**3GPP TSG-RAN WG4 #96-e R4-201xxxx**

Electronic Meeting, August 17th – 28th, 2020

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **rev** | **1** | **Current version:** | **16.4.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Introduction of NR-based access to unlicensed spectrum | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incorporated, Nokia | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_unlic-Core | | | | |  | ***Date:*** | | | 2020-08-26 |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | | Rel-16 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories 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:*** | | Introduce UE NR-U requirements to 38.101-1 including Band n46 (5 GHz) and Band n96 (6 GHz) | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | UE Tx and Rx requirements for NR-U in Band n46 and n96 are added. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | NR-U is not supported in 3GPP specifications | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.1, 4.3, 5.2, 5.2A.1, 5.2A.2, 5.2D, 5.3.3, 5.3.5, 5.3A.5, 5.4.2.3, 5.4.3.3, 5.5A.1, 5.5A.3, 6.2F, 6.3F, 6.4F, 6.5F, 7.1, 7.3F, 7.5F, 7.6F, 7.8F | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 38.521-1 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**<<< Start of Changes >>>**

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

**Aggregated Channel Bandwidth**: The RF bandwidth in which a UE transmits and receives multiple contiguously aggregated carriers.

**Carrier aggregation**: Aggregation of two or more component carriers in order to support wider transmission bandwidths.

**Carrier aggregation band**: A set of one or more operating bands across which multiple carriers are aggregated with a specific set of technical requirements.

**Carrier aggregation bandwidth class**: A class defined by the aggregated transmission bandwidth configuration and maximum number of component carriers supported by a UE.

**Carrier aggregation configuration**: A combination of CA operating band(s) and CA bandwidth class(es) supported by a UE.

**Contiguous carriers**: A set of two or more carriers configured in a spectrum block where there are no RF requirements based on co-existence for un-coordinated operation within the spectrum block.

**Contiguous resource allocation**: A resource allocation of consecutive resource blocks within one carrier or across contiguously aggregated carriers. The gap between contiguously aggregated carriers due to the nominal channel spacing is allowed.

**Contiguous spectrum**: Spectrum consisting of a contiguous block of spectrum with no sub-block gaps.

**Inter-band carrier aggregation:** Carrier aggregation of component carriers in different operating bands.

NOTE: Carriers aggregated in each band can be contiguous or non-contiguous.

**Intra-band contiguous carrier aggregation**: Contiguous carriers aggregated in the same operating band.

**Intra-band non-contiguous carrier aggregation**: Non-contiguous carriers aggregated in the same operating band.

**Sub-band**: For a UE that supports shared spectrum channel access in wideband operation, a sub-band is the set of RBs within an approximately 20 MHz segment of the channel where the wideband channel is uniformly divided into an integer number of 20 MHz sub-bands. Sub-bands may be separately allocated in uplink and downlink.

**Sub-block**: This is one contiguous allocated block of spectrum for transmission and reception by the same UE. There may be multiple instances of sub-blocks within an RF bandwidth.

**Sub-block bandwidth**: The bandwidth of one sub-block.

**Sub-block gap**: A frequency gap between two consecutive sub-blocks within an RF bandwidth, where the RF requirements in the gap are based on co-existence for un-coordinated operation.

**UE transmission bandwidth configuration**: Set of resource blocks located within the UE channel bandwidth which may be used for transmitting or receiving by the UE.

**Vehicular UE:** A UE embedded in a vehicle, permanently connected to an embedded antenna system that radiates externally for NR operating bands.

NOTE: Vehicular UE does not refer to other UE form factors placed inside the vehicle.

**Wideband operation:** For a UE that supports shared spectrum channel access, wideband operation refers to operation within a channel larger than 20 MHz in which intra-cell guard bands may be configured to distinguish individual RB-sets.

**<<< Unchanged sections omitted >>>**

## 4.3 Specification suffix information

Unless stated otherwise the following suffixes are used for indicating at 2nd level clause, shown in Table 4.3-1.

Table 4.3-1: Definition of suffixes

|  |  |
| --- | --- |
| Clause suffix | Variant |
| None | Single Carrier |
| A | Carrier Aggregation (CA) |
| B | Dual-Connectivity (DC) |
| C | Supplement Uplink (SUL) |
| D | UL MIMO |
| E | V2X |
| F | Shared spectrum channel access |

A terminal which supports the above features needs to meet both the general requirements and the additional requirement applicable to the additional clause (suffixes A to F) in clauses 5, 6 and 7. Where there is a difference in requirement between the general requirements and the additional clause requirements (suffixes A to F) in clauses 5, 6 and 7, the tighter requirements are applicable unless stated otherwise in the additional clause.

A terminal which supports more than one feature in clauses 5, 6 and 7 shall meet all of the separate corresponding requirements.

For a terminal that supports SUL for the band combination specified in Table 5.2C-1, the current version of the specification assumes the terminal is configured with active transmission either on UL carrier or SUL carrier at any time in one serving cell and the UE requirements for single carrier shall apply for the active UL or SUL carrier accordingly. For a terminal that supports SUL, the current version of the specification assumes the terminal is not configured with UL MIMO on SUL carrier.

For a terminal that supports operation in shared spectrum, the current version of this specification assumes in the uplink sub-bands within a wideband channel shall be contiguously allocated to the UE. The uplink requirements for one or more non-transmitted sub-bands between two transmitted sub-bands does not form a part of the current version of this specification.**<<< Unchanged sections omitted >>>**

## 5.2 Operating bands

NR is designed to operate in the FR1 operating bands defined in Table 5.2-1.

Table 5.2-1: NR operating bands in FR1

|  |  |  |  |
| --- | --- | --- | --- |
| NR operating band | Uplink (UL) *operating band* BS receive / UE transmit  FUL\_low  – FUL\_high | Downlink (DL) *operating band* BS transmit / UE receive  FDL\_low – FDL\_high | Duplex Mode |
| n1 | 1920 MHz – 1980 MHz | 2110 MHz – 2170 MHz | FDD |
| n2 | 1850 MHz – 1910 MHz | 1930 MHz – 1990 MHz | FDD |
| n3 | 1710 MHz – 1785 MHz | 1805 MHz – 1880 MHz | FDD |
| n5 | 824 MHz – 849 MHz | 869 MHz – 894 MHz | FDD |
| n7 | 2500 MHz – 2570 MHz | 2620 MHz – 2690 MHz | FDD |
| n8 | 880 MHz – 915 MHz | 925 MHz – 960 MHz | FDD |
| n12 | 699 MHz – 716 MHz | 729 MHz – 746 MHz | FDD |
| n14 | 788 MHz – 798 MHz | 758 MHz – 768 MHz | FDD |
| n18 | 815 MHz – 830 MHz | 860 MHz – 875 MHz | FDD |
| n20 | 832 MHz – 862 MHz | 791 MHz – 821 MHz | FDD |
| n25 | 1850 MHz – 1915 MHz | 1930 MHz – 1995 MHz | FDD |
| n26 | 814 MHz – 849 MHz | 859 MHz – 894 MHz | FDD |
| n28 | 703 MHz – 748 MHz | 758 MHz – 803 MHz | FDD |
| n29 | N/A | 717 MHz – 728 MHz | SDL |
| n303 | 2305 Mhz – 2315 MHz | 2350 MHz – 2360 MHz | FDD |
| n34 | 2010 MHz – 2025 MHz | 2010 MHz – 2025 MHz | TDD |
| n3810 | 2570 MHz – 2620 MHz | 2570 MHz – 2620 MHz | TDD |
| n39 | 1880 MHz – 1920 MHz | 1880 MHz – 1920 MHz | TDD |
| n40 | 2300 MHz – 2400 MHz | 2300 MHz – 2400 MHz | TDD |
| n41 | 2496 MHz – 2690 MHz | 2496 MHz – 2690 MHz | TDD |
| n46 | 5150 MHz – 5925 MHz | 5150 MHz – 5925 MHz | TDD13 |
| n4711 | 5855 MHz – 5925 MHz | 5855 MHz – 5925 MHz | TDD10 |
| n48 | 3550 MHz – 3700 MHz | 3550 MHz – 3700 MHz | TDD |
| n50 | 1432 MHz – 1517 MHz | 1432 MHz – 1517 MHz | TDD1 |
| n51 | 1427 MHz – 1432 MHz | 1427 MHz – 1432 MHz | TDD |
| n53 | 2483.5 MHz – 2495 MHz | 2483.5 MHz – 2495 MHz | TDD |
| n65 | 1920 MHz – 2010 MHz | 2110 MHz – 2200 MHz | FDD4 |
| n66 | 1710 MHz – 1780 MHz | 2110 MHz – 2200 MHz | FDD |
| n70 | 1695 MHz – 1710 MHz | 1995 MHz – 2020 MHz | FDD |
| n71 | 663 MHz – 698 MHz | 617 MHz – 652 MHz | FDD |
| n74 | 1427 MHz – 1470 MHz | 1475 MHz – 1518 MHz | FDD |
| n75 | N/A | 1432 MHz – 1517 MHz | SDL |
| n76 | N/A | 1427 MHz – 1432 MHz | SDL |
| n7712 | 3300 MHz – 4200 MHz | 3300 MHz – 4200 MHz | TDD |
| n78 | 3300 MHz – 3800 MHz | 3300 MHz – 3800 MHz | TDD |
| n79 | 4400 MHz – 5000 MHz | 4400 MHz – 5000 MHz | TDD |
| n80 | 1710 MHz – 1785 MHz | N/A | SUL |
| n81 | 880 MHz – 915 MHz | N/A | SUL |
| n82 | 832 MHz – 862 MHz | N/A | SUL |
| n83 | 703 MHz – 748 MHz | N/A | SUL |
| n84 | 1920 MHz – 1980 MHz | N/A | SUL |
| n86 | 1710 MHz – 1780 MHz | N/A | SUL |
| n89 | 824 MHz – 849 MHz | N/A | SUL |
| n90 | 2496 MHz – 2690 MHz | 2496 MHz – 2690 MHz | TDD5 |
| n91 | 832 MHz – 862 MHz | 1427 MHz – 1432 MHz | FDD9 |
| n92 | 832 MHz – 862 MHz | 1432 MHz – 1517 MHz | FDD9 |
| n93 | 880 MHz – 915 MHz | 1427 MHz – 1432 MHz | FDD9 |
| n94 | 880 MHz – 915 MHz | 1432 MHz – 1517 MHz | FDD9 |
| n958 | 2010 MHz – 2025 MHz | N/A | SUL |
| n9614 | 5925 MHz – 7125 MHz | 5925 MHz – 7125 MHz | TDD13 |
| NOTE 1: UE that complies with the NR Band n50 minimum requirements in this specification shall also comply with the NR Band n51 minimum requirements.  NOTE 2: UE that complies with the NR Band n75 minimum requirements in this specification shall also comply with the NR Band n76 minimum requirements.  NOTE 3: Uplink transmission is not allowed at this band for UE with external vehicle-mounted antennas.  NOTE 4: A UE that complies with the NR Band n65 minimum requirements in this specification shall also comply with the NR Band n1 minimum requirements.  NOTE 5: Unless otherwise stated, the applicability of requirements for Band n90 is in accordance with that for Band n41; a UE supporting Band n90 shall meet the requirements for Band n41. A UE supporting Band n90 shall also support band n41.  NOTE 6: A UE that supports NR Band n66 shall receive in the entire DL operating band.  NOTE 7: A UE that supports NR Band n66 and CA operation in any CA band shall also comply with the minimum requirements specified for the DL CA configurations CA\_n66B and CA\_n66(2A) in the current version of the specification.  NOTE 8: This band is applicable in China only.  NOTE 9: Variable duplex operation does not enable dynamic variable duplex configuration by the network, and is used such that DL and UL frequency ranges are supported independently in any valid frequency range for the band.  NOTE 10: When this band is used for V2X SL service, the band is exclusively used for NR V2X in particular regions.  NOTE 11: This band is unlicensed band used for V2X service. There is no expected network deployment in this band.  NOTE 12: In the USA this band is restricted to 3700 – 3980 MHz.  NOTE 13: This band is restricted to operation with shared spectrum channel access as defined in [37.213].  NOTE 14: This band is applicable in the USA only subject to FCC Report and Order [FCC 20-51] | | | |

**<<< Unchanged sections omitted >>>**

### 5.2A.1 Intra-band CA

NR intra-band carrier aggregation is designed to operate in the operating bands defined in Table 5.2A.1-1 and Table 5.2A.1-2, where all operating bands are within FR1.

Table 5.2A.1-1: Intra-band contiguous CA operating bands in FR1

|  |  |
| --- | --- |
| NR CA Band | NR Band  (Table 5.2-1) |
| CA\_n1 | n1 |
| CA\_n7 | n7 |
| CA\_n40 | n40 |
| CA\_n411 | n41 |
| CA\_n461 | n46 |
| CA\_n48 | n48 |
| CA\_n66 | n66 |
| CA\_n71 | n71 |
| CA\_n771 | n77 |
| CA\_n781 | n78 |
| CA\_n791 | n79 |
| NOTE 1: The minimum requirements only apply for non simultaneous Tx/Rx between all carriers. | |

Table 5.2A.1-2: Intra-band non-contiguous CA operating bands in FR1

|  |  |
| --- | --- |
| NR CA Band | NR Band  (Table 5.2-1) |
| CA\_n3(\*) | n3 |
| CA\_n7(\*) | n7 |
| CA\_n25(\*) | n25 |
| CA\_n41(\*) | n41 |
| CA\_n48(\*) | n48 |
| CA\_n66(\*) | n66 |
| CA\_n77(\*) | n77 |
| CA\_n78(\*) | n78 |
| NOTE 1: The minimum requirements only apply for non simultaneous Tx/Rx between all carriers for TDD combinations.  NOTE 2: The notation CA\_nX(\*) in this table indicates intra-band non-contiguous CA for band nX. The configurations for each band are in 5.5A.2. | |

### 5.2A.2 Inter-band CA

NR inter-band carrier aggregation is designed to operate in the operating bands defined in Table 5.2A.2.1-1, 5.2A.2.2-1 and Table 5.2A.2.3-1, where all operating bands are within FR1.

Table 5.2A.2-1: Void

Table 5.2A.2-2: Void

Table 5.2A.2-3: Void

#### 5.2A.2.1 Inter-band CA (two bands)

Table 5.2A.2.1-1: Inter-band CA operating bands involving FR1 (two bands)

|  |  |
| --- | --- |
| NR CA Band | NR Band  (Table 5.2-1) |
| CA\_n1-n3 | n1, n3 |
| CA\_n1-n7 | n1, n7 |
| CA\_n1-n8 | n1, n8 |
| CA\_n1-n28 | n1, n28 |
| CA\_n1-n40 | n1, n40 |
| CA\_n1-n41 | n1, n41 |
| CA\_n1-n77 | n1, n77 |
| CA\_n1-n78 | n1, n78 |
| CA\_n1-n79 | n1, n79 |
| CA\_n2-n5 | n2, n5 |
| CA\_n2-n48 | n2, n48 |
| CA\_n2-n66 | n2, n66 |
| CA\_n2-n77 | n2, n77 |
| CA\_n2-n78 | n2, n78 |
| CA\_n3-n7 | n3, n7 |
| CA\_n3-n8 | n3, n8 |
| CA\_n3-n28 | n3, n28 |
| CA\_n3-n38 | n3, n38 |
| CA\_n3-n40 | n3, n40 |
| CA\_n3-n41 | n3, n41 |
| CA\_n3-n771 | n3, n77 |
| CA\_n3-n781 | n3, n78 |
| CA\_n3-n791 | n3, n79 |
| CA\_n5-n7 | n5, n7 |
| CA\_n5-n66 | n5, n66 |
| CA\_n5-n77 | n5, n77 |
| CA\_n5-n78 | n5, n78 |
| CA\_n5-n79 | n5, n79 |
| CA\_n7-n25 | n7, n25 |
| CA\_n7-n28 | n7, n28 |
| CA\_n7-n66 | n7, n66 |
| CA\_n7-n78 | n7, n78 |
| CA\_n8-n391 | n8, n39 |
| CA\_n8-n40 | n8, n40 |
| CA\_n8-n41 | n8, n41 |
| CA\_n8-n751 | n8, n75 |
| CA n8-n781 | n8, n78 |
| CA\_n8-n791 | n8, n79 |
| CA\_n20-n282 | n20, n28 |
| CA\_n20-n75 | n20, n75 |
| CA\_n20-n78 | n20, n78 |
| CA\_n25-n41 | n25, n41 |
| CA\_n25-n466 | n25, n46 |
| CA\_n25-n66 | n25, n66 |
| CA\_n25-n71 | n25, n71 |
| CA\_n25-n78 | n25,n78 |
| CA\_n28-n40 | n28, n40 |
| CA\_n28-n41 | n28, n41 |
| CA\_n28-n50 | n28, n50 |
| CA\_n28-n752 | n28, n75 |
| CA\_n28-n77 | n28, n77 |
| CA\_n28-n781 | n28, n78 |
| CA\_n29-n66 | n29, n66 |
| CA\_n29-n70 | n29, n70 |
| CA\_n38-n66 | n38, n66 |
| CA\_n38-n781 | n38, n78 |
| CA\_n39-n40 | n39, n40 |
| CA\_n39-n41 | n39, n41 |
| CA\_n39-n791 | n39, n79 |
| CA\_n40-n41 | n40, n41 |
| CA\_n40-n78 | n40, n78 |
| CA\_n40-n791,4 | n40, n79 |
| CA\_n41-n501 | n41, n50 |
| CA\_n41-n66 | n41, n66 |
| CA\_n41-n711 | n41, n71 |
| CA\_n41-n78 | n41, n78 |
| CA\_n41-n791,3 | n41, n79 |
| CA\_n46-n486 | n46, n48 |
| CA\_n46-n666 | n46, n66 |
| CA\_n48-n66 | n48, n66 |
| CA\_n50-n78 | n50, n78 |
| CA\_n66-n70 | n66, n70 |
| CA\_n66-n71 | n66, n71 |
| CA\_n66-n77 | n66, n77 |
| CA\_n66-n78 | n66, n78 |
| CA\_n70-n71 | n70, n71 |
| CA\_n75-n781 | n75, n78 |
| CA\_n76-n781 | n76, n78 |
| CA\_n77-n79 | n77, n79 |
| CA\_n78-n795 | n78, n79 |
| CA\_n78-n92 | n78, n92 |
| NOTE 1: Applicable for UE supporting inter-band carrier aggregation with mandatory simultaneous Rx/Tx capability.  NOTE 2: The frequency range in band n28 is restricted for this band combination to 703-733 MHz for the UL and 758-788 MHz for the DL.  NOTE 3: The frequency range below 2506 MHz for Band n41 is not used in this combination.  NOTE 4: Applicable for frequency range above 4800 MHz for Band n79 in this combination.  NOTE 5: Simultaneous Rx/Tx capability does not apply for UEs supporting band n78 with a n77 implementation.  NOTE 6: The PCell is allocated in the licensed band in this combination. | |

**<<< Unchanged sections omitted >>>**

## 5.2D Operating bands for UL MIMO

NR is designed to support UL MIMO where all of the operating bands are in FR1 defined in Table 5.2D-1.

