**3GPP TSG-RAN WG4 Meeting #100-e *R4-2115873***

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

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.104** | **CR** | **<CR#>** | **rev** |  | **Current version:** | **17.2.0** |  |
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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 38.104 Maintenance RF part (Rel-17, CAT A) | | | | | | | | | |
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| ***Source to WG:*** | MCC, Ericsson | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_RF\_FR1-Core  NR\_newRAT-Core | | | | |  | ***Date:*** | | | 2021-08-30 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **A** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | This big CR merges the multiple endorsed draft CRs. The reason for change in each endorsed draft CR is copied below.  **R4-2112272 Draft CR to TS 38.104: Addition of FCC emission limits on US 3.45-3.55 GHz band**  FCC emission limits in US 3.45-3.55 GHz band are not specified for Band n77.  **R4-2113079 OTA transmitter intermodulation 38.104 R17**  On OTA tranmitter intermodulation, very high power Prated,t,TRP is not feasible for the test chamber. And the power transmitted in closest column could be far below the power Prated,t,TRP since AAS always use multi-column antenna. For co-location blocking requirements, 46 dBm is adopted in terms of TRP. The same interferer level as used for co-location blocking should be re-used | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The summary of change in each each endorsed draft CR is copied below.  **R4-2112272 Draft CR to TS 38.104: Addition of FCC emission limits on US 3.45-3.55 GHz band**  Specify the FCC emission limits in US 3.45-3.55 GHz band as additional regional spurious emissions requirements for Band n77.  **R4-2113079 OTA transmitter intermodulation 38.104 R17**  The max interfereing power is defined as 46 dBm which is the same as co-location blocking for Macro BS | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The consequences if not approved for each endorsed draft CR are copied below.  **R4-2112272 Draft CR to TS 38.104: Addition of FCC emission limits on US 3.45-3.55 GHz band**  Band n77 cannot be used to cover US 3.45-3.55 GHz band.  **R4-2113079 OTA transmitter intermodulation 38.104 R17**  OTA tranmitter intermodulation can not be tested in the test chamber. | | | | | | | | |
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| ***Clauses affected:*** | | **R4-2112272 Draft CR to TS 38.104: Addition of FCC emission limits on US 3.45-3.55 GHz band**  6.6.5.2.3  **R4-2113079 OTA transmitter intermodulation 38.104 R17**  9.8.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  |  | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  |  | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

***<Start of change1>***

##### 6.6.5.2.3 Additional spurious emissions 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 NR *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 4.5.

Some requirements may apply for the protection of specific equipment (UE, MS and/or BS) or equipment operating in specific systems (GSM, CDMA, UTRA, E-UTRA, NR, etc.) as listed below.

The spurious emission *basic limits* are provided in table 6.6.5.2.3 -1 for a BS where requirements for co-existence with the system listed in the first column apply. For a *multi-band connector*, the exclusions and conditions in the Note column of table 6.6.5.2.3 -1 apply for each supported *operating band*.

Table 6.6.5.2.3-1: BS spurious emissions *basic* *limits* for BS for co-existence with systems operating in other frequency bands

