**3GPP TSG-RAN WG4 Meeting #102-e R4-2206490**

**Electronic Meeting, 21st Feb. – 3rd March, 2022**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.101** | **CR** | **5848** | **rev** | **1** | **Current version:** | **17.4.0** |  |
|  | | | | | | | | |
| *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 | **x** | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Introduction of upper 700MHz A block into TS 36.101 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Puloli | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_upper\_700MHz\_A-Core | | | | |  | ***Date:*** | | | 2022-02-13 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Introduction of upper 700MHz A block into TS 36.101 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Relevant sections updated | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The band is not specified | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.5, 5.5F, 5.6.1, 5.7.3, 5.7.4, 6.2.2F, 6.6.3.2, 6.6.3.2A, 6.6.3G. | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **x** |  | Other core specifications | | | | TS 36.104 CR 4950, TS 36.133 CR 7141, TS 37.104 CR 0956, TS 37.105 CR 0248, TS 38.101-1 CR 1007, TS 38.104 CR 0365 | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS 36.521-1 | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of Changes \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

## 5.5 Operating bands

E-UTRA is designed to operate in the operating bands defined in Table 5.5-1.

Table 5.5-1 E-UTRA operating bands

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| E‑UTRA Operating Band | Uplink (UL) operating band BS receive UE transmit | | | Downlink (DL) operating band BS transmit  UE receive | | | Duplex Mode |
| FUL\_low – FUL\_high | | | FDL\_low – FDL\_high | | |
| 1 | 1920 MHz | – | 1980 MHz | 2110 MHz | – | 2170 MHz | FDD |
| 2 | 1850 MHz | – | 1910 MHz | 1930 MHz | – | 1990 MHz | FDD |
| 3 | 1710 MHz | – | 1785 MHz | 1805 MHz | – | 1880 MHz | FDD |
| 4 | 1710 MHz | – | 1755 MHz | 2110 MHz | – | 2155 MHz | FDD |
| 5 | 824 MHz | – | 849 MHz | 869 MHz | – | 894MHz | FDD |
| 61 | 830 MHz | – | 840 MHz | 875 MHz | – | 885 MHz | FDD |
| 7 | 2500 MHz | – | 2570 MHz | 2620 MHz | – | 2690 MHz | FDD |
| 8 | 880 MHz | – | 915 MHz | 925 MHz | – | 960 MHz | FDD |
| 9 | 1749.9 MHz | – | 1784.9 MHz | 1844.9 MHz | – | 1879.9 MHz | FDD |
| 10 | 1710 MHz | – | 1770 MHz | 2110 MHz | – | 2170 MHz | FDD |
| 11 | 1427.9 MHz | – | 1447.9 MHz | 1475.9 MHz | – | 1495.9 MHz | FDD |
| 12 | 699 MHz | – | 716 MHz | 729 MHz | – | 746 MHz | FDD |
| 13 | 777 MHz | – | 787 MHz | 746 MHz | – | 756 MHz | FDD |
| 14 | 788 MHz | – | 798 MHz | 758 MHz | – | 768 MHz | FDD |
| 15 | Reserved | | | Reserved | | | FDD |
| 16 | Reserved | | | Reserved | | | FDD |
| 17 | 704 MHz | – | 716 MHz | 734 MHz | – | 746 MHz | FDD |
| 18 | 815 MHz | – | 830 MHz | 860 MHz | – | 875 MHz | FDD |
| 19 | 830 MHz | – | 845 MHz | 875 MHz | – | 890 MHz | FDD |
| 20 | 832 MHz | – | 862 MHz | 791 MHz | – | 821 MHz | FDD |
| 21 | 1447.9 MHz | – | 1462.9 MHz | 1495.9 MHz | – | 1510.9 MHz | FDD |
| 22 | 3410 MHz | – | 3490 MHz | 3510 MHz | – | 3590 MHz | FDD |
| 231 | 2000 MHz | – | 2020 MHz | 2180 MHz | – | 2200 MHz | FDD |
| 2417 | 1626.5 MHz | – | 1660.5 MHz | 1525 MHz | – | 1559 MHz | FDD |
| 25 | 1850 MHz | – | 1915 MHz | 1930 MHz | – | 1995 MHz | FDD |
| 26 | 814 MHz | – | 849 MHz | 859 MHz | – | 894 MHz | FDD |
| 27 | 807 MHz | – | 824 MHz | 852 MHz | – | 869 MHz | FDD |
| 28 | 703 MHz | – | 748 MHz | 758 MHz | – | 803 MHz | FDD |
| 29 | N/A | | | 717 MHz | – | 728 MHz | FDD2 |
| 3015 | 2305 MHz | – | 2315 MHz | 2350 MHz | – | 2360 MHz | FDD |
| 31 | 452.5 MHz | – | 457.5 MHz | 462.5 MHz | – | 467.5 MHz | FDD |
| 32 |  | N/A |  | 1452 MHz | – | 1496 MHz | FDD2 |
| 33 | 1900 MHz | – | 1920 MHz | 1900 MHz | – | 1920 MHz | TDD |
| 34 | 2010 MHz | – | 2025 MHz | 2010 MHz | – | 2025 MHz | TDD |
| 35 | 1850 MHz | – | 1910 MHz | 1850 MHz | – | 1910 MHz | TDD |
| 36 | 1930 MHz | – | 1990 MHz | 1930 MHz | – | 1990 MHz | TDD |
| 37 | 1910 MHz | – | 1930 MHz | 1910 MHz | – | 1930 MHz | TDD |
| 38 | 2570 MHz | – | 2620 MHz | 2570 MHz | – | 2620 MHz | TDD |
| 39 | 1880 MHz | – | 1920 MHz | 1880 MHz | – | 1920 MHz | TDD |
| 40 | 2300 MHz | – | 2400 MHz | 2300 MHz | – | 2400 MHz | TDD |
| 41 | 2496 MHz |  | 2690 MHz | 2496 MHz |  | 2690 MHz | TDD |
| 42 | 3400 MHz | – | 3600 MHz | 3400 MHz | – | 3600 MHz | TDD |
| 43 | 3600 MHz | – | 3800 MHz | 3600 MHz | – | 3800 MHz | TDD |
| 44 | 703 MHz | – | 803 MHz | 703 MHz | – | 803 MHz | TDD |
| 45 | 1447 MHz | – | 1467 MHz | 1447 MHz | – | 1467 MHz | TDD |
| 46 | 5150 MHz | – | 5925 MHz | 5150 MHz | – | 5925 MHz | TDD8 |
| 47 | 5855 MHz | – | 5925 MHz | 5855 MHz | – | 5925 MHz | TDD11 |
| 48 | 3550 MHz | – | 3700 MHz | 3550 MHz | – | 3700 MHz | TDD |
| 49 | 3550 MHz | – | 3700 MHz | 3550 MHz | – | 3700 MHz | TDD16 |
| 50 | 1432 MHz | - | 1517 MHz | 1432 MHz | - | 1517 MHz | TDD13 |
| 51 | 1427 MHz | - | 1432 MHz | 1427 MHz | - | 1432 MHz | TDD13 |
| 52 | 3300 MHz | - | 3400 MHz | 3300 MHz | - | 3400 MHz | TDD |
| 53 | 2483.5 MHz | - | 2495 MHz | 2483.5 MHz | - | 2495 MHz | TDD |
| … |  |  |  |  |  |  |  |
| 64 | Reserved | | | | | |  |
| 65 | 1920 MHz | – | 2010 MHz | 2110 MHz | – | 2200 MHz | FDD |
| 66 | 1710 MHz | – | 1780 MHz | 2110 MHz | – | 2200 MHz | FDD4 |
| 67 |  | N/A |  | 738 MHz | – | 758 MHz | FDD2 |
| 68 | 698 MHz | – | 728 MHz | 753 MHz | – | 783 MHz | FDD |
| 69 | N/A | | | 2570 MHz | – | 2620 MHz | FDD2 |
| 70 | 1695 MHz | – | 1710 MHz | 1995 MHz | – | 2020 MHz | FDD10 |
| 71 | 663 MHz | – | 698 MHz | 617 MHz | – | 652 MHz | FDD |
| 72 | 451 MHz | – | 456 MHz | 461 MHz | – | 466 MHz | FDD |
| 73 | 450 MHz | – | 455 MHz | 460 MHz | – | 465 MHz | FDD |
| 74 | 1427 MHz | – | 1470 MHz | 1475 MHz | – | 1518 MHz | FDD |
| 75 |  | N/A |  | 1432 MHz | – | 1517 MHz | FDD2 |
| 76 |  | N/A |  | 1427 MHz | – | 1432 MHz | FDD2 |
| 85 | 698 MHz | – | 716 MHz | 728 MHz | – | 746 MHz | FDD |
| 87 | 410 MHz | – | 415 MHz | 420 MHz | – | 425 MHz | FDD |
| 88 | 412 MHz | – | 417 MHz | 422 MHz | – | 427 MHz | FDD |
| 10318 | 787 MHz | – | 788 MHz | 757 MHz | – | 758 MHz | FDD |
| NOTE 1: Band 6, 23 is not applicable  NOTE 2: Restricted to E-UTRA operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell.  NOTE 3: A UE that complies with the E-UTRA Band 65 minimum requirements in this specification shall also comply with the E-UTRA Band 1 minimum requirements.  NOTE 4: The range 2180-2200 MHz of the DL operating band is restricted to E-UTRA operation when carrier aggregation is configured.  NOTE 5: A UE that supports E-UTRA Band 66 shall receive in the entire DL operating band  NOTE 6: A UE that supports E-UTRA Band 66 and CA operation in any CA band shall also comply with the minimum requirements specified for the DL CA configurations CA\_66B, CA\_66C and CA\_66A-66A.  NOTE 7: A UE that complies with the E-UTRA Band 66 minimum requirements in this specification shall also comply with the E-UTRA Band 4 minimum requirements.  NOTE 8: This band is an unlicensed band restricted to licensed-assisted operation using Frame Structure Type 3  NOTE 9: In this version of the specification, restricted to E-UTRA DL operation when carrier aggregation is configured.  NOTE 10: The range 2010-2020 MHz of the DL operating band is restricted to E-UTRA operation when carrier aggregation is configured and TX-RX separation is 300 MHz The range 2005-2020 MHz of the DL operating band is restricted to E-UTRA operation when carrier aggregation is configured and TX-RX separation is 295 MHz.  NOTE 11: This band is unlicensed band used for V2X communication. There is no expected network deployment in this band so Frame Structure Type 1 is used.  NOTE 12: A UE that complies with the E-UTRA Band 74 minimum requirements in this specification shall also comply with the E-UTRA Band 11 and Band 21 minimum requirements.  NOTE 13: UE that complies with the E-UTRA Band 50 minimum requirements in this specification shall also comply with the E-UTRA Band 51 minimum requirements.  NOTE 14: A UE that complies with the E-UTRA Band 75 minimum requirements in this specification shall also comply with the E-UTRA Band 76 minimum requirements.  NOTE 15: Uplink transmission is not allowed at this band for UE with external vehicle-mounted antennas.  NOTE 16: This band is restricted to licensed-assisted operation using Frame Structure Type 3  NOTE 17: DL operation in this band is restricted to 1526 – 1536 MHz and UL operation is restricted to 1627.5 – 1637.5 MHz and 1646.5 – 1656.5 MHz.  NOTE 18: This band is restricted to NB-IoT operation only | | | | | | | |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Un-changed section \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

## 5.5F Operating bands for category NB1 and NB2

Category NB1 and NB2 are designed to operate in the E-UTRA operating bands 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14, 17, 18, 19, 20, 21, 24, 25, 26, 28, 31, 41, 42, 43, 65, 66, 70, 71, 72, 73, 74, 85, 87, 88, and 103 which are defined in Table 5.5-1. Category NB1 and NB2 are designed to operate in the NR operating bands n1, n2, n3, n5, n7, n8, n12, n14, n18, n20, n25, n28, n41, n65, n66, n70, n71, n74, n90.

Category NB1 and NB2 systems operate in HD-FDD duplex mode or in TDD mode.

In case UE receives network signaling value NS\_04 on any of the operating bands listed in Table 5.5F-1 then the lower and upper limit of those bands are shown in Table 5.5F-1 to account for the USA emission requirements.

Table 5.5F-1 E-UTRA operating bands for NB-IoT in the USA

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| E‑UTRA Operating Band | Uplink (UL) operating band BS receive UE transmit | | | Downlink (DL) operating band BS transmit  UE receive | | | Duplex Mode |
| FUL\_low – FUL\_high | | | FDL\_low – FDL\_high | | |
| 2 | 1850.1 MHz | – | 1909.9 MHz | 1930.1 MHz | – | 1989.9 MHz | FDD |
| 4 | 1710.1 MHz | – | 1754.9 MHz | 2110.1 MHz | – | 2154.9 MHz | FDD |
| 5 | 824.1 MHz | – | 848.9 MHz | 869.1 MHz | – | 893.9MHz | FDD |
| 12 | 699 MHz | – | 715.9 MHz | 729 MHz | – | 745.9 MHz | FDD |
| 13 | 777 MHz | – | 786.9 MHz | 746 MHz | – | 755.9 MHz | FDD |
| 17 | 704.1 MHz | – | 715.9 MHz | 734.1 MHz | – | 745.9 MHz | FDD |
| 25 | 1850.1 MHz | – | 1914.9 MHz | 1930.1 MHz | – | 1994.9 MHz | FDD |
| 26 | 814.1 MHz | – | 848.9 MHz | 859.1 MHz | – | 893.9 MHz | FDD |
| 66 | 1710.1 MHz | – | 1779.9 MHz | 2110.1 MHz | – | 2179.9 MHz | FDD4 |
| 71 | 663.1 MHz | – | 697.9 MHz | 617.1 MHz | – | 651.9 MHz | FDD |
| 85 | 698.1 MHz | – | 715.9 MHz | 728.1 MHz | – | 745.9 MHz | FDD |
| 103 | 787.1 MHz | – | 787.9 MHz | 757.1 MHz | – | 757.9 MHz | FDD |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Un-changed section \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 5.6.1 Channel bandwidths per operating band

a) The requirements in this specification apply to the combination of channel bandwidths and operating bands shown in Table 5.6.1-1. The transmission bandwidth configuration in Table 5.6.1-1 shall be supported for each of the specified channel bandwidths. The same (symmetrical) channel bandwidth is specified for both the TX and RX path.