Table 5.2D-1: NR operating bands for UL MIMO in FR1

|  |
| --- |
| NR operating band |
| n1 |
| n2 |
| n3 |
| n7 |
| n25 |
| n301 |
| n34 |
| n38 |
| n39 |
| n40 |
| n41 |
| n46 |
| n48 |
| n66 |
| n70 |
| n712 |
| n77 |
| n78 |
| n79 |
| n96 |
| NOTE 1: Uplink transmission is not allowed at this band for UE with external vehicle-mounted antennas.  NOTE 2: UL MIMO is targeted for FWA form factor. |

**<<< Unchanged sections omitted >>>**

### 5.3.3 Minimum guardband and transmission bandwidth configuration

The minimum guardband for each UE channel bandwidth and SCS is specified in Table 5.3.3-1,

Table 5.3.3-1: Minimum guardband for each UE channel bandwidth and SCS (kHz)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SCS (kHz) | 5 MHz | 10 MHz | 15 MHz | 20 MHz | 25 MHz | 30 MHz | 40 MHz | 50 MHz | 60 MHz | 70 MHz | 80 MHz | 90 MHz | 100 MHz |
| 15 | 242.5 | 312.5 | 382.5 | 452.5 | 522.5 | 592.5 | 552.5 | 692.5 | N/A | N/A | N/A | N/A | N/A |
| 30 | 505 | 665 | 645 | 805 | 785 | 945 | 905 | 1045 | 825 | 965 | 925 | 885 | 845 |
| 60 | N/A | 1010 | 990 | 1330 | 1310 | 1290 | 1610 | 1570 | 1530 | 1490 | 1450 | 1410 | 1370 |

NOTE: The minimum guardbands have been calculated using the following equation: (BWChannel x 1000 (kHz) - NRB x SCS x 12) / 2 - SCS/2, where NRB are from Table 5.3.2-1.

Figure 5.3.3-1: Void

The number of RBs configured in any channel bandwidth shall ensure that the minimum guardband specified in this clause is met.

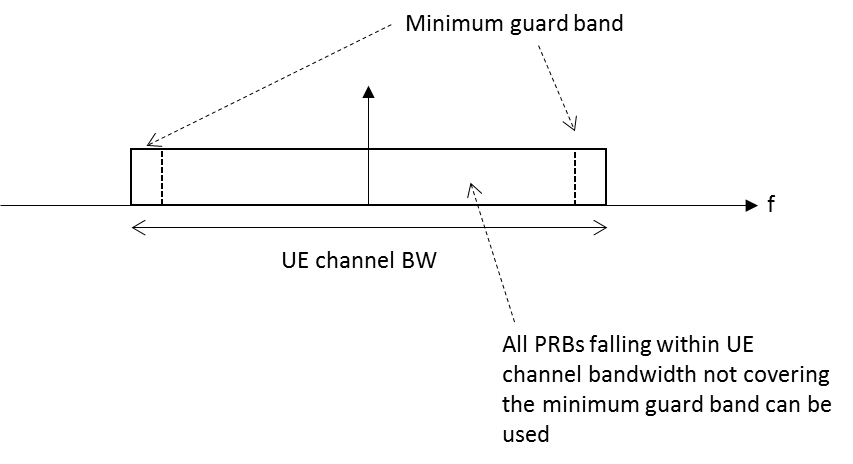


Figure 5.3.3-2: UE PRB utilization

In the case that multiple numerologies are multiplexed in the same symbol due to BS transmission of SSB, the minimum guardband on each side of the carrier is the guardband applied at the configured channel bandwidth for the numerology that is received immediately adjacent to the guard.

If multiple numerologies are multiplexed in the same symbol and the UE channel bandwidth is >50 MHz, the minimum guardband applied adjacent to 15 kHz SCS shall be the same as the minimum guardband defined for 30 kHz SCS for the same UE channel bandwidth.

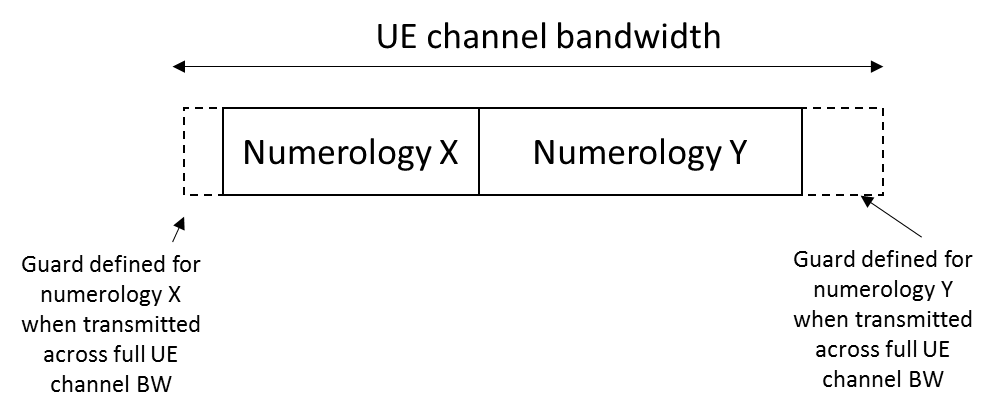


Figure 5.3.3-3 Guard band definition when transmitting multiple numerologies

NOTE: Figure 5.3.3-3 is not intended to imply the size of any guard between the two numerologies. Inter-numerology guard band within the carrier is implementation dependent.

If a UE supporting wideband operation is configured with channel bandwidths of greater than 20 MHz as specified in 38.214, the nominal intra-cell guard bands and the corresponding sizes (transmission bandwidth configuration) of the RB sets separated by the said guard bands are as specified in Table 5.3.3-2 for each UE channel bandwidth and sub-carrier spacing for the downlink and uplink. The intra-cell guard band configuration in Table 5.3.3-2 is applicable when the IE *intraCellGuardBand* in TS 38.331 is not provided.

Table 5.3.3-2: Nominal intra-cell guard bands for wideband operation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SCS  (kHz) | 20 MHz | 40 MHz | 60 MHz | 80 MHz |
| 15 | 106  (106) | 105-6-105  (216) | N/A | N/A |
| 30 | 51  (51) | 50-6-50  (106) | 50-6-50-6-50  (162) | 50-6-50-5-50-6-50  (217) |
| 60 | TBD | TBD | TBD | TBD |
| NOTE 1: The intra-cell guard band is denoted TBW0-GB0-…-GBN\_RBset-2-TBWN\_RBset-1 for N\_RBset > 1 number of RB-sets with TBW*r* the maximum transmission bandwidth (PRB) of RB-set *r* and GB*r* the guard band (PRB) above the upper edge of RB-set *r*. The RB-set 0 is starting at the first common resource block (CRB) of the carrier as indicated by *offsetToCarrier*. The total transmission bandwidth configuration (size of resource grid) including guard bands is given in between parentheses. | | | | |

For each UE channel bandwidth and sub-carrier spacing given by Table 5.3.3-2, the maximum transmission bandwidth configuration including intra-cell guard band(s), if configured by IE *intraCellGuardBands* in TS 38.331 in the uplink and/or downlink, and corresponding RB-set(s) shall be in accordance with clause 5.3.2 with a minimum inter-cell guard band of the UE channel bandwidth as specified in Table 5.3.3-1 for the uplink and downlink. Minimum requirements specified for wideband operation in Clause 6 and Clause 7 also apply for intra-cell guard bands larger than the nominal sizes in Table 5.3.3-2 as listed in Table 5.3.3-3 for each sub-carrier spacing; each guard band in order of CRB index must be larger than or equal to the corresponding nominal guard band specified in Table 5.3.3-2 for each channel bandwidth.

Table 5.3.3-3: Applicable intra-cell guard bands for wideband operation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Unit | SCS | | |
|  |  | 15 kHz | 30 kHz | 60 kHz |
| Intra-cell guard band (size) | PRB | 6,7 | 5,6,7 | TBD |
| Transmission bandwidth (size) of RB-set | PRB | 104,105 | 49,50,51 | TBD |

If the UE is configured with zero intra-cell guard bands by IE *intraCellGuardBands* in 38.331 in the uplink and/or downlink on a carrier greater than 20 MHz, the maximum transmission bandwidth configuration for the uplink and downlink shall be in accordance with clause 5.3.2 with a minimum inter-cell guard band of the UE channel bandwidth as specified in Table 5.3.3-1.

**<<< Unchanged sections omitted >>>**

5.3.5 UE channel bandwidth per operating band

The requirements in this specification apply to the combination of channel bandwidths, SCS and operating bands shown in Table 5.3.5-1. The transmission bandwidth configuration in Table 5.3.2-1 shall be supported for each of the specified channel bandwidths. The channel bandwidths are specified for both the TX and RX path.

**Table 5.3.5-1 Channel bandwidths for each NR band**

| **NR band / SCS / UE Channel bandwidth** | | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NR Band** | **SCS**  **kHz** | **5 MHz** | **10 MHz** | **15 MHz** | **20MHz** | **25 MHz** | **30 MHz** | **40 MHz** | **50 MHz** | **60 MHz** | **70 MHz** | **80 MHz** | **90 MHz** | **100 MHz** |
| n1 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| n2 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n5 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n7 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| n8 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n12 | 15 | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n14 | 15 | Yes | Yes |  |  |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n18 | 15 | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n20 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n25 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n26 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n28 | 15 | Yes | Yes | Yes | Yes7 |  | Yes7 |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes7 |  | Yes7 |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n29 | 15 | Yes | Yes |  |  |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n30 | 15 | Yes | Yes |  |  |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n34 | 15 | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes |  |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes |  |  |  |  |  |  |  |  |  |  |
| n38 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n39 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n40 | 15 | Yes9 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| n41 | 15 |  | Yes | Yes | Yes |  | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n46 | 15 |  | Yes5 |  | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  | Yes5 |  | Yes |  |  | Yes |  | Yes |  | Yes |  |  |
| 60 |  | Yes5 |  | Yes |  |  | Yes |  | Yes |  | Yes |  |  |
| n48 | 15 | Yes5 | Yes | Yes | Yes |  |  | Yes | Yes6 |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes6 | Yes6 |  | Yes6 | Yes6,4 | Yes6 |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes6 | Yes6 |  | Yes6 | Yes6,4 | Yes6 |
| n4710 | 15 |  | Yes |  | Yes |  | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes |  | Yes |  | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes |  | Yes |  | Yes | Yes |  |  |  |  |  |  |
| n50 | 15 | Yes5 | Yes | Yes | Yes |  | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |  | Yes3 |  |  |
| 60 |  | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |  | Yes3 |  |  |
| n51 | 15 | Yes |  |  |  |  |  |  |  |  |  |  |  |  |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n53 | 15 | Yes | Yes |  |  |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes |  |  |  |  |  |  |  |  |  |  |  |
| n65 | 15 | Yes | Yes | Yes | Yes |  |  |  | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  | Yes |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  | Yes |  |  |  |  |  |
| n66 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n70 | 15 | Yes | Yes | Yes | Yes3 | Yes3 |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes3 | Yes3 |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes3 | Yes3 |  |  |  |  |  |  |  |  |
| n71 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n74 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n75 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| n76 | 15 | Yes |  |  |  |  |  |  |  |  |  |  |  |  |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n77 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes4 | Yes | Yes4 | Yes |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes4 | Yes | Yes4 | Yes |
| n78 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes4 | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes4 | Yes | Yes | Yes |
| n79 | 15 |  |  |  |  |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| 60 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| n80 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n81 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n82 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n83 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n84 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n86 | 15 | Yes | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| n89 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n90 | 15 |  | Yes | Yes | Yes |  | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n91 | 15 | Yes | Yes8 |  |  |  |  |  |  |  |  |  |  |  |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n92 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n93 | 15 | Yes | Yes8 |  |  |  |  |  |  |  |  |  |  |  |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n94 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n95 | 15 | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes |  |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes |  |  |  |  |  |  |  |  |  |  |
| n96 | 15 |  |  |  | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  |  |  | Yes |  |  | Yes |  | Yes |  | Yes |  |  |
| 60 |  |  |  | Yes |  |  | Yes |  | Yes |  | Yes |  |  |
| NOTE 1: Void.  NOTE 2: Void.  NOTE 3: This UE channel bandwidth is applicable only to downlink.  NOTE 4: This UE channel bandwidth is optional in this release of the specification.  NOTE 5: For this bandwidth, the minimum requirements are restricted to operation when carrier is configured as an SCell part of DC or CA configuration.  NOTE 6: For this bandwidth, the minimum requirements are restricted to operation when carrier is configured as an downlink SCell part of CA configuration.  NOTE 7: For the 20 MHz bandwidth, the minimum requirements are specified for NR UL carrier frequencies confined to either 713-723 MHz or 728-738 MHz. For the 30MHz bandwidth, the minimum requirements are specified for NR UL transmission bandwidth configuration confined to either 703-733 or 718-748 MHz.  NOTE 8: This UE channel bandwidth is applicable only to uplink.  NOTE 9: For this bandwidth, the minimum requirements are restricted to operation when carrier is configured as an SCell part of DC or CA configuration.  NOTE 10: This UE channel bandwidth is applicable only to sidelink operation. | | | | | | | | | | | | | | |

**<<< Unchanged sections omitted >>>**

### 5.3A.5 UE channel bandwidth per operating band for CA

The requirements for carrier aggregation in this specification are defined for carrier aggregation configurations.

For intra-band contiguous carrier aggregation, a carrier aggregation configuration is a single operating band supporting a carrier aggregation bandwidth class with associated bandwidth combination sets specified in clause 5.5A.1. For each carrier aggregation configuration, requirements are specified for all aggregated channel bandwidths contained in a bandwidth combination set, a UE can indicate support of several bandwidth combination sets per carrier aggregation configuration. For intra-band non-contiguous carrier aggregation, a carrier aggregation configuration is a single operating band supporting two or more sub-blocks, each supporting a carrier aggregation bandwidth class.

For inter-band carrier aggregation, a carrier aggregation configuration is a combination of operating bands, each supporting a carrier aggregation bandwidth class.

Table 5.3A.5-1: NR CA bandwidth classes

|  |  |  |  |
| --- | --- | --- | --- |
| NR CA bandwidth class | Aggregated channel bandwidth | Number of contiguous CC | Fallback group |
| A | BWChannel ≤ BWChannel,max | 1 | 1, 2, 3 |
| B | 20 MHz ≤ BWChannel\_CA ≤ 100 MHz | 2 | 2, 3 |
| C | 100 MHz < BWChannel\_CA ≤ 2 x BWChannel,max | 2 | 1, 3 |
| D | 200 MHz < BWChannel\_CA ≤ 3 x BWChannel,max | 3 | 1 |
| E | 300 MHz < BWChannel\_CA ≤ 4 x BWChannel,max | 4 |
| G | 100 MHz < BWChannel\_CA ≤ 150 MHz | 3 | 2 |
| H | 150 MHz < BWChannel\_CA ≤ 200 MHz | 4 |
| I | 200 MHz < BWChannel\_CA ≤ 250 MHz | 5 |
| J | 250 MHz < BWChannel\_CA ≤ 300 MHz | 6 |
| K | 300 MHz < BWChannel\_CA ≤ 350 MHz | 7 |
| L | 350 MHz < BWChannel\_CA ≤ 400 MHz | 8 |
| M3 | 50 MHz < BWChannel\_CA ≤ [180] MHz | 3 | 3 |
| N3 | 80 MHz < BWChannel\_CA ≤ [240] MHz | 4 |
| O3 | 100 MHz ≤ BWChannel\_CA ≤ [300] MHz | 5 |
| NOTE 1: BWChannel, max is maximum channel bandwidth supported among all bands in a release  NOTE 2: It is mandatory for a UE to be able to fallback to lower order NR CA bandwidth class configuration within a fallback group. It is not mandatory for a UE to be able to fallback to lower order NR CA bandwidth class configuration that belong to a different fallback group  NOTE 3: This bandwidth class is only applicable to bands identified for use with shared spectrum channel access in Table 5.2-1. | | | |

**<<< Unchanged sections omitted >>>**

#### 5.4.2.3 Channel raster entries for each operating band

The RF channel positions on the channel raster in each NR operating band are given through the applicable NR-ARFCN in Table 5.4.2.3‑1, using the channel raster to resource element mapping in clause 5.4.2.2.

For NR operating bands with 100 kHz channel raster, ΔFRaster = 20 × ΔFGlobal. In this case every 20th NR-ARFCN within the operating band are applicable for the channel raster within the operating band and the step size for the channel raster in Table 5.4.2.3‑1 is given as <20>.

For NR operating bands with 15 kHz channel raster below 3GHz, ΔFRaster = *I* × ΔFGlobal, where *I ϵ {3,6}*. Every *Ith* NR‑ARFCN within the operating band are applicable for the channel raster within the operating band and the step size for the channel raster in Table 5.4.2.3‑1 is given as < *I* >.

For NR operating bands with 15 kHz channel raster above 3GHz, ΔFRaster = *I* × ΔFGlobal, where *I ϵ {1,2}.* Every *Ith* NR‑ARFCN within the operating band are applicable for the channel raster within the operating band and the step size for the channel raster in table 5.4.2.3-1 is given as <*I*>.

In frequency bands with two ΔFRaster, the higher ΔFRaster applies to channels using only the SCS that is equal to or larger than the higher ΔFRaster and SSB SCS is equal to the higher ∆FRaster .