| System type for NR to co-exist with | Frequency range for co-existence requirement | *Basic limits* | *Measurement bandwidth* | Note |
| --- | --- | --- | --- | --- |
|  | 921 – 960 MHz | -57 dBm | 100 kHz | This requirement does not apply to BS operating in band n8 |
| GSM900 | 876 – 915 MHz | -61 dBm | 100 kHz | For the frequency range 880-915 MHz, this requirement does not apply to BS operating in band n8, since it is already covered by the requirement in clause 6.6.5.2.2. |
|  | 1805 – 1880 MHz | -47 dBm | 100 kHz | This requirement does not apply to BS operating in band n3. |
| DCS1800 | 1710 – 1785 MHz | -61 dBm | 100 kHz | This requirement does not apply to BS operating in band n3, since it is already covered by the requirement in clause 6.6.5.2.2. |
|  | 1930 – 1990 MHz | -47 dBm | 100 kHz | This requirement does not apply to BS operating in band n2, n25 or band n70. |
| PCS1900 | 1850 – 1910 MHz | -61 dBm | 100 kHz | This requirement does not apply to BS operating in band n2 or n25 since it is already covered by the requirement in clause 6.6.5.2.2. |
|  | 869 – 894 MHz | -57 dBm | 100 kHz | This requirement does not apply to BS operating in band n5 or n26. |
| GSM850 or CDMA850 | 824 – 849 MHz | -61 dBm | 100 kHz | This requirement does not apply to BS operating in band n5 or n26, since it is already covered by the requirement in clause 6.6.5.2.2. |
| UTRA FDD Band I or | 2110 – 2170 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n1 or n65 |
| 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 n1 or n65, since it is already covered by the requirement in clause 6.6.5.2.2. |
| UTRA FDD Band II or | 1930 – 1990 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n2 or n70. |
| 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 n2, since it is already covered by the requirement in clause 6.6.5.2.2. |
| UTRA FDD Band III or | 1805 – 1880 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n3. |
| E-UTRA Band 3 or NR Band n3 | 1710 – 1785 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n3, since it is already covered by the requirement in clause 6.6.5.2.2. |
| UTRA FDD Band IV or | 2110 – 2155 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n66 |
| E-UTRA Band 4 | 1710 – 1755 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n66, since it is already covered by the requirement in clause 6.6.5.2.2. |
| UTRA FDD Band V or | 869 – 894 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n5 or n26. |
| E-UTRA Band 5 or NR Band n5 | 824 – 849 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n5 or n26, since it is already covered by the requirement in clause 6.6.5.2.2. |
| UTRA FDD Band VI, XIX or | 860 – 890 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n18. |
| 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 n18, since it is already covered by the requirement in clause 6.6.5.2.2. |
|  | 830 – 845 MHz | -49 dBm | 1 MHz |  |
| UTRA FDD Band VII or | 2620 – 2690 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n7. |
| 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 n7, since it is already covered by the requirement in clause 6.6.5.2.2. |
| UTRA FDD Band VIII or | 925 – 960 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n8. |
| 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 n8, since it is already covered by the requirement in clause 6.6.5.2.2. |
| UTRA FDD Band IX or | 1844.9 – 1879.9 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n3. |
| E-UTRA Band 9 | 1749.9 – 1784.9 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n3, since it is already covered by the requirement in clause 6.6.5.2.2. |
| UTRA FDD Band X or | 2110 – 2170 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n66 |
| E-UTRA Band 10 | 1710 – 1770 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n66, since it is already covered by the requirement in clause 6.6.5.2.2. |
| 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 n50, n74, n75, n92 or n94. |
| 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 n50, n51, n74, n75, n76, n91, n92, n93 or n94. |
|  | 1447.9 – 1462.9 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n50, n74, n75, n92 or n94. |
| UTRA FDD Band XII or | 729 – 746 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n12 or n85. |
| 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 n12 or n85, since it is already covered by the requirement in clause 6.6.5.2.2.  For NR BS operating in n29, it applies 1 MHz below the Band n29 downlink operating band (Note 5). |
| UTRA FDD Band XIII or | 746 – 756 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n13. |
| E-UTRA Band 13 or NR Band n13 | 777 – 787 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n13, since it is already covered by the requirement in clause 6.6.5.2.2. |
| UTRA FDD Band XIV or | 758 – 768 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n14. |
| 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 n14, since it is already covered by the requirement in clause 6.6.5.2.2. |
