm (Note 7) | 1MHz |
| NOTE 1: For MSR BS supporting non-contiguous spectrum operation within any operating band the test 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 test requirement within sub-block gaps shall be -25dBm/MHz.NOTE2: For MSR BS supporting multi-band operation with Inter RF Bandwidth gap < 2×ΔfOBUE the test 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 a standalone NB-IoT carrier adjacent to the Base Station RF Bandwidth edge, the limits in Table 6.6.2.5.1-3b apply for 0 MHz ≤ Δf < 0.15 MHz. |

Table 6.6.2.5.1-3a: MR BS OBUE in BC1 bands > 3 GHz applicable for: BS with maximum output power PRated,c ≤ 31 dBm and not supporting NR; or BS with maximum output power PRated,c ≤ 31 dBm supporting NR, and supporting UTRA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Test requirement (Note 1, 2) | Measurement bandwidth (Note 6) |
| 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 5) | 1.015MHz ≤ f\_offset < 1.5 MHz  | -32.2 dBm | 30 kHz  |
| 1 MHz ≤ Δf ≤ 5 MHz | 1.5 MHz ≤ f\_offset < 5.5 MHz | -19.2 dBm | 1 MHz  |
| 5 MHz ≤ Δf ≤ min(Δfmax,10MHz) | 5.5 MHz ≤ f\_offset < min(f\_offsetmax,10.5MHz)  | -23.2 dBm | 1 MHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.5 MHz ≤ f\_offset < f\_offsetmax | -25 dBm (Note 7) | 1MHz |
| NOTE 1: For MSR BS supporting non-contiguous spectrum operation within any operating band the test 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 test requirement within sub-block gaps shall be -25dBm/MHz.NOTE2: For MSR BS supporting multi-band operation with Inter RF Bandwidth gap < 2×ΔfOBUE the test 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. |

Table 6.6.2.5.1-3b: MR BS OBUE in BC1 bands ≤ 3 GHz applicable for: BS with maximum output power PRated,c ≤ 31 dBm BS and standalone NB-IoT carrier 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 1, 2, 3, 4) | Measurement bandwidth (Note 7) |
| 0 MHz ≤ Δf < 0.05 MHz(Note 1) | 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 a standalone NB-IoT carrier adjacent to the Base Station RF Bandwidth edge.NOTE 2: For MSR 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.NOTE 3: For MSR BS supporting multi-band operation 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 4: In case the carrier adjacent to the RF bandwidth edge is a standalone NB-IoT carrier, the value of X = PNB-IoTcarrier – 31, where PNB-IoTcarrier is the power level of the standalone NB-IoT carrier adjacent to the RF bandwidth edge. In other cases, X = 0. |

Table 6.6.2.5.1-3c: MR BS OBUE in BC1 bands ≤ 3 GHz applicable for: BS with maximum output power PRated,c ≤ 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 | Minimum requirement (Note 1, 2) | Measurement bandwidth (Note 6) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | - 20.5dBm - 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) | -27.5 dBm | 100 kHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | -29 dBm (Note 7) | 100 kHz |
| NOTE 1: For MSR 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 -29dBm/100kHz.NOTE 2: For MSR BS supporting multi-band operation 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 a standalone NB-IoT carrier adjacent to the Base Station RF Bandwidth edge, the limits in Table 6.6.2.5.1-3b apply for 0 MHz ≤ Δf < 0.15 MHz. |

Table 6.6.2.5.1-3d: MR BS OBUE in BC1 bands >3 GHz applicable for: BS with maximum output power PRated,c ≤ 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 | Minimum requirement (Note 1, 2) | Measurement bandwidth (Note 6) |
| 0 MHz ≤ Δf < 5 MHz | 0.05 MHz ≤ f\_offset < 5.05 MHz | - 20.2dBm - 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) | -27.2 dBm | 100 kHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax | -29 dBm (Note 7) | 100 kHz |
| NOTE 1: For MSR 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 -29dBm/100kHz.NOTE 2: For MSR BS supporting multi-band operation 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 6.6.2.5.1-4: LA BS OBUE in BC1 bands ≤ 3 GHz

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Test requirement (Note 1, 2) | Measurement bandwidth (Note 6) |
| 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) | -35.5 dBm | 100 kHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax  | -37 dBm (Note 7) | 100 kHz  |
| NOTE 1: For MSR BS supporting non-contiguous spectrum operation within any operating band the test 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 test requirement within sub-block gaps shall be -37dBm/100 kHz.NOTE2: For MSR BS supporting multi-band operation with Inter RF Bandwidth gap < 2×ΔfOBUE the test 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 a standalone NB-IoT carrier adjacent to the Base Station RF Bandwidth edge, the limits in Table 6.6.2.5.1-4b apply for 0 MHz ≤ Δf < 0.15 MHz. |