Table 5.4.2.3-1: Applicable NR-ARFCN per operating band

|  |  |  |  |
| --- | --- | --- | --- |
| NR operating band | ΔFRaster  (kHz) | Uplink  Range of NREF  (First – <Step size> – Last) | Downlink  Range of NREF  (First – <Step size> – Last) |
| n1 | 100 | 384000 – <20> – 396000 | 422000 – <20> – 434000 |
| n2 | 100 | 370000 – <20> – 382000 | 386000 – <20> – 398000 |
| n3 | 100 | 342000 – <20> – 357000 | 361000 – <20> – 376000 |
| n5 | 100 | 164800 – <20> – 169800 | 173800 – <20> – 178800 |
| n7 | 100 | 500000 – <20> – 514000 | 524000 – <20> – 538000 |
| n8 | 100 | 176000 – <20> – 183000 | 185000 – <20> – 192000 |
| n12 | 100 | 139800 – <20> – 143200 | 145800 – <20> – 149200 |
| n14 | 100 | 157600 – <20> – 159600 | 151600 – <20> – 153600 |
| n18 | 100 | 163000 – <20> – 166000 | 172000 – <20> – 175000 |
| n20 | 100 | 166400 – <20> – 172400 | 158200 – <20> – 164200 |
| n25 | 100 | 370000 – <20> – 383000 | 386000 – <20> – 399000 |
| n26 | 100 | 162800 – <20> – 169800 | 171800 – <20> – 178800 |
| n28 | 100 | 140600 – <20> – 149600 | 151600 – <20> – 160600 |
| n29 | 100 | N/A | 143400 – <20> – 145600 |
| n30 | 100 | 461000 – <20> – 463000 | 470000 – <20> – 472000 |
| n34 | 100 | 402000 – <20> – 405000 | 402000 – <20> – 405000 |
| n38 | 100 | 514000 – <20> – 524000 | 514000 – <20> – 524000 |
| n39 | 100 | 376000 – <20> – 384000 | 376000 – <20> – 384000 |
| n40 | 100 | 460000 – <20> – 480000 | 460000 – <20> – 480000 |
| n41 | 15 | 499200 – <3> – 537999 | 499200 – <3> – 537999 |
| 30 | 499200 – <6> – 537996 | 499200 – <6> – 537996 |
| n462 | 15 | 743333 – <1> – 795000 | 743333 – <1> – 795000 |
| n47 | 15 | 790334 – <1> – 795000 | 790334 – <1> – 795000 |
| n48 | 15 | 636667 – <1> – 646666 | 636667 – <1> – 646666 |
| 30 | 636668 – <2> – 646666 | 636668 – <2> – 646666 |
| n50 | 100 | 286400 – <20> – 303400 | 286400 – <20> – 303400 |
| n51 | 100 | 285400 – <20> – 286400 | 285400 – <20> – 286400 |
| n53 | 100 | 496700 – <20> – 499000 | 496700 – <20> – 499000 |
| n65 | 100 | 384000 – <20> – 402000 | 422000 – <20> – 440000 |
| n66 | 100 | 342000 – <20> – 356000 | 422000 – <20> – 440000 |
| n70 | 100 | 339000 – <20> – 342000 | 399000 – <20> – 404000 |
| n71 | 100 | 132600 – <20> – 139600 | 123400 – <20> – 130400 |
| n74 | 100 | 285400 – <20> – 294000 | 295000 – <20> – 303600 |
| n75 | 100 | N/A | 286400 – <20> – 303400 |
| n76 | 100 | N/A | 285400 – <20> – 286400 |
| n77 | 15 | 620000 – <1> – 680000 | 620000 – <1> – 680000 |
| 30 | 620000 – <2> – 680000 | 620000 – <2> – 680000 |
| n78 | 15 | 620000 – <1> – 653333 | 620000 – <1> – 653333 |
| 30 | 620000 – <2> – 653332 | 620000 – <2> – 653332 |
| n79 | 15 | 693334 – <1> – 733333 | 693334 – <1> – 733333 |
| 30 | 693334 – <2> – 733332 | 693334 – <2> – 733332 |
| n80 | 100 | 342000 – <20> – 357000 | N/A |
| n81 | 100 | 176000 – <20> – 183000 | N/A |
| n82 | 100 | 166400 – <20> – 172400 | N/A |
| n83 | 100 | 140600 – <20> –149600 | N/A |
| n84 | 100 | 384000 – <20> – 396000 | N/A |
| n86 | 100 | 342000 – <20> – 356000 | N/A |
| n89 | 100 | 164800 – <20> – 169800 | N/A |
| n90 | 15 | 499200 – <3> – 537999 | 499200 – <3> – 537999 |
| 30 | 499200 – <6> – 537996 | 499200 – <6> – 537996 |
| 100 | 499200 – <20> – 538000 | 499200 – <20> – 538000 |
| n91 | 100 | 166400 – <20> – 172400 | 285400 – <20> – 286400 |
| n92 | 100 | 166400 – <20> – 172400 | 286400 – <20> – 303400 |
| n93 | 100 | 176000 – <20> – 183000 | 285400 – <20> – 286400 |
| n94 | 100 | 176000 – <20> – 183000 | 286400 – <20> – 303400 |
| n95 | 100 | 402000 – <20> – 405000 | N/A |
| n963 | 15 | 795000 – <1> – 875000 | 795000 – <1> – 875000 |
| 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.  NOTE 2: The following NREF are allowed for operation in Band n46   |  |  | | --- | --- | | **Channel Bandwidth** | **Allowed NREF** | | 10 MHz | 782000, 788668 | | 20 MHz | 744000, 745332, 746668, 748000, 749332, 750668, 752000, 753332, 754668, 756000, 765332, 766668, 768000, 769332, 770668, 772000, 773332, 774668, 776000, 777332, 778668, 780000, 781332, 783000, 784332, 785668, 787000, 788332, 789668, 791000, 792332, 793668 | | 40 MHz | 744668, 746000, 748668, 751332, 754000, 755332, 766000, 767332, 770000, 772668, 775332, 778000, 780668, 783668, 786332, 787668, 790332, 793000 | | 60 MHz | 745332, 746668, 748000, 752000, 753332, 754668, 766668, 768000, 769332, 773332, 774668, 778668, 780000, 784332, 785668, 787000, 791000, 792332 | | 80 MHz | 746000, 747332, 752668, 754000, 767332, 768668, 774000, 779332, 785000, 786332, 791668 | | NOTE: 10 MHz channel bandwidth shall only apply in certain regions where the absence of non 3GPP technologies can be guaranteed on a long-term basis in this version of specification. | |   NOTE 3: The following NREF are allowed for operation in Band n96   |  |  | | --- | --- | | **Channel Bandwidth** | **Allowed NREF** | | 20 MHz | 796332, 797668, 799000, 800332, 801668, 803000, 804332, 805668, 807000, 808332, 809668, 811000, 812332, 813668, 815000, 816332, 817668, 819000, 820332, 821668, 823000, 824332, 825668, 827000, 828332, 829668, 831000, 832332, 833668, 835000, 836332, 837668, 839000, 840332, 841668, 843000, 844332, 845668, 847000, 848332, 849668, 851000, 852332, 853668, 855000, 856332, 857668, 859000, 860332, 861668, 863000, 864332, 865668, 867000, 868332, 869668, 871000, 872332, 873668 | | 40 MHz | 797000, 799668, 802332, 805000, 807668, 810332, 813000, 815668, 818332, 821000, 823668, 826332, 829000, 831668, 834332, 837000, 839668, 842332, 845000, 847668, 850332, 853000, 855668, 858332, 861000, 863668, 866332, 869000, 871668 | | 60 MHz | 797668, 799000, 803000, 804332, 808332, 809668, 813668, 815000, 819000, 820332, 824332, 825668, 829668, 831000, 835000, 836332, 840332, 841668. 845668, 847000, 851000, 852332, 856332, 857668, 861668, 863000, 867000, 868332 | | 80 MHz | 798332, 803668, 809000, 814332, 819668, 825000, 830332, 835668, 841000, 846332, 851668, 857000, 862332, 867668 | | | | |

**<<< Unchanged sections omitted >>>**

#### 5.4.3.3 Synchronization raster entries for each operating band

The synchronization raster for each band is give in Table 5.4.3.3-1. The distance between applicable GSCN entries is given by the <Step size> indicated in Table 5.4.3.3-1.

Table 5.4.3.3-1: Applicable SS raster entries per operating band

|  |  |  |  |
| --- | --- | --- | --- |
| NR operating band | SS Block SCS | SS Block pattern1 | Range of GSCN  (First – <Step size> – Last) |
| n1 | 15 kHz | Case A | 5279 – <1> – 5419 |
| n2 | 15 kHz | Case A | 4829 – <1> – 4969 |
| n3 | 15 kHz | Case A | 4517 – <1> – 4693 |
| n5 | 15 kHz | Case A | 2177 – <1> – 2230 |
| 30 kHz | Case B | 2183 – <1> – 2224 |
| n7 | 15 kHz | Case A | 6554 – <1> – 6718 |
| n8 | 15 kHz | Case A | 2318 – <1> – 2395 |
| n12 | 15 kHz | Case A | 1828 – <1> – 1858 |
| n14 | 15 kHz | Case A | 1901 – <1> – 1915 |
| n18 | 15 kHz | Case A | 2156 – <1> – 2182 |
| n20 | 15 kHz | Case A | 1982 – <1> – 2047 |
| n25 | 15 kHz | Case A | 4829 – <1> – 4981 |
| n26 | 15 kHz | Case A | 2153 – <1> – 2230 |
| n28 | 15 kHz | Case A | 1901 – <1> – 2002 |
| n29 | 15 kHz | Case A | 1798 – <1> – 1813 |
| n30 | 15 kHz | Case A | 5879 – <1> – 5893 |
| n34 | 15 kHz | Case A | 5030 – <1> – 5056 |
| n38 | 15 kHz | Case A | NOTE 2 |
| 30 kHz | Case C | 6437 – <1> – 6538 |
| n39 | 15 kHz | Case A | 4706 – <1> – 4795 |
| n40 | 30 kHz | Case C | 5762 – <1> – 5989 |
| n41 | 15 kHz | Case A | 6246 – <3> – 6717 |
| 30 kHz | Case C | 6252 – <3> – 6714 |
| n46**3** | 30 kHz | Case C | 8993 – <1> – 9530 |
| n48 | 30 kHz | Case C | 7884 – <1> – 7982 |
| n50 | 30 kHz | Case C | 3590 – <1> – 3781 |
| n51 | 15 kHz | Case A | 3572 – <1> – 3574 |
| n53 | 15 kHz | Case A | 6215 – <1> – 6232 |
| n65 | 15 kHz | Case A | 5279 – <1> – 5494 |
| n66 | 15 kHz | Case A | 5279 – <1> – 5494 |
| 30 kHz | Case B | 5285 – <1> – 5488 |
| n70 | 15 kHz | Case A | 4993 – <1> – 5044 |
| n71 | 15 kHz | Case A | 1547 – <1> – 1624 |
| n74 | 15 kHz | Case A | 3692 – <1> – 3790 |
| n75 | 15 kHz | Case A | 3584 – <1> – 3787 |
| n76 | 15 kHz | Case A | 3572 – <1> – 3574 |
| n77 | 30 kHz | Case C | 7711 – <1> – 8329 |
| n78 | 30 kHz | Case C | 7711 – <1> – 8051 |
| n79 | 30 kHz | Case C | 8480 – <16> – 8880 |
| n90 | 15 kHz | Case A | 6246 – <1> – 6717 |
| 30 kHz | Case C | 6252 – <1> – 6714 |
| n91 | 15 kHz | Case A | 3572 – <1> – 3574 |
| n92 | 15 kHz | Case A | 3584 – <1> – 3787 |
| n93 | 15 kHz | Case A | 3572 – <1> – 3574 |
| n94 | 15 kHz | Case A | 3584 – <1> – 3787 |
| n96**4** | 30 kHz | Case C | 9531 – <1> – 9877 |
| NOTE 1: SS Block pattern is defined in clause 4.1 in TS 38.213 [8].  NOTE 2: The applicable SS raster entries are GSCN = {6432, 6443, 6457, 6468, 6479, 6493, 6507, 6518, 6532, 6543}  NOTE 3: The following GSCN are allowed for operation in band n46:  GSCN = 8996, 9010, 9024, 9038, 9051, 9065, 9079, 9093, 9107, 9121, 9218, 9232, 9246, 9260, 9274, 9288, 9301, 9315, 9329, 9343, 9357, 9371, 9385, 9402, 9416, 9430, 9444, 9458, 9472, 9485, 9499, 9513.  NOTE 4: The following GSCN are allowed for operation in band n96:  GSCN = 9541, 9555, 9569, 9583, 9597, 9610, 9624, 9638, 9652, 9666, 9680, 9694, 9708, 9722, 9735, 9749, 9763, 9777, 9791, 9805, 9819, 9833, 9847, 9860, 9874, 9888, 9902, 9916, 9930, 9944, 9958, 9972, 9985, 9999, 10013, 10027, 10041, 10055, 10069, 10083, 10097, 10110, 10124, 10138, 10152, 10166, 10180, 10194, 10208, 10222, 10235, 10249, 10263, 10277, 10291, 10305, 10319, 10333, 10347. | | | |

**<<< Unchanged sections omitted >>>**

### 

### 5.5A.1 Configurations for intra-band contiguous CA

Table 5.5A.1-1: NR CA configurations and bandwidth combination sets defined for intra-band contiguous CA

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR CA configuration / Bandwidth combination set | | | | | | | | |
| NR CA configuration | Uplink CA configurations | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | Maximum aggregated  bandwidth (MHz) | Bandwidth combination set |
| CA\_n1B | - | 10 | 10,15 |  |  |  | 40 | 0 |
| 15 | 15,20 |  |  |  |
| 20 | 20 |  |  |  |
| CA\_n7B | CA\_n7B | 10, 15, 20 | 10, 15, 20, 30, 35, 40 |  |  |  | 50 | 0 |
| CA\_n40B | - | 20 | 80 |  |  |  | 100 | 0 |
| 50 | 50 |  |  |  |
| CA\_n41B | CA\_n41B | 10, 20, 30, 40, 50 | 10, 20, 30, 40, 50 |  |  |  | 100 | 0 |
| CA\_n41C | CA\_n41C | 40 | 80, 100 |  |  |  | 180 | 0 |
| 50, 60, 80 | 60, 80, 100 |  |  |  |
| 10, 15, 20, 40, 50, 60, 80, 90 | 15, 20, 40, 50, 60, 80, 90, 100 |  |  |  | 190 | 1 |
| CA\_n46B | - | 20, 40, 60 | 20, 40 |  |  |  | 100 | 0 |
| CA\_n46C | - | 60, 80 | 60, 80 |  |  |  | 160 | 0 |
| CA\_n46D | - | 60, 80 | 80 | 80 |  |  | 240 | 0 |
| CA\_n46E | - | 80 | 80 | 80 | 80 |  | 320 | 0 |
| CA\_n46G | - | 40, 60 | 40 | 40 |  |  | 140 | 0 |
| CA\_n46H | - | 40, 80 | 40 | 40 | 40 |  | 200 | 0 |
| CA\_n46I | - | 60 | 40 | 40 | 40 | 40 | 220 | 0 |
| CA\_n46M | - | 20 | 20 | 20 |  |  | 60 | 0 |
| CA\_n46N | - | 20 | 20 | 20 | 20 |  | 80 | 0 |
| CA\_n46O | - | 20 | 20 | 20 | 20 | 20 | 100 | 0 |
| CA\_n48B | CA\_n48B | 5, 10 | 10, 15, 20 |  |  |  | 40 | 0 |
| 15, 20 | 5, 10, 15, 20 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| - | 10 | 50, 60, 80, 90 |  |  |  | 100 | 1 |
| 15, 20 | 40, 50, 60, 80 |  |  |  |
| 40 | 40, 50, 60 |  |  |  |
|  |  |  |  |  |
| CA\_n48C | - | 10 | 100 |  |  |  | 140 | 0 |
| 15 | 90,100 |  |  |  |
| 20 | 90, 100 |  |  |  |
| 40 | 80, 90, 100 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| CA\_n66B | - | 5 1 | 20, 40 |  |  |  | 50 | 0 |
| 10 | 15, 20, 40 |  |  |  |
| 15 | 10, 15, 20 |  |  |  |
| 20 | 5 1, 10, 15 |  |  |  |
| 40 | 5 1, 10 |  |  |  |
| CA\_n71B | - | 5 | 20 |  |  |  | 25 | 0 |
| 10 | 15 |  |  |  |
| 15 | 10 |  |  |  |
| 20 | 5 |  |  |  |
| 10 | 20 |  |  |  | 35 | 1 |
| 15 | 15, 20 |  |  |  |
| 20 | 10, 15 |  |  |  |
| CA\_n77C | CA\_n77C | 50 | 60, 80, 100 |  |  |  | 200 | 0 |
| 60 | 60, 80, 100 |  |  |  |
| 80 | 80, 100 |  |  |  |
| 100 | 100 |  |  |  |
| 10, 15, 20, 25, 30, 40, 50, 60, 70,80,90, 100 | 10, 15, 20, 25, 30, 40, 50, 60, 70,80,90, 100 |  |  |  | 200 | 1 |
| CA\_n77D | - | 100 | 100 | 100 |  |  | 300 | 0 |
| CA\_n78B | - | 20 | 50 |  |  |  | 70 | 0 |
| CA\_n78C | CA\_n78C | 50 | 60, 80, 100 |  |  |  | 200 | 0 |
| 60 | 60, 80, 100 |  |  |  |
| 80 | 80, 100 |  |  |  |
| 100 | 100 |  |  |  |
| 10, 15, 20, 25, 30, 40, 50, 60, 70,80,90, 100 | 10, 15, 20, 25, 30, 40, 50, 60, 70,80,90, 100 |  |  |  | 200 | 1 |
| CA\_n78D | - | 100 | 100 | 100 |  |  | 300 | 0 |
| CA\_n79C | CA\_n79C | 50 | 60, 80, 100 |  |  |  | 200 | 0 |
| 60 | 60, 80, 100 |  |  |  |
| 80 | 80, 100 |  |  |  |
| 100 | 100 |  |  |  |
| CA\_n79D | - | 100 | 100 | 100 |  |  | 300 | 0 |
| NOTE 1: 5 MHz is not applicable for 30/60 kHz SCS. | | | | | | | | |