|  | 734 – 746 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 17 | 704 – 716 MHz | -49 dBm | 1 MHz | For NR BS operating in n29, it applies 1 MHz below the Band n29 downlink operating band (Note 5). |
| UTRA FDD Band XX or | 791 – 821 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n20 or n28. |
| E-UTRA Band 20 or NR Band n2 | 832 – 862 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n20, since it is already covered by the requirement in clause 6.6.5.2.2. |
| UTRA FDD Band XXII | 3510 – 3590 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n48, n77 or n78. |
| or E-UTRA Band 22 | 3410 – 3490 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n77 or n78. |
|  | 1525 – 1559 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n24. |
| E-UTRA Band 24 or NR Band n24 | 1626.5 – 1660.5 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n24, since it is already covered by the requirement in clause 6.6.5.2.2. |
| UTRA FDD Band XXV or | 1930 – 1995 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n2, n25 or n70. |
| E-UTRA Band 25 or NR band n25 | 1850 – 1915 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n25 since it is already covered by the requirement in clause 6.6.5.2.2. For BS operating in Band n2, it applies for 1910 MHz to 1915 MHz, while the rest is covered in clause 6.6.5.2.2. |
| UTRA FDD Band XXVI or | 859 – 894 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n5 or n26. |
| E-UTRA Band 26 or NR Band n26 | 814 – 849 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n26 since it is already covered by the requirement in clause 6.6.5.2.2. For BS operating in Band n5, it applies for 814 MHz to 824 MHz, while the rest is covered in clause 6.6.5.2.2. |
|  | 852 – 869 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n5. |
| E-UTRA Band 27 | 807 – 824 MHz | -49 dBm | 1 MHz | This requirement also applies to BS operating in Band n28, starting 4 MHz above the Band n28 downlink *operating band* (Note 5). |
| E-UTRA Band 28 or | 758 – 803 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n20, n67 or n28. |
| NR Band n28 | 703 – 748 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n28, since it is already covered by the requirement in clause 6.6.5.2.2.  For BS operating in band n67, it applies for 703 MHz to 736 MHz. |
| 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 n29 or n85 |
| E-UTRA Band 30 or | 2350 – 2360 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n30 |
| NR Band n30 | 2305 – 2315 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n30, since it is already covered by the requirement in clause 6.6.5.2.2. |
|  | 462.5 – 467.5 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 31 | 452.5 – 457.5 MHz | -49 dBm | 1 MHz |  |
| 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 n50, n74, n75, n92 or n94. |
| UTRA TDD Band a) or E-UTRA Band 33 | 1900 – 1920 MHz | -52 dBm | 1 MHz |  |
| 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 n34. |
| UTRA TDD Band b) or E-UTRA Band 35 | 1850 – 1910 MHz | -52 dBm | 1 MHz |  |
| 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 n2 or n25. |
| UTRA TDD Band c) or E-UTRA Band 37 | 1910 – 1930 MHz | -52 dBm | 1 MHz |  |
| 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 n38. |
| UTRA TDD Band f) or E-UTRA Band 39 or NR band n39 | 1880 – 1920MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n39. |
| UTRA TDD Band e) or E-UTRA Band 40 or NR Band n40 | 2300 – 2400MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n30 or n40. |
| E-UTRA Band 41 or NR Band n41, n90 | 2496 – 2690 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band n41, n53 or [n90]. |
| E-UTRA Band 42 | 3400 – 3600 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band n48, n77 or n78. |
| E-UTRA Band 43 | 3600 – 3800 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band n48, n77 or n78. |
| E-UTRA Band 44 | 703 – 803 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band n28. |
| E-UTRA Band 45 | 1447 – 1467 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 46 or NR Band n46 | 5150 – 5925 MHz | -52 dBm | 1 MHz | This is not applicable to BS operating in Band n46 or n96. |
| 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 n48, n77 or n78. |
| E-UTRA Band 50 or NR band n50 | 1432 – 1517 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n50, n51, n74, n75, n76, n91, n92, n93 or n94. |
| E-UTRA Band 51 or NR Band n51 | 1427 – 1432 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n50, n51, n75, n76, n91, n92, n93 or n94. |
| E-UTRA Band 53 or NR Band n53 | 2483.5 - 2495 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n41, n53 or n90. |
| E-UTRA Band 65 or | 2110 – 2200 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n1 or n65. |
| NR Band n65 | 1920 – 2010 MHz | -49 dBm | 1 MHz | For BS operating in Band n1, it applies for 1980 MHz to 2010 MHz, while the rest is covered in clause 6.6.5.2.2.  This requirement does not apply to BS operating in band n65, since it is already covered by the requirement in clause 6.6.5.2.2. |
