**3GPP TSG-RAN WG4 Meeting # 101-e *R4-*** ***2120780***

**Electronic meeting, November 1 - 12, 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.104** | **CR** |  | **rev** | **-** | **Current version:** | **17.3.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** | Big CR for TS 36.104 Maintenance (Rel-17, CAT A) | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | MCC,CATT | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI14, [TEI](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=60094) | | | | |  | ***Date:*** | | | 2021-11-16 |
|  |  | | | |  | |  | | |  |
| ***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.  **R4-2117232, Draft CR to TS 36.104: Correction on tables for Band 23 co-location requirements**  Entries for Band 23 were deleted from tables for coexistence spurious emission limits but kept in tables for co-location requirements. This would create ambiguity on Band 23 co-location requirements.  **R4-2119039, DraftCR: cleanup the square brackets for LTE PUSCH performance requirements**  There are still brackets exsiting in some requirements in Table 8.2.1.1-4, Table 8.2.1.1-5 and Table 8.2.1.1-6. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The summary of change in each each endorsed draft CR is copied below.  **R4-2117232, Draft CR to TS 36.104: Correction on tables for Band 23 co-location requirements**  Delete the entries for Band 23 from tables for co-location requirements.  **R4-2119039, DraftCR: cleanup the square brackets for LTE PUSCH performance requirements**  Remove the corrosponding brackets. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The consequences if not approved for each endorsed draft CR are copied below.  **R4-2117232, Draft CR to TS 36.104: Correction on tables for Band 23 co-location requirements**  Ambiguity remains and would lead to different interpretations.  **R4-2119039, DraftCR: cleanup the square brackets for LTE PUSCH performance requirements**  The brackets will still be existing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | The clauses affected in each each endorsed draft CR are copied below.  **R4-2117232, Draft CR to TS 36.104: Correction on tables for Band 23 co-location requirements**  6.6.4.4.1, 7.6.2.1  **R4-2119039, DraftCR: cleanup the square brackets for LTE PUSCH performance requirements**  8.2.1.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS36.141 ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**<Start of Change 1>**

##### 6.6.4.4.1 Minimum Requirement

The power of any spurious emission shall not exceed the limits of Table 6.6.4.4.1-1 for a Wide Area BS where requirements for co-location with a BS type listed in the first column apply. For BS capable of multi-band operation, the exclusions and conditions in the Note column of Table 6.6.4.4.1-1 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 6.6.4.4.1-1 apply for the operating band supported at that antenna connector.

Table 6.6.4.4.1-1: BS Spurious emissions limits for Wide Area BS co-located with another BS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of co-located BS | Frequency range for co-location requirement | Maximum Level | Measurement Bandwidth | Note |
| Macro GSM900 | 876-915 MHz | -98 dBm | 100 kHz |  |
| Macro DCS1800 | 1710 - 1785 MHz | -98 dBm | 100 kHz |  |
| Macro PCS1900 | 1850 - 1910 MHz | -98 dBm | 100 kHz |  |
| Macro GSM850 or CDMA850 | 824 - 849 MHz | -98 dBm | 100 kHz |  |
| WA UTRA FDD Band I or E-UTRA Band 1 or NR Band n1 | 1920 - 1980 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band II or E-UTRA Band 2 or NR Band n2 | 1850 - 1910 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band III or E-UTRA Band 3 or NR Band n3 | 1710 - 1785 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band IV or E-UTRA Band 4 | 1710 - 1755 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band V or E-UTRA Band 5 or NR Band n5 | 824 - 849 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band VI, XIX or E-UTRA Band 6, 19 | 830 - 845 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band VII or E-UTRA Band 7 or NR Band n7 | 2500 - 2570 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band VIII or E-UTRA Band 8 or NR Band n8 | 880 - 915 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band IX or E-UTRA Band 9 | 1749.9 - 1784.9 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band X or E-UTRA Band 10 | 1710 - 1770 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band XI or E-UTRA Band 11 | 1427.9 –1447.9 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 50 or 75 |
| WA UTRA FDD Band XII or  E-UTRA Band 12 or NR Band n12 | 699 - 716 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band XIII or  E-UTRA Band 13 or NR Band n13 | 777 - 787 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band XIV or  E-UTRA Band 14 or NR Band n14 | 788 - 798 MHz | -96 dBm | 100 kHz |  |
| WA E-UTRA Band 17 | 704 - 716 MHz | -96 dBm | 100 kHz |  |
| WA E-UTRA Band 18 | 815 - 830 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band XX or E-UTRA Band 20 or NR Band n20 | 832 - 862 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band XXI or E-UTRA Band 21 | 1447.9 – 1462.9 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 32, 50 or 75 |
| WA UTRA FDD Band XXII or E-UTRA Band 22 | 3410 – 3490 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42 |
| WA E-UTRA Band 24 or NR Band n24 | 1626.5 – 1660.5 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band XXV or  E-UTRA Band 25 or NR Band n25 | 1850 – 1915 MHz | -96 dBm | 100 kHz |  |
| WA UTRA FDD Band XXVI or  E-UTRA Band 26 or NR Band n26 | 814 – 849 MHz | -96 dBm | 100 kHz |  |
| WA E-UTRA Band 27 | 807 - 824 MHz | -96 dBm | 100 kHz |  |
| WA E-UTRA Band 28 or NR Band n28 | 703 – 748 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 44 |
| WA E-UTRA Band 30 or NR Band n30 | 2305 – 2315 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 40 |
| WA E-UTRA Band 31 | 452.5 -457.5 MHz | -96 dBm | 100 kHz |  |
| WA UTRA TDD Band a) or E-UTRA Band 33 | 1900 - 1920 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 33 |
| WA UTRA TDD Band a) or E-UTRA Band 34 or NR Band n34 | 2010 - 2025 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 34 |
| WA UTRA TDD Band b) or E-UTRA Band 35 | 1850 – 1910 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 35 |
| WA UTRA TDD Band b) or E-UTRA Band 36 | 1930 - 1990 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 2 and 36 |
| WA UTRA TDD Band c) or E-UTRA Band 37 | 1910 - 1930 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 37. This unpaired band is defined in ITU-R M.1036, but is pending any future deployment. |
| WA UTRA TDD Band d) or E-UTRA Band 38 or NR Band n38 | 2570 – 2620 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 38. |
| WA UTRA TDD Band f) or E-UTRA Band 39 or NR Band n39 | 1880 – 1920MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 33 and 39 |
| WA UTRA TDD Band e) or E-UTRA Band 40 or NR Band n40 | 2300 – 2400MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 30 or 40 |
| WA E-UTRA Band 41 or NR Band n41 | 2496 – 2690 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 41 |
| WA E-UTRA Band 42 | 3400 – 3600 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48 or 52 |
| WA E-UTRA Band 43 | 3600 – 3800 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42, 43 or 48 |
| WA E-UTRA Band 44 | 703 – 803 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 28 or 44 |
| WA E-UTRA Band 45 | 1447 – 1467 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 45 |
| WA E-UTRA Band 48 or NR Band n48 | 3550 – 3700 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42, 43 or 48 |
| WA E-UTRA Band 50 | 1432 – 1517 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 11, 21, 32, 74 or 75 |
| WA E-UTRA Band 52 | 3300 – 3400 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42 or 52 |
| WA E-UTRA Band 65 or NR Band n65 | 1920 - 2010 MHz | -96 dBm | 100 kHz |  |
| WA E-UTRA Band 66 or NR Band n66 | 1710 - 1780 MHz | -96 dBm | 100 kHz |  |
| WA E-UTRA Band 68 | 698 - 728 MHz | -96 dBm | 100 kHz |  |
| WA E-UTRA Band 70 or NR Band n70 | 1695 - 1710 MHz | -96 dBm | 100 kHz |  |
| WA E-UTRA Band 71 or NR Band n71 | 663 - 698 MHz | -96 dBm | 100 kHz |  |
| WA E-UTRA Band 72 | 451 - 456 MHz | -96 dBm | 100 kHz |  |
| WA E-UTRA Band 73 | 450 - 455 MHz | -96 dBm | 100 kHz |  |
| WA E-UTRA Band 74 | 1427 – 1470 MHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 50 |
| WA NR Band n77 | 3.3 – 4.2 GHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48 or 52 |
| WA NR Band n78 | 3.3 – 3.8 GHz | -96 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48 or 52 |
| WA NR Band n79 | 4.4 – 5.0 GHz | -96 dBm | 100 kHz |  |
| WA NR Band n80 | 1710 – 1785 MHz | -96 dBm | 100 kHz |  |
| WA NR Band n81 | 880 – 915 MHz | -96 dBm | 100 kHz |  |
| WA NR Band n82 | 832 – 862 MHz | -96 dBm | 100 kHz |  |
| WA NR Band n83 | 703 – 748 MHz | -96 dBm | 100 kHz |  |
| WA NR Band n84 | 1920 – 1980 MHz | -96 dBm | 100 kHz |  |
| WA E-UTRA Band 85 or NR band n85 | 698 - 716 MHz | -96 dBm | 100 kHz |  |
| WA NR Band n86 | 1710 – 1780 MHz | -96 dBm | 100 kHz |  |
| WA E-UTRA Band 87 | 410 - 415 MHz | -96 dBm | 100 kHz |  |
| WA E-UTRA Band 88 | 412 - 417 MHz | -96 dBm | 100 kHz |  |
| WA NR Band n89 | 824 – 849 MHz | -96 dBm | 100 kHz |  |
| WA NR Band n92 | 832 – 862 MHz | -96 dBm | 100 kHz |  |
| WA NR Band n94 | 880 – 915 MHz | -96 dBm | 100 kHz |  |
| WA NR Band n95 | 2010 - 2025 MHz | -96 dBm | 100 kHz |  |
| WA NR Band n97 | 2300 – 2400MHz | -96 dBm | 100 kHz |  |
| WA NR Band n98 | 1880 – 1920MHz | -96 dBm | 100 kHz |  |
| WA NR Band n99 | 1626.5 – 1660.5 MHz | -96 dBm | 100 kHz |  |

