**3GPP TSG-RAN WG4 Meeting #99-eR4-2110052**

**Electronic Meeting, May. 19-27, 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-1** | **CR** | 0805 | **rev** | **-** | **Current version:** | **17.1.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | CR to 38.101-1 Introduce RF requirements for HPUE CA with 2 bands downlink and x bands uplink (x =1,2) | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | China Telecom | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_PC2\_CA\_R17\_2BDL\_2BUL-Core | | | | |  | ***Date:*** | | | 2021-05-31 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Introduce band combination specific requirements for PC2 CA with 2UL and 1UL | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The changes include adding power class 2 and MSD requirements for the following PC2 combinations  In RAN4 #98bis-e, the following combos are completed, which were endorsed in the draft CR R4-2106278.  2DL2UL:  CA\_n40A-n41A  CA\_n28A-n41A  CA\_n28A-n79A  CA\_n3A-n41A  CA\_n2A-n77A, CA\_n2A-n77(2A)  CA\_n5A-n77A, CA\_n5A-n77(2A)  CA\_n66A\_n77A, CA\_n66A-n77(2A)  2DL1UL, of which the 1UL is PC2:  CA\_DL\_n40A-n41A\_UL\_n41A  CA\_DL\_n28A-n41A\_UL\_n41A  CA\_DL\_n28A-n79A\_UL\_n79A  CA\_DL\_n3A-n41A\_UL\_n41A  CA\_DL\_n2A-n77A\_UL\_n77A, CA\_DL\_n2A-n77(2A)\_UL\_n77A  CA\_DL\_n5A-n77A\_UL\_n77A, CA\_DL\_n5A-n77(2A)\_UL\_n77A  CA\_DL\_n66A-n77A\_UL\_n77A, CA\_DL\_n66A-n77(2A)\_UL\_n77A  In RAN4 #99-e, the following combos are completed. On how to reflect HPUE CA with 1 uplink into the spec, a WF R4-2107832 was approved to add a new table to indicate the 1 uplink HPUE inter-band CA.  2DL2UL:  CA\_n41A-n79A  CA\_n25A-n77A  CA\_n41A-n77A  CA\_n71A-n77A  2DL1UL, of which the 1UL is PC2:  CA\_DL\_n41A-n79A\_UL\_n41A, CA\_DL\_n41A-n79A\_UL\_n79A  CA\_DL\_n25A-n77A\_UL\_n77A  CA\_DL\_n41A-n77A\_UL\_n41A, CA\_DL\_n41A-n77A\_UL\_n77A  CA\_DL\_n71A-n77A\_UL\_n77A  CA\_DL\_n1A-n78A\_UL\_n78A | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | UE power class 2 for above combinations will not be supported | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.2A.1.3, 7.3A.4, 7.3A.5, 7.3A.6, 7.6A.3.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 38.521-1 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

## <Start of Changes>

#### 6.2A.1.3 UE maximum output power for Inter-band CA

For power class 3 inter-band downlink carrier aggregation with one uplink carrier assigned to one NR band, the transmitter power requirements power class 3 in clause 6.2 apply.

For other power class except class 3 inter-band downlink carrier aggregation with one uplink carrier assigned to one NR band, the maximum output power is specified in Table 6.2A.1.3-2. The period of measurement shall be at least one sub frame (1 ms).

For inter-band uplink 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 defined as the sum of maximum output power from 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 6.2A.1.3-1.