| E-UTRA Band 66 or | 2110 – 2200 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n66. |
| NR Band n66 | 1710 – 1780 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n66, since it is already covered by the requirement in clause 6.6.5.2.2. |
| E-UTRA Band 67 or NR Band n67 | 738 – 758 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n28 or n67. |
| E-UTRA Band 68 | 753 -783 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n28. |
|  | 698-728 MHz | -49 dBm | 1 MHz | For BS operating in Band n28, this requirement applies between 698 MHz and 703 MHz, while the rest is covered in clause 6.6.5.2.2. |
| E-UTRA Band 69 | 2570 – 2620 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n38. |
| E-UTRA Band 70 or | 1995 – 2020 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n2, n25 or n70 |
| NR Band n70 | 1695 – 1710 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n70, since it is already covered by the requirement in clause 6.6.5.2.2. |
| E-UTRA Band 71 or | 617 – 652 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n71 |
| NR Band n71 | 663 – 698 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n71, since it is already covered by the requirement in clause 6.6.5.2.2. |
|  | 461 – 466 MHz | -52 dBm | 1 MHz |  |
| E-UTRA Band 72 | 451 – 456 MHz | -49 dBm | 1 MHz |  |
| E-UTRA Band 74 | 1475 – 1518 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n50, n74, n75, n92 or n94. |
| or NR Band n74 | 1427 – 1470 MHz | -49 dBm | 1MHz | This requirement does not apply to BS operating in band n50, n51, n74, n75, n76, n91, n92, n93 or n94. |
| 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 n50, n51, n74, n75, n76, n91, n92, n93 or n94. |
| 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 n50, n51, n75, n76, n91, n92, n93 or n94. |
| NR Band n77 | 3.3 – 4.2 GHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n48, n77 or n78 |
| NR Band n78 | 3.3 – 3.8 GHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n48, n77 or n78 |
| NR Band n79 | 4.4 – 5.0 GHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n79 |
| NR Band n80 | 1710 – 1785 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n3, since it is already covered by the requirement in clause 6.6.5.2.2. |
| NR Band n81 | 880 – 915 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n8, since it is already covered by the requirement in clause 6.6.5.2.2. |
| NR Band n82 | 832 – 862 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n20, since it is already covered by the requirement in clause 6.6.5.2.2. |
| NR Band n83 | 703 – 748 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n28, since it is already covered by the requirement in clause 6.6.5.2.2.  For BS operating in Band n67, it applies for 703 MHz to 736 MHz. |
| NR Band n84 | 1920 – 1980 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n1, since it is already covered by the requirement in clause 6.6.5.2.2. |
| E-UTRA Band 85 or NR Band n85 | 728 – 746 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in band n12 or n85.  For NR BS operating in n29, it applies 1 MHz below the Band n29 downlink operating band (Note 5). |
|  | 698 – 716 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n12 or n85, since it is already covered by the requirement in clause 6.6.5.2.2. |
| NR Band n86 | 1710 – 1780 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n66, since it is already covered by the requirement in clause 6.6.5.2.2. |
| NR Band n89 | 824 – 849 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n5, since it is already covered by the requirement in clause 6.6.5.2.2. |
|  | 1427 – 1432 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n50, n51, n75 or n76. |
| NR Band n91 | 832 – 862 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n20, since it is already covered by the requirement in clause 6.6.5.5.1.2. |
|  | 1432 – 1517 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n50, n51, n74, n75 or n76. |
| NR Band n92 | 832 – 862 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n20, since it is already covered by the requirement in clause 6.6.5.5.1.2. |
|  | 1427 – 1432 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n50, n51, n75 or n76. |
| NR Band n93 | 880 – 915 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n8, since it is already covered by the requirement in clause 6.6.5.5.1.2. |
|  | 1432 – 1517 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n50, n51, n74, n75 or n76. |
| NR Band n94 | 880 – 915 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n8, since it is already covered by the requirement in clause 6.6.5.5.1.2. |
| NR Band n95 | 2010 – 2025 MHz | -52 dBm | 1 MHz |  |
| NR Band n96 | 5925 – 7125 MHz | -52 dBm | 1 MHz | This requirement does not apply to BS operating in Band n46 or n96. |
| NR Band n97 | 2300 – 2400MHz | -52 dBm | 1 MHz |  |
| NR Band n98 | 1880 – 1920MHz | -52 dBm | 1 MHz |  |
| NR Band n99 | 1626.5 – 1660.5 MHz | -49 dBm | 1 MHz | This requirement does not apply to BS operating in band n24, since it is already covered by the requirement in clause 6.6.5.2.2. |