**<<< Unchanged sections omitted >>>**

### 5.5A.3 Configurations for inter-band CA

Table 5.5A.3-1: Void

Table 5.5A.3-2: Void

Table 5.5A.3-3: Void

#### 5.5A.3.1 Configurations for inter-band CA (two bands)

Table 5.5A.3.1-1: NR CA configurations and bandwith combinations sets defined for inter-band CA (two bands)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR CA configuration | Uplink CA configuration | NR Band | SCS  (kHz) | 5  MHz | 10  MHz | 15  MHz | 20  MHz | 25 MHz | 30 MHz | 40  MHz | 50  MHz | 60  MHz | 70  MHz | 80  MHz | 90 MHz | 100 MHz | Bandwidth combination set |
| CA\_n1A-n3A | CA\_n1A-n3A | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| CA\_n1B-n3A | CA\_n1A-n3A | n1 | See CA\_n1B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | | 0 |
| n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| CA\_n1A-n3(2A) | CA\_n1A-n3A | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n3 | See CA\_n3(2A) bandwidth combination set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n1A-n7A | CA\_n1A-n7A | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n7 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| CA\_n1A-n7B | - | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n7 | See CA\_n7B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n1A-n8A | CA\_n1A-n8A | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n8 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n1A-n28A | CA\_n1A-n28A | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n1A-n40A | CA\_n1A-n40A | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n40 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| CA\_n1A-n41A | CA\_n1A-n41A | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n41 | 15 | Yes | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n1A-n77A | - | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n77 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n1A-n78A | CA\_n1A-n78A | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n1A-n78(2A) | CA\_n1A-n78A | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n78 | See CA\_n78(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n1A-n78C | CA\_n1A-n78A | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n78 | See CA\_n78C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n1A-n79A | CA\_n1A-n79A | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n79 | 15 |  |  |  |  |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| 60 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| CA\_n1A-n79C | CA\_n1A-n79A | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n79 | See CA\_n79C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n2A-n5A | CA\_n2A-n5A | n2 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n5 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n2A-n48A | CA\_n2A-n48A | n2 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n48 | 15 | Yes | Yes | Yes | Yes |  |  | Yes | Yes1 |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes1 | Yes1 |  | Yes1 | Yes1 | Yes1 |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes1 | Yes1 |  | Yes1 | Yes1 | Yes1 |
| CA\_n2A-n48C | CA\_n2A-n48A  CA\_n48C | n2 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n48 | See CA\_n48C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n2A-n66A | - | n2 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n66 | 15 | Yes | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| CA\_n2A-n77A | CA\_n2A-n77A | n2 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n77 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| CA\_n2A-n78A | CA\_n2A-n78A | n2 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n2A-n78(2A) | CA\_n2A-n78A | n2 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n78 | See CA\_n78(2A) Bandwidth Combination Set 1 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n3A-n7A | CA\_n3A-n7A | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n7 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| CA\_n3A-n7B | - | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n7 | See CA\_n7B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n3A-n8A | CA\_n3A-n8A | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n8 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n3A-n28A | CA\_n3A-n28A | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n3A-n38A | CA\_n3A-n38A | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n38 | 15 | Yes | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| CA\_n3A-n40A | CA\_n3A-n40A | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n40 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| CA\_n3A-n41A | CA\_n3A-n41A | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 1 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  |  |  |  |
| CA\_n3A-n41C | CA\_n3A-n41A | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n41 | See CA\_n41C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n3A-n41(2A) | CA\_n3A-n41A | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n41 | See CA\_n41(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n3A-n77A | CA\_n3A-n77A | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n77 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n3A-n77(2A) | CA\_n3A-n77A | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n77 | See CA\_n77(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n3A-n78A | CA\_n3A-n78A | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n3A-n78C | CA\_n3A-n78A | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n78 | See CA\_n78C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n3A-n78(2A) | - | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n78 | See CA\_n78(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n3A-n79A | CA\_n3A-n79A | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n79 | 15 |  |  |  |  |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| 60 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| CA\_n3A-n79C | CA\_n3A-n79A | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n79 | See CA\_n79C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n5A-n7A | - | n5 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n7 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| CA\_n5A-n7B | - | n5 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n7 | See CA\_n7B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n5A-n66A | CA\_n5A-n66A | n5 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n66 | 15 | Yes | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| CA\_n5A-n77A | CA\_n5A-n77A | n5 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n77 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| CA\_n5A-n78A | CA\_n5A-n78A | n5 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n5A-n78C | CA\_n5A-n78A | n5 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n78 | See CA\_n78C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n5A-n79A | CA\_n5A-n79A | n5 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n79 | 15 |  |  |  |  |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| 60 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| CA\_n5A-n79C | CA\_n5A-n79A | n5 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n79 | See CA\_n79C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n7A-n25A | CA\_n7A-n25A | n7 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n25 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| CA\_n7A-n25(2A) | CA\_n7A-n25A | n7 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n25 | See CA\_n25(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n7(2A)-n25A | CA\_n7A-n25A | n25 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n7 | See CA\_7(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n7(2A)-n25(2A) | CA\_n7A-n25A | n7 | See CA\_7(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n25 | See CA\_25(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n7A-n28A | CA\_n7A-n28A | n7 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n7B-n28A | - | n7 | See CA\_n7B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | | 0 |
| n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n7A-n66A | CA\_n7A-n66A | n7 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n66 | 15 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| CA\_n7A-n78A | CA\_n7A-n78A | n7 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n7A-n78(2A) | CA\_n7A-n78A | n7 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| n78 | See CA\_n78(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n7(2A)-n78A | CA\_n7A-n78A | n7 | See CA\_n7(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n7(2A)-n78(2A) | CA\_n7A-n78A | n7 | See CA\_n7(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n78 | See CA\_n78(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n8A-n39A | CA\_n8A-n39A | n8 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n39 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| CA\_n8A-n40A | CA\_n8A-n40A | n8 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n40 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| CA\_n8A-n41A | CA\_n8A-n41A | n8 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n8 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 1 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  |  |  |  |
| CA\_n8A-n75A | - | n8 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n75 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| CA\_n8A-n78A | CA\_n8A-n78A | n8 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n8A-n79A | CA\_n8A-n79A | n8 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n79 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| CA\_n20A-n28A | CA\_n20A-n28A | n20 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n20A-n75A | - | n20 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n75 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| CA\_n20A-n78A | CA\_n20A-n78A | n20 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n25A-n41A | CA\_n25A-n41A | n25 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n25(2A)-n41A | CA\_n25A-n41A | n25 | See CA\_n25(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n25A-n41C | CA\_n25A-n41A | n25 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n41 | See CA\_n41C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n25A-n41(2A) | CA\_n25A-n41A | n25 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n41 | See CA\_n41(2A) Bandwidth Combination Set 1 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n25A-n66A | CA\_n25A-n66A | n25 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n66 | 15 | Yes | Yes | Yes | Yes |  | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  | Yes | Yes |  |  |  |  |  |  |
| CA\_n25A-n66(2A) | CA\_n25A-n66A | n25 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n66 | See CA\_n66(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n25(2A)-n66A | CA\_n25A-n66A | n25 | See CA\_n25(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n66 | 15 |  | Yes | Yes | Yes |  | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  | Yes | Yes |  |  |  |  |  |  |
| CA\_n25(2A)-n66(2A) | CA\_n25A-n66A | n25 | See CA\_n25(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n66 | See CA\_n66(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n25A-n71A | CA\_n25A-n71A | n25 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n71 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n25A-n78A | CA\_n25A-n78A | n25 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n25A-n78(2A) | CA\_n25A-n78A | n25 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n78 | See CA\_n78(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n25(2A)-n78A | CA\_n25A-n78A | n25 | See CA\_n25(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n78 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n25(2A)-n78(2A) | CA\_n25A-n78A | n25 | See CA\_n25(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n78 | See CA\_n78(2A) Bandwidth Combination Set 1 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n25A-n46A | - | n25 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n46 | 15 |  |  |  | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  |  |  | Yes |  |  | Yes |  | Yes |  | Yes |  |  |
| 60 |  |  |  | Yes |  |  | Yes |  | Yes |  | Yes |  |  |
| CA\_n28A-n40A | CA\_n28A-n40A | n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n40 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| CA\_n28A-n41A | CA\_n28A-n41A | n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n41 | 15 | Yes | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n28A-n50A | CA\_n28A-n50A | n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n50 | 15 | Yes | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes1 |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes1 |  |  |
| CA\_n28A-n75A | - | n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n75 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| CA\_n28A-n75A | - | n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 1 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n75 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| CA\_n28A-n77A | CA\_n28A-n77A | n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n77 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n28A-n77(2A) | CA\_n28A-n77A | n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n77 | See CA\_n77(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n28A-n78A | CA\_n28A-n78A | n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n28A-n78(2A) | CA\_n28A-n78A | n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n78 | See CA\_n78(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n29A-n66A | - | n29 | 15 | Yes | Yes |  |  |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n66 | 15 | Yes | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| CA\_n29A-n66B | **-** | n29 | 15 | Yes | Yes |  |  |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n66 | See CA\_n66B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n29A-n66(2A) | **-** | n29 | 15 | Yes | Yes |  |  |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n66 | See CA\_n66(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n29A-n70A | - | n29 | 15 | Yes | Yes |  |  |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n70 | 15 | Yes | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  |
| CA\_n38A-n66A | CA\_n38A-n66A | n38 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n66 | 15 | Yes | Yes | Yes | Yes |  | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  | Yes | Yes |  |  |  |  |  |  |
| CA\_n38A-n78A | CA\_n38A-n78A | n38 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n38A-n78(2A) | CA\_n38A-n78A | n38 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n78 | See CA\_n78(2A) Bandwidth Combination 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n39A-n40A | CA\_n39A-n40A | n39 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n40 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| CA\_n39A-n41A | CA\_n39A-n41A | n39 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n39A-n41C | CA\_n39A-n41A | n39 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n41 | See CA\_n41C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n39A-n41(2A) | CA\_n39A-n41A | n39 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n41 | See CA\_n41(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n39A-n79A | CA\_n39A-n79A | n39 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n79 | 15 |  |  |  |  |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| 60 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| CA\_n40A-n41A | CA\_n40A-n41A | n40 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n40 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 1 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  |  |  |  |
| CA\_n40A-n78A | CA\_n40A-n78A | n40 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n40A-n78(2A) | CA\_n40A-n78A | n40 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| n78 | See CA\_n78(2A) Bandwidth Combination Set 1 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n40A-n79A | CA\_n40A-n79A | n40 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes |  |  |
| n79 | 15 |  |  |  |  |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| 60 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| n40 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 1 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n79 | 15 |  |  |  |  |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| 60 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| CA\_n41A-n50A | CA\_n41A-n50A | n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n50 | 15 | Yes | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes1 |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes1 |  |  |
| CA\_n41A-n66A | CA\_n41A-n66A | n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n66 | 15 | Yes | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| CA\_n41(2A)-n66A | - | n41 | See CA\_n41(2A) Bandwidth Combination Set 1 inTable 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n66 | 15 | Yes | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| CA\_n41C-n66A | - | n41 | See CA\_n41C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | | 0 |
| n66 | 15 | Yes | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| CA\_n41A-n71A | CA\_n41A-n71A | n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n71 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n41A-n71B | - | n41 | 15 |  | Yes | Yes | Yes |  | Yes | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n71 | See CA\_n71B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |  |
| CA\_n41C-n71A | - | n41 | See CA\_n41C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | | 0 |
| n71 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n41(2A)-n71A | - | n41 |  | See CA\_n41(2A) Bandwidth Combination Set 1 in Table 5.5A.2-1 | | | | | | | | | | | | | 0 |
| n71 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n41(2A)-n71B | - | n41 | See CA\_n41(2A) Bandwidth Combination Set 1 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n71 | See CA\_n71B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n41C-n71B | - | n41 | See CA\_n41C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | | 0 |
| n71 | See CA\_n71B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | |
| CA\_n41A-n78A | CA\_n41A-n78A | n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n41A-n78A | CA\_n41A-n78A | n41 | 15 |  | Yes | Yes | Yes |  | Yes | Yes | Yes |  |  |  |  |  | 1 |
| 30 |  | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n78 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| CA\_n41A-n79A | CA\_n41A-n79A | n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n79 | 15 |  |  |  |  |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| 60 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| n41 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  | 1 |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  |  |  |  |
| n79 | 15 |  |  |  |  |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| 60 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| CA\_n41C-n79A | CA\_n41A-n79A  CA\_n41C | n41 | See CA\_n41C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | | 0 |
| n79 |  |  |  |  |  |  |  | Yes | Yes |  |  |  |  |  |
|  |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
|  |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| CA\_n46A-n48A | CA\_n46A-n48A | n46 | 15 |  |  |  | Yes |  |  | Yes |  |  |  |  |  |  | 0 |
| 30 |  |  |  | Yes |  |  | Yes |  | Yes |  | Yes |  |  |
| 60 |  |  |  | Yes |  |  | Yes |  | Yes |  | Yes |  |  |
| n48 | 15 |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
| CA\_n46B-n48A | CA\_n46A-n48A | n46 | See CA\_n46B Bandwidth Combination Set 0 in 38.101-1 Table 5.5A.1-1 | | | | | | | | | | | | | | 0 |
| n48 |  |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
| CA\_n46C-n48A | CA\_n46A-n48A | n46 | See CA\_n46C Bandwidth Combination Set 0 in 38.101-1 Table 5.5A.1-1 | | | | | | | | | | | | | | 0 |
| n48 |  |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
| CA\_n46D-n48A | CA\_n46A-n48A | n46 | See CA\_n46D Bandwidth Combination Set 0 in 38.101-1 Table 5.5A.1-1 | | | | | | | | | | | | | | 0 |
| n48 |  |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
| CA\_n46E-n48A | CA\_n46A-n48A | n46 | See CA\_n46E Bandwidth Combination Set 0 in 38.101-1 Table 5.5A.1-1 | | | | | | | | | | | | | | 0 |
| n48 |  |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Yes |  |  |  |  |  |  |  |  |  |
| CA\_n46A-n66A | - | n46 | 15 |  |  |  | Yes |  |  | Yes |  |  |  |  |  |  | 0 |
| 30 |  |  |  | Yes |  |  | Yes |  | Yes |  | Yes |  |  |
| 60 |  |  |  | Yes |  |  | Yes |  | Yes |  | Yes |  |  |
| n66 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| CA\_n48A-n66A | CA\_n48A-n66A | n48 | 15 | Yes | Yes | Yes | Yes |  |  | Yes | Yes1 |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes1 | Yes1 |  | Yes1 | Yes1 | Yes1 |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes1 | Yes1 |  | Yes1 | Yes1 | Yes1 |
| n66 | 15 | Yes | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| CA\_n48C-n66A | CA\_n48A-n66A | n48 | See CA\_n48C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | | 0 |
| n66 | 15 | Yes | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| CA\_n48(2A)-n66A | CA\_n48A-n66A | n48 | See CA\_n48(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n66 | 15 | Yes | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| CA\_n50A-n78A | CA\_n50A-n78A | n50 | 15 | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |  | Yes1 |  |  |
| 60 |  | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |  | Yes1 |  |  |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n66A-n70A | - | n66 | 15 | Yes | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| n70 | 15 | Yes | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  |
| CA\_n66B-n70A | - | n66 | See CA\_n66B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | | 0 |
| n70 | 15 | Yes | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  |
| CA\_n66(2A)-n70A | - | n66 | See CA\_n66(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n70 | 15 | Yes | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  |
| CA\_n66A-n71A | CA\_n66A-n71A | n66 | 15 | Yes | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| n71 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n66(2A)-n71A | CA\_n66A-n71A | n66 | See CA\_n66(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n71 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n66B-n71A | CA\_n66A-n71A | n66 | See CA\_n66B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | | | 0 |
| n71 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n66A-n77A | CA\_n66A-n77A | n66 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n77 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| CA\_n66A-n78A | CA\_n66A-n78A | n66 | 15 | Yes | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  | Yes |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n66A-n78(2A) | CA\_n66A-n78A | n66 | 15 | Yes | Yes | Yes | Yes |  | Yes | Yes |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  | Yes | Yes |  |  |  |  |  |  |
| n78 | See CA\_n78(2A) Bandwidth Combination Set 1 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n66(2A)-n78A | CA\_n66A-n78A | n66 | See CA\_n66(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n78 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n66(2A)-n78(2A) | CA\_n66A-n78A | n66 | See CA\_n66(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n78 | See CA\_n78(2A) Bandwidth Combination Set 1 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA\_n70A-n71A | CA\_n70A-n71A | n70 | 15 | Yes | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes1 | Yes1 |  |  |  |  |  |  |  |  |
| n71 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n75A-n78A | - | n75 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n75A-n78(2A) | - | n75 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n78 | See CA\_n78(2A) Bandwidth Combination Set 1 in Table 5.5A.2-1 | | | | | | | | | | | | | |
| CA n76A-n78A | - | n76 | 15 | Yes |  |  |  |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n77A-n78A2 |  | n77 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| CA\_n77A-n79A | - | n77 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n79 | 15 |  |  |  |  |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| 60 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| CA\_n78A-n79A | - | n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n79 | 15 |  |  |  |  |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| 60 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| CA\_n78A-n92A | CA\_n78A-n92A | n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n92 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n78(2A)-n92A | CA\_n78A-n92A | n78 | See CA\_n78(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | | | 0 |
| n92 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| NOTE 1: This UE channel bandwidth is applicable only to downlink.  NOTE 2: The minimum requirements for intra-band contiguous or non-contiguous CA apply. | | | | | | | | | | | | | | | | | |

## 

**<<< Unchanged sections omitted >>>**

## 6.2F Transmitter power for shared spectrum channel access

### 6.2F.1 UE maximum output power

The following UE Power Classes define the maximum output power for any transmission bandwidth within the channel bandwidth of shared spectrum channel access carrier unless otherwise stated. The period of measurement shall be at least one sub frame (1ms).

Table 6.2F.1-1: UE Power Class

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR  band | Class 1 (dBm) | Tolerance (dB) | Class 2 (dBm) | Tolerance (dB) | Class 3 (dBm) | Tolerance (dB) | Class 5 (dBm) | Tolerance (dB) |
| n46 |  |  |  |  |  |  | 20 | +2/-3 |
| n96 |  |  |  |  |  |  | 20 | +2/-3 |
| NOTE 1: PPowerClass is the maximum UE power specified without taking into account the tolerance  NOTE 2: Powerclass 5 is default power class unless otherwise stated | | | | | | | | |

The UE operating shall meet the following additional requirements for maximum mean transmission power density specified in Table 6.2F.1-2 when NS is signaled and when transmission overlaps with any portion of the specified frequency range. In case transmission overlaps multiple frequency ranges, the lowest power density requirement applies.

Table 6.2F.1-2: Additional requirements for transmit power density

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NR Band | NS value | Channel bandwidth (MHz) | Frequency range (MHz) | Maximum mean power density (dBm/MHz) |
| n46 | NS\_28 | 20, 40, 60, 80 | 5150 – 5350 | 10 |
| 5470 – 5725 |
| NS\_29 | 20 | 5170 – 5330 | 10 |
| 5490 – 5730 |
| 40 | 5170 – 5330 | 7 |
| 5490 – 5730 |
| 60, 80 | 5170 – 5330 | 4 |
| 5490 – 5730 |
| NS\_30 | 20, 40, 60, 80 | 5150 – 5350 | 11 |
| 5470 – 5725 |
| NS\_31 | 20 | 5150 - 5230 | 10 |
| 5250 – 5350 |
| 5470 – 5725 |
| 5725 - 5850 |
| 5230 – 5250 | 4 |
| 40 | 5150 - 5230 | 7 |
| 5250 – 5350 |
| 5470 – 5725 |
| 5725 - 5850 |
| 5230 – 5250 | 4 |
| 60, 80 | 5150 - 5230 | 4 |
| 5250 – 5350 |
| 5470 – 5725 |
| 5725 - 5850 |
| 5230 – 5250 |
| n96 | NS\_53 | 20, 40, 60, 80 | 5925 – 7125 | -1 |
| NS\_54 | 20, 40, 60, 80 | 5925 – 6425 | 17 |
| 6525 – 6875 |

### 6.2F.1A UE maximum output power for CA

### 6.2F.1A.1 UE maximum output power for inter-band CA

For inter-band carrier aggregation with one uplink carrier assigned to one NR band, the transmitter power requirements in clause 6.2 apply.