The power of any spurious emission shall not exceed the limits of Table 6.6.4.4.1-2 for a Local Area BS where requirements for co-location with a BS type listed in the first column apply. For BS capable of multi-band operation, the exclusions and conditions in the Note column of Table 6.6.4.4.1-2 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 6.6.4.4.1-2 apply for the operating band supported at that antenna connector.

Table 6.6.4.4.1-2: BS Spurious emissions limits for Local Area BS co-located with another BS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of co-located BS | Frequency range for co-location requirement | Maximum Level | Measurement Bandwidth | Note |
| Pico GSM900 | 876-915 MHz | -70 dBm | 100 kHz |  |
| Pico DCS1800 | 1710 - 1785 MHz | -80 dBm | 100 kHz |  |
| Pico PCS1900 | 1850 - 1910 MHz | -80 dBm | 100 kHz |  |
| Pico GSM850 | 824 - 849 MHz | -70 dBm | 100 kHz |  |
| LA UTRA FDD Band I or E-UTRA Band 1 or NR Band n1 | 1920 - 1980 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band II or E-UTRA Band 2 or NR Band n2 | 1850 - 1910 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band III or E-UTRA Band 3 or NR Band n3 | 1710 - 1785 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band IV or E-UTRA Band 4 | 1710 - 1755 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band V or E-UTRA Band 5 or NR Band n5 | 824 - 849 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band VI, XIX or E-UTRA Band 6, 19 | 830 - 845 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band VII or E-UTRA Band 7 or NR Band n7 | 2500 - 2570 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band VIII or E-UTRA Band 8 or NR Band n8 | 880 - 915 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band IX or E-UTRA Band 9 | 1749.9 - 1784.9 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band X or E-UTRA Band 10 | 1710 - 1770 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band XI or E-UTRA Band 11 | 1427.9 - 1447.9 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 50, 51, 75 or 76 |
| LA UTRA FDD Band XII or E-UTRA Band 12 or NR Band n12 | 699 - 716 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band XIII or E-UTRA Band 13 or NR Band n13 | 777 - 787 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band XIV or E-UTRA Band 14 or NR Band n14 | 788 - 798 MHz | -88 dBm | 100 kHz |  |
| LA E-UTRA Band 17 | 704 - 716 MHz | -88 dBm | 100 kHz |  |
| LA E-UTRA Band 18 | 815 - 830 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band XX or E-UTRA Band 20 or NR Band n20 | 832 - 862 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band XXI or E-UTRA Band 21 | 1447.9 - 1462.9 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 32, 50 or 75 |
| LA UTRA FDD Band XXII or E-UTRA Band 22 | 3410 – 3490 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42 |
| LA E-UTRA Band 24 or NR Band n24 | 1626.5 – 1660.5 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band XXV or E-UTRA Band 25 or NR Band n25 | 1850 – 1915 MHz | -88 dBm | 100 kHz |  |
| LA UTRA FDD Band XXVI or  E-UTRA Band 26 or NR Band n26 | 814 – 849 MHz | -88 dBm | 100 kHz |  |
| LA E-UTRA Band 27 | 807 - 824 MHz | -88 dBm | 100 kHz |  |
| LA E-UTRA Band 28 or NR Band n28 | 703 – 748 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 44 |
| LA E-UTRA Band 30 or NR Band n30 | 2305 – 2315 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 40 |
| LA E-UTRA Band 31 | 452.5 – 457.5 MHz | -88 dBm | 100 kHz |  |
| LA UTRA TDD Band a) or E-UTRA Band 33 | 1900 - 1920 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 33 |
| LA UTRA TDD Band a) or E-UTRA Band 34 or NR Band n34 | 2010 - 2025 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 34 |
| LA UTRA TDD Band b) or E-UTRA Band 35 | 1850 – 1910 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 35 |
| LA UTRA TDD Band b) or E-UTRA Band 36 | 1930 - 1990 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 2 and 36 |
| LA UTRA TDD Band c) or E-UTRA Band 37 | 1910 - 1930 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 37. This unpaired band is defined in ITU-R M.1036, but is pending any future deployment. |
| LA UTRA TDD Band d) or E-UTRA Band 38 or NR Band n38 | 2570 – 2620 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 38. |
| LA LUTRA TDD Band f) or E-UTRA Band 39 or NR Band n39 | 1880 – 1920MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 33 and 39 |
| LA UTRA TDD Band e) or E-UTRA Band 40 or NR Band n40 | 2300 – 2400MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 30 or 40 |
| LA E-UTRA Band 41 or NR Band n41 | 2496 – 2690 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 41 or 53 |
| LA E-UTRA Band 42 | 3400 – 3600 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48, 49 or 52 |
| LA E-UTRA Band 43 | 3600 – 3800 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42, 43, 48 or 49 |
| LA E-UTRA Band 44 | 703 – 803 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 28 or 44 |
| LA E-UTRA Band 45 | 1447 – 1467 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 45 |
| LA E-UTRA Band 46 or NR Band n46 | 5150 – 5925 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 46 |
| LA E-UTRA Band 48 or NR Band n48 | 3550 – 3700 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42, 43, 48 or 49 |
| LA E-UTRA Band 49 | 3550 – 3700 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42, 43, 48 or 49 |
| LA E-UTRA Band 50 | 1432 – 1517 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 11, 21, 32, 51, 74, 75 or 76 |
| LA E-UTRA Band 51 or NR Band n51 | 1427 – 1432 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 50, 75 or 76 |
| LA E-UTRA Band 52 | 3300 – 3400 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42 or 52 |
| LA E-UTRA Band 53 or NR Band n53 | 2483.5 – 2495 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 41 or 53 |
| LA E-UTRA Band 65 or NR Band n65 | 1920 - 2010 MHz | -88 dBm | 100 kHz |  |
| LA E-UTRA Band 66 or NR Band n66 | 1710 - 1780 MHz | -88 dBm | 100 kHz |  |
| LA E-UTRA Band 68 | 698 - 728 MHz | -88 dBm | 100 kHz |  |
| LA E-UTRA Band 70 or NR Band n70 | 1695 - 1710 MHz | -88 dBm | 100 kHz |  |
| LA E-UTRA Band 71 or NR Band n71 | 663 - 698 MHz | -88 dBm | 100 kHz |  |
| LA E-UTRA Band 72 | 451 - 456 MHz | -88 dBm | 100 kHz |  |
| LA E-UTRA Band 73 | 450 - 455 MHz | -88 dBm | 100 kHz |  |
| LA E-UTRA Band 74 | 1427 – 1470 MHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 50 or 51 |
| LA NR Band n77 | 3.3 – 4.2 GHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48, 49 or 52 |
| LA NR Band n78 | 3.3 – 3.8 GHz | -88 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48, 49 or 52 |
| LA NR Band n79 | 4.4 – 5.0 GHz | -88 dBm | 100 kHz |  |
| LA NR Band n80 | 1710 – 1785 MHz | -88 dBm | 100 kHz |  |
| LA NR Band n81 | 880 – 915 MHz | -88 dBm | 100 kHz |  |
| LA NR Band n82 | 832 – 862 MHz | -88 dBm | 100 kHz |  |
| LA NR Band n83 | 703 – 748 MHz | -88 dBm | 100 kHz |  |
| LA NR Band n84 | 1920 – 1980 MHz | -88 dBm | 100 kHz |  |
| LA E-UTRA Band 85 or NR band n85 | 698 - 716 MHz | -88 dBm | 100 kHz |  |
| LA NR Band n86 | 1710 – 1780 MHz | -88 dBm | 100 kHz |  |
| LA E-UTRA Band 87 | 410 - 415 MHz | -88 dBm | 100 kHz |  |
| LA E-UTRA Band 88 | 412 - 417 MHz | -88 dBm | 100 kHz |  |
| LA NR Band n89 | 824 – 849 MHz | -88 dBm | 100 kHz |  |
| LA NR Band n91 | 832 – 862 MHz | -88 dBm | 100 kHz |  |
| LA NR Band n92 | 832 – 862 MHz | -88 dBm | 100 kHz |  |
| LA NR Band n93 | 880 – 915 MHz | -88 dBm | 100 kHz |  |
| LA NR Band n94 | 880 – 915 MHz | -88 dBm | 100 kHz |  |
| LA NR Band n95 | 2010 - 2025 MHz | -88 dBm | 100 kHz |  |
| LA NR Band n96 | 5925 - 7125 MHz | -87 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 46 |
| LA NR Band n97 | 2300 – 2400MHz | -88 dBm | 100 kHz |  |
| LA NR Band n98 | 1880 – 1920MHz | -88 dBm | 100 kHz |  |
| LA NR Band n99 | 1626.5 – 1660.5 MHz | -88 dBm | 100 kHz |  |

The power of any spurious emission shall not exceed the limits of Table 6.6.4.4.1-3 for a Medium Range BS where requirements for co-location with a BS type listed in the first column apply. For BS capable of multi-band operation, the exclusions and conditions in the Note column of Table 6.6.4.4.1-3 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 6.6.4.4.1-3 apply for the operating band supported at that antenna connector.