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 n28, the co-existence requirements in table 6.6.5.2.3 -1 do not apply for the ΔfOBUE frequency range immediately outside the downlink *operating band* (see table 5.2-1). Emission limits for this excluded frequency range may be covered by local or regional requirements.

NOTE 2: Table 6.6.5.2.3 -1 assumes that two *operating bands*, where the frequency ranges in table 5.2-1 would be overlapping, are not deployed in the same geographical area. For such a case of operation with overlapping frequency arrangements in the same geographical area, special co-existence requirements may apply that are not covered by the 3GPP specifications.

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

NOTE 4: For NR Band n28 BS, specific solutions may be required to fulfil the spurious emissions limits for BS for co-existence with E-UTRA Band 27 UL *operating band*.

NOTE 5: For NR Band n29 BS, specific solutions may be required to fulfil the spurious emissions limits for NR BS for co-existence with UTRA Band XII, E-UTRA Band 12 or NR Band n12 UL operating band, E-UTRA Band 17 UL operating band or E-UTRA Band 85 UL or NR Band n85 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*. ΔfOBUE is defined in clause 6.6.1.

The spurious emission *basic limit* for this requirement is:

Table 6.6.5.2.3-2: BS spurious emissions *basic limits* for BS for co-existence with PHS

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency range | *Basic limit* | *Measurement Bandwidth* | Note |
| 1884.5 – 1915.7 MHz | -41 dBm | 300 kHz | Applicable when co-existence with PHS system operating in 1884.5 – 1915.7 MHz |

Table 6.6.5.2.3-3: Void

In certain regions, the following requirement may apply to NR BS operating in Band n50 and n75 within the 1432 – 1452 MHz, and in Band n51 and Band n76. The *basic limit is* specified in Table 6.6.5.2.3-4. 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*.

Table 6.6.5.2.3-4: Additional operating band unwanted emission *basic limit* for NR BS operating in Band n50 and n75 within 1432 – 1452 MHz, and in Band n51 and n76

|  |  |  |
| --- | --- | --- |
| Filter centre frequency, Ffilter | *Basic limit* | *Measurement Bandwidth* |
| Ffilter = 1413.5 MHz | -42 dBm | 27 MHz |

In certain regions, the following requirement may apply to BS operating in NR Band n50 and n75 within 1492-1517 MHz and in Band n74 within 1492-1518 MHz. The maximum level of emissions, measured on centre frequencies Ffilter with filter bandwidth according to Table 6.6.5.2.3-5, shall be defined according to the *basic limits* PEM,n50/n75,a nor PEM,n50/n75,b declared by the manufacturer.

Table 6.6.5.2.3-5: *Operating band* n50, n74 and n75 declared emission above 1518 MHz

|  |  |  |
| --- | --- | --- |
| Filter centre frequency, Ffilter | Declared *basic limits* (dBm) | *Measurement bandwidth* |
| 1518.5 MHz ≤ Ffilter ≤ 1519.5 MHz | PEM, n50/n75,a | 1 MHz |
| 1520.5 MHz ≤ Ffilter ≤ 1558.5 MHz | PEM,n50/n75,b | 1 MHz |

In certain regions, the following requirement shall be applied to BS operating in Band n13 and n14 to ensure that appropriate interference protection is provided to 700 MHz public safety operations. This requirement is also applicable at the frequency range from 10 MHz below the lowest frequency of the BS 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 6.6.5.2.3-6: BS Spurious emissions limits for protection of 700 MHz public safety operations

|  |  |  |  |
| --- | --- | --- | --- |
| Operating Band | Frequency range | Maximum Level | *Measurement Bandwidth* |
| n13 | 763 - 775 MHz | -46 dBm | 6.25 kHz |
| n13 | 793 - 805 MHz | -46 dBm | 6.25 kHz |
| n14 | 769 - 775 MHz | -46 dBm | 6.25 kHz |
| n14 | 799 - 805 MHz | -46 dBm | 6.25 kHz |

In certain regions, the following requirement may apply to NR BS operating in Band n30. 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 6.6.5.2.3-7: Additional NR BS Spurious emissions limits for Band n30

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

The following requirement may apply to BS operating in Band n48 in certain regions. The power of any spurious emission shall not exceed:

Table 6.6.5.2.3-8: Additional BS Spurious emissions limits for Band n48

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

NOTE: 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: The regional requirement, included in [12], is defined in terms of EIRP, which is dependent on both the BS emissions at the *antenna connector* and the deployment (including antenna gain and feeder loss). The requirement defined above provides the characteristics of the base station needed to verify compliance with the regional requirement. The assessment of the EIRP level is described in Annex F.