Table 6.2A.1.3-1 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\_n1A-n3A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n1A-n7A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n1A-n8A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n1A-n28A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n1A-n40A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n1A-n41A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n1A-n77A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n1A-n78A |  |  | 266 | +2/-32 | 23 | +2/-32 |  |  |
| CA\_n1A-n79A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n2A-n5A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n2A-n48A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n2A-n66A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n2A-n77A |  |  | 266 | +2/-32 | 23 | +2/-32 |  |  |
| CA\_n2A-n78A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n3A-n7A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n3A-n8A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n3A-n18A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n3A-n28A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n3-n38A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n3A-n40A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n3A-n41A |  |  | 266 | +2/-32 | 23 | +2/-32 |  |  |
| CA\_n3A-n77A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n3A-n78A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n3A-n79A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n5A-n25A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n5A-n48A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n5A-n66A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n5A-n77A |  |  | 266 | +2/-32 | 23 | +2/-32 |  |  |
| CA\_n5A-n78A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n5A-n79A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n7A-n25A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n7A-n28A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n7A-n66A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n7A-n77A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n7A-n78A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n8A-n39A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n8A-n40A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n8A-n41A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n8A-n77A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n8A-n78A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n8A-n79A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n13A-n25A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n13A-n66A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n18A-n41A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n20A-n28A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n20A-n78A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n25A-n38A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n25A-n41A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n25A-n66A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n25A-n77A |  |  | 266 | +2/-32 | 23 | +2/-32 |  |  |
| CA\_n25A-n78A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n28A-n40A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n28A-n41A |  |  | 266 | +2/-32 | 23 | +2/-32 |  |  |
| CA\_n28A-n50A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n28A-n77A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n28A-n78A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n28A-n79A |  |  | 266 | +2/-32 | 23 | +2/-32 |  |  |
| CA\_n34A-n79A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n38A-n66A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n38A-n78A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n39A-n40A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n39A-n41A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n39A-n79A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n40A-n41A |  |  | 266 | +2/-32 | 23 | +2/-32 |  |  |
| CA\_n40A-n78A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n40A-n79A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n41A-n66A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n41A-n71A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n41A-n77A |  |  | 266 | +2/-32 | 23 | +2/-32 |  |  |
| CA\_n41A-n78A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n41A-n79A |  |  | 266 | +2/-32 | 23 | +2/-32 |  |  |
| CA\_n41A-n50A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n46A-n48A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n46A-n48B |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n48A-n66A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n50A-n78A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n66A-n71A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n66A-n77A |  |  | 266 | +2/-32 | 23 | +2/-32 |  |  |
| CA\_n66A-n78A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n70A-n71A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n71A-n77A |  |  | 266 | +2/-32 | 23 | +2/-32 |  |  |
| CA\_n71A-n78A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n77A-n79A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n78A-n79A |  |  |  |  | 23 | +2/-32 |  |  |
| CA\_n78A-n92A |  |  |  |  | 23 | +2/-32 |  |  |
| NOTE 1: Void  NOTE 2: 2 refers to the transmission bandwidths confined within FUL\_low and FUL\_low + 4 MHz or FUL\_high – 4 MHz and FUL\_high, the maximum output power requirement is relaxed by reducing the lower tolerance limit by 1.5 dB  NOTE 3: PPowerClass is the maximum UE power specified without taking into account the tolerance  NOTE 4: For inter-band carrier aggregation the maximum power requirement should apply to the total transmitted power over all component carriers (per UE).  NOTE 5: Power class 3 is the default power class unless otherwise stated.  NOTE 6: The UE supports PC3 within NR FDD band, and supports either PC3 or PC2 within NR TDD band. | | | | | | | | |

Table 6.2A.1.3-2 UE Power Class except class 3 for downlink inter-band CA (two bands DL/ 1 band UL)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Downlink CA Configuration | Band | Class 1.5 (dBm) | Tolerance (dB) | Class 2 (dBm) | Tolerance  (dB) |
| CA\_n1A-n78A | n78 |  |  | 265 | +2/-32 |
| CA\_n2A-n77A, CA\_n2A-n77(2A) | n77 |  |  | 265 | +2/-32 |
| CA\_n3A-n41A | n41 |  |  | 265 | +2/-32 |
| CA\_n5A-n77A, CA\_n5A-n77(2A) | n77 |  |  | 265 | +2/-32 |
| CA\_n25A-n77A | n77 |  |  | 265 | +2/-32 |
| CA\_n28A-n41A | n41 |  |  | 265 | +2/-32 |
| CA\_n28A-n79A | n79 |  |  | 265 | +2/-32 |
| CA\_n40A-n41A | n41 |  |  | 265 | +2/-32 |
| CA\_n41A-n77A | n41, n77 |  |  | 265 | +2/-32 |
| CA\_n41A-n79A | n41, n79 |  |  | 265 | +2/-32 |
| CA\_n66A\_n77A, CA\_n66A-n77(2A) | n77 |  |  | 265 | +2/-32 |
| CA\_n71A-n77A | n77 |  |  | 265 | +2/-32 |
| NOTE 1: Void  NOTE 2: 2 refers to the transmission bandwidths confined within FUL\_low and FUL\_low + 4 MHz or FUL\_high – 4 MHz and FUL\_high, the maximum output power requirement is relaxed by reducing the lower tolerance limit by 1.5 dB  NOTE 3: PPowerClass is the maximum UE power specified without taking into account the tolerance.  NOTE 4: Power class 3 is the default power class unless otherwise stated.  NOTE 5: The power class is supported by UE within NR TDD band. | | | | | |

## <Next Change>

### 7.3A.4 Reference sensitivity exceptions due to UL harmonic interference for CA

Sensitivity degradation is allowed for a band in frequency range 1 if it is impacted by UL harmonic interference from another band in frequency range 1 of the same CA configuration. Reference sensitivity exceptions are specified in Table 7.3A.4-1 with uplink configuration specified in Table 7.3A.4-2.