Table 6.6.4.4.1-3: BS Spurious emissions limits for Medium range BS co-located with another BS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of co-located BS | Frequency range for co-location requirement | Maximum Level | Measurement Bandwidth | Note |
| Micro/MR GSM900 | 876-915 MHz | -91 dBm | 100 kHz |  |
| Micro/MR DCS1800 | 1710 - 1785 MHz | -91 dBm | 100 kHz |  |
| Micro/MR PCS1900 | 1850 - 1910 MHz | -91 dBm | 100 kHz |  |
| Micro/MR GSM850 | 824 - 849 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band I or E-UTRA Band 1 or NR Band n1 | 1920 - 1980 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band II or E-UTRA Band 2 or NR Band n2 | 1850 - 1910 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band III or E-UTRA Band 3 or NR Band n3 | 1710 - 1785 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band IV or E-UTRA Band 4 | 1710 - 1755 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band V or E-UTRA Band 5 or NR Band n5 | 824 - 849 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band VI, XIX or E-UTRA Band 6, 19 | 830 - 850 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band VII or E-UTRA Band 7 or NR Band n7 | 2500 - 2570 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band VIII or E-UTRA Band 8 or NR Band n8 | 880 - 915 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band IX or E-UTRA Band 9 | 1749.9 - 1784.9 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band X or E-UTRA Band 10 | 1710 - 1770 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band XI or E-UTRA Band 11 | 1427.9 - 1447.9 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 50 or 75 |
| MR UTRA FDD Band XII or E-UTRA Band 12 or NR Band n12 | 699 - 716 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band XIII or E-UTRA Band 13 or NR Band n13 | 777 - 787 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band XIV or E-UTRA Band 14 or NR Band n14 | 788 - 798 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 17 | 704 - 716 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 18 | 815 - 830 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band XX or E-UTRA Band 20 or NR Band n20 | 832 - 862 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band XXI or E-UTRA Band 21 | 1447.9 - 1462.9 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 32, 50 or 75 |
| MR UTRA FDD Band XXII or E-UTRA Band 22 | 3410 – 3490 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42 |
| MR E-UTRA Band 24 or NR Band n24 | 1626.5 – 1660.5 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band XXV or E-UTRA Band 25 or NR Band n25 | 1850 – 1915 MHz | -91 dBm | 100 kHz |  |
| MR UTRA FDD Band XXVI or  E-UTRA Band 26 or NR Band n26 | 814 – 849 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 27 | 807 - 824 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 28 or NR Band n28 | 703 – 748 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 44 |
| MR E-UTRA Band 30 or NR Band n30 | 2305 – 2315 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 40 |
| MR E-UTRA Band 31 | 452.5 – 457.5 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 33 | 1900 - 1920 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 33 |
| MR E-UTRA Band 34 or NR Band n34 | 2010 - 2025 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 34 |
| MR E-UTRA Band 35 | 1850 – 1910 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 35 |
| MR E-UTRA Band 36 | 1930 - 1990 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 2 and 36 |
| MR E-UTRA Band 37 | 1910 - 1930 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 37. This unpaired band is defined in ITU-R M.1036, but is pending any future deployment. |
| MR E-UTRA Band 38 or NR Band n38 | 2570 – 2620 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 38. |
| MR E-UTRA Band 39 or NR Band n39 | 1880 – 1920MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 33 and 39 |
| MR E-UTRA Band 40 or NR Band n40 | 2300 – 2400MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 30 or 40 |
| MR E-UTRA Band 41 or NR Band n41 | 2496 – 2690 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 41 or 53 |
| MR E-UTRA Band 42 | 3400 – 3600 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48 or 52 |
| MR E-UTRA Band 43 | 3600 – 3800 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42, 43 or 48 |
| MR E-UTRA Band 44 | 703 – 803 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 28 or 44 |
| MR E-UTRA Band 45 | 1447 – 1467 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 45 |
| MR E-UTRA Band 46 or NR Band n46 | 5150 – 5925 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 46 |
| MR E-UTRA Band 48 or NR Band n48 | 3550 – 3700 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42, 43 or 48 |
| MR E-UTRA Band 50 | 1432 – 1517 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 11, 21, 32, 74 or 75 |
| MR E-UTRA Band 52 | 3300 – 3400 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 42 or 52 |
| MR E-UTRA Band 53 or NR Band n53 | 2483.5 – 2495 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 41 or 53 |
| MR E-UTRA Band 65 or NR Band n65 | 1920 - 2010 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 66 or NR Band n66 | 1710 - 1780 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 68 | 698 - 728 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 70 or NR Band n70 | 1695 - 1710 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 71 or NR Band n71 | 663 - 698 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 72 | 451 - 456 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 73 | 450 - 455 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 74 | 1427 – 1470 MHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 50 |
| MR NR Band n77 | 3.3 – 4.2 GHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48 or 52 |
| MR NR Band n78 | 3.3 – 3.8 GHz | -91 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 22, 42, 43, 48 or 52 |
| MR NR Band n79 | 4.4 – 5.0 GHz | -91 dBm | 100 kHz |  |
| MR NR Band n80 | 1710 – 1785 MHz | -91 dBm | 100 kHz |  |
| MR NR Band n81 | 880 – 915 MHz | -91 dBm | 100 kHz |  |
| MR NR Band n82 | 832 – 862 MHz | -91 dBm | 100 kHz |  |
| MR NR Band n83 | 703 – 748 MHz | -91 dBm | 100 kHz |  |
| MR NR Band n84 | 1920 – 1980 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 85 or NR band n85 | 698 - 716 MHz | -91 dBm | 100 kHz |  |
| MR NR Band n86 | 1710 – 1780 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 87 | 410 - 415 MHz | -91 dBm | 100 kHz |  |
| MR E-UTRA Band 88 | 412 - 417 MHz | -91 dBm | 100 kHz |  |
| MR NR Band n89 | 824 – 849 MHz | -91 dBm | 100 kHz |  |
| MR NR Band n92 | 832 – 862 MHz | -91 dBm | 100 kHz |  |
| MR NR Band n94 | 880 – 915 MHz | -91 dBm | 100 kHz |  |
| MR NR Band n95 | 2010 - 2025 MHz | -91 dBm | 100 kHz |  |
| MR NR Band n96 | 5925 - 7125 MHz | -90 dBm | 100 kHz | This is not applicable to E-UTRA BS operating in Band 46 |
| MR NR Band n97 | 2300 – 2400MHz | -91 dBm | 100 kHz |  |
| MR NR Band n98 | 1880 – 1920MHz | -91 dBm | 100 kHz |  |
| MR NR Band n99 | 1626.5 – 1660.5 MHz | -91 dBm | 100 kHz |  |

NOTE 1: As defined in the scope for spurious emissions in this clause, the co-location requirements in Table 6.6.4.4.1-1 to Table 6.6.4.4.1-3 do not apply for the 10 MHz frequency range immediately outside the BS transmit frequency range of a downlink operating band (see Table 5.5-1). The current state-of-the-art technology does not allow a single generic solution for co-location with other system 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 [8].

NOTE 2: Table 6.6.4.4.1-1 to Table 6.6.4.4.1-3 assume that two operating bands, where the corresponding BS transmit and receive frequency ranges in Table 5.5-1 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-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 (except in Band 46), special co-location requirements may apply that are not covered by the 3GPP specifications.

**<End of Change 1>**

**<Start of Change 2>**

#### 7.6.2.1 Minimum requirement

The throughput shall be ≥ 95% of the maximum throughput of the reference measurement channel, with a wanted and an interfering signal coupled to BS antenna input using the parameters in Table 7.6.2.1-1 for Wide Area BS, in Table 7.6.2.1-2 for Local Area BS and in Table 7.6.2.1-3 for Medium Range BS. The reference measurement channel for the wanted signal is identified in Tables 7.2.1-1, 7.2.1-2 and 7.2.1-4 for each channel bandwidth for E-UTRA, Table 7.2.1-5 for NB-IoT and further specified in Annex A.