Table 5.6.1-1: E-UTRA channel bandwidth

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| E-UTRA band / Channel bandwidth | | | | | | |
| E-UTRA Band | 1.4 MHz | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz |
| 1 |  |  | Yes | Yes | Yes | Yes |
| 2 | Yes | Yes | Yes | Yes | Yes1 | Yes1 |
| 3 | Yes | Yes | Yes | Yes | Yes1 | Yes1 |
| 4 | Yes | Yes | Yes | Yes | Yes | Yes |
| 5 | Yes | Yes | Yes | Yes1 |  |  |
| 6 |  |  | Yes | Yes1 |  |  |
| 7 |  |  | Yes | Yes | Yes3 | Yes1, 3 |
| 8 | Yes | Yes | Yes | Yes1 |  |  |
| 9 |  |  | Yes | Yes | Yes1 | Yes1 |
| 10 |  |  | Yes | Yes | Yes | Yes |
| 11 |  |  | Yes | Yes1 |  |  |
| 12 | Yes | Yes | Yes1 | Yes1 |  |  |
| 13 |  |  | Yes1 | Yes1 |  |  |
| 14 |  |  | Yes1 | Yes1 |  |  |
| … |  |  |  |  |  |  |
| 17 |  |  | Yes1 | Yes1 |  |  |
| 18 |  |  | Yes | Yes1 | Yes1 |  |
| 19 |  |  | Yes | Yes1 | Yes1 |  |
| 20 |  |  | Yes | Yes1 | Yes1 | Yes1 |
| 21 |  |  | Yes | Yes1 | Yes1 |  |
| 22 |  |  | Yes | Yes | Yes1 | Yes1 |
| 23 | Yes | Yes | Yes | Yes | Yes1 | Yes1 |
| 24 |  |  | Yes | Yes |  |  |
| 25 | Yes | Yes | Yes | Yes | Yes1 | Yes1 |
| 26 | Yes | Yes | Yes | Yes1 | Yes1 |  |
| 27 | Yes | Yes | Yes | Yes1 |  |  |
| 28 |  | Yes | Yes | Yes1 | Yes1 | Yes1, 2 |
| 30 |  |  | Yes | Yes1 |  |  |
| 31 | Yes | Yes1 | Yes1 |  |  |  |
| ... |  |  |  |  |  |  |
| 33 |  |  | Yes | Yes | Yes | Yes |
| 34 |  |  | Yes | Yes | Yes |  |
| 35 | Yes | Yes | Yes | Yes | Yes | Yes |
| 36 | Yes | Yes | Yes | Yes | Yes | Yes |
| 37 |  |  | Yes | Yes | Yes | Yes |
| 38 |  |  | Yes | Yes | Yes3 | Yes3 |
| 39 |  |  | Yes | Yes | Yes3 | Yes3 |
| 40 |  |  | Yes | Yes | Yes | Yes |
| 41 |  |  | Yes | Yes | Yes | Yes |
| 42 |  |  | Yes | Yes | Yes | Yes |
| 43 |  |  | Yes | Yes | Yes | Yes |
| 44 |  | Yes | Yes | Yes | Yes | Yes |
| 45 |  |  | Yes | Yes | Yes | Yes |
| 46 |  |  |  | Yes |  | Yes |
| 47 |  |  |  | Yes |  | Yes |
| 48 |  |  | Yes | Yes | Yes | Yes |
| 49 |  |  |  | Yes |  | Yes |
| 50 |  | Yes | Yes | Yes | Yes | Yes |
| 51 |  | Yes | Yes |  |  |  |
| 52 |  |  | Yes | Yes | Yes | Yes |
| 53 | Yes | Yes | Yes | Yes |  |  |
| … |  |  |  |  |  |  |
| 64 | Reserved | | | | | |
| 65 | Yes | Yes | Yes | Yes | Yes | Yes |
| 66 | Yes | Yes | Yes | Yes | Yes | Yes |
| 68 |  |  | Yes | Yes | Yes5 |  |
|  |  |  |  |  |  |  |
| 70 |  |  | Yes | Yes | Yes | Yes4 |
| 71 |  |  | Yes | Yes1 | Yes1 | Yes1,6 |
| 72 | Yes | Yes1 | Yes1 |  |  |  |
| 73 | Yes | Yes | Yes |  |  |  |
| 74 | Yes | Yes | Yes | Yes1 | Yes1 | Yes1 |
| 85 |  |  | Yes1 | Yes1 |  |  |
| 87 | Yes | Yes1 | Yes1 |  |  |  |
| 88 | Yes | Yes1 | Yes1 |  |  |  |
| 103 7 |  |  |  |  |  |  |
| NOTE 1: 1 refers to the bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (subclause 7.3) is allowed.  NOTE 2: 2 For the 20 MHz bandwidth, the minimum requirements are specified for E-UTRA UL carrier frequencies confined to either 713-723 MHz or 728-738 MHz  NOTE 3: 3 refersto the bandwidth for which the uplink transmission bandwidth can be restricted by the network for some channel assignments in FDD/TDD co-existence scenarios in order to meet unwanted emissions requirements (Clause 6.6.3.2).  NOTE 4: 4 For the 20 MHz bandwidth, the minimum requirements are restricted to E‑UTRA operation when carrier aggregation is configured.  NOTE 5: 5 For the 15 MHz bandwidth, the minimum requirements are specified for E-UTRA UL carrier frequencies confined to either 705.5 MHz or 710.5-720.5 MHz  NOTE 6: 6 For the 20MHz bandwidth, the minimum requirements are specified for E-UTRA UL carrier frequencies confined to either 673-678 MHz or 683-688MHz.  NOTE 7: 7 This band is for standalone NB-IoT operation only. None of E-UTRA standard channel bandwidths is applicable. | | | | | | |

b) The use of different (asymmetrical) channel bandwidth for the TX and RX is not precluded and is intended to form part of a later release.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Un-changed section \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

The carrier frequency in the uplink and downlink is designated by the E-UTRA Absolute Radio Frequency Channel Number (EARFCN) in the range 0 – 262143. The relation between EARFCN and the carrier frequency in MHz for the downlink is given by the following equation, where FDL\_low and NOffs-DL are given in Table 5.7.3-1 and NDL is the downlink EARFCN.

FDL = FDL\_low + 0.1(NDL – NOffs-DL)

The relation between EARFCN and the carrier frequency in MHz for the uplink is given by the following equation where FUL\_low and NOffs-UL are given in Table 5.7.3-1 and NUL is the uplink EARFCN.

FUL = FUL\_low + 0.1(NUL – NOffs-UL)

Table 5.7.3-1: E-UTRA channel numbers

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| E-UTRA Operating  Band | Downlink | | | Uplink | | |
| FDL\_low (MHz) | NOffs-DL | Range of NDL | FUL\_low (MHz) | NOffs-UL | Range of NUL |
| 1 | 2110 | 0 | 0 – 599 | 1920 | 18000 | 18000 – 18599 |
| 2 | 1930 | 600 | 6001199 | 1850 | 18600 | 18600 – 19199 |
| 3 | 1805 | 1200 | 1200 – 1949 | 1710 | 19200 | 19200 – 19949 |
| 4 | 2110 | 1950 | 1950 – 2399 | 1710 | 19950 | 19950 – 20399 |
| 5 | 869 | 2400 | 2400 – 2649 | 824 | 20400 | 20400 – 20649 |
| 6 | 875 | 2650 | 2650 – 2749 | 830 | 20650 | 20650 – 20749 |
| 7 | 2620 | 2750 | 2750 – 3449 | 2500 | 20750 | 20750 – 21449 |
| 8 | 925 | 3450 | 3450 – 3799 | 880 | 21450 | 21450 – 21799 |
| 9 | 1844.9 | 3800 | 3800 – 4149 | 1749.9 | 21800 | 21800 – 22149 |
| 10 | 2110 | 4150 | 4150 – 4749 | 1710 | 22150 | 22150 – 22749 |
| 11 | 1475.9 | 4750 | 4750 – 4949 | 1427.9 | 22750 | 22750 – 22949 |
| 12 | 729 | 5010 | 5010 – 5179 | 699 | 23010 | 23010 – 23179 |
| 13 | 746 | 5180 | 5180 – 5279 | 777 | 23180 | 23180 – 23279 |
| 14 | 758 | 5280 | 5280 – 5379 | 788 | 23280 | 23280 – 23379 |
| … |  |  |  |  |  |  |
| 17 | 734 | 5730 | 5730 – 5849 | 704 | 23730 | 23730 – 23849 |
| 18 | 860 | 5850 | 5850 – 5999 | 815 | 23850 | 23850 – 23999 |
| 19 | 875 | 6000 | 6000 – 6149 | 830 | 24000 | 24000 – 24149 |
| 20 | 791 | 6150 | 6150 – 6449 | 832 | 24150 | 24150 – 24449 |
| 21 | 1495.9 | 6450 | 6450 – 6599 | 1447.9 | 24450 | 24450 – 24599 |
| 22 | 3510 | 6600 | 6600 – 7399 | 3410 | 24600 | 24600 – 25399 |
| 23 | 2180 | 7500 | 7500 – 7699 | 2000 | 25500 | 25500 – 25699 |
| 24 | 1525 | 7700 | 7700 – 8039 | 1626.5 | 25700 | 25700 – 26039 |
| 25 | 1930 | 8040 | 8040 – 8689 | 1850 | 26040 | 26040 – 26689 |
| 26 | 859 | 8690 | 8690 – 9039 | 814 | 26690 | 26690 – 27039 |
| 27 | 852 | 9040 | 9040 – 9209 | 807 | 27040 | 27040 – 27209 |
| 28 | 758 | 9210 | 9210 – 9659 | 703 | 27210 | 27210 – 27659 |
| 292 | 717 | 9660 | 9660 – 9769 | N/A | | |
| 30 | 2350 | 9770 | 9770 – 9869 | 2305 | 27660 | 27660 – 27759 |
| 31 | 462.5 | 9870 | 9870 – 9919 | 452.5 | 27760 | 27760 – 27809 |
| 322 | 1452 | 9920 | 9920 – 10359 | N/A | | |
| 33 | 1900 | 36000 | 36000 – 36199 | 1900 | 36000 | 36000 – 36199 |
| 34 | 2010 | 36200 | 36200 – 36349 | 2010 | 36200 | 36200 – 36349 |
| 35 | 1850 | 36350 | 36350 – 36949 | 1850 | 36350 | 36350 – 36949 |
| 36 | 1930 | 36950 | 36950 – 37549 | 1930 | 36950 | 36950 – 37549 |
| 37 | 1910 | 37550 | 37550 – 37749 | 1910 | 37550 | 37550 – 37749 |
| 38 | 2570 | 37750 | 37750 – 38249 | 2570 | 37750 | 37750 – 38249 |
| 39 | 1880 | 38250 | 38250 – 38649 | 1880 | 38250 | 38250 – 38649 |
| 40 | 2300 | 38650 | 38650 – 39649 | 2300 | 38650 | 38650 – 39649 |
| 41 | 2496 | 39650 | 39650 –41589 | 2496 | 39650 | 39650 –41589 |
| 42 | 3400 | 41590 | 41590 – 43589 | 3400 | 41590 | 41590 – 43589 |
| 43 | 3600 | 43590 | 43590 – 45589 | 3600 | 43590 | 43590 – 45589 |
| 44 | 703 | 45590 | 45590 – 46589 | 703 | 45590 | 45590 – 46589 |
| 45 | 1447 | 46590 | 46590 – 46789 | 1447 | 46590 | 46590 – 46789 |
| 46 | 5150 | 46790 | 46790 – 54539 | 5150 | 46790 | 46790 – 54539 |
| 47 | 5855 | 54540 | 54540 - 55239 | 5855 | 54540 | 54540 – 55239 |
| 48 | 3550 | 55240 | 55240 – 56739 | 3550 | 55240 | 55240 – 56739 |
| 49 | 3550 | 56740 | 56740 – 58239 | 3550 | 56740 | 56740 – 58239 |
| 50 | 1432 | 58240 | 58240 - 59089 | 1432 | 58240 | 58240 - 59089 |
| 51 | 1427 | 59090 | 59090 - 59139 | 1427 | 59090 | 59090 - 59139 |
| 52 | 3300 | 59140 | 59140 - 60139 | 3300 | 59140 | 59140 - 60139 |
| 53 | 2483.5 | 60140 | 60140 - 60254 | 2483.5 | 60140 | 60140 - 60254 |
| … |  |  |  |  |  |  |
| 64 | Reserved | | | | | |
| 65 | 2110 | 65536 | 65536 – 66435 | 1920 | 131072 | 131072 – 131971 |
| 665 | 2110 | 66436 | 66436 – 67335 | 1710 | 131972 | 131972 – 132671 |
| 672 | 738 | 67336 | 67336 – 67535 | N/A | | |
| 68 | 753 | 67536 | 67536 - 67835 | 698 | 132672 | 132672 - 132971 |
| 692 | 2570 | 67836 | 67836 - 68335 | N/A | | |
| 706 | 1995 | 68336 | 68336 - 68585 | 1695 | 132972 | 132972 - 133121 |
| 71 | 617 | 68586 | 68586 - 68935 | 663 | 133122 | 133122 - 133471 |
| 72 | 461 | 68936 | 68936 - 68985 | 451 | 133472 | 133472 - 133521 |
| 73 | 460 | 68986 | 68986 - 69035 | 450 | 133522 | 133522 - 133571 |
| 74 | 1475 | 69036 | 69036 - 69465 | 1427 | 133572 | 133572 - 134001 |
| 752 | 1432 | 69466 | 69466 - 70315 | N/A | | |
| 762 | 1427 | 70316 | 70316 - 70365 | N/A | | |
| 85 | 728 | 70366 | 70366 - 70545 | 698 | 134002 | 134002 - 134181 |
| 87 | 420 | 70546 | 70546 - 70595 | 410 | 134182 | 134182 - 134231 |
| 88 | 422 | 70596 | 70596 - 70645 | 412 | 134232 | 134232 - 134281 |
| 103 | 757 | 70646 | 70646 – 70655 | 787 | 134282 | 134282 – 134291 |
| NOTE 1: The channel numbers that designate carrier frequencies so close to the operating band edges that the carrier extends beyond the operating band edge shall not be used. This implies that the first 7, 15, 25, 50, 75 and 100 channel numbers at the lower operating band edge and the last 6, 14, 24, 49, 74 and 99 channel numbers at the upper operating band edge shall not be used for channel bandwidths of 1.4, 3, 5, 10, 15 and 20 MHz respectively.  NOTE 2: Restricted to E-UTRA operation when carrier aggregation is configured.  NOTE 3: For ProSe and V2X the corresponding UL channel number are also specified for the DL for the associated ProSe/V2X operating bands i.e. ProSe\_FUL = FUL and ProSe\_FDL = FUL; V2X\_FUL = FDL and V2X\_FDL = FUL.  NOTE 4: Requirements for uplink operations are not specified in this version of the specification.  NOTE 5: The range 2180-2200 MHz of the DL operating band is restricted to E-UTRA operation when carrier aggregation is configured.  NOTE 6: The range 2010-2020 MHz of the DL operating band is restricted to E-UTRA operation when carrier aggregation is configured and TX-RX separation is 300 MHz The range 2005-2020 MHz of the DL operating band is restricted to E-UTRA operation when carrier aggregation is configured and TX-RX separation is 295 MHz. | | | | | | |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Un-changed section \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 5.7.4 TX–RX frequency separation

a) The default E-UTRA TX channel (carrier centre frequency) to RX channel (carrier centre frequency) separation is specified in Table 5.7.4-1 for the TX and RX channel bandwidths defined in Table 5.6.1-1