For inter-band carrier aggregation with uplink assigned to two NR bands, UE maximum output power shall be measured over all component carriers from different bands. If each band has separate antenna connectors, maximum output power is measured as the sum of maximum output power at each UE antenna connector. The period of measurement shall be at least one sub frame (1 ms). The maximum output power is specified in Table 6.2F.1.3A-1.

Table 6.2F.1A.1-1 UE Power Class for uplink inter-band CA (two bands)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Uplink CA Configuration | Class 1 (dBm) | Tolerance (dB) | Class 2 (dBm) | Tolerance  (dB) | Class 3 (dBm) | Tolerance (dB) | Class 4 (dBm) | Tolerance (dB) |
| CA\_n46A-n48A |  |  |  |  | 23 | +2/-32 |  |  |

### 6.2F.2 UE maximum output power reduction

For UE maximum output power reduction, the general requirements of sub-clause 6.2.2 do not apply but instead the UE is allowed to reduce the maximum output power due to higher order modulations and transmit bandwidth configurations for power class 5 according to Table 6.2F.2-1 and Table 6.2F.2-2.

Table 6.2F.2-1 Maximum power reduction (MPR) for shared spectrum access UE power class 5

|  |  |  |  |
| --- | --- | --- | --- |
| Pre-coding | Modulation | RB Allocation | |
| Full2 (dB) | Partial3 (dB) |
| DFT-s-ODFM | Pi/2 BPSK4 | ≤ 1.5 | ≤ 2.5 |
| QPSK | ≤ 1.5 | ≤ 2.5 |
| 16 QAM | ≤ 2.0 | ≤ 3.0 |
| 64 QAM | ≤ 3.5 | ≤ 4.5 |
| 256 QAM | ≤ 5.0 | ≤ 5.5 |
| CP-OFDM | QPSK | ≤ 3.5 | ≤ 3.5 |
| 16 QAM | ≤ 4.0 | ≤ 4.0 |
| 64 QAM | ≤ 5.5 | ≤ 5.5 |
| 256 QAM | ≤ 7.0 | ≤ 7.0 |
| NOTE 1: The MPR shall apply to all SCS in all active 20 MHz sub-bands contiguously allocated in the channel. The MPR applies to interlaced allocations with uplink resource allocation type 2 as specified in TS 38.214 [10].  NOTE 2: Full RB allocation MPR applies when all RB’s in a 20 MHz channel or all RB’s in all sub-bands for wideband operation are fully allocated and sub-bands are transmitted according to configuration A in Table 6.2F.2-2.  NOTE 3: Partial RB allocation MPR applies when one or more RB’s in one or more sub-bands are not allocated or when the transmitted sub-bands for wideband operation are transmitted according to configuration B in Table 6.2F.2-2.  NOTE 4: Applicable to Pi/2-BPSK modulation when IE *powerBoostPi2BPSK* is set to 0. | | | |

Table 6.2F.2-2 MPR mapping for wideband operation

|  |  |  |
| --- | --- | --- |
| Wideband operation channel bandwidth (MHz) | Sub-band configuration | |
| A | B |
| 40 | 11 | 10, 01 |
| 60 | 111, 011, 110, 001, 010, 100 | None |
| 80 | 1111, 0111, 1110, 0110, 0001, 1000 | 1100, 0011, 0100, 0010 |
| NOTE 1: The sub-band configuration is represented as a bitmap where ‘1’ indicates that a sub-band is transmitted and ‘0’ indicates a sub-band is not transmitted. The bitmap is ordered with MSB mapped to the lowest frequency sub-band and LSB mapped to highest frequency sub-band within the wideband channel. | | |

For the UE maximum output power modified by MPR, the power limits specified in clause 6.2F.4 apply.

### 6.2F.2A UE maximum output power reduction for CA

### 6.2F.2A.1 UE maximum output power reduction for inter-band CA

For inter-band carrier aggregation with uplink assigned to two bands, the requirements in clause 6.2.2 apply for the NR uplink carrier and clause 6.2F.2 for the carrier operating with shared spectrum access.

### 6.2F.3 UE additional maximum output power reduction

#### 6.2F.3.1 General

Additional emission requirements can be signalled by the network. Each additional emission requirement is associated with a unique network signalling (NS) value indicated in RRC signalling by an NR frequency band number of the applicable operating band and an associated value in the field *additionalSpectrumEmission.* Throughout this specification, the notion of indication or signalling of an NS value refers to the corresponding indication of an NR frequency band number of the applicable operating band, the IE field *freqBandIndicatorNR* and an associated value of *additionalSpectrumEmission* in the relevant RRC information elements [7]*.*

To meet the additional requirements, additional maximum power reduction (A-MPR) is allowed for the maximum output power as specified in Table 6.2F.1-1. Unless stated otherwise, the total reduction to UE maximum output power is max(MPR, A-MPR) where MPR is defined in clause 6.2F.2.

Table 6.2F.3.1-1 specifies the additional requirements with their associated network signalling values and the allowed A-MPR and applicable operating band(s) for each NS value. The mapping of NR frequency band numbers and values of the *additionalSpectrumEmission* to network signalling labels is specified in Table 6.2F.3.1-1A.

Table 6.2F.3.1-1: Additional maximum power reduction (A-MPR)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Network signalling label | Requirements (clause) | NR Band | Channel bandwidth (MHz) | Resources blocks (*N*RB) | A-MPR (clause) |
| NS\_01 |  | n46, n96 | 20, 40, 60, 80 |  | N/A |
| NS\_28 |  | n46 | 20, 40, 60, 80 |  | 6.2F.3.2 |
| NS\_29 |  | n46 | 20, 40, 60, 80 |  | 6.2F.3.3 |
| NS\_30 |  | n46 | 20, 40, 60, 80 |  | 6.2F.3.4 |
| NS\_31 |  | n46 | 20, 40, 60, 80 |  | 6.2F.3.5 |
| NS\_53 |  | n96 | 20, 40, 60, 80 |  | 6.2F.3.6 |
| NS\_54 |  | n96 | 20, 40, 60, 80 |  | 6.2F.3.7 |
| NOTE 1: The A-MPR shall apply to all active 20 MHz sub-bands contiguously allocated in the channel. | | | | | |

[The NS\_01 label with the field *additionalPmax* [7] absent is default for all NR bands.]

Table 6.2F.3.1-1A: Mapping of network signaling label

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR band | Value of additionalSpectrumEmission | | | | | | | |
| **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| n46 | NS\_01 | NS\_28 | NS\_29 | NS\_30 | NS\_31 |  |  |  |
| n96 | NS\_01 | NS\_53 | NS\_54 |  |  |  |  |  |
| NOTE: *additionalSpectrumEmission* corresponds to an information element of the same name defined in clause 6.3.2 of TS 38.331 [7]. | | | | | | | | |

#### 6.2F.3.2 A-MPR for NS\_28

When "NS\_28" is indicated in the cell, the A-MPR is specified in Table 6.2F.3.2-1.

Table 6.2F.3.2-1: A-MPR for NS\_28 power class 5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pre-coding | Modulation | RB Allocation (Note 2) | | RB Allocation (Note 3) |
| Full (dB) | Partial (dB) | Full/Partial |
| DFT-s-ODFM | QPSK | ≤ 4.0 | ≤ 6.0 | See Table 6.2F.2-1 |
| 16 QAM | ≤ 4.5 | ≤ 6.0 |
| 64 QAM | ≤ 4.5 | ≤ 6.5 |
| 256 QAM | ≤ 5.5 | ≤ 6.5 |
| CP-OFDM | QPSK | ≤ 6.0 | ≤ 7.0 |
| 16 QAM | ≤ 6.0 | ≤ 7.5 |
| 64 QAM | ≤ 6.5 | ≤ 7.5 |
| 256 QAM | ≤ 7.0 | ≤ 7.5 |
| NOTE 1: Full allocation A-MPR applies when all RB’s in a 20 MHz channel or all RB’s in all sub-bands for wideband operation are fully allocated and all sub-bands are transmitted. Partial allocation A-MPR applies when one or more RB’s in one or more sub-bands are not allocated or when not all transmitted sub-bands for wideband operation are transmitted.  NOTE 2: Applicable for 20 MHz channels centered at the nearest NR-ARFCN corresponding to 5160, 5340, 5480, and 5700 MHz, 40 MHz channels centered at the nearest NR-ARFCN corresponding to 5170, 5190, 5310, 5330, 5490, and 5510 MHz, 60 MHz channels centered at the nearest NR-ARFCN corresponding to 5180, 5200, 5220, 5280, 5300, 5320, 5500, 5520, 5540, 5680 MHz, and 80 MHz channels centered at the nearest NR-ARFCN corresponding to 5190, 5210, 5290, 5310, 5510, and 5530 MHz.  NOTE 3: Applicable for all valid channels other than those enumerated under NOTE 2. | | | | |

#### 6.2F.3.3 A-MPR for NS\_29

When "NS\_29" is indicated in the cell, the A-MPR is specified in Table 6.2F.3.3-1.

Table 6.2F.3.3-1: A-MPR for NS\_29 power class 5

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Pre-coding | Modulation | Channel bandwidth (Sub-band allocation) / RB Allocation | | | | |
| 20 MHz | 40 MHz | | 60 MHz, 80 MHz | |
| Full/Partial | Full (dB) | Partial (dB) | Full (dB) | Partial (dB) |
| DFT-s-ODFM | QPSK | See Table 6.2F.2-1 | ≤ 2.0 | ≤ 4.0 | ≤ 4.0 | ≤ 6.0 |
| 16 QAM | ≤ 2.5 | ≤ 4.0 | ≤ 4.0 | ≤ 6.0 |
| 64 QAM | ≤ 3.5 | ≤ 4.0 | ≤ 4.5 | ≤ 6.0 |
| 256 QAM | ≤ 5.0 | ≤ 5.5 | ≤ 5.5 | ≤ 6.0 |
| CP-OFDM | QPSK | ≤ 3.5 | ≤ 4.5 | ≤ 4.0 | ≤ 6.0 |
| 16 QAM | ≤ 4.0 | ≤ 4.5 | ≤ 4.0 | ≤ 6.0 |
| 64 QAM | ≤ 5.5 | ≤ 5.0 | ≤ 5.5 | ≤ 6.5 |
| 256 QAM | ≤ 7.0 | ≤ 6.5 | ≤ 7.0 | ≤ 7.0 |
| NOTE 1: Full allocation A-MPR applies when all RB’s in a 20 MHz channel or all RB’s in all sub-bands for wideband operation are fully allocated and all sub-bands are transmitted. Partial allocation A-MPR applies when one or more RB’s in one or more sub-bands are not allocated but when all sub-bands within the channel are transmitted. When not all sub-bands within the channel are transmitted, the A-MPR associated with the channel bandwidth according to the bandwidth of the contiguously transmitted sub-bands and according to the allocation type applies. | | | | | | |

#### 6.2F.3.4 A-MPR for NS\_30

When "NS\_30" is indicated in the cell, the A-MPR is specified in Table 6.2F.3.4-1.

Table 6.2F.3.4-1: A-MPR for NS\_30 power class 5

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Pre-coding | Modulation | RB Allocation (Note 2) | | RB Allocation (Note 3) | | RB Allocation (Note 4) |
| Full (dB) | Partial (dB) | Full (dB) | Partial (dB) | Full/Partial |
| DFT-s-ODFM | QPSK | ≤ 9.0 | ≤ 15.0 | ≤ 2.5 | ≤ 5.0 | See Table 6.2F.2-1 |
| 16 QAM | ≤ 9.0 | ≤ 15.5 | ≤ 3.0 | ≤ 5.0 |
| 64 QAM | ≤ 9.0 | ≤ 15.5 | ≤ 4.5 | ≤ 5.5 |
| 256 QAM | ≤ 9.0 | ≤ 16.0 | ≤ 5.5 | ≤ 5.5 |
| CP-OFDM | QPSK | ≤ 9.0 | ≤ 14.0 | ≤ 4.0 | ≤ 6.0 |
| 16 QAM | ≤ 9.5 | ≤ 14.5 | ≤ 4.0 | ≤ 6.0 |
| 64 QAM | ≤ 9.0 | ≤ 15.0 | ≤ 5.5 | ≤ 6.5 |
| 256 QAM | ≤ 9.5 | ≤ 15.0 | ≤ 7.0 | ≤ 7.0 |
| NOTE 1: Full allocation A-MPR applies when all RB’s in a 20 MHz channel or all RB’s in all sub-bands for wideband operation are fully allocated and all sub-bands are transmitted. Partial allocation A-MPR applies when one or more RB’s in one or more sub-bands are not allocated or when not all transmitted sub-bands for wideband operation are transmitted.  NOTE 2: Applicable for 20 MHz channels centered at the nearest NR-ARFCN corresponding to 5160, 5340, 5480, and 5700 MHz, 40 MHz channels centered at the nearest NR-ARFCN corresponding to 5170, 5190, 5310, 5330, 5490, and 5510 MHz, 60 MHz channels centered at the nearest NR-ARFCN corresponding to 5180, 5200, 5220, 5280, 5300, 5320, 5500, 5520, 5540, 5680 MHz, and 80 MHz channels centered at the nearest NR-ARFCN corresponding to 5190, 5210, 5290, 5310, 5510, and 5530 MHz.  NOTE 3: Applicable for 20 MHz channels centered at the nearest NR-ARFCN corresponding to 5180 and 5320 MHz, and 40 MHz channels centered at the nearest NR-ARFCN corresponding to 5230 and 5270 MHz.  NOTE 4: Applicable for all valid channels other than those enumerated under NOTE 2 and NOTE 3. | | | | | | |

#### 6.2F.3.5 A-MPR for NS\_31

When "NS\_30" is indicated in the cell, the A-MPR is specified in Table 6.2F.3.5-1.

Table 6.2F.3.5-1: A-MPR for NS\_31 power class 5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pre-coding | Modulation | RB Allocation (Note 2) | RB Allocation (Note 3) | |
| Full/Partial | Full (dB) | Partial (dB) |
| DFT-s-ODFM | QPSK | See Table 6.2F.2-1 | ≤ 4.0 | ≤ 6.5 |
| 16 QAM | ≤ 4.0 | ≤ 6.0 |
| 64 QAM | ≤ 4.0 | ≤ 6.5 |
| 256 QAM | ≤ 5.0 | ≤ 6.5 |
| CP-OFDM | QPSK | ≤ 5.5 | ≤ 6.5 |
| 16 QAM | ≤ 5.5 | ≤ 7.0 |
| 64 QAM | ≤ 5.5 | ≤ 7.0 |
| 256 QAM | ≤ 7.0 | ≤ 7.0 |
| NOTE 1: Full allocation A-MPR applies when all RB’s in a 20 MHz channel or all RB’s in all sub-bands for wideband operation are fully allocated and all sub-bands are transmitted. Partial allocation A-MPR applies when one or more RB’s in one or more sub-bands are not allocated or when not all transmitted sub-bands for wideband operation are transmitted.  NOTE 2: Applicable for 20 MHz channels centered at the nearest NR-ARFCN corresponding to 5180, 5200, 5220, 5280, 5300, 5320, 5500, 5520, 5540, 5560, 5580, 5600, 5620, 5640, 5660, 5680, 5745, 5765, 5785, and 5805 MHz.  NOTE 3: Applicable for all valid channels and bandwidths other than those enumerated in NOTE 1. | | | | |

#### 6.2F.3.6 A-MPR for NS\_53

When "NS\_53" is indicated in the cell, the A-MPR is specified in Table 6.2F.3.6-1.

Table 6.2F.3.6-1: A-MPR for NS\_53 power class 5

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Pre-coding | Modulation | Channel bandwidth (Sub-band allocation) / RB Allocation | | | | | | | |
| 20 MHz | | 40 MHz | | 60 MHz | | 80 MHz | |
| Full (dB) | Partial (dB) | Full (dB) | Partial (dB) | Full (dB) | Partial (dB) | Full (dB) | Partial (dB) |
| DFT-s-ODFM | QPSK | ≤ 9.0 | ≤ 12.0 | ≤ 6.5 | ≤ 8.5 | ≤ 4.5 | ≤ 6.5 | ≤ 3.0 | ≤ 5.5 |
| 16 QAM | ≤ 9.0 | ≤ 12.0 | ≤ 6.5 | ≤ 8.5 | ≤ 4.5 | ≤ 6.5 | ≤ 3.0 | ≤ 5.5 |
| 64 QAM | ≤ 9.0 | ≤ 12.0 | ≤ 6.5 | ≤ 8.5 | ≤ 4.5 | ≤ 6.5 | ≤ 4.0 | ≤ 5.5 |
| 256 QAM | ≤ 9.0 | ≤ 12.0 | ≤ 6.5 | ≤ 8.5 | ≤ 5.0 | ≤ 7.0 | ≤ 5.0 | ≤ 5.5 |
| CP-OFDM | QPSK | ≤ 9.0 | ≤ 12.0 | ≤ 6.5 | ≤ 8.5 | ≤ 4.5 | ≤ 6.5 | ≤ 4.0 | ≤ 5.5 |
| 16 QAM | ≤ 9.0 | ≤ 12.0 | ≤ 6.5 | ≤ 8.5 | ≤ 4.5 | ≤ 6.5 | ≤ 4.0 | ≤ 5.5 |
| 64 QAM | ≤ 9.0 | ≤ 12.0 | ≤ 6.5 | ≤ 8.5 | ≤ 5.5 | ≤ 6.5 | ≤ 5.5 | ≤ 5.5 |
| 256 QAM | ≤ 9.0 | ≤ 12.0 | ≤ 7.0 | ≤ 8.5 | ≤ 7.0 | ≤ 7.0 | ≤ 7.0 | ≤ 7.0 |
| NOTE 1: Full allocation A-MPR applies when all RB’s in a 20 MHz channel or all RB’s in all sub-bands for wideband operation are fully allocated and all sub-bands are transmitted. Partial allocation A-MPR applies when one or more RB’s in one or more sub-bands are not allocated but when all sub-bands within the channel are transmitted. When not all sub-bands within the channel are transmitted, the A-MPR associated with the channel bandwidth according to the bandwidth of the contiguously transmitted sub-bands and according to the allocation type applies. | | | | | | | | | |

#### 6.2F.3.7 A-MPR for NS\_54

When "NS\_54" is indicated in the cell, the A-MPR is specified in Table 6.2F.3.7-1.