Table 7.6.2.1-1: Blocking performance requirement for E-UTRA and NB-IoT Wide Area BS when co-located with BS in other frequency bands.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Co-located BS type | Centre Frequency of Interfering Signal (MHz) | Interfering Signal mean power (dBm) | Wanted Signal mean power (dBm) | Type of Interfering Signal |
| Macro GSM850 or CDMA850 | 869 – 894 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| Macro GSM900 | 921 – 960 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| Macro DCS1800 | 1805 – 1880 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| Macro PCS1900 | 1930 – 1990 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band I or E-UTRA Band 1 or NR band n1 | 2110 – 2170 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band II or E-UTRA Band 2 or NR band n2 | 1930 – 1990 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band III or E-UTRA Band 3 or NR band n3 | 1805 – 1880 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band IV or E-UTRA Band 4 | 2110 – 2155 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band V or E-UTRA Band 5 or NR band n5 | 869 – 894 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band VI or E-UTRA Band 6 | 875 – 885 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band VII or E-UTRA Band 7 or NR band n7 | 2620 – 2690 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band VIII or E-UTRA Band 8 or NR band n8 | 925 – 960 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band IX or E-UTRA Band 9 | 1844.9 – 1879.9 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band X or E-UTRA Band 10 | 2110 – 2170 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band XI or E-UTRA Band 11 | 1475.9 –1495.9 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band XII or E-UTRA Band 12 or NR band n12 | 729 - 746 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band XIIII or E-UTRA Band 13 or NR Band n13 | 746 - 756 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band XIV or E-UTRA Band 14 or NR Band n14 | 758 - 768 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 17 | 734 - 746 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 18 | 860 - 875 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band XIX or E-UTRA Band 19 | 875 - 890 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band XX or E-UTRA Band 20 or NR band n20 | 791 - 821 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band XXI or E-UTRA Band 21 | 1495.9 – 1510.9 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band XXII or E-UTRA Band 22 | 3510 – 3590 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 24 or NR Band n24 | 1525 – 1559 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band XXV or E-UTRA Band 25 or NR band n25 | 1930 – 1995 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band XXVI or E-UTRA Band 26 or NR Band n26 | 859 – 894 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 27 | 852 - 869 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 28 or NR band n28 | 758 – 803 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 29 or NR Band n29 | 717-728 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 30 or NR Band n30 | 2350 – 2360 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 31 | 462.5-467.5 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA FDD Band XXXII or E-UTRA Band 32 | 1452-1496 (NOTE 3) | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA TDD Band a) or E-UTRA Band 33 | 1900-1920 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA TDD Band a) or E-UTRA Band 34 or NR band n34 | 2010-2025 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA TDD Band b) or E-UTRA Band 35 | 1850-1910 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA TDD Band b) or E-UTRA Band 36 | 1930-1990 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA TDD Band c) or E-UTRA Band 37 | 1910-1930 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA TDD Band d) or E-UTRA Band 38 or NR band n38 | 2570-2620 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA TDD Band f) or E-UTRA Band 39 or NR band n39 | 1880-1920 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA UTRA TDD Band e) or E-UTRA Band 40 or NR band n40 | 2300-2400 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 41 or NR band n41 | 2496 - 2690 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 42 | 3400-3600 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 43 | 3600-3800 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 44 | 703-803 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 45 | 1447-1467 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 48 or NR Band n48 | 3550-3700 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 50 or NR band n50 | 1432 – 1517 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 52 | 3300-3400 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 65 or NR Band n65 | 2110 – 2200 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 66 or NR band n66 | 2110 – 2200 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 67 or NR band n67 | 738-758 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 68 | 753-783 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 69 | 2570-2620 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 70 or NR band n70 | 1995 – 2020 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 71 or NR band n71 | 617 – 652 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 72 | 461 – 466 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 73 | 460 – 465 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 74 or NR band n74 | 1475 - 1518 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 75 | 1432 – 1517 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA NR band n77 | 3300-4200 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA NR band n78 | 3300-3800 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA NR band n79 | 4400-5000 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 85 or NR band n85 | 728 - 746 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 87 | 420 – 425 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA E-UTRA Band 88 | 422 – 427 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA NR band n92 | 1432 – 1517 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| WA NR band n94 | 1432 – 1517 | +16\*\* | PREFSENS + 6dB\* | CW carrier |
| Note\*: PREFSENS depends on the channel bandwidth as specified in Table 7.2.1-1 for E-UTRA and is specified in Table 7.2.1-5 for NB-IoT.  Note\*\*: 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. | | | | |
| NOTE 1: 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 10 MHz immediately outside any of the supported uplink operating band. For a BS operating in band 13 the requirements do not apply when the interfering signal falls within the frequency range 768-797 MHz.  NOTE 2: 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 with E-UTRA 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 [8].  NOTE 3: 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 4: 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. | | | | |