Table 5.7.4-1: Default UE TX-RX frequency separation

| E-UTRA Operating Band | TX – RX  carrier centre frequency separation |
| --- | --- |
| 1 | 190 MHz |
| 2 | 80 MHz. |
| 3 | 95 MHz. |
| 4 | 400 MHz |
| 5 | 45 MHz |
| 6 | 45 MHz |
| 7 | 120 MHz |
| 8 | 45 MHz |
| 9 | 95 MHz |
| 10 | 400 MHz |
| 11 | 48 MHz |
| 12 | 30 MHz |
| 13 | -31 MHz |
| 14 | -30 MHz |
| 17 | 30 MHz |
| 18 | 45 MHz |
| 19 | 45 MHz |
| 20 | -41 MHz |
| 21 | 48 MHz |
| 22 | 100 MHz |
| 23 | 180 MHz |
| 24 | -101.5, -120.5 MHz |
| 25 | 80 MHz |
| 26 | 45 MHz |
| 27 | 45 MHz |
| 28 | 55 MHz |
| 30 | 45 MHz |
| 31 | 10 MHz |
| 65 | 190 MHz |
| 66 | 400 MHz |
| 68 | 55 MHz |
| … |  |
| 70 | 295, 300MHz1 |
| 71 | -46 MHz |
| 72 | 10 MHz |
| 73 | 10 MHz |
| 74 | 48 MHz |
| 85 | 30 MHz |
| 87 | 10 MHz |
| 88 | 10 MHz |
| 103 | -30 MHz |
| NOTE 1: Default TX-RX carrier centre frequency separation. | |

b) The use of other TX channel to RX channel carrier centre frequency separation is not precluded and is intended to form part of a later release.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Un-changed section \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 6.2.2F UE maximum output power for category NB1 and NB2

Category NB1 and NB2 UE Power Classes are specified in Table 6.2.2F-1 and define the maximum output power for any transmission bandwidth within the category NB1 and NB2 channel bandwidth. For 3.75 kHz sub-carrier spacing the maximum output power is defined as mean power of measurement which period is atleast one slot (2ms) excluding the 2304Ts gap when UE is not transmitting. For 15kHz sub-carrier spacing the maximum output power is defined as mean power of measurement which period is atleast one sub-frame (1ms).

Table 6.2.2F-1: UE Power Class

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| EUTRA band | Class 3 (dBm) | Tolerance (dB) | Class 5 (dBm) | Tolerance (dB) | Class 6 (dBm) | Tolerance (dB) |
| 1 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 2 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 3 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 4 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 5 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 7 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 8 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 11 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 12 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 13 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 14 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 17 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 18 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 19 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 20 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 21 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 24 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 25 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 26 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 28 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 31 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 41 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 42 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 43 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 65 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 66 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 70 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 71 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 72 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 73 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 74 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 85 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 87 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |
| 103 | 23 | ±2 | 20 | ±2 | 14 | ±2.5 |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Un-changed section \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 6.2.4F UE maximum output power with additional requirements for category NB1 and NB2 UE

Additional ACLR and spectrum emission requirements can be signalled by the network to indicate that the UE shall also meet additional requirements in a specific deployment scenario. To meet these additional requirements, Additional Maximum Power Reduction (A-MPR) is allowed for the output power are specified. For the agreed E-UTRA bands for category NB1 and NB2 UE an A-MPR of 0 dB shall be allowed unless specified otherwise.

For UE Power Class 3 and 5 the specific requirements and identified subclauses are specified in Table 6.2.4F-1 along with the allowed A-MPR values that may be used to meet these requirements. The allowed A-MPR values specified below in Table 6.2.4F-1 are in addition to the allowed MPR requirements specified in subclause 6.2.3F-1.

Table 6.2.4F-1: Additional Maximum Power Reduction (A-MPR) for category NB1 and NB2 UE

|  |  |  |  |
| --- | --- | --- | --- |
| Network Signalling value | Requirements (subclause) | E-UTRA Band | A-MPR (dB) |
| NS\_01 | 6.6.2F.1 | Operating bands defined in 5.5F | N/A |
| NS\_02 | 6.6.2F.2.1 | [1, 2, 3, 5, 8, 11, 12, 13, 17, 18, 19, 20, 21, 25, 26, 28, 66, 70 and 85] | [N/A] |
| NS\_03 | 6.6.2F.2.2 | [1, 2, 3, 5, 8, 11, 12, 13, 17, 18, 19, 20, 21, 25, 26, 28, 66, 70 and 85] | [N/A] |
| NS\_04 | 5.5F | 2, 4, 5, 12, 13, 17, 25, 26, 66, 71, 85, 103 | N/A |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Un-changed section \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 6.6.3.2 Spurious emission band UE co-existence

This clause specifies the requirements for the specified E-UTRA band, for coexistence with protected bands.

NOTE: For measurement conditions at the edge of each frequency range, the lowest frequency of the measurement position in each frequency range should be set at the lowest boundary of the frequency range plus MBW/2. The highest frequency of the measurement position in each frequency range should be set at the highest boundary of the frequency range minus MBW/2. MBW denotes the measurement bandwidth defined for the protected band.