Table 6.2F.3.7-1: A-MPR for NS\_54 power class 5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pre-coding | Modulation | RB Allocation (Note 2) | RB Allocation (Note 3) | |
| Full/Partial | Full (dB) | Partial (dB) |
| DFT-s-ODFM | QPSK | See Table 6.2F.2-1 | ≤ 2.5 | ≤ 5.0 |
| 16 QAM | ≤ 3.0 | ≤ 5.0 |
| 64 QAM | ≤ 3.5 | ≤ 5.0 |
| 256 QAM | ≤ 5.0 | ≤ 6.0 |
| CP-OFDM | QPSK | ≤ 4.5 | ≤ 6.0 |
| 16 QAM | ≤ 4.5 | ≤ 6.0 |
| 64 QAM | ≤ 5.5 | ≤ 6.0 |
| 256 QAM | ≤ 7.0 | ≤ 7.0 |
| NOTE 1: Full allocation A-MPR applies when all RB’s in a 20 MHz channel or all RB’s in all sub-bands for wideband operation are fully allocated and all sub-bands are transmitted. Partial allocation A-MPR applies when one or more RB’s in one or more sub-bands are not allocated or when not all transmitted sub-bands for wideband operation are transmitted.  NOTE 2: Applicable for all valid channels and bandwidths other than those enumerated in NOTE 3.  NOTE 3: Applicable for 20 MHz channels centered at 5945, 40 MHz channels centered at 5955, 60 MHz channels centered at 5965 and 5985 MHz, and 80 MHz channels centered at 5975 MHz. | | | | |

### 6.2F.3A UE additional maximum output power reduction for CA

### 6.2F.3A.1 UE additional maximum output power reduction for inter-band CA

For inter-band carrier aggregation with uplink assigned to two bands, the requirements in clause 6.2.3 apply for the NR uplink carrier and clause 6.2F.3 for the carrier operating with shared spectrum access.

### 6.2F.4 Configured transmitted power

The requirements for configured maximum output power in sub-clause 6.2.4 apply.

**<<< Unchanged sections omitted >>>**

## 6.3F Output power dynamics for shared spectrum channel access

### 6.3F.1 Minimum output power

The requirements for minimum output power in sub-clause 6.3.1 apply.

### 6.3F.2 Transmit OFF power

The requirements for Transmit OFF power in sub-clause 6.3.2 apply.

### 6.3F.3 Transmit ON/OFF time mask

#### 6.3F.3.1 General

The transmit power time mask defines the transient period(s) allowed between transmit OFF power as defined in clause 6.3F.2 and transmit ON power symbols (transmit ON/OFF). The transmit power ON/OFF time mask specified in sub-clause 6.3F.3.2 supercedes the ON/OFF masks specified in sub-clause 6.3.3; however, between continuous ON-power transmissions the requirements in sub-clause 6.3.3 apply. Unless otherwise stated the requirements in clause 6.5F apply also in transient periods.

#### 6.3F.3.2 General ON/OFF time mask

The general ON/OFF time mask defines the observation period between transmit OFF and ON power and between transmit ON and OFF power for each SCS as illustrated below in Figure 6.3F.3.2-1. ON/OFF scenarios include: contiguous, and non-contiguous transmission, etc

The OFF power measurement period is defined in a duration of at least one slot excluding any transient periods. The ON power is defined as the mean power over the duration of at least one slot excluding any transient period and non-transmitted symbols. The leading transient period starts 5us before the beginning of the first symbol of transmission and extends 10us into the transmission including the CP extension if applicable. The trailing transient period starts 5us before the end of transmssion and extends 5us beyond the end of transmission.

**Figure 6.3F.3.2-1: General ON/OFF time mask for shared spectrum channel access**

**CP-E**

**End of OFF power**

**5µs**

**5µs**

**Transient period**

**Transient period**

**Start of OFF power**

**Start of ON power**

**requirement**

**Start of transmission**

**End of transmission**

**End of ON power**

**requirement**

**\* The OFF power requirements does not**

**apply for DTX and measurement gaps**

**10µs**

**5µs**

### 6.3F.3A General ON/OFF mask for CA

### 6.3F.3A.1 General ON/OFF mask for inter-band CA

For inter-band carrier aggregation with uplink assigned to two bands, the general output power ON/OFF time mask specified in clause 6.3.3.1 is applicable for the NR uplink carrier while the general output power ON/OFF time mask specified in clause 6.3F.3 is applicable for the carrier operating with shared spectrum access. The OFF period as specified in clause 6.3.3.1 and clause 6.3F.3 shall only be applicable for each component carrier when all the component carriers are OFF.

**<<< Unchanged sections omitted >>>**

### 6.3F.4 Power control

#### 6.3F.4.1 General

The requirements on power control accuracy apply under normal conditions.

#### 6.3F.4.2 Absolute power tolerance

The absolute power tolerance requirements of sub-clause 6.3.4.2 apply at the start of a contiguous transmission or non-contiguous transmission with a transmission gap larger than 40 ms.

#### 6.3F.4.3 Relative power tolerance

The relative power tolerace requirements of sub-clause 6.3.4.3 apply if the transmission gap between the target sub-frame and the reference sub-frame is less than or equal to 40 ms.

#### 6.3F.4.4 Aggregate power tolerance

The aggregate power tolerance requirements of sub-clause 6.3.4.4 apply during non-contiguous transmissions within 41ms with respect to the first UE transmission.

**<<< Unchanged sections omitted >>>**

## 6.4F Transmit signal quality for shared spectrum channel access

### 6.4F.1 Frequency error

The requirements for frequency error in sub-clause 6.4.1 apply.

### 6.4F.2 Transmit modulation quality

Transmit modulation quality defines the modulation quality for expected in-channel RF transmissions from the UE. The transmit modulation quality is specified in terms of:

- Error Vector Magnitude (EVM) for the allocated resource blocks (RBs)

- EVM equalizer spectrum flatness derived from the equalizer coefficients generated by the EVM measurement process

- Carrier leakage

- In-band emissions for the non-allocated RB

All the parameters defined in clause 6.4.2 are defined using the measurement methodology specified in Annex F.

In case the parameter 3300 or 3301 is reported from UE via *txDirectCurrentLocation* IE (as defined in TS 38.331 [7]), carrier leakage measurement requirement in clause 6.4F.2.2 and 6.4F.2.3 shall be waived, and the RF correction with regard to the carrier leakage and IQ image shall be omitted during the calculation of transmit modulation quality.

#### 6.4F.2.1 Error Vector Magnitude

The requirements for Error Vector Magnitude in sub-clause 6.4.2.1 apply.

#### 6.4F.2.2 Carrier leakage

The requirements for carrier leakage in sub-clause 6.4.2.2 apply.

#### 6.4F.2.3 In-band emissions

The in-band emission is defined as the average emission across 12 sub-carriers and as a function of the RB offset from the edge of the allocated UL transmission bandwidth. The in-band emission is measured as the ratio of the UE output power in a non–allocated RB to the UE output power in an allocated RB.

The basic in-band emissions measurement interval is defined over one slot in the time domain; however, the minimum requirement applies when the in-band emission measurement is averaged over 10 sub-frames. When the PUSCH or PUCCH transmission slot is shortened, the in-band emissions measurement interval is reduced by one or more symbols, accordingly. The requirement applies for power class 5 UE for 20 MHz channel bandwidth and 15 kHz SCS,

Instead of the general requirement in sub-clause 6.4.2.3, the average of the basic in-band emission measurement over 10 sub-frames shall not exceed the values specified in Table 6.4F.2.3-1.

Table 6.4F.2.3-1: Minimum requirements for in-band emissions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter description | Unit | Limit (NOTE 1) | | Applicable Frequencies |
| General | dB |  | | Any non-allocated (NOTE 2) |
| IQ Image | dB | -28 | Image frequencies when output power > 10 dBm | Image frequencies (NOTES 2, 3) |
| -25 | Image frequencies when output power ≤ 10 dBm |
| Carrier leakage | dBc | -28 | Output power > 10 dBm | Carrier frequency (NOTES 4, 5) |
| -25 | 0 dBm ≤ Output power ≤10 dBm |
| -20 | -30 dBm ≤ Output power ≤ 0 dBm |
| -10 | -40 dBm ≤ Output power < -30 dBm |
| NOTE 1: An in-band emissions combined limit is evaluated in each non-allocated RB. For each such RB, the minimum requirement is calculated as the higher of *PRB* - 30 dB and the power sum of all limit values (General, IQ Image or Carrier leakage) that apply. *PRB* is defined in NOTE 10.  NOTE 2: The measurement bandwidth is 1 RB and the limit is expressed as a ratio of measured power in one non-allocated RB to the measured average power per allocated RB, where the averaging is done across all allocated RBs. The requirement applies with  for any non-allocated RB with *RIV*=1 and *RIV*=5 in the uplink scheduling grant where *RIV* is specified in [10].  NOTE 3: [The applicable frequencies for this limit are those that are enclosed in the reflection of the allocated RBs, based on symmetry with respect to the reported carrier frequency location in *txDirectCurrentLocation* field of the *UplinkTxDirectCurrentBWP*, but excluding any allocated RBs. If *txDirectCurrentLocation* is not available or is reported with value 3300 or 3301, applicable frequencies shall be calculated with an assumed carrier frequency location at the center of the channel.]  NOTE 4: [The measurement bandwidth is 1 RB and the limit is expressed as a ratio of measured power in one non-allocated RB to the measured total power in all allocated RBs with *RIV*=1 and *RIV*=5 in the uplink scheduling grant.]  NOTE 5: [The applicable frequencies for this limit are those that are enclosed in the RBs containing the DC frequency if  is odd, or in the two RBs immediately adjacent to the DC frequency if  is even, but excluding any allocated RB. The location of the DC frequency is given by *txDirectCurrentLocation* field of the *UplinkTxDirectCurrentBWP*. If *txDirectCurrentLocation* is not available or is reported with value 3300 or 3301, applicable frequencies shall be those that are enclosed in the RB(s) in the center of the channel.]  NOTE 6:  is the Transmission Bandwidth Configuration (see Figure 5.6-1).  NOTE 7:  is the starting frequency offset between the allocated RB and the measured non-allocated RB (e.g.  or  for the first adjacent RB outside of the allocated bandwidth.  NOTE 10:  is the transmitted power per 180\*2 kHz in allocated RBs, measured in dBm. | | | | |

#### 6.4F.2.4 EVM equalizer spectrum flatness

The requirements for EVM equalizer spectrum flatness in sub-clause 6.4.2.4 apply.

### 6.4F.2A Transmit modulation quality for CA

### 6.4F.2A.1 Transmit modulation quality for inter-band CA

For inter-band carrier aggregation with uplink assigned to two bands, the transmit modulation quality requirements shall apply on the NR carrier as defined in clause 6.4.2 and on the carrier operating with shared spectrum access as defind in clause 6.4F.2. The requirements apply with all component carrier active: PCC with PRB allocation and SCC without PRB allocation and without CSI reporting and SRS configured.

**<<< Unchanged sections omitted >>>**

## 6.5F Output RF spectrum emissions

### 6.5F.1 Occupied bandwidth

The requirements for occupied bandwidth in sub-clause 6.5.1 apply for the specified NR-U channel bandwidths in Table 5.3.5-1.

### 6.5F.2 Out of band emission

#### 6.5F.2.1 General

The Out of band emissions are unwanted emissions immediately outside the assigned channel bandwidth resulting from the modulation process and non-linearity in the transmitter but excluding spurious emissions. This out of band emission limit is specified in terms of a spectrum emission mask and an adjacent channel leakage power ratio.

To improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth may be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

#### 6.5F.2.2 Spectrum emission mask for operation with shared spectrum channel access

Instead of the general spectrum emission mask requirement in sub-clause 6.5.2.2, when operating with shared spectrum channel access the relative power of any UE emission shall not exceed the levels specified in Table 6.5F.2.2-1 for the specified channel bandwidth or -30 dBm/MHz whichever is the greatest. The spectrum emission mask for operation with shared spectrum channel access is defined relative to the maximum power density in a 1 MHz measurement bandwidth within the channel bandwidth.

The spectrum emission mask for operation with shared spectrum channel access applies to frequencies (ΔfOOB) starting from the ± edge of the assigned channel bandwidth. For frequencies offset greater than ΔfOOB, the spurious requirements in clause 6.5.3 are applicable.

Table 6.5F.2.2-1: Spectrum emission mask for operation with shared spectrum channel access

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Spectrum emission limit (dBr) / Channel bandwidth | | | | | | | | | |
| ΔfOOB  (MHz) | 10 MHz | | 20 MHz | | 40 MHz | | 60 MHz | 80 MHz | Measurement bandwidth (MBW) |
| ± 0-1 |  | | | | | | | | [100kHz]3 |
| ± 1-5 | NOTE 1 | NOTE 1 | | NOTE 1 | | NOTE 1 | | NOTE 1 | 1 MHz |
| ± 5-10 | NOTE 2 |
| ± 10-20 | -40 | NOTE 2 | |
| ± 20-30 |  | -40 | | NOTE 2 | |
| ± 30-40 |  |  | | NOTE 2 | |
| ± 40-50 |  |  | | -40 | | NOTE 2 |
| ± 50-60 |  |  | |  | |
| ± 60-70 |  |  | |  | | -40 | |
| ± 70-80 |  |  | |  | |  | |
| ± 80-100 |  |  | |  | |  | | -40 |
| NOTE 1: Given as: where  NOTE 2: Given as: where  NOTE 3: The measured value shall be scaled by a factor equal to the ratio of the reference bandwidth (1 MHz) to the measurement bandwidth before the emission limit (dBr) is applied.  NOTE 4:   The carrier leakage exceptions from Table 6.4F.2.3-1 apply and carrier leakage contribution shall be removed prior to setting the 0dBr level of the mask, the reported carrier frequency location in *txDirectCurrentLocation* field of the *UplinkTxDirectCurrentBWP* can be used to cancel the carrier leakage contribution. If *txDirectCurrentLocation* is not available or is reported with value 3300 or 3301, a carrier frequency location at the center of the channel shall be assumed. | | | | | | | | | |

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.

#### 6.5F.2.2.1 Spectrum emission mask for non-transmitted channels

In the case of non-transmitted 20 MHz channel(s) on the edges of an assigned channel bandwidth the spectrum emission mask for operation with shared spectrum channel access, specified in Table 6.5F.2.2-1, is applied by using the total bandwidth of the remaining transmitted channels. The spectrum emission mask for non-transmitted channels is floored at -28dBr.

The relative power of any UE emission shall not exceed the most stringent levels given by the spectrum emission mask for operation with shared spectrum channel access with full channel bandwidth and the spectrum emission mask for non-transmitted channels with the channel bandwidth of the transmitted channels in the case of non-transmitted channels at the edge of an assigned channel bandwidth.

An exception to the spectrum emission mask for non-transmitted channels allows a single [2] MHz bandwidth to extend to [-28] dBc relative to total transmit power, or [-20] dBm, whichever is the greatest.

#### 6.5F.2.3 Additional spectrum emission mask

There are no additional spectrum emission mask requirements in this version of the specification.

#### 6.5F.2.4 Adjacent channel leakage ratio

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the filtered mean power centred on the assigned channel frequency to the filtered mean power centred on an adjacent channel frequency.

To improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth may be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

##### 6.5F.2.4.1 Shared spectrum channel access ACLR

The Adjacent Channel Leakage power Ratio is the ratio of the filtered mean power centred on the assigned channel frequency to the filtered mean power centred on an adjacent channel frequency at nominal channel spacing. The assigned channel power and adjacent channel power are measured with rectangular filters with measurement bandwidths specified in Table 6.5.2.4.1-1.

Instead of the general ACLR requirement in sub-clause 6.5.2.4, if the measured adjacent channel power is greater than –47 dBm then the ACLR shall be higher than the value specified in Table 6.5F.2.4.1-1.

Table 6.5F.2.4.1-1: Shared spectrum channel acess ACLR requirement

|  |  |
| --- | --- |
|  | Power class 5 |
| ACLR | 27 dB |

##### 6.5F.2.4.2 Additional requirement for network signaled value “NS\_29”

When “NS\_29” is indicated in the cell, the UE emission shall meet the additional requirements specified in Table 6.5F.2.4.2-1 for shared spectrum channels assigned within 5150 – 5350 MHz and 5470 – 5730 MHz.

Table 6.5F.2.4.2-1: ACLR2 requirement for “NS\_29”

|  |  |  |  |
| --- | --- | --- | --- |
| **Power class 5** | 20 MHz | 40 MHz | 60, 80 MHz |
| ACLR2 | 40 dB | 40 dB | N/A |
| Measurement bandwidth | 20 MHz | 40 MHz | N/A |
| Adjacent channel center frequency offset (MHz) | +40 / -40 | +80 / -80 | N/A |

### 6.5F.3 Spurious emissions

Spurious emissions are emissions which are caused by unwanted transmitter effects such as harmonics emission, parasitic emissions, intermodulation products and frequency conversion products, but exclude out of band emissions unless otherwise stated. The spurious emission limits are specified in terms of general requirements in line with SM.329 [9] and NR operating band requirement to address UE co-existence.

To improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth may be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

NOTE: 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.

#### 6.5F.3.1 General spurious emissions

The requirements for general spurious emission requirements in sub-clause 6.5.3.1 apply.

#### 6.5F.3.2 Spurious emissions for UE co-existence

Spurious emissions requirements for UE coexistence are not applicable to bands restricted to stand-alone operation with shared spectrum channel access as identified in Table 5.2-1.

#### 6.5F.3.3 Additional spurious emissions

These requirements are specified in terms of an additional spectrum emission requirement. Additional spurious emission requirements are signalled by the network to indicate that the UE shall meet an additional requirement for a specific deployment scenario as part of the cell handover/broadcast message.

##### 6.5F.3.3.1 Requirement for network signalled value "NS\_28"

When "NS\_28" is indicated in the cell, the power of any UE emission for channels assigned within 5150-5350 and 5470-5725 MHz shall not exceed the levels specified in Table 6.5F.3.3.1-1. This requirement also applies for the frequency ranges that are less than FOOB (MHz) in Table 6.6.3.1-1 from the edge of the channel bandwidth.

Table 6.5F.3.3.1-1: Additional requirements

|  |  |  |
| --- | --- | --- |
| Frequency band  (MHz) | Channel bandwidth /  Spectrum emission limit  (dBm) | Measurement bandwidth |
| 20, 40, 60, 80, [100] MHz |
| 47 ≤ f ≤ 74 | -54 | 100 kHz |
| 87.5 ≤ f ≤ 118 | -54 | 100 kHz |
| 174 ≤ f ≤ 230 | -54 | 100 kHz |
| 470 ≤ f ≤ 862 | -54 | 100 kHz |
| 1000 ≤ f ≤ 5150 | -30 | 1 MHz |
| 5350 ≤ f ≤ 5470 | -30 | 1 MHz |
| 5725 ≤ f ≤ 26000 | -30 | 1 MHz |

##### 6.5F.3.3.2 Requirement for network signalled value "NS\_29"

When "NS\_29" is indicated in the cell, the power of any UE emission for channels assigned within 5150-5350 and 5470-5730 MHz shall not exceed the levels specified in Table 6.5F.3.3.2-1, Table 6.5F.3.3.2-2, and Table 6.F.3.3.2-3. This requirement also applies for the frequency ranges that are less than FOOB (MHz) in Table 6.6.3.1-1 from the edge of the channel bandwidth.