The following requirement shall be applied to BS operating in Band n26 to ensure that appropriate interference protection is provided to 800 MHz public safety operations. This requirement is also applicable at the frequency range from 10 MHz below the lowest frequency of the BS downlink operating band up to 10 MHz above the highest frequency of the BS downlink operating band.

The power of any spurious emission shall not exceed:

Table 6.6.5.2.3-9: BS Spurious emissions limits for protection of 800 MHz public safety operations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operating Band | Frequency range | Maximum Level | Measurement Bandwidth | Note |
| n26 | 851 - 859 MHz | -13 dBm | 100 kHz | Applicable for offsets > 37.5kHz from the channel edge |

The following requirement may apply to BS for Band n41 and n90 operation in Japan. 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.

The power of any spurious emission shall not exceed:

Table 6.6.5.2.3-10: Additional BS Spurious emissions limits for Band n41 and n90

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

The following requirement may apply to BS operating in 3.45-3.55 GHz in Band n77 in certain regions. Emissions shall not exceed the maximum levels specified in table 6.6.5.2.3-11.

Table 6.6.5.2.3-11: Additional BS spurious emissions limits for Band n77

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Channel bandwidth [MHz] | Frequency range [MHz] | Filter centre frequency, Ffilter [MHz] | Minimum requirement [dBm] | *Measurement bandwidth* [MHz] |
| All | 3430 – 3440  3560 – 3570 | 3430.5 ≤ Ffilter < 3439.5  3560.5 ≤ Ffilter < 3569.5 | -25 | 1 |
| All | ≤ 3430  > 3570 | Ffilter < 3429.5  3570.5 ≤ Ffilter | -40 | 1 |

NOTE: 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.

***<End of change1>***

***<Start of change2>***

### 9.8.2 Minimum requirement for *BS type 1-O*

For *BS type 1-O* the transmitter intermodulation level shall not exceed the TRP unwanted emission limits specified for OTA transmitter spurious emission in clause 9.7.5.2 (except clause 9.7.5.2.3 and clause 9.7.5.2.5), OTA operating band unwanted emissions in clause 9.7.4.2 and OTA ACLR in clause 9.7.3.2 in the presence of a wanted signal and an interfering signal, defined in table 9.8.2-1.

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

For RIBs supporting operation in *non-contiguous spectrum*, the requirement is also applicable inside a *sub-block gap* for interfering signal offsets where the interfering signal falls completely within the *sub-block gap*. The interfering signal offset is defined relative to the *sub-block* edges.

For RIBs supporting operation in multiple *operating bands*, the requirement shall apply relative to the *Base Station RF Bandwidth* *edges* of each *operating band*. In case the *inter RF Bandwidth gap* is less than 3\*BWChannel (where BWChannel is the minimal *BS channel bandwidth* of the band), the requirement in the gap shall apply only for interfering signal offsets where the interfering signal falls completely within the *inter RF Bandwidth gap*.

Table 9.8.2-1: Interfering and wanted signals for  
the OTA transmitter intermodulation requirement

| Parameter | Value |
| --- | --- |
| Wanted signal | NR signal or multi-carrier, or multiple intra-band contiguously or non-contiguously aggregated carriers |
| Interfering signal type | NR signal the minimum *BS channel bandwidth* (BWChannel) with 15 kHz SCS of the band defined in clause 5.3.5 |
| Interfering signal level | min(46 dBm, Prated,t,TRP) |
| Interfering signal centre frequency offset from the lower (upper) edge of the wanted signal or edge of *sub-block* inside a gap | , for n=1, 2 and 3 |
| NOTE 1: Interfering signal positions that are partially or completely outside of any downlink *operating band* of the RIB are excluded from the requirement, unless the interfering signal positions fall within the frequency range of adjacent downlink *operating bands* in the same geographical area. In case that none of the interfering signal positions fall completely within the frequency range of the downlink *operating band*, TS 38.141-2 [6] provides further guidance regarding appropriate test requirements.  NOTE 2: In Japan, NOTE 1 is not applied in Band n77, n78, n79.  NOTE 3: The Prated,t,TRP is split between polarizations at the *co-location reference antenna*. | |