Table 6.6.2.5.1-4a: LA BS OBUE in BC1 bands > 3 GHz

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency offset of measurement filter ‑3dB point, Δf | Frequency offset of measurement filter centre frequency, f\_offset | Test requirement (Note 1, 2 | Measurement bandwidth (Note 6) |
| 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) | -35.2 dBm | 100 kHz  |
| 10 MHz ≤ Δf ≤ Δfmax | 10.05 MHz ≤ f\_offset < f\_offsetmax  | -37 dBm (Note 7) | 100 kHz  |
| NOTE 1: For MSR BS supporting non-contiguous spectrum operation within any operating band the test 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 test requirement within sub-block gaps shall be -37dBm/100 kHz.NOTE2: For MSR BS supporting multi-band operation with Inter RF Bandwidth gap < 2×ΔfOBUE the test 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. |

Table 6.6.2.5.1-4b: LA BS OBUE in BC1 bands ≤ 3 GHz applicable for: BS with standalone NB-IoT carrier 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 1, 2, 3, 4) | Measurement bandwidth (Note 7) |
| 0 MHz ≤ Δf < 0.05 MHz(Note 1) | 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 a standalone NB-IoT carrier adjacent to the Base Station RF Bandwidth edge.NOTE 2: For MSR 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.NOTE 3: For MSR BS supporting multi-band operation 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 4: In case the carrier adjacent to the RF bandwidth edge is a standalone NB-IoT carrier, the value of X = PNB-IoTcarrier – 24, where PNB-IoTcarrier is the power level of the standalone NB-IoT carrier adjacent to the RF bandwidth edge. In other cases, X = 0. |

NOTE 5: This frequency range ensures that the range of values of f\_offset is continuous.

NOTE 6: As a general rule for the requirements in the present clause, 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 7: The requirement is not applicable when Δfmax < ΔfOBUE.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*End of change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next changed section\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 7.5.5.2 Co-location test requirements

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

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

For a wanted and an interfering signal coupled to BS antenna input using the parameters in Table 7.5.5.2-1, the following requirements shall be met:

- For any measured E-UTRA carrier, the throughput shall be ≥ 95% of the maximum throughput of the reference measurement channel defined in TS 36.104 [5], clause 7.2.

- For any measured UTRA FDD carrier, the BER shall not exceed 0.001 for the reference measurement channel defined in TS 25.104 [3], clause 7.2.

- For any measured UTRA TDD carrier, the BER shall not exceed 0.001 for the reference measurement channel defined in TS 25.105 [4], clause 7.2.

- For any measured GSM/EDGE carrier, the conditions are specified in TS 45.005 [6], Annex P.2.1.

- For any measured NB-IoT carrier (standalone or operating in E-UTRA in-band/guard band), the throughput shall be ≥ 95% of the maximum throughput of the reference measurement channel defined in TS 36.104 [5], clause 7.2.

- For any measured NB-IoT carrier (operating in NR in-band), the throughput shall be ≥ 95% of the maximum throughput of the reference measurement channel defined in TS 38.104 [27], clause 7.2.

- For any measured NR carrier, the throughput shall be ≥ 95% of the maximum throughput of the reference measurement channel defined in TS 38.104 [27], clause 7.2.