Table 6.6.3.2-1: Requirements

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| E-UTRA Band | Spurious emission | | | | | | |
| Protected band | Frequency range (MHz) | | | Maximum Level (dBm) | MBW (MHz) | NOTE |
| 1 | E-UTRA Band 1, 3, 5, 7, 8, 11, 18, 19, 20, 21, 22, 26, 27, 28, 31, 32, 38, 40, 41, 42, 43, 44, 45, 50, 51, 52, 65, 67, 68, 69, 72, 73, 74, 75, 76, 87, 88  NR Band n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 34 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1880 |  | 1895 | -40 | 1 | 15, 27 |
| Frequency range | 1895 |  | 1915 | -15.5 | 5 | 15, 26, 27 |
| Frequency range | 1915 |  | 1920 | +1.6 | 5 | 15, 26, 27, 44 |
| 2 | E-UTRA Band 4, 5, 12, 13, 14, 17, 24, 26, 27, 28, 29, 30, 41, 42, 48, 50, 51, 53, 66, 70, 71, 74, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 2, 25 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| E-UTRA Band 43  NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| 3 | E-UTRA Band 1, 5, 7, 8, 11, 18, 19, 20, 21, 26, 27, 28, 31, 32, 33, 34, 38, 39, 40, 41, 43, 44, 45, 50, 51, 65, 67, 68, 69, 72, 73,74, 75, 76, 87, 88  NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 3 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| E-UTRA Band 22, 42, 52  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 |  |
| 4 | E-UTRA Band 2, 4, 5, 7, 12, 13, 14, 17, 24, 25, 26, 27, 28, 29, 30, 41, 43, 48, 50, 51, 53, 66, 70, 71, 74, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 42,  NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| 5 | E-UTRA Band 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 24, 25, 28, 29, 30, 31, 34, 38, 40, 42, 43, 45, 48, 50, 51, 65, 66, 70, 71, 73, 74, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 26 | 859 | - | 869 | -27 | 1 |  |
| E-UTRA Band 41, 52, 53  NR Band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 18, 19 | FDL\_low | - | FDL\_high | -40 | 1 | 39 |
| E-UTRA Band 11, 21 | FDL\_low | - | FDL\_high | -50 | 1 | 39 |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 8, 39 |
| 6 | E-UTRA Band 1, 9, 11, 34 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 860 | - | 875 | -37 | 1 |  |
| Frequency range | 875 | - | 895 | -50 | 1 |  |
| Frequency range | 1884.5 | - | 1919.6 | -41 | 0.3 | 7 |
| 1884.5 | - | 1915.7 | 8 |
| 7 | E-UTRA Band 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 20, 22, 26, 27, 28, 29, 30, 31, 32, 33, 34, 40, 42, 43, 50, 51, 52, 65, 66, 67, 68, 72, 74, 75, 76, 85, 87, 88, 103  NR Band n77,n78 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 2570 | - | 2575 | +1.6 | 5 | 15, 21, 26 |
| Frequency range | 2575 | - | 2595 | -15.5 | 5 | 15, 21, 26 |
| Frequency range | 2595 | - | 2620 | -40 | 1 | 15, 21 |
| 8 | E-UTRA Band 1, 20, 28, 31, 32, 33, 34, 38, 39, 40, 45, 50, 51, 65, 67, 68, 69, 72, 73, 74, 75, 76, 87, 88 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3, 7, 22, 41, 42, 43, 52  NR Band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 8 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| E-UTRA Band 11, 21 | FDL\_low | - | FDL\_high | -50 | 1 | 23 |
| Frequency range | 860 | - | 890 | -40 | 1 | 15, 23 |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 8, 23 |
| 9 | E-UTRA Band 1, 3, 11, 18, 19, 21, 26, 28, 34 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 42 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 945 | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 8 |
| Frequency range | 2545 | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | - | 2645 | -50 | 1 |  |
| 10 | E-UTRA Band 2, 4, 5, 10, 12, 13, 14, 17, 24, 25, 26, 27, 28, 29, 30, 41, 43, 66, 70, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 22, 42,  NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| 11 | E-UTRA Band 1, 3, 11, 18, 19, 21, 28, 34, 40, 42, 65  NR Band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 945 | - | 960 | -50 | 1 |  |
|  |  |  |  |  |  |  |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 8 |
| Frequency range | 2545 | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | - | 2645 | -50 | 1 |  |
| 12 | E-UTRA Band 2, 5, 13, 14, 17, 24, 25, 26, 27, 30, 41, 53, 70, 71, 74, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 4, 48, 50, 51, 66  NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 12, 85 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| 13 | E-UTRA Band 2, 4, 5, 12, 13, 17, 25, 26, 27, 29, 41, 48, 50, 51, 53, 66, 70, 71, 74, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 14 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| E-UTRA Band 24, 30,  NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 769 | - | 775 | -35 | 0.00625 | 15 |
| Frequency range | 799 | - | 805 | -35 | 0.00625 | 15 |
| 14 | E-UTRA Band 2, 4, 5, 12, 13, 14, 17, 23, 24, 25, 26, 27, 29, 30, 41, 48, 53, 66, 70, 71, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 769 | - | 775 | -35 | 0.00625 | 12, 15 |
| Frequency range | 799 | - | 805 | -35 | 0.00625 | 12, 15 |
| 17 | E-UTRA Band 2, 5, 13, 14, 17, 24, 25, 26, 27, 30, 41, 71, 74, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 4, 50, 51, 53, 66, 70,  NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 12, 48, 85 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| 18 | E-UTRA Band 1, 3, 11, 21, 34, 40, 42, 65  NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 758 | - | 799 | -50 | 1 |  |
| Frequency range | 799 | - | 803 | -40 | 1 | 15 |
| Frequency range | 860 | - | 890 | -40 | 1 |  |
| Frequency range | 945 | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 8 |
| Frequency range | 2545 | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | - | 2645 | -50 | 1 |  |
| 19 | E-UTRA Band 1, 3, 11, 21, 28, 34, 40, 42, 65  NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 945 | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 8 |
| Frequency range | 2545 | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | - | 2645 | -50 | 1 |  |
| 20 | E-UTRA Band 1, 3, 7, 8, 22, 31, 32, 33, 34, 40, 43, 50, 51, 65, 67, 68, 72, 74, 75, 76, 87, 88 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 20 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| E-UTRA Band 38, 42, 52, 69  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 758 | - | 788 | -50 | 1 |  |
| 21 | E-UTRA Band 1, 3, 18, 19, 28, 34, 40, 42, 65  NR Band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 945 | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 8 |
| Frequency range | 2545 | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | - | 2645 | -50 | 1 |  |
| 22 | E-UTRA Band 1, 3, 7, 8, 20, 26, 27, 28, 31, 32, 33, 34, 38, 39, 40, 43, 65, 67, 68, 69, 72, 75, 76, 87, 88 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 3510 | - | 3525 | -40 | 1 | 15 |
| Frequency range | 3525 | - | 3590 | -50 | 1 |  |
| 23 | E-UTRA Band 4, 5, 12, 13, 14, 17, 23, 24, 26, 27, 29, 30, 41, 66, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| 24 | E-UTRA Band 2, 4, 5, 12, 13, 14, 17, 24, 25, 26, 29, 30, 41, 48, 66, 70, 71, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| 25 | E-UTRA Band 4, 5, 12, 13, 14, 17, 24, 26, 27, 28, 29, 30, 41, 42, 48, 53, 66, 70, 71, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 2 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| E-UTRA Band 25 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| E-UTRA Band 43,  NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| 26 | E-UTRA Band 1, 2, 3, 4, 5, 11, 12, 13, 14, 17, 18,19, 21, 24, 25, 26, 29, 30, 31, 34, 39, 40, 42, 43, 48, 50, 51, 65, 66, 70, 71, 73,74, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 41, 53  NR Band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 703 | - | 799 | -50 | 1 |  |
| Frequency range | 799 | - | 803 | -40 | 1 | 15 |
| Frequency range | 945 | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 8 |
| 27 | E-UTRA Band 1, 2, 3, 4, 5, 7, 12, 13, 14, 17, 25, 26, 27, 29, 30, 31, 38, 40, 41, 42, 43, 65, 66, 73, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 28 | FDL\_low | - | 790 | -50 | 1 |  |
| NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 799 | - | 805 | -35 | 0.00625 |  |
| 28 | E-UTRA Band 1, 4, 22, 32, 42, 43, 50, 51, 65, 66, 73, 74, 75, 76  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 1 | FDL\_low | - | FDL\_high | -50 | 1 | 19, 25 |
| E-UTRA Band 2, 3, 5, 7, 8, 18, 19, 20, 25, 26, 27, 31, 34, 38, 40, 41, 52, 72, 87, 88  NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 11, 21 | FDL\_low | - | FDL\_high | -50 | 1 | 19, 24 |
| Frequency range | 470 | - | 694 | -42 | 8 | 15, 35 |
| Frequency range | 470 | - | 710 | -26.2 | 6 | 34 |
| Frequency range | 662 | - | 694 | -26.2 | 6 | 15 |
| Frequency range | 758 | - | 773 | -32 | 1 | 15 |
| Frequency range | 773 | - | 803 | -50 | 1 |  |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 8, 19 |
| 30 | E-UTRA Band 2, 4, 5, 7, 12, 13, 14, 17, 24, 25, 26, 27, 29, 30, 38, 41, 48, 53, 66, 70, 71, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| 31 | E-UTRA Band 1, 5, 7, 8, 20, 22, 26, 27, 28, 31, 32, 33, 34, 38, 40, 42, 43, 50, 51, 52, 65, 67, 68, 69, 74, 75, 76, 87, 88 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 3 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 470 | - | 694 | -42 | 8 |  |
| … |  |  |  |  |  |  |  |
| 33 | E-UTRA Band 1, 7, 8, 20, 22, 28, 31, 32, 34, 38, 40, 42, 43, 52, 65, 67, 69, 72, 73, 75, 76, 87, 88 | FDL\_low | - | FDL\_high | -50 | 1 | 5 |
| E-UTRA Band 3 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| 34 | E-UTRA Band 1, 3, 7, 8, 11, 18, 19, 20, 21, 22, 26, 28, 31, 32, 33, 38,39, 40, 41, 42, 43, 44, 45, 50, 51, 52, 65, 67, 69, 72, 73, 74, 75, 76, 87, 88  NR Band n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 | 5 |
| NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2, 5 |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 8 |
| 35 |  |  |  |  |  |  |  |
| 36 |  |  |  |  |  |  |  |
| 37 |  |  | - |  |  |  |  |
| 38 | E-UTRA Band 1, 2, 3, 4, 5, 8, 12, 13, 14, 17, 20, 22, 27, 28, 29, 30, 31, 32, 33, 34, 40, 42, 43, 50, 51, 52, 65, 66, 67, 68, 72, 74, 75, 76, 85, 87, 88, 103  NR Band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 2620 | - | 2645 | -15.5 | 5 | 15, 22, 26 |
| Frequency range | 2645 | - | 2690 | -40 | 1 | 15, 22 |
| 39 | E-UTRA Band 1, 8, 22, 26, 28, 34, 40, 41, 42, 44, 45, 50, 51, 52, 73, 74  NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1805 |  | 1855 | -40 | 1 | 33 |
| Frequency range | 1855 |  | 1880 | -15.5 | 5 | 15,26,33 |
| 40 | E-UTRA Band 1, 3, 5, 7, 8, 11, 18, 19, 20, 21, 22, 26, 27, 28, 31, 32, 33, 34, 38, 39, 41, 42, 43, 44, 45, 50, 51, 52, 65, 67, 68, 69, 72, 73, 74, 75, 76, 87, 88  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 8 |
| 41 | E-UTRA Band 1, 2, 3, 4, 5, 8, 12, 13 , 14, 17, 24, 25, 26, 27, 28, 29, 30, 34, 39, 40, 42, 44, 45, 48, 50, 51, 52, 65, 66, 70, 71, 73, 74, 85, 103  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 9, 11, 18, 19, 21 | FDL\_low | - | FDL\_high | -50 | 1 | 30 |
| NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1884.5 |  | 1915.7 | -41 | 0.3 | 8, 30 |
| 42 | E-UTRA Band 1, 2, 3, 4, 5, 7, 8, 11, 18, 19, 20, 21, 25, 26, 27, 28, 31, 32, 33, 34, 38, 40, 41, 44, 45, 50, 51, 65, 66, 67, 68, 69, 72, 73, 74, 75, 76, 87, 88  NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 8 |
| 43 | E-UTRA Band 1, 2, 3, 4, 5, 7, 8, 20, 25, 26, 27, 28, 31,32, 33, 34, 38, 40, 50, 51, 65, 66, 67, 68, 69, 72, 73, 74, 75, 76, 85, 87, 88 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| 44 | E-UTRA Band 1, 40, 42, 45 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 3, 5, 8, 34, 39, 41, 73 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| 45 | E-UTRA Band 1, 3, 5, 8, 34, 39, 40, 41, 42, 44, 52, 73 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| … |  |  |  |  |  |  |  |
| 47 | E-UTRA Band 1, 3, 5, 7, 8, 22, 26, 28, 34, 39, 40, 41, 42, 44, 45, 65, 68, 72, 73  NR band n77, n78 , n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 5925 | - | 5950 | -30 EIRP | 1 | 38, 40, 43 |
| Frequency range | 5815 | - | 5855 | -30 EIRP | 1 | 38, 43, 45 |
| 48 | E-UTRA Band 2, 4, 5, 12, 13, 14, 17, 24, 25, 26, 29, 30, 41, 50, 51, 66, 70, 71, 74, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| 50 | E-UTRA Band 1, 2, 3, 4, 5, 7, 8, 12, 13, 17, 20, 26, 28, 29, 31, 34, 38, 39, 40, 41, 42, 43, 48, 52, 65, 66, 67, 68, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| 51 | E-UTRA Band 1, 2, 3, 4, 5, 7, 8, 12, 13, 17, 20, 26, 28, 29, 31, 34, 38, 39, 40, 41, 42, 43, 48, 52, 65, 66, 67, 68, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| 52 | E-UTRA Band 1, 3, 5, 7, 8, 20, 28, 31, 33, 34, 38, 39, 40, 41, 45, 47, 50, 51, 68, 72, 73, 74, 87, 88 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| 53 | E-UTRA Band 2, 4, 5, 12, 13, 14, 17, 24, 25, 26, 29, 30, 48, 66, 70, 71, 85, 103  NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| 65 | E-UTRA Band 1, 3, 7, 8, 20, 22, 28, 31, 32, 38, 40, 42, 43, 50, 51, 65, 68, 69, 72, 74, 75, 76, 87, 88  NR Band n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 5, 11, 18, 19, 21, 26, 27, 41 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 34 | FDL\_low | - | FDL\_high | -50 | 1 | 36 |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 37 |
| Frequency range | 1900 | - | 1915 | -15.5 | 5 | 15, 26, 27 |
| Frequency range | 1915 | - | 1920 | +1.6 | 5 | 15, 26, 27 |
| 66 | E-UTRA Band 2, 4, 5, 7, 12, 13, 14, 17, 24, 25, 26, 27, 28, 29, 30, 38, 41, 43, 50, 51, 53, 66, 70, 71, 74, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 42, 48,  NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| 68 | E-UTRA Band 3, 7, 8, 20, 28, 31, 38, 40, 47, 72, 74, 87, 88 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 1, 22, 42, 43, 50, 51, 52, 65 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| … |  |  |  |  |  |  |  |
| 70 | E-UTRA Band 2, 4, 5, 12, 13, 14, 17, 24, 25, 26, 29, 30, 41, 48, 53, 66, 70, 71, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| 71 | E-UTRA Band 4, 5, 12, 13, 14, 17, 24, 26, 30, 48, 53, 66, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 2, 25, 41, 70,  NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 29 | FDL\_low | - | FDL\_high | -38 | 1 | 15 |
| E-UTRA Band 71 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| 72 | E-UTRA Band 1, 7, 20, 22, 28, 31, 32, 33, 34, 38, 42, 43, 47, 52, 65, 68, 72, 87, 88 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 3, 8, 40 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 470 | - | 694 | -42 | 8 |  |
| 73 | E-UTRA Band 1, 26, 28, 33, 34, 39, 41, 42, 43, 44, 45, 47, 52 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 3, 5, 8, 27, 40 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| 74 | E-UTRA Band 1, 2, 3, 4, 5, 7, 8, 12, 13, 17, 18, 19, 20, 26, 28, 29, 31, 34, 38, 39, 40, 41, 42, 43, 48, 52, 65, 66, 67, 68, 85, 103  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 8 |
| Frequency range | 1400 | - | 1427 | -32 | 27 | 15, 41 |
| Frequency range | 1475 | - | 1488 | -50 | 1 | 42 |
| Frequency range | 1488 | - | 1518 | -50 | 1 | 15 |
| 85 | E-UTRA Band 2, 5, 13, 14, 17, 24, 25, 26, 27, 30, 41, 53, 70, 71, 74 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 4, 48, 51, 66  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 2, 5, 13, 14, 17, 24, 25, 26, 27, 30, 41, 53, 70, 71, 74, 103 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| 87 | E-UTRA Band 1, 3, 7, 8, 22, 28, 31, 32, 33, 34, 38, 40, 42, 43, 47, 52, 65, 68, 72 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band, 20 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 87, 88 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| Frequency range | 470 | - | 694 | -42 | 8 |  |
| 88 | E-UTRA Band 1, 3, 7, 8, 20, 22, 28, 31, 32, 33, 34, 38, 40, 42, 43, 47, 52, 65, 68, 72 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 87 | FDL\_low | - | FDL\_high | -20 | 1 | 15 |
| E-UTRA Band 88 | FDL\_low | - | FDL\_high | -50 | 1 | 15 |
| Frequency range | 470 | - | 694 | -42 | 8 |  |
| 103 | E-UTRA Band 2, 4, 5, 12, 13, 14, 17, 25, 26, 27, 29, 41, 48, 50, 51, 53, 66, 70, 71, 74, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 24, 30,  NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 769 | - | 775 | -35 | 0.00625 |  |
| Frequency range | 799 | - | 805 | -35 | 0.00625 |  |
| NOTE 1: FDL\_low and FDL\_high refer to each E-UTRA frequency band specified in Table 5.5-1  NOTE 2: As exceptions, measurements with a level up to the applicable requirements defined in Table 6.6.3.1-2 are permitted for each assigned E-UTRA carrier used in the measurement due to 2nd, 3rd, 4th [or 5th] harmonic spurious emissions. Due to spreading of the harmonic emission the exception is also allowed for the first 1 MHz frequency range immediately outside the harmonic emission on both sides of the harmonic emission. This results in an overall exception interval centred at the harmonic emission of (2MHz + N x LCRB x 180kHz), where N is 2, 3, 4, [5] for the 2nd, 3rd, 4th [or 5th] harmonic respectively. The exception is allowed if the measurement bandwidth (MBW) totally or partially overlaps the overall exception interval.  NOTE 3: N/A  NOTE 4: N/A  NOTE 5: For non synchronised TDD operation to meet these requirements some restriction will be needed for either the operating band or protected band  NOTE 6: N/A  NOTE 7:Applicable when co-existence with PHS system operating in 1884.5 -1919.6MHz.  NOTE 8:Applicable when co-existence with PHS system operating in 1884.5 -1915.7MHz.  NOTE 9:N/A  NOTE 10:N/A  NOTE 11:Whether the applicable frequency range should be 793-805MHz instead of 799-805MHz is TBD  NOTE 12:The emissions measurement shall be sufficiently power averaged to ensure a standard deviation < 0.5 dB  NOTE 13:N/A  NOTE 14: N/A  NOTE 15:These requirements also apply for the frequency ranges that are less than FOOB (MHz) in Table 6.6.3.1-1 and Table 6.6.3.1A-1 from the edge of the channel bandwidth.  NOTE 16: N/A  NOTE 17: N/A  NOTE 18: N/A  NOTE 19:Applicable when the assigned E-UTRA carrier is confined within 718 MHz and 748 MHz and when the channel bandwidth used is 5 or 10 MHz.  NOTE 20:N/A  NOTE21:This requirement is applicable for any channel bandwidths within the range 2500 - 2570 MHz with the following restriction: for carriers of 15 MHz bandwidth when carrier centre frequency is within the range 2560.5 - 2562.5 MHz and for carriers of 20 MHz bandwidth when carrier centre frequency is within the range 2552 - 2560 MHz the requirement is applicable only for an uplink transmission bandwidth less than or equal to 54 RB.  NOTE22:This requirement is applicable for power class 3 UE for any channel bandwidths within the range 2570 - 2615 MHz with the following restriction: for carriers of 15 MHz bandwidth when carrier centre frequency is within the range 2605.5 - 2607.5 MHz and for carriers of 20 MHz bandwidth when carrier centre frequency is within the range 2597 - 2605 MHz the requirement is applicable only for an uplink transmission bandwidth less than or equal to 54 RB. For power class 2 UE for any channel bandwidths within the range 2570 - 2615 MHz, NS\_44 shall apply. For power class 2 or 3 UE for carriers with channel bandwidth overlapping the frequency range 2615 - 2620 MHz the requirement applies with the maximum output power configured to +19 dBm in the IE *P-Max*.  NOTE 23: This requirement is applicable only for the following cases: - for carriers of 5 MHz channel bandwidth when carrier centre frequency (Fc) is within the range 902.5 MHz ≤ Fc < 907.5 MHz with an uplink transmission bandwidth less than or equal to 20 RB - for carriers of 5 MHz channel bandwidth when carrier centre frequency (Fc) is within the range 907.5 MHz ≤ Fc ≤ 912.5 MHz without any restriction on uplink transmission bandwidth. - for carriers of 10 MHz channel bandwidth when carrier centre frequency (Fc) is Fc = 910 MHz with an uplink transmission bandwidth less than or equal to 32 RB with RBstart > 3.  NOTE 24: As exceptions, measurements with a level up to the applicable requirement of -38 dBm/MHz is permitted for each assigned E-UTRA carrier used in the measurement due to 2nd harmonic spurious emissions. An exception is allowed if there is at least one individual RB within the transmission bandwidth (see Figure 5.6-1) for which the 2nd harmonic totally or partially overlaps the measurement bandwidth (MBW).  NOTE 25: As exceptions, measurements with a level up to the applicable requirement of -36 dBm/MHz is permitted for each assigned E-UTRA carrier used in the measurement due to 3rd harmonic spurious emissions. An exception is allowed if there is at least one individual RB within the transmission bandwidth (see Figure 5.6-1) for which the 3rd harmonic totally or partially overlaps the measurement bandwidth (MBW).  NOTE 26: For these adjacent bands, the emission limit could imply risk of harmful interference to UE(s) operating in the protected operating band.  NOTE 27: This requirement is applicable for any channel bandwidths within the range 1920 - 1980 MHz with the following restriction: for carriers of 15 MHz bandwidth when carrier centre frequency is within the range 1927.5 - 1929.5 MHz and for carriers of 20 MHz bandwidth when carrier centre frequency is within the range 1930 - 1938 MHz the requirement is applicable only for an uplink transmission bandwidth less than or equal to 54 RB.  NOTE 28: N/A  NOTE 29: N/A  NOTE 30: This requirement applies when the E-UTRA carrier is confined within 2545-2575MHz or 2595-2645MHz and the channel bandwidth is 10 or 20 MHz  NOTE 31: N/A  NOTE 32: Void  NOTE 33: This requirement is only applicable for carriers with bandwidth confined within 1885-1920 MHz (requirement for carriers with at least 1RB confined within 1880 - 1885 MHz is not specified). This requirement applies for an uplink transmission bandwidth less than or equal to 54 RB for carriers of 15 MHz bandwidth when carrier center frequency is within the range 1892.5 - 1894.5 MHz and for carriers of 20 MHz bandwidth when carrier center frequency is within the range 1895 - 1903 MHz.  NOTE 34: This requirement is applicable for 5 and 10 MHz E-UTRA channel bandwidth allocated within 718-728MHz. For carriers of 10 MHz bandwidth, this requirement applies for an uplink transmission bandwidth less than or equal to 30 RB with RBstart > 1 and RBstart<48.  NOTE 35: This requirement is applicable in the case of a 10 MHz E-UTRA carrier confined within 703 MHz and 733 MHz, otherwise the requirement of -25 dBm with a measurement bandwidth of 8 MHz applies.  NOTE 36: This requirement is applicable for E-UTRA channel bandwidth allocated within 1920-1980 MHz.  NOTE 37: Applicable when the upper edge of the channel bandwidth frequency is greater than 1980MHz.  NOTE 38: Applicable when NS\_33 or NS\_34 is configured by the pre-configured radio parameters.  NOTE 39: Applicable only when the assigned E-UTRA carrier is confined within 824 MHz and 849 MHz for UE category M1, M2 and UE category NB1 and NB2.  NOTE 40: In the frequency range x-5950MHz, SE requirement of -30dBm/MHz should be applied; where x = max (5925, fc + 15), where fc is the channel centre frequency.  NOTE 41: Applicable for all bandwidths, and when the lower edge of the assigned E-UTRA UL channel bandwidth frequency is greater than or equal to 1427 MHz + the channel BW assigned for 1.4, 3, 5 and 10 MHz bandwidth, and when the lower edge of the assigned E-UTRA UL channel bandwidth frequency is greater than or equal to 1440 MHz for 15 and 20 MHz bandwidth. This requirement shall be verified with UE transmission power of 15 dBm.  NOTE 42: Applicable for 1.4 , 3 and 5 MHz bandwidth, and when the upper edge of the assigned E-UTRA UL channel bandwidth frequency is less than or equal to 1467 MHz assigned for10 MHz bandwidth, and when the upper edge of the assigned E-UTRA UL channel bandwidth frequency is less than or equal to 1463.8 MHz for 15 MHz bandwidth, and when the upper edge of the assigned E-UTRA UL channel bandwidth frequency is less than or equal to 1460.8 MHz for 20 MHz bandwidth.  NOTE 43: The EIRP requirement is converted to conducted requirement depend on the supported post antenna connector gain Gpost connector declared by the UE following the principle described in annex I.  NOTE 44: For category NB1 and NB2 UE when carrier centre frequency is 1920.1 MHz, in case of single-tone uplink transmission the requirement is applicable only for sub-carrier index > 2.  NOTE 45: Resolution BW is 10% of the measurement BW and the result should be integrated to achieve the measurement bandwidth. The sweep time shall be set at least as (sweep points)\*(symbol length) to improve the measurement accuracy. | | | | | | | |