Table 6.5F.3.3.2-1: Additional requirements for 20 MHz channel bandwidth

|  |  |  |  |
| --- | --- | --- | --- |
| Center  Frequency Fc  [MHz] | Protected range  [MHz] | Minimum requirement  [dBm] | Measurement bandwidth |
| 5179.98 ≤ Fc ≤ 5239.98 | 5135 ≤ f ≤ 5142 | -26 | 1 MHz |
| 5142 < f ≤ 5150 | -18 |
| 5250 ≤ f < 5250.2 | 3 to -2 |
| 5250.2 ≤ f < 5251 | -2 to -10 |
| 5251 ≤ f < 5260 | -10 to -18 |
| 5260 ≤ f < 5266.7 | -18 to -26 |
| 5266.7 ≤ f ≤ 5365 | -26 |
| 5260.02 ≤ Fc ≤ 5320.02 | 5135 ≤ f ≤ 5233.3 | -26 |
| 5233.3 < f ≤ 5240 | -26 to -18 |
| 5240 < f ≤ 5249 | -18 to -10 |
| 5249 < f ≤ 5249.8 | -10 to -2 |
| 5249.8 < f ≤ 5250 | -2 to 3 |
| 5350 ≤ f ≤ 5365 | -26 |
| 5500.02 ≤ Fc ≤ 5719.98 | 5420 ≤ f ≤ 5460 | -26 |
| 5460 < f ≤ 5470 | -19 |
| 5745 ≤ f < 5765 | -19 |
| 5765 ≤ f ≤ 5800 | -26 |
| NOTE: The minimum requirement when specified as a range denotes the emission requirement at the end points of the protected range. The requirement within the protected range is obtained by linear interpolation between the requirements at the end points. | | | |

Table 6.5F.3.3.2-2: Additional requirements for 40 MHz channel bandwidth

|  |  |  |  |
| --- | --- | --- | --- |
| Center  Frequency Fc  [MHz] | Protected range  [MHz] | Minimum requirement  [dBm] | Measurement bandwidth |
| 5190 ≤ Fc ≤ 5230.02 | 5100 ≤ f ≤ 5141.6 | -26 | 1 MHz |
| 5141.6 < f ≤ 5150 | -18 |
| 5250 ≤ f < 5251 | -3 to -13 |
| 5251 ≤ f < 5270 | -13 to -21 |
| 5270 ≤ f < 5278.4 | -21 to -26 |
| 5278.4 ≤ f ≤ 5400 | -26 |
| 5269.98 ≤ Fc ≤ 5310 | 5210 < f ≤ 5221.6 | -26 |
| 5221.6 < f ≤ 5230 | -26 to -21 |
| 5230 < f ≤ 5249 | -21 to -13 |
| 5249 ≤ f ≤ 5250 | -13 to -3 |
| 5350 ≤ f ≤ 5358.4 | -18 |
| 5358.4 < f ≤ 5400 | -26 |
| 5509.98 ≤ Fc ≤ 5670 | 5420 ≤ f ≤ 5460 | -19 |
| 5460 < f ≤ 5470 | -13 |
| 5770 ≤ f ≤ 5800 | -19 |
| NOTE: The minimum requirement when specified as a range denotes the emission requirement at the end points of the protected range. The requirement within the protected range is obtained by linear interpolation between the requirements at the end points. | | | |

Table 6.5F.3.3.2-3: Additional requirements for 60 and 80 MHz channel bandwidth

|  |  |  |  |
| --- | --- | --- | --- |
| Center  Frequency Fc  [MHz] | Protected range  [MHz] | Minimum requirement  [dBm] | Measurement bandwidth |
| 5200.02 ≤ Fc ≤ 5220 | 5020 ≤ f ≤ 5123.2 | -26 | 1 MHz |
| 5123.2 < f ≤ 5150 | -18 |
| 5250 ≤ f < 5251 | -6 to -16 |
| 5251 ≤ f < 5290 | -16 to -24 |
| 5290 ≤ f < 5296.7 | -24 to -26 |
| 5296.7 ≤ f ≤ 5480 | -26 |
| 5280 ≤ Fc ≤ 5299.98 | 5020 ≤ f ≤ 5203.3 | -26 |
| 5203.3 < f ≤ 5210 | -26 to -24 |
| 5210 < f ≤ 5249 | -24 to -16 |
| 5249 < f ≤ 5250 | -16 to -6 |
| 5350 ≤ f < 5376.8 | -18 |
| 5376.8 ≤ f ≤ 5480 | -26 |
| 5520 ≤ Fc ≤ 5689.98 | 5340 ≤ f ≤ 5460 | -19 |
| 5460 < f ≤ 5469.5 | -13 |
| 5469.5 < f ≤ 5470 | -13 |
| 5770 ≤ f ≤ 5800 | -19 |
| NOTE: The minimum requirement when specified as a range denotes the emission requirement at the end points of the protected range. The requirement within the protected range is obtained by linear interpolation between the requirements at the end points. | | | |

##### 6.5F.3.3.3 Requirement for network signalled value "NS\_30"

When "NS\_30" is indicated in the cell, the power of any UE emission for channels assigned within 5150-5350 MHz, 5470-5725 MHz and 5725-5850 MHz shall not exceed the levels specified in Table 6.5F.3.3.3-1-1, Table 6.5F.3.3.3-1-2 and Table 6.5F.3.3.3-1-3, respectively. These requirements also apply for the frequency ranges that are less than FOOB (MHz) in Table 6.6.3.1-1 from the edge of the channel bandwidth.

Table 6.5F.3.3.3-1: Additional requirements for shared access channels assigned within 5150-5350 MHz

|  |  |  |
| --- | --- | --- |
| Protected range  (MHz) | Channel bandwidth /  Spectrum emission limit  (dBm) | Measurement bandwidth |
| 20, 40, 60, 80 MHz |
| 4500 ≤ f ≤ 5150 | -41 | 1 MHz |
| 5350 ≤ f ≤ 5460 | -41 |

Table 6.5F.3.3.3-2: Additional requirements for shared access channels assigned within 5470-5725 MHz

|  |  |  |
| --- | --- | --- |
| Protected range  (MHz) | Channel bandwidth /  Spectrum emission limit  (dBm) | Measurement bandwidth |
| 20, 40, 60, 80 MHz |
| 4500 ≤ f ≤ 5150 | -41 | 1 MHz |
| 5350 ≤ f ≤ 5460 | -41 |
| 5460 < f ≤ 5470 | -27 |
| 5725 ≤ f | -27 |

Table 6.5F.3.3.3-3: Additional requirements for shared access channels assigned within 5725-5850 MHz

|  |  |  |
| --- | --- | --- |
| Protected range  (MHz) | Channel bandwidth /  Spectrum emission limit  (dBm) | Measurement bandwidth |
| 20, 40, 60, 80, [100] MHz |
| f < 5650 | -27 | 1 MHz |
| 5650 ≤ f < 5700 | -27 to 10 |
| 5700 ≤ f < 5720 | 10 to 15.6 |
| 5720 < f ≤ 5725 | 15.6 to 27 |
| 5850 ≤ f ≤ 5855 | 27 to 15.6 |
| 5855 < f ≤ 5875 | 15.6 to 10 |
| 5875 < f ≤ 5925 | 10 to -27 |
| 5925 < f | -27 |
| NOTE: The minimum requirement when specified as a range denotes the emission requirement at the end points of the protected range. The requirement within the protected range is obtained by linear interpolation between the requirements at the end points. | | |

##### 6.5F.3.3.4 Requirement for network signalled value "NS\_31"

When "NS\_31" is indicated in the cell, the power of any UE emission for channels assigned within 5150-5250 MHz, 5250-5350 MHz, 5470-5725 MHz and 5725-5850 MHz shall not exceed the levels specified in Table 6.5F.3.3.4-1, Table 6.5F.3.3.4-2, Table 6.5F.3.3.4-3 and Table 6.5F.3.3.4-4, respectively. These requirements also apply for the frequency ranges that are less than FOOB (MHz) in Table 6.6.3.1-1 from the edge of the channel bandwidth.

Table 6.5F.3.3.4-1: Additional requirements for NR-U channels assigned within 5150-5250 MHz

|  |  |  |
| --- | --- | --- |
| Frequency band  (MHz) | Channel bandwidth /  Spectrum emission limit  (dBm) | Measurement bandwidth |
| 20, 40, 60, 80 MHz |
| f ≤ 5150 | -27 | 1 MHz |
| f ≥ 5250 | -27 |

Table 6.5F.3.3.4-2: Additional requirements for NR-U channels assigned within 5250-5350 MHz

|  |  |  |
| --- | --- | --- |
| Frequency band  (MHz) | Channel bandwidth /  Spectrum emission limit  (dBm) | Measurement bandwidth |
| 20, 40, 60, 80 MHz |
| f ≤ 5250 | -27 | 1 MHz |
| f ≥ 5350 | -27 |

Table 6.5F.3.3.4-3: Additional requirements for NR-U channels assigned within 5470-5725 MHz

|  |  |  |
| --- | --- | --- |
| Frequency band  (MHz) | Channel bandwidth /  Spectrum emission limit  (dBm) | Measurement bandwidth |
| 20, 40, 60, 80 MHz |
| f ≤ 5470 | -27 | 1 MHz |
| f ≥ 5725 | -27 |

Table 6.5F.3.3.4-4: Additional requirements for NR-U channels assigned within 5725-5850 MHz

|  |  |  |
| --- | --- | --- |
| Frequency band  (MHz) | Channel bandwidth /  Spectrum emission limit  (dBm) | Measurement bandwidth |
| 20, 40, 60, 80 MHz |
| f ≤ 5725 | -27 | 1 MHz |
| f ≥ 5850 | -27 |
|  |  |  |

##### 6.5F.3.3.5 Requirements for network signalled value "NS\_53" or “NS\_54”

When "NS\_53" or “NS\_54” is indicated in the cell, the power of any UE emission shall not exceed the levels specified in Table 6.5F.3.3.5-1. These requirements also apply for the frequency ranges that are less than FOOB (MHz) in Table 6.6.3.1-1 from the edge of the channel bandwidth.

Table 6.5F.3.3.5-1: Additional requirements

|  |  |  |
| --- | --- | --- |
| Frequency band  (MHz) | Spectrum emission limit  (dBm) | Measurement bandwidth |
| f ≤ 5925 | -27 | 1 MHz |
| f ≥ 7125 | -27 |

**<<< Unchanged sections omitted >>>**

### 6.5F.4 Transmit intermodulation

The requirements for transmit intermodulation in sub-clause 6.5F.4 apply.

**<<< Unchanged sections omitted >>>**

## 7.1 General

Unless otherwise stated the receiver characteristics are specified at the antenna connector(s) of the UE. For UE(s) with an integral antenna only, a reference antenna(s) with a gain of 0 dBi is assumed for each antenna port(s). UE with an integral antenna(s) may be taken into account by converting these power levels into field strength requirements, assuming a 0 dBi gain antenna. For UEs with more than one receiver antenna connector, identical interfering signals shall be applied to each receiver antenna port if more than one of these is used (diversity).

The levels of the test signal applied to each of the antenna connectors shall be as defined in the respective clauses below.

The applicability of receiver requirements for Band n90 is in accordance with that for Band n41; a UE supporting Band n90 shall meet the minimum requirements for Band n41.

With the exception of clause 7.3, the requirements shall be verified with the network signalling value NS\_01 configured (Table 6.2.3-1).

All the parameters in clause 7 are defined using the UL reference measurement channels specified in Annexes A.2.2 and A.2.3, the DL reference measurement channels specified in Annex A.3.2 and using the set-up specified in Annex C.3.1.

The minium requirements specified in clauses 7.5, 7.6, 7.7 and 7.8 for NR band n48 refer to the minimum requirements for NR bands < 2.7 GHz.

For the additional requirements for intra-band non-contiguous carrier aggregation of two or more sub-blocks, an in-gap test refers to the case when the interfering signal is located at a negative offset with respect to the assigned lowest channel frequency of the highest sub-block and located at a positive offset with respect to the assigned highest channel frequency of the lowest sub-block.

For the additional requirements for intra-band non-contiguous carrier aggregation of two or more sub-blocks, an out-of-gap test refers to the case when the interfering signal(s) is (are) located at a positive offset with respect to the assigned channel frequency of the highest carrier frequency, or located at a negative offset with respect to the assigned channel frequency of the lowest carrier frequency.

For the additional requirements for intra-band non-contiguous carrier aggregation of two or more sub-blocks with channel bandwidth larger than or equal to 5 MHz, the existing adjacent channel selectivity requirements, in-band blocking requirements (for each case), and narrow band blocking requirements apply for in-gap tests only if the corresponding interferer frequency offsets with respect to the two measured carriers satisfy the following condition in relation to the sub-block gap size Wgap for at least one of these carriers *j* = 1,2, so that the interferer frequency position does not change the nature of the core requirement tested:

Wgap ≥ 2∙|FInterferer (offset),*j*| – BWChannel(*j*)

where FInterferer (offset),*j*for a sub-block with a single component carrier is the interferer frequency offset with respect to carrier *j* as specified in clause 7.5, clause 7.6.2 and clause 7.6.4 for the respective requirement and BWChannel(*j*) the channel bandwidth of carrier *j*. FInterferer (offset),j for a sub-block with two or more contiguous component carriers is the interference frequency offset with respect to the carrier adjacent to the gap is specified in clause 7.5A, 7.6A.2 and 7.6A.3. The interferer frequency offsets for adjacent channel selectivity, each in-band blocking case and narrow- band blocking shall be tested separately with a single in-gap interferer at a time.

For the additional requirements for operation with shared spectrum channel access, the receiver requirements apply under the assumption that all 20 MHz sub-bands and all RB’s of each sub-band within the downlink channel are allocated with intra-cell guard bands configured to zero.

**<<< Unchanged sections omitted >>>**

## 7.3F Reference sensitivity for shared spectrum channel access

### 7.3F.1 General

The reference sensitivity power level REFSENS is the minimum mean power applied to each one of the UE antenna ports, at which the throughput shall meet or exceed the requirements for the specified reference measurement channel.

In later sub-clauses of Clause 7 where the value of REFSENS is used as a reference to set the corresponding requirement, the UE shall be verified against those requirements by applying the REFSENS value in Table 7.3F.2-1 with 2 Rx antenna ports tested.

### 7.3F.2 Reference sensitivity power level

The throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2.2, A.2.3.2, A3.2 and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1) with parameters specified in Table 7.3F.2-1, Table 7.3F.2-2, and Table 7.3F.2-3.

Table 7.3F.2-1: Two antenna port reference sensitivity QPSK PREFSENS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Operating band / SCS / Channel bandwidth | | | | | |
| Operating Band | SCS kHz | 20 MHz (dBm) | 40 MHz (dBm) | 60 MHz (dBm) | 80 MHz (dBm) |
| n46 | 15 | -89.7 | -86.6 |  |  |
| 30 | -89.9 | -86.7 | -84.8 | -83.6 |
| 60 | -90.1 | -86.9 | -85.0 | -83.6 |
| n96 | 15 | [-89.7] | [-86.6] |  |  |
| 30 | [-89.9] | [-86.7] | [-84.8] | [-83.6] |
| 60 | [-90.1] | [-86.9] | [-85.0] | [-83.6] |

For UE(s) equipped with 4 Rx antenna ports, reference sensitivity for 2Rx antenna ports in Table 7.3F.2-1 shall be modified by the amount given in ΔRIB,4R in Table 7.3F.2-2 for the applicable operating bands.

Table 7.3F.2-2: Four antenna port reference sensitivity allowance ΔRIB,4R

|  |  |
| --- | --- |
| Operating band | ΔRIB,4R (dB) |
| n46, n96 | -2.2 |

The reference receive sensitivity (REFSENS) requirement specified in Table 7.3F.2-1 and Table 7.3F.2-2 shall be met with uplink transmission bandwidth less than or equal to that specified in Table 7.3F.2-3.

Table 7.3F.2-3: Uplink configuration for reference sensitivity

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Operating band / SCS / Channel bandwidth | | | | | |
| Operating Band | SCS kHz | 20 MHz (dBm) | 40 MHz (dBm) | 60 MHz (dBm) | 80 MHz (dBm) |
| n46 | 15 | 100 | 216 |  |  |
| 30 | 50 | 100 | 162 | 216 |
| 60 | 24 | 50 | 75 | 100 |
| n96 | 15 | 100 | 216 |  |  |
| 30 | 50 | 100 | 162 | 216 |
| 60 | 24 | 50 | 75 | 100 |

Unless given by Table 7.3F.2-4, the minimum requirements specified in Tables 7.3F.2-1 and 7.3F.2-2 shall be verified with the network signalling value NS\_01 (Table 6.2F.3.1-1) configured.

Table 7.3F.2-4: Network signaling value for reference sensitivity

|  |  |
| --- | --- |
| Operating band | Network Signalling value |
| n46 | NS\_01 |
| n96 | NS\_53 |

### 7.3F.3 ΔRIB,c

For a UE supporting CA or DC band combination, the minimum requirement for reference sensitivity in Table 7.3F.2-1 shall be increased by the amount given by ΔRIB,c defined in Table 7.3F.3-1. Unless otherwise stated, ΔRIB,c is set to zero.

Table 7.3F.3-1: ΔRIB,c due to CA (two bands)

|  |  |  |
| --- | --- | --- |
| Inter-band CA combination | Operating Band | ΔRIB,c (dB) |
| CA\_n46-n48 | n46 | 0 |
| n48 | 0.5 |

In case the UE supports more than one of band combinations for CA or DC, and an operating band belongs to more than one band combinations then the applicable additional ΔRIB,c shall be the maximum value for all band combinations defined in clause 7.3A and 7.3F.3 in this specification and 7.3A, 7.3B in TS 38.101-3 [3] for the applicable operating bands.

### 7.3F.4 Intra-band contiguous shared spectrum channel access CA

For intra-band contiguous carrier aggregation, the throughput of each component carrier shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2.2, A.2.3.2, A.3.2, and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1) with parameters specified in Table 7.3F.2-1, Table 7.3F.2-2, and Table 7.3F.2-3.

### 7.3F.5 Inter-band CA with shared spectrum channel access

For inter-band carrier aggregation with one component carrier per operating band and the uplink assigned to one NR band the throughput of the NR carrier shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2.2, A.2.3.2, A.3.2, and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1 with parameters specified in Table 7.3.2-1, Table 7.3.2-2 and Table 7.3.2-3 modified in accordance with clause 7.3F.3. The throughput of the NR-U carrier shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2.2, A.2.3.2, A.3.2, and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1) with parameters specified in Table 7.3F.2-1, Table 7.3F.2-2, and Table 7.3F.2-3 modified in accordance with clause 7.3F.3. The reference sensitivity is defined to be met with all downlink component carriers active and the PCell uplink carrier active. Exceptions to reference sensitivity are allowed in accordance with clause 7.3F.5.1 and clause 7.3F.5.2.