Table 7.6.2.1-2: Blocking performance requirement for E-UTRA and NB-IoT Local Area BS when co-located with BS in other frequency bands.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Co-located BS type | Centre Frequency of Interfering Signal (MHz) | Interfering Signal mean power (dBm) | Wanted Signal mean power (dBm) | Type of Interfering Signal |
| Pico GSM850 | 869 – 894 | -7\*\* | PREFSENS + 6dB\* | CW carrier |
| Pico GSM900 | 921 – 960 | -7\*\* | PREFSENS + 6dB\* | CW carrier |
| Pico DCS1800 | 1805 – 1880 | -4\*\* | PREFSENS + 6dB\* | CW carrier |
| Pico PCS1900 | 1930 – 1990 | -4\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band I or E-UTRA Band 1 or NR band n1 | 2110 – 2170 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band II or E-UTRA Band 2 or NR band n2 | 1930 – 1990 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band III or E-UTRA Band 3 or NR band n3 | 1805 – 1880 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band IV or E-UTRA Band 4 | 2110 – 2155 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band V or E-UTRA Band 5 or NR band n5 | 869 – 894 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band VI or E-UTRA Band 6 | 875 – 885 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band VII or E-UTRA Band 7 or NR band n7 | 2620 – 2690 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band VIII or E-UTRA Band 8 or NR band n8 | 925 – 960 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band IX or E-UTRA Band 9 | 1844.9 – 1879.9 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band X or E-UTRA Band 10 | 2110 – 2170 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band XI or E-UTRA Band 11 | 1475.9 - 1495.9 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band XII or E-UTRA Band 12 or NR band n12 | 729 - 746 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band XIIII or E-UTRA Band 13 or NR Band n13 | 746 - 756 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band XIV or E-UTRA Band 14 or NR Band n14 | 758 - 768 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 17 | 734 - 746 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 18 | 860 - 875 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band XIX or E-UTRA Band 19 | 875 - 890 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band XX or E-UTRA Band 20 or NR band n20 | 791 - 821 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band XXI or E-UTRA Band 21 | 1495.9 – 1510.9 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band XXII or E-UTRA Band 22 | 3510 – 3590 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 24 or NR Band n24 | 1525 – 1559 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band XXV or E-UTRA Band 25 or NR band n25 | 1930 – 1995 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band XXVI or E-UTRA Band 26 or NR Band n26 | 859 – 894 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 27 | 852 - 869 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 28 or NR band n28 | 758 – 803 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 29 or NR Band n29 | 717 - 728 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 30 or NR Band n30 | 2350 – 2360 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 31 | 462.5 - 467.5 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA FDD Band XXXII or E-UTRA Band 32 | 1452 - 1496 (NOTE 3) | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA TDD Band a) or E-UTRA Band 33 | 1900 - 1920 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA TDD Band a) or E-UTRA Band 34 or NR band n34 | 2010 - 2025 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA TDD Band b) or E-UTRA Band 35 | 1850 - 1910 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA TDD Band b) or E-UTRA Band 36 | 1930 - 1990 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA TDD Band c) or E-UTRA Band 37 | 1910 - 1930 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA TDD Band d) or E-UTRA Band 38 or NR band n38 | 2570 - 2620 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA UTRA TDD Band f) or E-UTRA Band 39 or NR band n39 | 1880 - 1920 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA UTRA TDD Band e) or Band 40 or NR band n40 | 2300 - 2400 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 41 or NR band n41 | 2496 - 2690 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 42 | 3400 - 3600 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 43 | 3600 - 3800 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 44 | 703 - 803 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 45 | 1447 - 1467 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 46 or NR Band n46 | 5150 - 5925 | -6 | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 48 or NR Band n48 | 3550 - 3700 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 49 | 3550 - 3700 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 50 or NR band n50 | 1432 – 1517 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 51 or NR band n51 | 1427 – 1432 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 52 | 3300 - 3400 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 53 or NR Band n53 | 2483.5 - 2495 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 65 or NR Band n65 | 2110 – 2200 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 66 or NR band n66 | 2110 – 2200 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 67 or NR band n67 | 738 - 758 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 68 | 753 - 783 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 69 | 2570 - 2620 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 70 or NR band n70 | 1995 – 2020 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 71 or NR band n71 | 617 – 652 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 72 | 461 – 466 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 73 | 460 – 465 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 74 or NR band n74 | 1475 - 1518 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 75 or NR band n75 | 1432 – 1517 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 76 or NR band n76 | 1427 – 1432 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA NR band n77 | 3300 - 4200 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA NR band n78 | 3300 - 3800 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA NR band n79 | 4400 - 5000 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 85 or NR band n85 | 728 - 746 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 87 | 420 – 425 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA E-UTRA Band 88 | 422 – 427 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA NR band n91 | 1427 – 1432 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA NR band n92 | 1432 – 1517 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA NR band n93 | 1427 – 1432 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA NR band n94 | 1432 – 1517 | -6\*\* | PREFSENS + 6dB\* | CW carrier |
| LA NR band n96 | 5925 – 7125 | -6 | PREFSENS + 6dB\* | CW carrier |
| Note\*: PREFSENS depends on the channel bandwidth as specified in Table 7.2.1-2.  Note\*\*: 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. | | | | |
| NOTE 1: 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 10 MHz immediately outside any of the supported uplink operating band. For a BS operating in band 13 the requirements do not apply when the interfering signal falls within the frequency range 768-797 MHz.  NOTE 2: 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 with E-UTRA 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 [8].  NOTE 3: 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 4: 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 (except in Band 46), special co-location requirements may apply that are not covered by the 3GPP specifications. | | | | |