NOTE: The restriction on the maximum uplink transmission to 54 RB in Notes 21, 22, and 27 of Table 6.6.3.2-1 and the restriction on the single-tone uplink transmission to sub-carrier index > 2 in Note 44 of Table 6.6.3.2-1 are intended for conformance testing and may be applied to network operation to facilitate coexistence when the aggressor and victim bands are deployed in the same geographical area. The applicable spurious emission requirement of -15.5 dBm/5MHz is a least restrictive technical condition for FDD/TDD coexistence and may have to be revised in the future.

When "NS\_33" or “NS 34” is configured from pre-configured radio parameters or the cell and the indication from upper layers has indicated that the UE is within the protection zone of CEN DSRC devices or HDR DSRC devices, the power of any V2X UE emission shall fulfil either one of the two set of conditions.

|  |  |  |
| --- | --- | --- |
|  | Maximum Transmission Power (dBm EIRP) | Emission Limit in Frequency Range 5795-5815 (dBm/MHz EIRP) |
| Condition 1 | 10 | -65 |
| Condition 2 | 10 | -45 |

#### 6.6.3.2A Spurious emission band UE co-existence for CA

This clause specifies the requirements for the specified carr`ier aggregation configurations for coexistence with protected bands.

NOTE: For measurement conditions at the edge of each frequency range, the lowest frequency of the measurement position in each frequency range should be set at the lowest boundary of the frequency range plus MBW/2. The highest frequency of the measurement position in each frequency range should be set at the highest boundary of the frequency range minus MBW/2. MBW denotes the measurement bandwidth defined for the protected band.

For inter-band carrier aggregation with the uplink assigned to two E-UTRA bands, the requirements in Table 6.6.3.2A-0 apply on each component carrier with all component carriers are active.

NOTE: For inter-band carrier aggregation with uplink assigned to two E-UTRA bands the requirements in Table 6.6.3.2A-0 could be verified by measuring spurious emissions at the specific frequencies where second and third order intermodulation products generated by the two transmitted carriers can occur; in that case, the requirements for remaining applicable frequencies in Table 6.6.3.2A-0 would be considered to be verified by the measurements verifying the one uplink inter-band CA UE to UE co-existence requirements.