### 7.3F.5.1 Reference sensitivity exceptions due to UL harmonic interference

The reference sensitivity for the shared access band does not apply when there is at least one individual RE within the shared access downlink transmission bandwidth which falls into the reference sensitivity exclusion region as specified in Table 7.3F.5.1-1.

Table 7.3F.5.1-1: NR-U reference sensitivity measurement exclusion region in MHz.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| NR Band / Harmonic order / Channel BW in UL | | | | | | |
| Band | Harmonic order | 5MHz | 10MHz | 15MHz | 20 MHz | 40MHz |
| n25 | 3 | +/- 15 | +/- 23 | +/- 35 | +/- 45 | +/- 90 |
| n66 | 3 | +/- 15 | +/- 23 | +/- 35 | +/- 45 | +/- 90 |
| NOTE 1: Even though UL harmonic does not fall directly into NR-U band the exclusion region still applies.  NOTE 2: The center of the exclusion region is obtained by multiplying the UL channel center frequency by the harmonic order. | | | | | | |

### 7.3F.5.2 Reference sensitivity exceptions due to cross band isolation

For unsynchronized operation, Rx de-sensing in one band will be caused by another band due to lack of isolation in the band filters. Reference sensitivity exceptions for cross band are specified in Table 7.3F.5.2-1 with uplink configuration specified in Table 7.3F.5.2-2-2.

Table 7.3F.5.2-1: MSD for cross band isolation

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Operating Band / Channel bandwidth of the affected DL band | | | | | | | | | | | | | | |
| CA Configuration | UL band | DL band | 5 MHz (dB) | 10 MHz (dB) | 15 MHz (dB) | 20 MHz (dB) | 25 MHz (dB) | 30 MHz (dB) | 40 MHz (dB) | 50 MHz (dB) | 60 MHz (dB) | 80 MHz (dB) | 90 MHz (dB) | 100 MHz (dB) |
| CA\_n46A-n48A | n46 | n48 | 13.3 | 10.4 | 8.8 | 7.8 | - | - | 7.8 | 7 | 6.5 | 5.7 | 5.4 | 5.1 |
| n48 | n46 | - | - | - | 13.5 | - | - | 10.9 | - | 9.4 | 8.7 | - | - |

Table 7.3F.5.2-2: Uplink configuration for reference sensitivity exceptions due to cross band isolation

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Operating Band / SCS / Channel bandwidth of the affected DL band | | | | | | | | | | | | | | |
| UL band | DL band | SCS of UL band (kHz) | 5 MHz | 10 MHz | 15 MHz | 20 MHz | 25 MHz | 30 MHz | 40 MHz | 50 MHz | 60 MHz | 80 MHz | 90 MHz | 100 MHz |
| n46 | n48 | 30 | 216 | 216 | 216 | 216 |  |  | 216 | 216 | 216 | 216 | 216 | 216 |
| n48 | n46 | 15 |  |  |  | 216 |  |  | 216 |  | 216 | 216 |  |  |
| NOTE 1: The UL configuration applies regardless of the channel bandwidth of the UL band unless the UL resource blocks exceed that specified in Table 7.3.2-3 for the uplink bandwidth in which case the allocation according to Table 7.3.2-3 applies.  NOTE 2: Refers to the UL resource blocks shall be located as close as possible to the downlink operating band but confined within the transmission bandwidth configuration for the channel bandwidth in Table 5.3.2-1. | | | | | | | | | | | | | | |

**<<< Unchanged sections omitted >>>**

## 7.5F Adjacent channel selectivity

### 7.5F.1 General

Adjacent channel selectivity (ACS) is a measure of a receiver's ability to receive an NR signal at its assigned channel frequency in the presence of an adjacent channel signal at a given frequency offset from the centre frequency of the assigned channel. ACS is the ratio of the receive filter attenuation on the assigned channel frequency to the receive filter attenuation on the adjacent channel(s).

Instead of the general ACS requirements specified in sub-clause 7.5, the UE shall fulfil the minimum requirements specified in Table 7.5F.1-1. These requirements apply for any SCS specified for the channel bandwidth of the wanted signal. For the test parameters specified in Table 7.5F.1-2, the throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2, A.2.3, A.3.2, and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1).

Table 7.5F.1-1: ACS for shared spectrum channel access bands

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| RX parameter | Units | Channel bandwidth | | | |
| 20 MHz | 40 MHz | 60 MHz | 80 MHz |
| ACS | dB | 24 | 21 | 19.2 | 18 |

Table 7.5F.1-2: Test parameters for shared spectrum channel acess bands

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| RX parameter | Units | Channel bandwidth | | | |
| 20 MHz | 40 MHz | 60 MHz | 80 MHz |
| Power in transmission bandwidth configuration | dBm | REFSENS + 14 dB | | | |
| Pinterferer | dBm | REFSENS + TBD +12.5 dB | REFSENS + TBD + 9.5 dB | REFSENS + TBD + 7.7 dB | REFSENS + TBD + 6.5 dB |
| BWinterferer | MHz | 20 | | | |
| Finterferer (offset) | MHz | 20 / -20 | | | |
| NOTE 1: The transmitter shall be set to 4 dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4.  NOTE 2: The absolute value of the interferer offset Finterferer (offset) shall be further adjusted to MHz with SCS the sub-carrier spacing of the wanted signal in MHz. The interferer is an NR signal with an SCS equal to that of the wanted signal.  NOTE 3: The interferer consists of the RMC specified in Annexes A.3.2.2 and A.3.3.2 with  one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1. | | | | | |

### 7.5F.2 Intra-band contiguous shared spectrum channel access CA

ACS for intra-band contiguous shared access CA requirements are specified in Table 7.5F.2-1. These requirements apply for any SCS specified for the channel bandwidth of the wanted signal. For the test parameters specified in Table 7.5F.2-2, the throughput of each carrier shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2, A.2.3, A.3.2, and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1).

Table 7.5F.2-1: ACS for intra-band contiguous shared access CA

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | NR-U CA bandwidth class | | | | | | | |
| Rx Parameter | Units | B | C | D | E | I | M | N | O |
| ACS | dB | 24 – 10log10(BWChannel\_CA/20) | | | | | | | |

Table 7.5F.1-2: Test parameters for intra-band contiguous NR-U CA

|  |  |  |
| --- | --- | --- |
| Rx Parameter | Units | NR-U CA bandwidth class |
| B, C, D, E, I, M, N, O |
| Pw in Transmission Bandwidth Configuration, per CC | dBm | REFSENS + 14 dB |
| PInterferer | dBm | Aggregated power + 24 – 1.5 – 10log10(BWChannel\_CA/20) dB |
| BWInterferer | MHz | 20 |
| FInterferer (offset) | MHz | 10 + Foffset  /  -10 - Foffset |
| NOTE 1: The transmitter shall be set to 4 dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4 .  NOTE 2: The absolute value of the interferer offset Finterferer (offset) shall be further adjusted to MHz with SCS the sub-carrier spacing of the carrier closest to the interferer in MHz. The interferer is an NR signal with an SCS equal to that of the closest carrier.  NOTE 3: The interferer consists of the RMC specified in Annexes A.3.2.2 and A.3.3.2 with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1. | | |

**<<< Unchanged sections omitted >>>**

## 7.6F Blocking characteristics

### 7.6F.1 General

The blocking characteristic is a measure of the receiver's ability to receive a wanted signal at its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the spurious response or the adjacent channels, without this unwanted input signal causing a degradation of the performance of the receiver beyond a specified limit. The blocking performance shall apply at all frequencies except those at which a spurious response occurs.

### 7.6F.2 In-band blocking

#### 7.6F.2.1 General

In-band blocking (IBB) is defined for an unwanted interfering signal falling into the UE receive band or into the first 60 MHz below or above the UE receive band. Instead of the general in-band blocking requirements specified in sub-clause 7.6.2, the throughput of the wanted signal shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2, A.2.3, A.3.2 and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1) with parameters specified in Table 7.6F.2.1-1 and Table 7.6F.2.1-2. The relative throughput requirement shall be met for any SCS specified for the channel bandwidth of the wanted signal.

Table 7.6F.2.1-1: In-band blocking parameters for shared access bands

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| RX parameter | Units | Channel bandwidth | | | |
| 20 MHz | 40 MHz | 60 MHz | 80 MHz |
| Power in transmission bandwidth configuration | dBm | REFSENS + channel bandwidth specific value below | | | |
| dB | 9 | 12 | 13.8 | 15 |
| BWinterferer | MHz | 20 | | | |
| FIoffset, case 1 | MHz | 30 | | | |
| FIoffset, case 2 | MHz | ≥ 50 | | | |

Table 7.6F.2.1-2: In-band blocking for shared access bands

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operating band | Parameter | Unit | Case 1 | Case 2 |
| Pinterferer | dBm | -56 | -44 |
| Finterferer (offset) | MHz | -CBW/2 –  FIoffset, case 1  and  CBW/2 +  FIoffset, case 1 | ≤ -CBW/2 –  FIoffset, case 2  and  ≥ CBW/2 +  FIoffset, case 2 |
| n46, n96 | Finterferer |  | NOTE 2 | FDL\_low – 3\*CBW  to  FDL\_high + 3\*CBW,  NOTE 4 |
| NOTE 1: The absolute value of the interferer offset Finterferer (offset) shall be further adjusted to MHz with SCS the sub-carrier spacing of the wanted signal in MHz. The interferer is an NR signal with an SCS equal to that of the wanted signal.  NOTE 2: For each carrier frequency, the requirement applies for two interferer carrier frequencies: a: -CBW/2 – FIoffset, case 1; b: CBW/2 + FIoffset, case 1  NOTE 3: CBW denotes the channel bandwidth of the wanted signal  NOTE 4: Interferer carrier frequencies in the frequency range for Case 2 shall be located at discrete frequencies in integer multiples of 20 MHz offset from -CBW/2 – FIoffset, case 2 and CBW/2 + FIoffset, case 2 | | | | |

#### 7.6F.2.2 Intra-band contiguous shared spectrum channel access CA

In-band blocking for intra-band contiguous shared access CA requirements are specified in Table 7.6F.2.2-1. These requirements apply for any SCS specified for the channel bandwidth of the wanted signal. For the test parameters specified in Table 7.6F.2.2-2, the throughput of each carrier shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2, A.2.3, A.3.2, and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1).

Table 7.6F.2.2-1: In-band blocking parameters for intra-band contiguous shared access CA

|  |  |  |
| --- | --- | --- |
| Rx Parameter | Units | Shared access CA bandwidth class |
| B, C, D, E, I, M, N, O |
| Pw in Transmission Bandwidth Configuration, per CC | dBm | REFSENS + aggregated channel bandwidth value below |
| dB | 9 + 10log(BWChannel\_CA/20) |
| BWInterferer | MHz | 20 |
| FIoffset, case 1 | MHz | 30 |
| FIoffset, case 2 | MHz | ≥ 50 |
| NOTE 1: The transmitter shall be set to 4dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4.  NOTE 2: The interferer consists of the Reference measurement channel specified in Annexes A.3.2 and A.3.3 with one sided dynamic OCNG Pattern OP.1 FDD/TDD as described in Annex A.5.1.1/A.5.2.1 and set-up according to Annex C.3.1 | | |

Table 7.6F.2.2-2: In-band blocking for intra-band contiguous shared access CA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operating band | Parameter | Unit | Case 1 | Case 2 |
| Pinterferer | dBm | -56 | -44 |
| Finterferer (offset) | MHz | -BWchannel CA/2 –FIoffset, case 1  and  BWchannel CA/2 +FIoffset, case 1 | ≤ -BWchannel CA/2 –FIoffset, case 2  and  ≥ BWchannel CA/2 +FIoffset, case 2 |
| n46 | Finterferer | MHz | NOTE 2 | FDL\_low – 3\* BWchannel CA  to  FDL\_high + 3\* BWchannel CA  NOTE 4 |
| NOTE 1: The absolute value of the interferer offset Finterferer (offset) shall be further adjusted to MHz with SCS the sub-carrier spacing of the carrier closest to the interferer in MHz. The interferer is an NR signal with an SCS equal to that of the closest carrier.  NOTE 2: For each carrier frequency, the requirement applies for two interferer carrier frequencies: a: -BWchannel CA/2 – FIoffset, case 1; b: BWchannel CA/2 + FIoffset, case 1  NOTE 3: BWchannel CA denotes the aggregated channel bandwidth of the wanted signal  NOTE 4: Interferer carrier frequencies in the frequency range for Case 2 shall be located at discrete frequencies in integer multiples of 20 MHz offset from - BWchannel CA /2 – FIoffset, case 2 and BWchannel CA /2 + FIoffset, case 2 | | | | |

### 7.6F.3 Out-of-band blocking

#### 7.6F.3.1 General

Out-of-band band blocking is defined for an unwanted CW interfering signal falling outside a frequency range 60 MHz or greater below or above the UE receive band. Instead of the general out-of-band blocking requirements specified in sub-clause 7.6.3, the throughput of the wanted signal shall be ≥ 95% of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2, A.2.3, A.3.2 and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1) with parameters specified in Table 7.6F.3.1-1 and Table 7.6F.3.1-2. The relative throughput requirement shall be met for any SCS specified for the channel bandwidth of the wanted signal.

Table 7.6F.3.1-1: Out-of-band blocking parameters for shared access bands

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| RX parameter | Units | Channel bandwidth | | | |
| 20 MHz | 40 MHz | 60 MHz | 80 MHz |
| Power in transmission bandwidth configuration | dBm | REFSENS + channel bandwidth specific value below | | | |
| dB | 9 | | | |
| NOTE: The transmitter shall be set to 4 dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4. | | | | | |

Table 7.6F.3.1-2: Out of-band blocking for shared access bands

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Operating band | Parameter | Unit | Range1 | Range 2 | Range 3 |
| Pinterferer | dBm | -44 | -30 | -15 |
| n46, n96 | Finterferer (CW) | MHz | N/A | -200 < f – FDL\_low ≤ -3\*CBW  or  3\*CBW ≤ f – FDL\_high < 200 | 1 ≤ f ≤ FDL\_low – MAX(200,3\*CBW)  or  FDL\_high + MAX(200,3\*CBW)  ≤ f ≤ 12750 |
| NOTE 1: The power level of the interferer (PInterferer) for Range 3 shall be modified to -20 dBm for FInterferer > 4200 MHz.  NOTE 2: CBW denotes the channel bandwidth of the wanted signal | | | | | |

For interferer frequencies across ranges 1, 2 and 3 in Table 7.6F.3-2, a maximum of



exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a step size of  MHz withthe number of resource blocks in the downlink transmission bandwidth configuration, *CBW* the bandwidth of the frequency channel in MHz and *n* = 1, 2, 3 for SCS = 15, 30, 60 kHz, respectively. For these exceptions, the requirements in clause 7.7 apply.

#### 7.6F.3.2 Intra-band contiguous shared spectrum channel access CA

Out-of-band blocking for intra-band contiguous shared access CA requirements are specified in Table 7.6F.3.2-1. These requirements apply for any SCS specified for the channel bandwidth of the wanted signal. For the test parameters specified in Table 7.6F.3.2-2, the throughput of each carrier shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2, A.2.3, A.3.2, and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1).

Table 7.6F.3.2-1: Out-of-band blocking parameters for intra-band contiguous shared access CA

|  |  |  |
| --- | --- | --- |
| Rx Parameter | Units | Shared access CA bandwidth class |
| B, C, D, E, I, M, N,O |
| Pw in Transmission Bandwidth Configuration, per CC | dBm | REFSENS + CA bandwidth class specific value below |
| dB | 9 |
| NOTE 1: The transmitter shall be set to 4dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4. | | |

Table 7.6F.3.2-2: Out of-band blocking for intra-band contiguous CA

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Operating band | Parameter | Unit | Range1 | Range 2 | Range 3 |
| Pinterferer | dBm | -45 | -30 | -15 |
| n46 | Finterferer (CW) | MHz | N/A | -200 < f – FDL\_low ≤ -3\*BWChannel\_CA  or  3\*BWChannel\_CA ≤ f – FDL\_high < 200 | 1 ≤ f ≤ FDL\_low – MAX(200,3\*BWChannel\_CA)  or  FDL\_high + MAX(200,3\*BWChannel\_CA)  ≤ f ≤ 12750 |
| NOTE 1: The power level of the interferer (PInterferer) for Range 3 shall be modified to -20 dBm, for FInterferer > 4200 MHz. | | | | | |

### 7.6F.4 Narrow band blocking

The requirements for narrowband blocking of sub-clause 7.6.4 do not apply.

**<<< Unchanged sections omitted >>>**

## 7.8F Intermodulation characteristics for shared spectrum channel access

### 7.8F.1 General

Intermodulation response rejection is a measure of the capability of the receiver to receive a wanted signal on its assigned channel frequency in the presence of two or more interfering signals which have a specific frequency relationship to the wanted signal

### 7.8F.2 Wide band Intermodulation

The wide band intermodulation requirement is defined using a CW carrier and modulated NR signal as interferer 1 and interferer 2 respectively.

Instead of the general wideband intermodulation requirements specified in sub-clause 7.8.2, the throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2, A.2.3, A.3.2 and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1) with parameters specified in Table 7.8F.2-1. The relative throughput requirement shall be met for any SCS specified for the channel bandwidth of the wanted signal.

Table 7.8F.2-1: Wide band intermodulation parameters for shared spectrum channel access

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Rx parameter | Units | Channel bandwidth | | | |
| 20 MHz | 40 MHz | 60 MHz | 80 MHz |
| Pw in Transmission Bandwidth Configuration, per CC | dBm | REFSENS + channel bandwidth specific value below | | | |
| 9 | 12 | 13.8 | 15 |
| PInterferer 1 (CW) | dBm | -46 | | | |
| PInterferer 2  (Modulated) | dBm | -46 | | | |
| BWInterferer 2 | MHz | 20 | | | |
| FInterferer 1  (Offset) | MHz | -BW/2 - 30  /  +BW/2 + 30 | | | |
| FInterferer 2  (Offset) | MHz | 2\*FInterferer 1 | | | |
| NOTE 1: The transmitter shall be set to 4dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4.  NOTE 2: Reference measurement channel is specified in Annexes A.2.2, A.2.3, A.3.2, and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1).  NOTE 3: The modulated interferer consists of the Reference measurement channel specified in Annexes A.3.2.2 and A.3.3.2 with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1 and the same SCS as the wanted signal.  NOTE 4: The Finterferer 1 (offset) is the frequency separation of the center frequency of the carrier closest to the interferer and the center frequency of the CW interferer and Finterferer 2 (offset) is the frequency separation of the center frequency of the carrier closest to the interferer and the center frequency of the modulated interferer. | | | | | |

**<<< End of Changes >>>**