Table 7.6.2.1-3: Blocking performance requirement for E-UTRA and NB-IoT Medium Range BS when co-located with BS in other frequency bands.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Co-located BS type | Centre Frequency of Interfering Signal (MHz) | Interfering Signal mean power (dBm) | Wanted Signal mean power (dBm) | Type of Interfering Signal |
| Micro/MR GSM850 | 869 – 894 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| Micro/MR GSM900 | 921 – 960 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| Micro/MR DCS1800 | 1805 – 1880 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| Micro/MR PCS1900 | 1930 – 1990 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band I or E-UTRA Band 1 or NR band n1 | 2110 – 2170 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band II or E-UTRA Band 2 or NR band n2 | 1930 – 1990 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band III or E-UTRA Band 3 or NR band n3 | 1805 – 1880 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band IV or E-UTRA Band 4 | 2110 – 2155 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band V or E-UTRA Band 5 or NR band n5 | 869 – 894 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band VI or E-UTRA Band 6 | 875 – 885 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band VII or E-UTRA Band 7 or NR band n7 | 2620 – 2690 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band VIII or E-UTRA Band 8 or NR band n8 | 925 – 960 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band IX or E-UTRA Band 9 | 1844.9 – 1879.9 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band X or E-UTRA Band 10 | 2110 – 2170 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band XI or E-UTRA Band 11 | 1475.9 –1495.9 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band XII or E-UTRA Band 12 or NR band n12 | 729 – 746 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band XIIII or E-UTRA Band 13 or NR Band n13 | 746 – 756 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band XIV or E-UTRA Band 14 or NR Band n14 | 758 – 768 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 17 | 734 – 746 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 18 | 860 – 875 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band XIX or E-UTRA Band 19 | 875 – 890 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band XX or E-UTRA Band 20 or NR band n20 | 791 – 821 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band XXI or E-UTRA Band 21 | 1495.9 – 1510.9 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band XXII or E-UTRA Band 22 | 3510 – 3590 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 24 or NR Band n24 | 1525 – 1559 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band XXV or E-UTRA Band 25 or NR band n25 | 1930 – 1995 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band XXVI or E-UTRA Band 26 or NR Band n26 | 859 – 894 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 27 | 852 – 869 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 28 or NR band n28 | 758 – 803 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 29 or NR Band n29 | 717 – 728 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 30 or NR Band n30 | 2350 – 2360 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 31 | 462.5 – 467.5 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR UTRA FDD Band XXXII or E-UTRA Band 32 | 1452-1496 (NOTE 3) | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 33 | 1900 – 1920 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 34 or NR band n34 | 2010 – 2025 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 35 | 1850 – 1910 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 36 | 1930 – 1990 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 37 | 1910 – 1930 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 38 or NR band n38 | 2570 – 2620 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 39 or NR band n39 | 1880 – 1920 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 40 or NR band n40 | 2300 – 2400 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 41 or NR band n41 | 2496 – 2690 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 42 | 3400 – 3600 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 43 | 3600 – 3800 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 44 | 703 – 803 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 45 | 1447 – 1467 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 46 or NR Band n46 | 5150 – 5925 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 48 or NR Band n48 | 3550-3700 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 50 or NR band n50 | 1432 – 1517 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 52 | 3300 – 3400 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 53 or NR Band n53 | 2483.5 - 2495 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 65 or NR Band n65 | 2110 – 2200 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 66 or NR band n66 | 2110 – 2200 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 67 or NR band n67 | 738-758 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 68 | 753-783 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 69 | 2570-2620 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 70 or NR band n70 | 1995 – 2020 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 71 or NR band n71 | 617 – 652 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 72 | 461 – 466 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 73 | 460 – 465 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 74 or NR band n74 | 1475 - 1518 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 75 or NR band n75 | 1432 – 1517 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR NR band n77 | 3300-4200 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR NR band n78 | 3300-3800 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR NR band n79 | 4400-5000 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 85 or NR band n85 | 728 - 746 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 87 | 420 – 425 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR E-UTRA Band 88 | 422 – 427 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR NR band n92 | 1432 – 1517 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR NR band n94 | 1432 – 1517 | +8\*\* | PREFSENS + 6dB\* | CW carrier |
| MR NR band n96 | 5925 – 7125 | +8 | PREFSENS + 6dB\* | CW carrier |
| Note\*: PREFSENS depends on the channel bandwidth as specified in Table 7.2.1-4.  Note\*\*: 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. | | | | |
| NOTE 1: 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 10 MHz immediately outside any of the supported uplink operating band. For a BS operating in band 13 the requirements do not apply when the interfering signal falls within the frequency range 768-797 MHz.  NOTE 2: 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 with E-UTRA 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 [8].  NOTE 3: 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 4: 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 (except in Band 46), special co-location requirements may apply that are not covered by the 3GPP specifications. | | | | |