Table 6.6.3.2A-0: Requirements for uplink inter-band carrier aggregation (two bands)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| E-UTRA CA Configuration | Spurious emission | | | | | | | |
| Protected band | Frequency range (MHz) | | | | Maximum Level (dBm) | MBW (MHz) | NOTE |
| CA\_1-3 | E-UTRA Band 1, 5, 7, 8, 11, 18, 19, 20, 21, 26, 27, 28, 31, 32, 38, 40, 41, 43, 44, 50, 51, 65, 67, 72, 73, 74, 75, 76  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3, 34 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA band 22, 42, 52  NR Band n77, n78 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
|  |  | |  |  |  |  |  |
| Frequency range | 1880 | |  | 1895 | -40 | 1 | 3,12 |
| Frequency range | 1895 | |  | 1915 | -15.5 | 5 | 3, 12, 13 |
| Frequency range | 1915 | |  | 1920 | +1.6 | 5 | 3, 12, 13 |
| CA\_1-5 | E-UTRA Band 1, 5, 7, 8, 22, 28, 31, 38, 40, 42, 43, 50, 51, 65, 73, 74 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3,34 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA band 26 | 859 | | - | 869 | -27 | 1 |  |
| E-UTRA band 41, 52  NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| CA\_1-7 | E-UTRA Band 1, 5, 7, 8, 20, 22, 26, 27, 28, 31,32, 40, 42, 43, 50, 51, 52, 65, 67, 72, 74, 75, 76  NR Band n78 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3, 34 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1880 | |  | 1895 | -40 | 1 | 3,12 |
| Frequency range | 1895 | |  | 1915 | -15.5 | 5 | 3, 12, 13 |
| Frequency range | 1915 | |  | 1920 | +1.6 | 5 | 3, 12, 13 |
| Frequency range | 2570 | | - | 2575 | +1.6 | 5 | 3, 13, 14 |
| Frequency range | 2575 | | - | 2595 | -15.5 | 5 | 3, 13, 14 |
| Frequency range | 2595 | | - | 2620 | -40 | 1 | 3, 14 |
| CA\_1-8 | E-UTRA Band 1, 20, 28, 31, 32, 38, 40, 50, 51, 65, 67, 72, 73, 74, 75, 76 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3, 7, 22, 41, 42, 43, 52  NR Band n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 8, 34 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA band 11, 21 | FDL\_low | | - | FDL\_high | -50 | 1 | 11 |
| Frequency range | 860 | | - | 890 | -40 | 1 | 3, 11 |
| NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1880 | |  | 1895 | -40 | 1 | 3,12 |
| Frequency range | 1895 | |  | 1915 | -15.5 | 5 | 3, 12, 13 |
| Frequency range | 1915 | |  | 1920 | +1.6 | 5 | 3, 12, 13 |
| CA\_1-11 | E-UTRA Band 1, 3, 11, 18, 19, 21, 28, 34, 40, 42, 65  NR Band n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| Frequency range | 2545 | | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| CA\_1-18 | E-UTRA Band 1, 3, 11, 21, 40, 42, 65  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 34 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| NR Band n77, n78 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 758 | | - | 799 | -50 | 1 |  |
| Frequency range | 799 | | - | 803 | -40 | 1 | 3 |
| Frequency range | 860 | | - | 890 | -40 | 1 |  |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
|  |  | |  |  |  |  |  |
| Frequency range | 2545 | | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| CA\_1-19 | E-UTRA Band 1, 3, 11, 21, 28, 40, 42, 65  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 34 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| NR Band n77, n78 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
|  |  | |  |  |  |  |  |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
|  |  | |  |  |  |  |  |
| Frequency range | 2545 | | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| CA\_1-20 | E-UTRA Band 1, 3, 7, 8, 22, 31, 32, 34, 40, 43, 50, 51, 65, 67, 68, 72, 75, 76 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 20 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 38, 42, 69  NR Band n77, n78 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 758 | | - | 788 | -50 | 1 |  |
| CA\_1-21 | NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 1, 3, 18, 19, 28, 34, 40, 42, 65  NR Band n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
|  |  | |  |  |  |  |  |
|  |  | |  |  |  |  |  |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| Frequency range | 2545 | | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| CA\_1-26 | E-UTRA Band 1, 5, 7, 11, 18, 19, 21, 22, 26, 31, 38, 40, 42, 43, 50, 51, 65, 73, 74  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| Frequency range | 1880 | | - | 1895 | -40 | 1 | 3, 12 |
| Frequency range | 1895 | | - | 1915 | -15.5 | 5 | 3, 12, 13 |
| Frequency range | 1915 | | - | 1920 | +1.6 | 5 | 3, 12, 13 |
|  |  | |  |  |  |  |  |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| E-UTRA Band 41  NR Band n77, n78 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 3, 34 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| Frequency range | 703 | | - | 799 | -50 | 1 |  |
| 799 | | - | 803 | -40 | 1 | 3 |
| CA\_1-28 | E-UTRA Band 3, 5, 7, 8, 18, 19, 20, 26, 27, 31, 38, 40, 41, 72, 73 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 22, 32, 42, 43, 50, 51, 52, 74, 75, 76  NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 34 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 11, 21 | FDL\_low | | - | FDL\_high | -50 | 1 | 5, 21 |
| E-UTRA Band 1, 65 | FDL\_low | | - | FDL\_high | -50 | 1 | 5, 6 |
| Frequency range | 470 | | - | 694 | -42 | 8 | 3, 22 |
| Frequency range | 470 | | - | 710 | -26.2 | 6 | 23 |
| Frequency range | 758 | | - | 773 | -32 | 1 | 3 |
| Frequency range | 773 | | - | 803 | -50 | 1 |  |
| Frequency range | 662 | | - | 694 | -26.2 | 6 | 3 |
| Frequency range | 1880 | |  | 1895 | -40 | 1 | 3,12 |
| Frequency range | 1895 | |  | 1915 | -15.5 | 5 | 3, 12, 13 |
| Frequency range | 1915 | |  | 1920 | +1.6 | 5 | 3, 12, 13 |
|  |  | |  |  |  |  |  |
| CA\_1-41 | E-UTRA Band 1, 3, 5, 8, 26, 27, 28, 40, 42, 44, 45, 50, 51, 52, 65, 73, 74  NR Band n78 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 34 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| NR Band n77, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1880 | |  | 1895 | -40 | 1 | 3,12 |
| Frequency range | 1895 | |  | 1915 | -15.5 | 5 | 3, 12, 13 |
| Frequency range | 1915 | |  | 1920 | +1.6 | 5 | 3, 12, 13 |
| E-UTRA Band 11, 18, 19, 21 | FDL\_low | | - | FDL\_high | -50 | 1 | 30 |
|  |  | |  |  |  |  |  |
| CA\_1-42 | E-UTRA Band 1, 5, 7, 8, 11, 18, 19, 20, 21, 26, 27, 28, 31, 32, 38, 40, 41, 44, 50, 51, 65, 67, 72, 73, 74, 75, 76  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 3, 34 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| Frequency range | 1880 | |  | 1895 | -40 | 1 | 3,12 |
| Frequency range | 1895 | |  | 1915 | -15.5 | 5 | 3, 12, 13 |
| Frequency range | 1915 | |  | 1920 | +1.6 | 5 | 3, 12, 13 |
|  |  | |  |  |  |  |  |
| CA\_2-4 | E-UTRA Band 4, 5, 12, 13, 14, 17, 24, 26, 27, 28, 29, 30, 41, 50, 51, 53, 66, 70, 71, 74, 85, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 2, 25 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 22, 42, 43,  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| CA\_2-5 | E-UTRA Band 4, 5, 12, 13, 14, 17, 24, 28, 29, 30, 42, 50, 51, 66, 70, 71, 74, 85, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 2, 25 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 26 | 859 | | - | 869 | -27 | 1 |  |
| E-UTRA Band 41, 43, 53  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| CA\_2-7 | E-UTRA Band 2, 4, 5, 7, 12, 13, 14, 17, 26, 27, 29, 30, 42, 50, 51, 65, 66, 70, 74, 85, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 43 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| CA\_2-12 | E-UTRA Band 5, 13, 14, 17, 24, 26, 27, 30, 41, 50, 53, 71, 74, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 2, 12, 25, 85 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 4, 51, 66, 70,  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| CA\_2-13 | E-UTRA Band 4, 5,12,13,17, 22, 26, 27, 29, 41, 42, 50, 51, 53, 66, 70, 71, 74, 85 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 2,14, 25, 103 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 24, 30, 43,  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 769 | | - | 775 | -35 | 0.00625 | 3 |
| Frequency range | 799 | | - | 805 | -35 | 0.00625 | 3 |
| CA\_2-14 | E-UTRA Band 4, 5, 12, 13, 14, 17, 24, 26, 27, 29, 30, 41, 48, 53, 66, 70, 71, 85, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 2, 25 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 769 | | - | 775 | -35 | 0.00625 | 3 |
| Frequency range | 799 | | - | 805 | -35 | 0.00625 | 3, 9 |
| CA\_2-48 | E-UTRA Band 4, 5, 12, 13, 14, 17, 24, 25, 26, 29, 30, 41, 50, 51, 53, 66, 70, 71, 74, 85, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| CA\_2-49 | E-UTRA Band 4, 5, 12, 13, 14, 17, 24, 25, 26, 29, 30, 41, 50, 51, 53, 66, 70, 71, 74, 85, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| CA\_3-5 | E-UTRA Band 1, 5, 7, 8, 28, 31, 38, 40, 43, 50, 51, 65, 73, 74 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3,34 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 22, 42, 52 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA band 26 | 859 | | - | 869 | -27 | 1 |  |
| CA\_3-7 | E-UTRA Band 1, 5, 7, 8, 20, 26, 27, 28, 31, 32, 33, 34, 40, 43, 44, 50, 51, 65, 67, 72, 74, 75, 76 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA band 22, 42, 52  NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 2570 | | - | 2575 | +1.6 | 5 | 3, 13, 14 |
| Frequency range | 2575 | | - | 2595 | -15.5 | 5 | 3, 13, 14 |
| Frequency range | 2595 | | - | 2620 | -40 | 1 | 3, 14 |
| CA\_3-8 | E-UTRA Band 1, 20, 28, 31, 32, 33, 34, 38, 39, 40, 44, 50, 51, 65, 67, 72, 73, 74, 75, 76 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3, 8 | FDL\_low | | - | FDL\_high | -50 | 1 | 2, 3 |
| E-UTRA band 11, 21 | FDL\_low | | - | FDL\_high | -50 | 1 | 10,11 |
| E-UTRA band 7, 22, 41, 42, 43, 52  NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4, 10, 11 |
| Frequency range | 860 | | - | 890 | -40 | 1 | 3,11,17 |
| CA\_3A-11A | E-UTRA Band 1, 18, 19, 28, 34, 40, 65 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 42 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4 |
| Frequency range | 2545 | | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| CA\_3-18 | E-UTRA Band 1, 3, 11, 21, 28, 34, 40, 65  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| NR Band n77, n78, | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4 |
| Frequency range | 2545 | | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| CA\_3-19 | E-UTRA Band 1, 11, 21, 28, 40, 65 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 3, 34 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 42  NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
|  |  | |  |  |  |  |  |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 3, 4 |
| Frequency range | 2545 | | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| CA\_3-20 | E-UTRA Band 1, 7, 8, 31, 32, 33, 34, 40, 43, 50, 51, 65, 67, 72, 74, 75, 76 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 3, 20 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 22, 38, 42, 52 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 758 | | - | 788 | -50 | 1 |  |
| CA\_3-21 | E-UTRA Band 1, 18, 19, 28, 34, 40, 65  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 42  NR Band n77, n78, | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4 |
| Frequency range | 2545 | | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| CA\_3-26 | E-UTRA Band 1, 5, 7, 11, 18, 19, 21, 26, 34, 39, 40, 43, 50, 51, 65, 73, 74 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA band 22, 41, 42  NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4 |
| Frequency range | 703 | | - | 799 | -50 | 1 |  |
| 799 | | - | 803 | -40 | 1 | 3 |
|  |  | |  |  |  |  |  |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| CA\_3-28 | E-UTRA Band 1, 11, 18, 19, 21, 22, 32, 42, 43, 50, 51, 52, 65, 74, 75, 76  NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 1 | FDL\_low | | - | FDL\_high | -50 | 1 | 5, 6 |
| E-UTRA band 3 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 5, 7, 8, 20, 26, 27, 31, 34, 38, 40, 41, 72, 73 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
|  |  | |  |  |  |  |  |
| Frequency range | 470 | | - | 710 | -26.2 | 6 | 23 |
| Frequency range | 758 | | - | 773 | -32 | 1 | 3 |
| Frequency range | 773 | | - | 803 | -50 | 1 |  |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4, 5 |
| CA\_3-38 | E-UTRA Band 1, 5, 8, 20, 27, 28, 31, 32, 33, 34, 40, 43, 50, 51, 65, 67, 68, 72, 74, 75, 76 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
|  | E-UTRA Band 22, 42 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| CA\_3-40 | E-UTRA Band 1, 5, 7, 8, 11, 18, 19, 20, 21, 26, 27, 28, 31, 32, 33, 34, 38, 39, 41, 43, 44. 45, 50, 51, 65, 67, 68, 69, 72, 73, 74, 75, 76 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 3 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 22, 42, 52  NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 |  |
| CA\_3-41 | E-UTRA Band 1, 5, 8, 26, 28, 33, 34, 39, 40, 44, 45, 50, 51, 65, 73, 74 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 3 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 11, 18, 19, 21 | FDL\_low | | - | FDL\_high | -50 | 1 | 18 |
| NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1884.5 | |  | 1915.7 | -41 | 0.3 | 4, 18 |
| CA\_3-42 | E-UTRA Band 1, 5, 7, 8, 20, 26, 27, 28, 31, 32, 33, 34, 38, 40, 41, 44, 45, 50, 51, 65, 67, 72, 73, 74, 75, 76  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 3 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 11, 18, 19, 21 | FDL\_low | | - | FDL\_high | -50 | 1 | 13 |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4 |
| CA\_4-5 | E-UTRA Band 2, 4, 5, 7, 12, 13, 14, 17, 24, 25, 28, 29, 30, 43, 50, 51, 66, 70, 71, 74, 85, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 26 | 859 | | - | 869 | -27 | 1 |  |
| E-UTRA band 41, 42, 53  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| CA\_4-7 | E-UTRA Band 2, 4, 5, 7, 12, 13, 14, 17, 26, 27, 28, 29, 30, 43, 50, 51, 66, 74, 85, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 42 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 2570 | | - | 2575 | +1.6 | 5 | 3, 13, 14 |
| Frequency range | 2575 | | - | 2595 | -15.5 | 5 | 3, 13, 14 |
| Frequency range | 2595 | | - | 2620 | -40 | 1 | 3, 14 |
| CA\_4-12 | E-UTRA Band 2, 5, 7,13, 14, 17, 24, 25, 26, 27, 30, 41, 43, 50, 53, 71, 74, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 4, 22, 42, 51, 66, 70,  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 12, 85 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| CA\_4-13 | E-UTRA Band 2,4, 5, 7, 12,13,17,25, 26, 27, 29, 41, 43, 50, 51, 53, 66, 70, 71, 74, 85 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 14, 103 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 22, 24, 30, 42,  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 769 | | - | 775 | -35 | 0.00625 | 3 |
| Frequency range | 799 | | - | 805 | -35 | 0.00625 | 3 |
| CA\_4-17 | E-UTRA Band 2, 5, 7,13, 14, 17, 24, 25, 26, 27, 30, 41, 43, 50, 53, 71, 74, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 4, 22, 42, 51, 66, 70,  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 12, 85 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| CA\_4-28 | E-UTRA Band 2, 5, 7, 14, 24, 25, 26, 27, 30, 41, 53, 70, 71 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 4, 42, 43, 48 50, 51, 66, 74 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 470 | | - | 710 | -26.2 | 6 | 23 |
| Frequency range | 758 | |  | 773 | -32 | 1 | 3 |
| Frequency range | 773 | |  | 803 | -50 | 1 |  |
| CA\_5-7 | E-UTRA Band 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 22, 28, 29, 30, 31, 40, 42, 43, 50, 51, 65, 66, 74, 85, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 52  NR Band n77, n78 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA band 26 | 859 | | - | 869 | -27 | 1 |  |
| Frequency range | 2570 | | - | 2575 | +1.6 | 5 | 3, 13, 14 |
| Frequency range | 2575 | | - | 2595 | -15.5 | 5 | 3, 13, 14 |
| Frequency range | 2595 | | - | 2620 | -40 | 1 | 3, 14 |
| CA\_5-12 | E-UTRA Band 2, 5, 13, 14, 17, 24, 25, 30, 31, 43, 50, 53, 71, 74, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 4, 22, 41, 42, 51, 66, 70,  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA band 26 | 859 | | - | 869 | -27 | 1 |  |
| E-UTRA band 12, 85 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| CA\_5-17 | E-UTRA Band 2, 5, 13, 14, 17, 24, 25, 30, 31, 43, 50, 71, 74, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 4, 22, 41, 42, 51, 53, 66, 70,  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA band 26 | 859 | | - | 869 | -27 | 1 |  |