Table 7.5.5.2-1: 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 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| GSM900 | 921 – 960 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| DCS1800 | 1805 – 1880(Note 4) | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| PCS1900 | 1930 – 1990 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band I or E-UTRA Band 1 or NR Band n1 | 2110 – 2170 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band II or E-UTRA Band 2 or NR Band n2 | 1930 – 1990 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band III or E-UTRA Band 3 or NR Band n3 | 1805 – 1880(Note 4) | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band IV or E-UTRA Band 4 | 2110 – 2155 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band V or E-UTRA Band 5 or NR Band n5 | 869 – 894 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band VI or E-UTRA Band 6 | 875 – 885 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band VII or E-UTRA Band 7 or NR Band n7 | 2620 – 2690 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band VIII or E-UTRA Band 8 or NR Band n8 | 925 – 960 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band IX or E-UTRA Band 9 | 1844.9 – 1879.9 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band X or E-UTRA Band 10 | 2110 – 2170 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band XI or E-UTRA Band 11 | 1475.9 - 1495.9 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band XII or E-UTRA Band 12 or NR Band n12 | 729 - 746 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band XIIII or E-UTRA Band 13 | 746 - 756 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band XIV or E-UTRA Band 14 or NR Band n14 | 758 - 768 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 17 | 734 - 746 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 18 or NR Band n18 | 860 - 875 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band XIX or E-UTRA Band 19 | 875 - 890 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band XX or E-UTRA Band 20 or NR Band n20 | 791 - 821 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band XXI or E-UTRA Band 21 | 1495.9 – 1510.9 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band XXII or E-UTRA Band 22 | 3510 – 3590 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
|  |  |  |  |  |  |  |
| E-UTRA Band 24 | 1525 – 1559 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band XXV or E-UTRA Band 25 or NR Band n25 | 1930 – 1995 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA FDD Band XXVI or E-UTRA Band 26 or NR Band n26 | 859 – 894 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 27 | 852 - 869 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 28 or NR Band n28 | 758 – 803 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 29 or NR Band n29 | 717-728 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| E-UTRA Band 30 or NR Band n30 | 2350-2360 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 31 | 462.5–467.5 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| UTRA FDD Band XXXII or E-UTRA Band 32 | 1452 – 1496(NOTE 5) | +16\*\* | +8\*\* | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| UTRA TDD Band a) or E-UTRA Band 33 | 1900-1920 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA TDD Band a) or E-UTRA Band 34 or NR Band n34 | 2010-2025 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA TDD Band b) or E-UTRA Band 35 | 1850-1910 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA TDD Band b) or E-UTRA Band 36 | 1930-1990 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA TDD Band c) or E-UTRA Band 37 | 1910-1930 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA TDD Band d) or E-UTRA Band 38 or NR Band n38 | 2570-2620 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA TDD Band f) or E-UTRA Band 39 or NR Band n39 | 1880-1920 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| UTRA TDD Band e) or E-UTRA Band 40 or NR Band n40 | 2300-2400 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 41 or NR Band n41 | 2496 - 2690 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 42 | 3400 – 3600 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 43 | 3600 – 3800 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 44 | 703 - 803 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 45 | 1447 - 1467 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 46 or NR Band n46 | 5150 - 5925 | N/A | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 48 or NR Band n48 | 3550 - 3700 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 49 | 3550 - 3700 | N/A | N/A | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 50 or NR Band n50 | 1432 - 1517 | +16 | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 51 or NR Band n51 | 1427 - 1432 | N/A | N/A | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 52 | 3300 – 3400 | +16\*\* | +8 | -6 | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 53 or NR Band n53 | 2483.5 – 2495 | N/A | +8 | -6 | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 65 or NR Band n65 | 2110 – 2200 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 66 or NR Band n66 | 2110 – 2200 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 67 | 738 – 758 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 68 | 753 – 783 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 69  | 2570-2620 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 70 or NR Band n70 | 1995 - 2020 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 71 or NR Band n71 | 617 - 652 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 72 | 461 - 466 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 73 | 460 - 465 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 74 or NR Band n74 | 1475 - 1518 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 75 or NR Band n75 | 1432 - 1517 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 76 or NR Band n76 | 1427 - 1432 | N/A | N/A | -6\*\* | PREFSENS + x dB\* | CW carrier |
| NR Band n77 | 3300 - 4200 | +16\*\* | +8 | -6 | PREFSENS + x dB\* | CW carrier |
| NR Band n78 | 3300 - 3800 | +16\*\* | +8 | -6 | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 85 | 728 - 746 | +16\*\* | +8 | -6 | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 87 | 420 – 425  | +16\*\* | +8 | -6 | PREFSENS + x dB\* | CW carrier |
| E-UTRA Band 88 | 422 – 427  | +16\*\* | +8 | -6 | PREFSENS + x dB\* | CW carrier |
| NR Band n91 | 1427 - 1432 | N/A | N/A | -6\*\* | PREFSENS + x dB\* | CW carrier |
| NR Band n92 | 1432 - 1517 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| NR Band n93 | 1427 - 1432 | N/A | N/A | -6\*\* | PREFSENS + x dB\* | CW carrier |
| NR Band n94 | 1432 - 1517 | +16\*\* | +8\*\* | -6\*\* | PREFSENS + x dB\* | CW carrier |
| NR Band n96 | 5925 – 7125 | N/A | +8 | -6 | PREFSENS + x dB\* | CW carrier |
| NOTE 1 (\*):PREFSENS depends on the RAT, the BS class and the channel bandwidth, see clause 7.2."x" is equal to 3 in case of GSM/EDGE wanted signal and equal to 6 in case of NR, UTRA or E-UTRA wanted signals.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 768-797MHz.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 for 30dB BS-BS minimum coupling loss. However, there are certain site-engineering solutions that can be used. These techniques are addressed in TR 25.942 [14].NOTE 4: In China, the blocking requirement for co-location with DCS1800 and Band III BS is only applicable in the frequency range 1805-1850MHz.NOTE 5: For a 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.NOTE 6: Co-located TDD base stations that are synchronized and using the same or adjacent operating band can receive without special co-location requirements. For unsynchronized base stations, special co-location requirements may apply that are not covered by the 3GPP specifications.NOTE 7 (\*\*): For NB-IoT, up to 24 exceptions are allowed for spurious response frequencies in each wanted signal frequency when measured using a 1MHz step size. For these exceptions the above throughput requirement shall be met when the blocking signal is set to a level of -40 dBm for 15 kHz subcarrier spacing and -46 dBm for 3.75 kHz subcarrier spacing. In addition, each group of exceptions shall not exceed three contiguous measurements using a 1MHz step size. |