**<End of Change 2>**

**<Start of Change 3>**

Table 8.2.1.1-4 Minimum requirements for PUSCH, 10 MHz Channel Bandwidth, 1Tx

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Number of TX antennas | Number of RX antennas | Cyclic prefix | Propagation conditions and correlation matrix (Annex B) | FRC (Annex A) | Fraction of maximum throughput | SNR  [dB] |
| 1 | 2 | Normal | EPA 5Hz Low | A3-5 | 30% | -4.2 |
| 70% | -0.4 |
| A4-6 | 70% | 10.8 |
| A5-5 | 70% | 18.3 |
| A17-4 | 70% | 22.6 |
| A18-4 | 70% | 8.5 |
| A19-4 | 70% | 19.5 |
| EVA 5Hz Low | A3-1 | 30% | -2.7 |
| 70% | 1.9 |
| A4-1 | 30% | 4.3 |
| 70% | 11.4 |
| A5-1 | 70% | 18.8 |
| EVA 70Hz Low | A3-5 | 30% | -4.1 |
| 70% | 0.1 |
| A4-6 | 30% | 4.5 |
| 70% | 12.6 |
| ETU 70Hz\* Low | A3-1 | 30% | -2.5 |
| 70% | 2.4 |
| ETU 300Hz\* Low | A3-1 | 30% | -2.2 |
| 70% | 2.9 |
| Extended | ETU 70Hz\* Low | A4-2 | 30% | 4.8 |
| 70% | 13.6 |
| 4 | Normal | EPA 5Hz Low | A3-5 | 30% | -6.8 |
| 70% | -3.5 |
| A4-6 | 70% | 7.5 |
| A5-5 | 70% | 14.7 |
| A17-4 | 70% | 19.2 |
| A18-4 | 70% | 5.3 |
| A19-4 | 70% | 15.8 |
| EVA 5Hz Low | A3-1 | 30% | -5.0 |
| 70% | -1.2 |
| A4-1 | 30% | 1.2 |
| 70% | 7.9 |
| A5-1 | 70% | 15.5 |
| EVA 70Hz Low | A3-5 | 30% | -6.7 |
| 70% | -2.9 |
| A4-6 | 30% | 0.7 |
| 70% | 8.0 |
| ETU 70Hz\* Low | A3-1 | 30% | -4.8 |
| 70% | -0.9 |
| ETU 300Hz\* Low | A3-1 | 30% | -4.6 |
| 70% | -0.6 |
| ETU 600Hz\*\* Low | A13-4 | 30% | -1.0 |
| 70% | 6.2 |
| Extended | ETU 70Hz\* Low | A4-2 | 30% | 1.7 |
| 70% | 10.3 |
| 8 | Normal | EPA 5Hz Low | A3-5 | 30% | -9.8 |
| 70% | -6.7 |
| A4-6 | 70% | 4.2 |
| A5-5 | 70% | 11.5 |
| A17-4 | 70% | 15.9 |
| A18-4 | 70% | 2.1 |
| A19-4 | 70% | 12.5 |
| EVA 5Hz Low | A3-1 | 30% | -6.9 |
| 70% | -3.8 |
| A4-1 | 30% | -1.7 |
| 70% | 4.5 |
| A5-1 | 70% | 11.9 |
| EVA 70Hz Low | A3-5 | 30% | -9.7 |
| 70% | -6.2 |
| A4-6 | 30% | -2.6 |
| 70% | 4.7 |
| ETU 70Hz\* Low | A3-1 | 30% | -6.8 |
| 70% | -3.6 |
| ETU 300Hz\* Low | A3-1 | 30% | -6.8 |
| 70% | -3.3 |
| Extended | ETU 70Hz\* Low | A4-2 | 30% | -1.1 |
| 70% | 6.5 |
| Note\*: Not applicable for Local Area BS and Home BS.  Note\*\*: Not applicable for Local Area BS and Home BS, and only applicable for BS supporting ETU600. | | | | | | |