| E-UTRA band 12, 85 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| CA\_5-40 | E-UTRA Band 1, 3, 5, 7, 8, 11, 18, 19, 21, 28, 31, 34, 38, 42, 43, 45, 65, 73, 74 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 26 | 859 | | - | 869 | -27 | 1 |  |
| E-UTRA band 41, 52  NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4 |
| CA\_7-8 | E-UTRA Band 1, 20, 27, 28, 31, 32, 34, 40, 50, 51, 65, 67, 68, 72, 74, 75, 76 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3, 7, 22, 42, 43, 52  NR Band n77, n78 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 8 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| Frequency range | 2570 | | - | 2575 | +1.6 | 5 | 3, 13, 14 |
| Frequency range | 2575 | | - | 2595 | -15.5 | 5 | 3, 13, 14 |
| Frequency range | 2595 | | - | 2620 | -40 | 1 | 3, 14 |
| CA\_7-20 | E-UTRA Band 1,3, 7, 8, 22, 28, 31, 32, 33, 34, 40, 43, 50, 51, 65, 67, 72, 74, 75, 76 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 20 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 42, 52  NR Band n77, n78 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 2570 | | - | 2575 | +1.6 | 5 | 2, 3, 13, 14 |
| Frequency range | 2575 | | - | 2595 | -15.5 | 5 | 2, 3, 13, 14 |
| Frequency range | 2595 | | - | 2620 | -40 | 1 | 3, 14 |
| CA\_7-26 | E-UTRA Band 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 22, 29, 30, 31, 40, 42, 43, 65, 66, 85, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 2570 | | - | 2575 | +1.6 | 5 | 3, 13, 14 |
| Frequency range | 2575 | | - | 2595 | -15.5 | 5 | 3, 13, 14 |
| Frequency range | 2595 | | - | 2620 | -40 | 1 | 3, 14 |
| Frequency range | 703 | | - | 799 | -50 | 1 |  |
| Frequency range | 799 | | - | 803 | -40 | 1 | 3 |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 7 |
| CA\_7-28 | E-UTRA Band 2, 3, 5, 7, 8, 20, 26, 27, 31, 34, 40, 72  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 1, 4, 22, 32, 42, 43, 50, 51, 52, 65, 66, 74, 75, 76  NR Band n77, n78 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 1 | FDL\_low | | - | FDL\_high | -50 | 1 | 5, 6 |
| Frequency range | 758 | | - | 773 | -32 | 1 | 3 |
| Frequency range | 773 | | - | 803 | -50 | 1 |  |
| Frequency range | 2570 | | - | 2575 | +1.6 | 5 | 3, 13, 14 |
| Frequency range | 2575 | | - | 2595 | -15.5 | 5 | 3, 13, 14 |
| Frequency range | 2595 | | - | 2620 | -40 | 1 | 3, 14 |
| CA\_8-20 | E-UTRA Band 1, 28, 31, 32, 33, 34, 39, 40, 45, 50, 51, 65, 67, 68, 72, 73, 74, 75, 76, 87, 88 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3, 7, 22, 38, 41, 42, 43, 52, 69  NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 8, 20 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 11, 21 | FDL\_low | | - | FDL\_high | -50 | 1 | 11 |
| Frequency range | 758 | | - | 788 | -50 | 1 |  |
| Frequency range | 860 | | - | 890 | -40 | 1 | 3, 11 |
| CA\_8-28 | E-UTRA Band 3, 4, 7, 22, 32, 41, 42, 43, 50, 51, 52, 65, 66, 73, 74, 75, 76  NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 1 | FDL\_low | | - | FDL\_high | -50 | 1 | 2, 5, 21 |
| E-UTRA Band 8 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 2, 18, 20, 25, 27, 28, 31, 33, 34, 38, 39, 40, 68, 69, 72, 87, 88 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 11, 21, 45 | FDL\_low | | - | FDL\_high | -50 | 1 | 21 |
| Frequency range | 470 | | - | 694 | -42 | 8 | 3, 22 |
| Frequency range | 470 | | - | 710 | -26.2 | 6 | 23 |
| Frequency range | 662 | | - | 694 | -26.2 | 6 | 3 |
| Frequency range | 758 | | - | 773 | -32 | 1 | 3 |
| Frequency range | 773 | | - | 803 | -50 | 1 |  |
| Frequency range | 860 | | - | 890 | -40 | 1 | 3, 11 |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4, 5, 11 |
| CA\_8-39 | E-UTRA Band 1, 28, 40, 45, 50, 51, 73, 74 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 22, 41, 42, 52  NR band n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 8 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| CA\_8-41 | E-UTRA Band 1, 28, 34, 39, 40, 45, 50, 51, 65, 73, 74 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3, 42, 52  NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA band 11, 21 | FDL\_low | | - | FDL\_high | -50 | 1 | 11 |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4, 11 |
| CA\_11-18 | E-UTRA Band 1, 3, 11, 21, 28, 34, 40, 42, 65  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| NR Band n77, n78 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 860 | | - | 890 | -40 | 1 | 3 |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4 |
| Frequency range | 2545 | | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| CA\_11-26 | E-UTRA Band 1, 3, 11, 18, 19, 21, 26, 28, 34, 40, 42, 65 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 1, 3, 11, 18, 19, 21, 26, 28, 34, 40, 42, 65 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4 |
| Frequency range | 2545 | | - | 2575 | -50 | 1 | 2 |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| CA\_13-66 | E-UTRA Band 2, 4, 5, 12, 13, 17, 25, 26, 27, 29, 41, 50, 51, 53, 66, 70, 71, 74, 85 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 14, 103 | FDL\_low | | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 24, 30, 48,  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 769 | | - | 775 | -35 | 0.00625 | 3 |
| Frequency range | 799 | | - | 805 | -35 | 0.00625 | 3, 9 |
| CA\_14-30 | E-UTRA Band 2, 4, 5, 12, 13, 14, 17, 24, 25, 26, 27, 29, 30, 41, 48, 53, 66, 70, 71, 85, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 769 | | - | 775 | -35 | 0.00625 | 3 |
| Frequency range | 799 | | - | 805 | -35 | 0.00625 | 3, 9 |
| CA\_14-66 | E-UTRA Band 2, 4, 5, 12, 13, 14, 17, 24, 25, 26, 27, 29, 30, 41, 53, 66, 70, 71, 85, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 48,  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 769 | | - | 775 | -35 | 0.00625 | 3 |
| Frequency range | 799 | | - | 805 | -35 | 0.00625 | 3, 9 |
| CA\_18-28 | E-UTRA Band 11, 21 | FDL\_low | | - | FDL\_high | -50 | 1 | 5, 21 |
| E-UTRA Band 1, 65 | FDL\_low | | - | FDL\_high | -50 | 1 | 5, 6 |
| E-UTRA Band 42, 43  NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 3, 34, 40 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| Frequency range | 470 | | - | 710 | -26.2 | 6 | 23 |
| Frequency range | 758 | | - | 773 | -32 | 1 | 3 |
| Frequency range | 773 | | - | 799 | -50 | 1 |  |
| Frequency range | 799 | | - | 803 | -40 | 1 | 3 |
| Frequency range | 860 | | - | 890 | -40 | 1 |  |
| Frequency range | 945 | | - | 960 | -50 | 1 | 3 |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4 |
| Frequency range | 2545 | | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| CA\_19-21 | E-UTRA Band 1, 3, 28, 34, 40, 42, 65  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
|  |  | |  |  |  |  |  |
|  |  | |  |  |  |  |  |
| NR Band n77, n78, | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
|  |  | |  |  |  |  |  |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4 |
| Frequency range | 2545 | | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| CA\_19-42 | E-UTRA Band 1, 3, 11, 21, 28, 34, 40, 65  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4 |
| Frequency range | 2545 | | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| CA\_21-28 | E-UTRA Band 1, 42, 65  NR Band n77, n78 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 1 | FDL\_low | | - | FDL\_high | -50 | 1 | 5, 6 |
| E-UTRA Band 3, 18, 19, 34, 40  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| Frequency range | 470 | | - | 710 | -26.2 | 6 | 23 |
| Frequency range | 773 | | - | 803 | -50 | 1 |  |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4, 5 |
| Frequency range | 2545 | | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| CA\_21-42 | E-UTRA Band 1, 3, 18, 19, 28, 34, 40, 65  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4 |
| Frequency range | 2545 | | - | 2575 | -50 | 1 |  |
| Frequency range | 2595 | | - | 2645 | -50 | 1 |  |
| CA\_25-26 | E-UTRA Band 4, 5, 12, 13, 14, 17, 24, 26, 29, 30, 42, 48, 66, 70, 71, 85, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 53  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| CA\_25-41 | E-UTRA Band 4, 5, 12, 13, 14, 17, 24, 26, 27, 28, 29, 30, 42, 45, 48, 66, 70, 71, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 2, 25,  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| CA\_26-46 | E-UTRA Band 1, 2, 3, 4, 5, 11, 12, 13, 14, 17, 18,19, 21, 24, 25, 26, 29, 30, 31, 34, 39, 40, 42, 43, 48, 65, 66, 70, 71, 85, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 41, 53,  NR Band n77 | FDL\_low | | - | FDL\_high | -50 | 1 | 1, 2 |
| Frequency range | 703 | | - | 799 | -50 | 1 |  |
| Frequency range | 799 | | - | 803 | -40 | 1 | 2 |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 3 |
| CA\_26-48 | E-UTRA Band 1, 2, 3, 4, 5, 11, 12, 13, 14, 17, 18,19, 21, 24, 25, 26, 29, 30, 31, 34, 39, 40, 50, 51, 65, 66, 70, 71, 73, 74, 103 | FDL\_low | | - | FDL\_high | -50 | 1 | 1, 2 |
| E-UTRA Band 41 | FDL\_low | | - | FDL\_high | -50 | 1 | 1 |
| Frequency range | 703 | | - | 799 | -50 | 1 |  |
| Frequency range | 799 | | - | 803 | -40 | 1 | 2 |
| Frequency range | 945 | | - | 960 | -50 | 1 |  |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 3 |
| CA\_28-41 | E-UTRA Band E-UTRA Band 1, 4, 22, 32, 42, 45, 43, 48, 52, 65, 66  NR Band n77, n78, n79 | FDL\_low | - | | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 1 | FDL\_low | - | | FDL\_high | -50 | 1 | 5, 6 |
| E-UTRA band 2, 3, 5, 8, 20, 25, 26, 27, 31, 33, 34, 40 | FDL\_low | - | | FDL\_high | -50 | 1 |  |
| E-UTRA band 11, 21 | FDL\_low | - | | FDL\_high | -50 | 1 | 5, 18, 21 |
| E-UTRA band 9, 18, 19 | FDL\_low | - | | FDL\_high | -50 | 1 | 5, 18 |
| Frequency range | 470 | - | | 694 | -42 | 8 | 3, 22 |
| Frequency range | 470 | - | | 710 | -26.2 | 6 | 23 |
| Frequency range | 662 | - | | 694 | -26.2 | 6 | 3 |
| Frequency range | 758 | - | | 773 | -32 | 1 | 3 |
| Frequency range | 773 | - | | 803 | -50 | 1 |  |
| Frequency range | 1884.5 | - | | 1915.7 | -41 | 0.3 | 4, 5, 18 |
| CA\_28-42 | E-UTRA Band 1, 4, 32, 50, 51, 66, 65, 74, 75, 76 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 1 | FDL\_low | | - | FDL\_high | -50 | 1 | 5, 6 |
| E-UTRA Band 2, 3, 5, 7, 8, 18, 19, 20, 25, 26, 27, 31, 34, 38, 40, 41, 72, 73  NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 11, 21 | FDL\_low | | - | FDL\_high | -50 | 1 | 5, 21 |
| Frequency range | 470 | | - | 710 | -26.2 | 6 | 23 |
| Frequency range | 758 | | - | 773 | -32 | 1 | 3 |
| Frequency range | 773 | | - | 803 | -50 | 1 |  |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 4, 5 |
| CA\_39-41 | E-UTRA Band 1, 8, 26, 28, 34, 40, 42, 44, 50, 51, 52, 73, 74 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| NR Band n77, n78, n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1805 | | - | 1855 | -40 | 1 | 20 |
| Frequency range | 1855 | | - | 1880 | -15.5 | 5 | 3, 13, 20 |
| CA\_40-42 | E-UTRA Band 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14, 17, 18, 19, 20, 21, 24, 25, 26, 27, 28, 29, 31, 32, 33, 34, 38, 39, 41, 44, 45, 50, 51, 65, 66, 67, 68, 69, 70, 72, 73, 74, 75, 76, 103 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1884.5 | | - | 1915.7 | -41 | 0.3 | 8 |
| CA\_41-42 | E-UTRA Band 1, 3, 5, 8, 26, 28, 33, 34, 39, 40, 44, 45, 50, 51, 65, 73, 74 | FDL\_low | | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 9, 11, 18, 19, 21 | FDL\_low | | - | FDL\_high | -50 | 1 | 18 |
| NR Band n79 | FDL\_low | | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1884.5 | |  | 1915.7 | -41 | 0.3 | 4, 18 |
| NOTE 1: FDL\_low and FDL\_high refer to each E-UTRA frequency band specified in Table 5.5-1  NOTE 2:As exceptions, measurements with a level up to the applicable requirements defined in Table 6.6.3.1-2 are permitted for each assigned E-UTRA carrier used in the measurement due to 2nd, 3rd, 4th [or 5th] harmonic spurious emissions. In case the exceptions are allowed due to spreading of the harmonic emission the exception is also allowed for the first 1 MHz frequency range immediately outside the harmonic emission on both sides of the harmonic emission. This results in an overall exception interval centred at the harmonic emission of (2MHz + N x LCRB x 180kHz), where N is 2, 3 or 4 for the 2nd, 3rd or 4th harmonic respectively. The exception is allowed if the measurement bandwidth (MBW) totally or partially overlaps the overall exception interval.  NOTE 3: These requirements also apply for the frequency ranges that are less than FOOB (MHz) in Table 6.6.3.1-1 and Table 6.6.3.1A-1 from the edge of the aggregated channel bandwidth.  NOTE 4:Applicable when co-existence with PHS system operating in 1884.5 -1915.7MHz.  NOTE 5:Applicable when the assigned E-UTRA carrier is confined within 718 MHz and 748 MHz and when the channel bandwidth used is 5 or 10 MHz.  NOTE 6: As exceptions, measurements with a level up to the applicable requirement of -36 dBm/MHz is permitted for each assigned E-UTRA carrier used in the measurement due to 3rd harmonic spurious emissions. An exception is allowed if there is at least one individual RB within the transmission bandwidth (see Figure 5.6-1) for which the 3rd harmonic totally or partially overlaps the measurement bandwidth (MBW).  NOTE 7: Void  NOTE 8: Void  NOTE 9: Void  NOTE10: Void  NOTE 11: This requirement is applicable only for the following cases: - for carriers of 5 MHz channel bandwidth when carrier centre frequency (Fc) is within the range 902.5 MHz ≤ Fc < 907.5 MHz with an uplink transmission bandwidth less than or equal to 20 RB - for carriers of 5 MHz channel bandwidth when carrier centre frequency (Fc) is within the range 907.5 MHz ≤ Fc ≤ 912.5 MHz without any restriction on uplink transmission bandwidth. - for carriers of 10 MHz channel bandwidth when carrier centre frequency (Fc) is Fc = 910 MHz with an uplink transmission bandwidth less than or equal to 32 RB with RBstart > 3.  NOTE 12: This requirement is applicable for any channel bandwidths within the range 1920 - 1980 MHz with the following restriction: for carriers of 15 MHz bandwidth when carrier centre frequency is within the range 1927.5 - 1929.5 MHz and for carriers of 20 MHz bandwidth when carrier centre frequency is within the range 1930 - 1938 MHz the requirement is applicable only for an uplink transmission bandwidth less than or equal to 54 RB.  NOTE13: For these adjacent bands, the emission limit could imply risk of harmful interference to UE(s) operating in the protected operating band.  NOTE14:This requirement is applicable for any channel bandwidths within the range 2500 - 2570 MHz with the following restriction: for carriers of 15 MHz bandwidth when carrier centre frequency is within the range 2560.5 - 2562.5 MHz and for carriers of 20 MHz bandwidth when carrier centre frequency is within the range 2552 - 2560 MHz the requirement is applicable only for an uplink transmission bandwidth less than or equal to 54 RB.  NOTE 15:Void  NOTE 16:Void  NOTE 17: This requirement is applicable only when Band 3 transmission frequency is less than or equal to 1765 MHz.  NOTE 18: This requirement applies when the E-UTRA carrier is confined within 2545-2575MHz or 2595-2645MHz and the channel bandwidth is 10 or 20 MHz  NOTE 19: Void  NOTE 20: This requirement is only applicable for carriers with bandwidth confined within 1885-1920 MHz (requirement for carriers with at least 1RB confined within 1880 - 1885 MHz is not specified). This requirement applies for an uplink transmission bandwidth less than or equal to 54 RB for carriers of 15 MHz bandwidth when carrier center frequency is within the range 1892.5 - 1894.5 MHz and for carriers of 20 MHz bandwidth when carrier center frequency is within the range 1895 - 1903 MHz.  NOTE 21: As exceptions, measurements with a level up to the applicable requirement of -38 dBm/MHz is permitted for each assigned E-UTRA carrier used in the measurement due to 2nd harmonic spurious emissions. An exception is allowed if there is at least one individual RB within the transmission bandwidth (see Figure 5.6-1) for which the 2nd harmonic totally or partially overlaps the measurement bandwidth (MBW).  NOTE 22: This requirement is applicable in the case of a 10 MHz E-UTRA carrier confined within 703 MHz and 733 MHz, otherwise the requirement of -25 dBm with a measurement bandwidth of 8 MHz applies.  NOTE 23: This requirement is applicable for 5 and 10 MHz E-UTRA channel bandwidth allocated within 718-728MHz. For carriers of 10 MHz bandwidth, this requirement applies for an uplink transmission bandwidth less than or equal to 30 RB with RBstart > 1 and RBstart<48.NOTE 24: Void  NOTE 25: Void | | | | | | | | |