Table 8.2.1.1-5 Minimum requirements for PUSCH, 15 MHz Channel Bandwidth, 1Tx

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Number of TX antennas | Number of RX antennas | Cyclic prefix | Propagation conditions and correlation matrix (Annex B) | FRC (Annex A) | Fraction of maximum throughput | SNR  [dB] |
| 1 | 2 | Normal | EPA 5Hz Low | A3-6 | 30% | -4.5 |
| 70% | -0.8 |
| A4-7 | 70% | 11.3 |
| A5-6 | 70% | 18.8 |
| A17-5 | 70% | 22.8 |
| A18-5 | 70% | 9.4 |
| A19-5 | 70% | 21.4 |
| EVA 5Hz Low | A3-1 | 30% | -2.8 |
| 70% | 1.8 |
| A4-1 | 30% | 4.2 |
| 70% | 11.4 |
| A5-1 | 70% | 18.7 |
| EVA 70Hz Low | A3-6 | 30% | -4.5 |
| 70% | -0.3 |
| A4-7 | 30% | 4.2 |
| 70% | 12.9 |
| ETU 70Hz\* Low | A3-1 | 30% | -2.5 |
| 70% | 2.4 |
| ETU 300Hz\* Low | A3-1 | 30% | -2.2 |
| 70% | 2.9 |
| Extended | ETU 70Hz\* Low | A4-2 | 30% | 4.9 |
| 70% | 13.6 |
| 4 | Normal | EPA 5Hz Low | A3-6 | 30% | -7.2 |
| 70% | -3.8 |
| A4-7 | 70% | 7.6 |
| A5-6 | 70% | 15.0 |
| A17-5 | 70% | 18.9 |
| A18-5 | 70% | 5.9 |
| A19-5 | 70% | 17.1 |
| EVA 5Hz Low | A3-1 | 30% | -5.0 |
| 70% | -1.2 |
| A4-1 | 30% | 1.2 |
| 70% | 7.9 |
| A5-1 | 70% | 15.7 |
| EVA 70Hz Low | A3-6 | 30% | -7.0 |
| 70% | -3.3 |
| A4-7 | 30% | 0.7 |
| 70% | 8.5 |
| ETU 70Hz\* Low | A3-1 | 30% | -4.8 |
| 70% | -1.0 |
| ETU 300Hz\* Low | A3-1 | 30% | -4.6 |
| 70% | -0.6 |
| ETU 600Hz\*\* Low | A13-5 | 30% | -0.9 |
| 70% | 6.4 |
| Extended | ETU 70Hz\* Low | A4-2 | 30% | 1.6 |
| 70% | 10.1 |
| 8 | Normal | EPA 5Hz Low | A3-6 | 30% | -10.4 |
| 70% | -7.3 |
| A4-7 | 70% | 4.4 |
| A5-6 | 70% | 11.8 |
| A17-5 | 70% | 15.5 |
| A18-5 | 70% | 2.8 |
| A19-5 | 70% | 13.8 |
| EVA 5Hz Low | A3-1 | 30% | -7.1 |
| 70% | -4.0 |
| A4-1 | 30% | -1.7 |
| 70% | 4.4 |
| A5-1 | 70% | 11.7 |
| EVA 70Hz Low | A3-6 | 30% | -10.1 |
| 70% | -6.8 |
| A4-7 | 30% | -2.5 |
| 70% | 5.0 |
| ETU 70Hz\* Low | A3-1 | 30% | -7.0 |
| 70% | -3.6 |
| ETU 300Hz\* Low | A3-1 | 30% | -6.9 |
| 70% | -3.3 |
| Extended | ETU 70Hz\* Low | A4-2 | 30% | -1.1 |
| 70% | 6.7 |
| Note\*: Not applicable for Local Area BS and Home BS.  Note\*\*: Not applicable for Local Area BS and Home BS, and only applicable for BS supporting ETU600. | | | | | | |

Table 8.2.1.1-6 Minimum requirements for PUSCH, 20 MHz Channel Bandwidth, 1Tx

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Number of TX antennas | Number of RX antennas | Cyclic prefix | Propagation conditions and correlation matrix (Annex B) | FRC (Annex A) | Fraction of maximum throughput | SNR  [dB] |
| 1 | 2 | Normal | EPA 5Hz Low | A3-7 | 30% | -4.2 |
| 70% | -0.4 |
| A4-8 | 70% | 11.5 |
| A5-7 | 70% | 19.7 |
| A17-6 | 70% | 23.7 |
| A18-6 | 70% | 9.3 |
| A19-6 | 70% | 21.0 |
| EVA 5Hz Low | A3-1 | 30% | -2.7 |
| 70% | 1.8 |
| A4-1 | 30% | 4.3 |
| 70% | 11.5 |
| A5-1 | 70% | 18.7 |
| EVA 70Hz Low | A3-7 | 30% | -4.1 |
| 70% | 0.2 |
| A4-8 | 30% | 4.2 |
| 70% | 13.0 |
| ETU 70Hz\* Low | A3-1 | 30% | -2.4 |
| 70% | 2.4 |
| ETU 300Hz\* Low | A3-1 | 30% | -2.1 |
| 70% | 2.9 |
| Extended | ETU 70Hz\* Low | A4-2 | 30% | 4.7 |
| 70% | 13.6 |
| 4 | Normal | EPA 5Hz Low | A3-7 | 30% | -6.8 |
| 70% | -3.5 |
| A4-8 | 70% | 7.5 |
| A5-7 | 70% | 15.9 |
| A17-6 | 70% | 19.8 |
| A18-6 | 70% | 5.7 |
| A19-6 | 70% | 16.6 |
| EVA 5Hz Low | A3-1 | 30% | -5.1 |
| 70% | -1.3 |
| A4-1 | 30% | 1.2 |
| 70% | 7.9 |
| A5-1 | 70% | 15.6 |
| EVA 70Hz Low | A3-7 | 30% | -6.7 |
| 70% | -2.9 |
| A4-8 | 30% | 0.7 |
| 70% | 8.6 |
| ETU 70Hz\* Low | A3-1 | 30% | -4.4 |
| 70% | -0.9 |
| ETU 300Hz\* Low | A3-1 | 30% | -4.6 |
| 70% | -0.7 |
| ETU 600Hz\*\* Low | A13-6 | 30% | -0.9 |
| 70% | 6.4 |
| Extended | ETU 70Hz\* Low | A4-2 | 30% | 1.6 |
| 70% | 10.0 |
| 8 | Normal | EPA 5Hz Low | A3-7 | 30% | -9.7 |
| 70% | -6.7 |
| A4-8 | 70% | 4.3 |
| A5-7 | 70% | 12.5 |
| A17-6 | 70% | 16.3 |
| A18-6 | 70% | 2.6 |
| A19-6 | 70% | 13.2 |
| EVA 5Hz Low | A3-1 | 30% | -7.0 |
| 70% | -3.9 |
| A4-1 | 30% | -1.7 |
| 70% | 4.6 |
| A5-1 | 70% | 12.0 |
| EVA 70Hz Low | A3-7 | 30% | -9.7 |
| 70% | -6.1 |
| A4-8 | 30% | -2.2 |
| 70% | 4.9 |
| ETU 70Hz\* Low | A3-1 | 30% | -6.9 |
| 70% | -3.5 |
| ETU 300Hz\* Low | A3-1 | 30% | -6.8 |
| 70% | -3.3 |
| Extended | ETU 70Hz\* Low | A4-2 | 30% | -1.2 |
| 70% | 6.5 |
| Note\*: Not applicable for Local Area BS and Home BS.  Note\*\*: Not applicable for Local Area BS and Home BS, and only applicable for BS supporting ETU600. | | | | | | |

**<End of Change 3>**