Table 6.6.3.2A-1: Requirements for intraband carrier aggregation

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| E-UTRA CA Configuration | Spurious emission | | | | | | |
| Protected band | Frequency range (MHz) | | | Maximum Level (dBm) | MBW (MHz) | NOTE |
| CA\_1 | E-UTRA Band 1, 7, 8, 11, 18, 19, 20, 21, 22, 26, 27, 28, 31, 32, 38, 40, 41, 42, 43, 44, 50, 51, 52, 65, 67, 72, 73, 74, 75, 76  NR Band n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 3 | FDL\_low | - | FDL\_high | -50 | 1 | 10 |
| NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| CA\_3 | E-UTRA Band 1, 7, 8, 20, 26, 27, 28, 31, 32, 33, 34, 38, 40, 41, 43, 44, 50, 51, 65, 67, 72, 73, 74, 75, 76  NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 3 | FDL\_low | - | FDL\_high | -50 | 1 | 10 |
| E-UTRA Band 22, 42, 52  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| CA\_5 | E-UTRA Band 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 24, 25, 28, 29, 30, 31, 34, 38, 40, 42, 43, 45, 48, 65, 66, 70, 71, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 52, 53  NR Band n77, n78,n79 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| CA\_7 | E-UTRA Band 1, 3, 7, 8, 20, 22, 27, 28, 29, 30. 31, 32, 33, 34, 40, 42, 43, 50, 51, 52, 65, 67, 72, 74, 75, 76  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| CA\_8 | E-UTRA Band 1, 20, 28, 31, 32, 33, 34, 38, 39, 40, 50, 51, 72, 73, 74, 75, 76 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA band 3 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA band 7 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 8 | FDL\_low | - | FDL\_high | -50 | 1 | 10 |
| E-UTRA Band 22, 41, 42, 43, 52  NR Band n77, n78,n79 | FDL\_low |  | FDL\_high | -50 | 1 | 2 |
| CA\_38 | E-UTRA Band 1,3, 8, 20, 22, 27, 28, 29, 30, 31, 32, 33, 34, 40, 42, 43, 50, 51, 52, 65, 67, 72, 74, 75, 76 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| CA\_39 | E-UTRA Band 22, 34, 40, 41, 42, 44, 50, 51, 52, 73, 74  NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| CA\_40 | E-UTRA Band 1, 3, 5, 7, 8, 11, 18, 19, 20, 21, 22, 26, 27, 28, 31, 32, 33, 34, 38, 39, 41, 42, 43, 44, 50, 51, 52, 65, 67, 72, 73, 74, 75, 76  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 15 |
| CA\_41 | E-UTRA Band 1, 2, 3, 4, 5, 8, 12, 13, 14, 17, 24, 25, 26, 27, 28, 29, 30, 34, 39, 40, 42, 44, 50, 51, 52, 65, 66, 70, 71, 73, 74, 85, 103  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| CA\_42 | E-UTRA Band 1, 2, 3, 4, 5, 7, 8, 11, 18, 19, 20, 21, 25, 26, 27, 28, 31, 32, 33, 34, 38, 40, 41, 44, 50, 51, 65, 66, 67, 72, 73, 74, 75, 76  NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 |  |
| CA\_48 | E-UTRA Band 2, 4, 5, 12, 13, 14, 17, 24, 25, 26, 29, 30, 41, 50, 51, 66, 70, 71, 74, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| CA\_66 | E-UTRA Band 2, 4, 5, 7, 12, 13, 14, 17, 24, 25, 26, 27, 28, 29, 30, 38, 41, 43, 50, 51, 66, 70, 71, 74, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 42, 48  NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| NOTE1:FDL\_low and FDL\_high refer to each E-UTRA frequency band specified in Table 5.5-1  NOTE 2:As exceptions, measurements with a level up to the applicable requirements defined in Table 6.6.3.1-2 are permitted for each assigned E-UTRA carrier used in the measurement due to 2nd, 3rd, 4th [or 5th] harmonic spurious emissions. Due to spreading of the harmonic emission the exception is also allowed for the first 1 MHz frequency range immediately outside the harmonic emission on both sides of the harmonic emission. This results in an overall exception interval centred at the harmonic emission of (2MHz + N x LCRB x 180kHz), where N is 2, 3, 4, [5] for the 2nd, 3rd, 4th [or 5th] harmonic respectively. The exception is allowed if the measurement bandwidth (MBW) totally or partially overlaps the overall exception interval  NOTE 3:To meet these requirements some restriction will be needed for either the operating band or protected band  NOTE 4:N/A  NOTE 5:N/A  NOTE 6:N/A  NOTE 7:N/A  NOTE 8:N/A  NOTE 9: N/A  NOTE 10: The requirement also applies for the frequency ranges that are less than FOOB (MHz) in Table 6.6.3.1-1 and Table 6.6.3.1A-1 from the edge of the aggregated channel bandwidth.  NOTE 11: N/A  NOTE 12: N/A  NOTE 13: N/A  NOTE 14: N/A  NOTE 15: Applicable when co-existence with PHS system operating in 1884.5 -1915.7MHz. | | | | | | | |

Table 6.6.3.2A-2: Requirements for intraband non-contiguous CA

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| E-UTRA CA Configuration | Spurious emission | | | | | | |
| Protected band | Frequency range (MHz) | | | Maximum Level (dBm) | MBW (MHz) | NOTE |
| CA\_4-4 | E-UTRA Band 2, 4, 5, 10, 12, 13, 14, 17, 24, 25, 26, 27, 28, 29, 30, 41, 43, 50, 51, 53, 66, 70, 71, 74, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 22, 42,  NR Band n7 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| NOTE1:FDL\_low and FDL\_high refer to each E-UTRA frequency band specified in Table 5.5-1  NOTE 2:As exceptions, measurements with a level up to the applicable requirements defined in Table 6.6.3.1-2 are permitted for each assigned E-UTRA carrier used in the measurement due to 2nd or 3rd harmonic spurious emissions. Due to spreading of the harmonic emission the exception is also allowed for the first 1 MHz frequency range immediately outside the harmonic emission on both sides of the harmonic emission. This results in an overall exception interval centred at the harmonic emission of (2MHz + N x LCRB x 180kHz), where N is 2 or 3 for the 2nd or 3rd harmonic respectively. The exception is allowed if the measurement bandwidth (MBW) totally or partially overlaps the overall exception interval. | | | | | | | |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Un-changed section \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 6.6.3G Spurious emission for V2X Communication

When UE is configured for E-UTRA V2X sidelink transmissions non-concurrent with E-UTRA uplink transmissions for E-UTRA V2X operating bands specified in Table 5.5G-1, the requirements in subclause 6.6.3 apply.

When UE is configured for simultaneous E-UTRA V2X sidelink and E-UTRA uplink transmissions for inter-band E-UTRA V2X / E-UTRA bands specified in Table 5.5G-2, the UE-coexistence requirements in Table 6.6.3G-0 in subclause 6.6.3G apply as as specified for the corresponding inter-band con-current operation with uplink assigned to two bands.

Table 6.6.3G-0: Requirements for inter-band con-current V2X operation

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| V2X con-current band Configuration | Spurious emission | | | | | | |
| Protected band | Frequency range (MHz) | | | Maximum Level (dBm) | MBW (MHz) | NOTE |
| V2X\_3A-47A | E-UTRA Band 1, 5, 7, 8, 26, 28, 34, 39, 40, 44, 45, 65, 87, 88  NR band n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 3 | FDL\_low | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 22, 41, 42, 52  NR band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 7,8 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 7 |
| V2X\_5A-47A | E-UTRA Band 1, 3, 5, 7, 8, 10, 12, 13, 14, 17, 40, 53, 65, 85, 103 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 26 | 859 | - | 869 | -27 | 1 |  |
| E-UTRA Band 41, 52  NR band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 7, 8 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 7 |
| V2X\_7A-47A | E-UTRA Band 1, 3, 5, 7, 8, 22, 26, 28, 34, 39, 40, 41, 42, 44, 45, 52, 65, 87, 88  NR band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 2570 | - | 2575 | +1.6 | 5 | 3, 6, 4 |
| Frequency range | 2575 | - | 2595 | -15.5 | 5 | 3, 6, 4 |
| Frequency range | 2595 | - | 2620 | -40 | 1 | 3, 6 |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 7, 8 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 7 |
| V2X\_8A-47A | E-UTRA Band 1, 5, 26, 28, 34, 39, 40, 44, 45, 65, 87, 88 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 7, 22, 41, 42, 52  NR band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 3, 8 | FDL\_low | - | FDL\_high | -50 | 1 | 2, 3 |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 7, 8 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 7 |
| V2X\_20A-47A | E-UTRA Band 1, 3, 7, 8, 22, 31, 32, 33, 34, 40, 43, 65, 67, 87, 88 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 20 | FDL\_low | - | FDL\_high | -50 | 1 | 3 |
| E-UTRA Band 38, 42, 52, 69  NR band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 758 | - | 788 | -50 | 1 |  |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 7, 8 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 7 |
| V2X\_28A-47A | E-UTRA Band 1, 22, 42, 43, 65  NR band n77, n78, 87, 88 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| E-UTRA Band 1 | FDL\_low | - | FDL\_high | -50 | 1 | 10, 11 |
| E-UTRA Band 3, 7, 8, 20, 31, 38, 40  NR band n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 470 | - | 694 | -42 | 8 | 3, 12 |
| Frequency range | 470 | - | 710 | -26.2 | 6 | 13 |
| Frequency range | 662 | - | 694 | -26.2 | 6 | 3 |
| Frequency range | 758 | - | 773 | -32 | 1 | 3 |
| Frequency range | 773 | - | 803 | -50 | 1 |  |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 7, 8 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 7 |
| V2X\_34A-47A | E-UTRA Band 1, 3, 5, 7, 8, 11, 18, 19, 20, 21, 22, 26, 28, 31, 32, 33, 34, 38,39, 40, 41, 42, 43, 44, 45, 52, 65, 67, 69, 87, 88  NR Band n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 | 9 |
| NR Band n77 | FDL\_low | - | FDL\_high | -50 | 1 | 2, 9 |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 7, 8 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 7 |
| V2X\_39A-47A | E-UTRA Band 1, 3,5,7,8, 22, 26, 28, 34, 39, 40, 41, 42, 44, 45, 52, 65  NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n77,n78 | FDL\_low | - | FDL\_high | -50 | 1 | 2, 9 |
| Frequency range | 1805 | - | 1855 | [-40] | 1 | 5 |
| Frequency range | 1855 | - | 1880 | [-15.5] | 5 | 3, 4, 5 |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 7, 8 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 7 |
| V2X\_41A-47A | E-UTRA Band 1, 3, 5, 7, 8, 22, 26, 28, 34, 39, 40, 41, 42, 44, 45, 52, 65  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 7, 8 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 7 |
| V2X\_71A-47A | E-UTRA Band 5, 26, 53 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| E-UTRA Band 41 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 7, 8 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 7 |
| NOTE 1: FDL\_low and FDL\_high refer to each E-UTRA frequency band specified in Table 5.5-1  NOTE 2:As exceptions, measurements with a level up to the applicable requirements defined in Table 6.6.3.1-2 are permitted for each assigned E-UTRA carrier used in the measurement due to 2nd, 3rd, 4th [or 5th] harmonic spurious emissions. In case the exceptions are allowed due to spreading of the harmonic emission the exception is also allowed for the first 1 MHz frequency range immediately outside the harmonic emission on both sides of the harmonic emission. This results in an overall exception interval centred at the harmonic emission of (2MHz + N x LCRB x 180kHz), where N is 2, 3 or 4 for the 2nd, 3rd or 4th harmonic respectively. The exception is allowed if the measurement bandwidth (MBW) totally or partially overlaps the overall exception interval.  NOTE 3: These requirements also apply for the frequency ranges that are less than FOOB (MHz) in Table 6.6.3.1-1 and Table 6.6.3.1A-1 from the edge of the aggregated channel bandwidth.  NOTE 4: For these adjacent bands, the emission limit could imply risk of harmful interference to UE(s) operating in the protected operating band.  NOTE 5: This requirement is only applicable for carriers with bandwidth confined within 1885-1920 MHz (requirement for carriers with at least 1RB confined within 1880 - 1885 MHz is not specified). This requirement applies for an uplink transmission bandwidth less than or equal to 54 RB for carriers of 15 MHz bandwidth when carrier center frequency is within the range 1892.5 - 1894.5 MHz and for carriers of 20 MHz bandwidth when carrier center frequency is within the range 1895 - 1903 MHz.  NOTE 6: As exceptions, measurements with a level up to the applicable requirement of -38 dBm/MHz is permitted for each assigned E-UTRA carrier used in the measurement due to 2nd harmonic spurious emissions. An exception is allowed if there is at least one individual RB within the transmission bandwidth (see Figure 5.6-1) for which the 2nd harmonic totally or partially overlaps the measurement bandwidth (MBW).  NOTE 7: Applicable when NS\_33 or NS\_34 is configured by the pre-configured radio parameters.  NOTE 8: In the frequency range x-5950MHz, SE requirement of -30dBm/MHz should be applied; where x = max (5925, fc + 15), where fc is the channel centre frequency.  NOTE 9: For non synchronised TDD operation to meet these requirements some restriction will be needed for either the operating band or protected band  NOTE 10:Applicable when the assigned E-UTRA carrier is confined within 718 MHz and 748 MHz and when the channel bandwidth used is 5 or 10 MHz.  NOTE 11: As exceptions, measurements with a level up to the applicable requirement of -36 dBm/MHz is permitted for each assigned E-UTRA carrier used in the measurement due to 3rd harmonic spurious emissions. An exception is allowed if there is at least one individual RB within the transmission bandwidth (see Figure 5.6-1) for which the 3rd harmonic totally or partially overlaps the measurement bandwidth (MBW).  NOTE 12: This requirement is applicable in the case of a 10 MHz E-UTRA carrier confined within 703 MHz and 733 MHz, otherwise the requirement of -25 dBm with a measurement bandwidth of 8 MHz applies.  NOTE 13: This requirement is applicable for 5 and 10 MHz E-UTRA channel bandwidth allocated within 718-728MHz. For carriers of 10 MHz bandwidth, this requirement applies for an uplink transmission bandwidth less than or equal to 30 RB with RBstart > 1 and RBstart<48. | | | | | | | |

For intra-band contiguous multi-carrier operation, the boundary between E-UTRA out of band and spurious emission domain for intra-band contiguous carrier aggregation specified in Table 6.6.3.1A-1 shall apply.

For intra-band contiguous multi-carrier operation, the spurious emission requirements in Table 6.6.3G-1 shall apply for coexistence with protected bands.

NOTE: For measurement conditions at the edge of each frequency range, the lowest frequency of the measurement position in each frequency range should be set at the lowest boundary of the frequency range plus MBW/2. The highest frequency of the measurement position in each frequency range should be set at the highest boundary of the frequency range minus MBW/2. MBW denotes the measurement bandwidth defined for the protected band.

Table 6.6.3G-1: Requirements for intraband multi-carrier V2X operation

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| V2X multi-carrier Configuration | Spurious emission | | | | | | |
| Protected band | Frequency range (MHz) | | | Maximum Level (dBm) | MBW (MHz) | NOTE |
| V2X\_47B | E-UTRA Band 1, 3, 5, 7, 8, 22, 26, 28, 34, 39, 40, 41, 42, 44, 45, 50, 51, 52, 65  NR band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |

For V2X UEs supportingTransmit Diversity, the requirements specified for single carrier shall apply to each transmit antenna connector.

If V2X UE is configured for transmission on single-antenna connector, the general requirements specified for single carrier shall apply to the active antenna connector.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Un-changed section \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of Changes \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*