Table 7.3A.4-1: Reference sensitivity exceptions due to UL harmonic for NR CA FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MSD due to harmonic exception for the DL band | | | | | | | | | | | | | | |
| UL band | DL band | 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 |
|  |  | dB | dB | dB | dB | dB | dB | dB | dB | dB |  | dB | dB | dB |
| n1 | n771,2 |  | 23.9 | 22.1 | 20.9 |  |  | 17.9 | 16.8 | 16.0 |  | 14.8 | 14.3 | 13.8 |
|  | n773 |  | 1.1 | 0.8 | 0.3 |  |  |  |  |  |  |  |  |  |
| n2 | n481, 2 | 27.1 | 23.9 | 22.1 | 20.9 |  |  | 17.9 | 16.912 | 16.112 |  | 14.812 | 14.312 | 13.812 |
|  | n483 | 1.9 | 1.1 | 0.8 | 0.3 |  |  |  |  |  |  |  |  |  |
| n2 | n771,2 |  | 23.9 | 22.1 | 20.9 | 19.8 | 19.0 | 17.9 | 16.8 | 16.0 |  | 15.5 | 14.8 | 14.3 |
|  | n773 |  | 1.1 | 0.8 | 0.3 | 0.1 |  |  |  |  |  |  |  |  |
| 2 | n781,2 |  | 23.9 | 22.1 | 20.9 |  |  | 17.9 | 16.8 | 16.0 |  | 14.8 | 14.3 | 13.8 |
|  | n783 |  | 1.1 | 0.8 | 0.3 |  |  |  |  |  |  |  |  |  |
| n3 | n771,2 |  | 23.9 | 22.1 | 20.9 |  |  | 17.9 | 16.9 | 16.1 |  | 14.8 | 14.3 | 13.8 |
|  | n773 |  | 1.1 | 0.8 | 0.3 |  |  |  |  |  |  |  |  |  |
|  | n781,2 |  | 23.9 | 22.1 | 20.9 |  |  | 17.9 | 16.9 | 16.1 |  | 14.8 | 14.3 | 13.8 |
|  | n783 |  | 1.1 | 0.8 | 0.3 |  |  |  |  |  |  |  |  |  |
| n5 | n774,5 |  | 10.5 | 8.9 | 7.8 | 7.2 | 6.5 | 5.1 | 4.2 | 3.5 |  | 2.8 | 2.3 | 2.1 |
| n5 | n776,7 |  | 10.4 | 8.9 | 7.8 | 7.4 | 6.5 | 4.7 | 3.7 | 3 |  | 2.35 | 1.7 | 1.2 |
| n5 | n784,5 |  | 10.5 | 8.9 | 7.8 |  |  | 5.4 | 4.2 | 3.5 |  | 2.3 | 2.1 | 1.4 |
| n8 | n311 | N/A | N/A | N/A | N/A | N/A | N/A |  |  |  |  |  |  |  |
|  | n418,9 |  | 13.0 | 11.3 | 10.1 |  |  | 7.0 | 6.1 | 5.5 |  | 4.3 | 3.9 | 3.5 |
|  | n784,5 |  | 10.8 | 9.1 | 8.0 | 7.2 | 6.5 | 5.1 | 4.2 | 3.5 |  | 2.3 | 2.1 | 1.4 |
|  | n796,7 |  |  |  |  |  |  | 6.8 | 6.2 | 5.6 |  | 4.9 |  | 4.4 |
| n20 | n784,5 |  | 10.8 | 9.1 | 8 |  |  | 6 | 4.0 | 3.2 |  | 2.0 | 1.5 | 1.0 |
| n25 | n481,2 | 27.1 | 23.9 | 22.1 | 20.9 |  |  | 17.9 | 16.912 | 16.112 |  | 14.812 | 14.312 | 13.812 |
|  | n483 | 1.9 | 1.1 | 0.8 | 0.3 |  |  |  |  |  |  |  |  |  |
| n25 | n771,2 |  | 23.9 | 22.1 | 20.9 | 19.8 | 19.0 | 17.9 | 16.8 | 16.0 |  | 15.5 | 14.8 | 14.3 |
|  | n773 |  | 1.1 | 0.8 | 0.3 | 0.1 |  |  |  |  |  |  |  |  |
| 25 | n781,2 |  | 23.9 | 22.1 | 20.9 |  |  | 17.9 | 16.8 | 16.0 |  | 14.8 | 14.3 | 13.8 |
|  | n783 |  | 1.1 | 0.8 | 0.3 |  |  |  |  |  |  |  |  |  |
| n28 | n18,9 | 10.2 | 7.6 | 6.2 | 5.3 |  |  |  |  |  |  |  |  |  |
|  | n501,2 |  | 19.8 | 18.0 | 16.8 |  |  | 13.8 | 12.8 | 12.0 |  | 10.8 |  |  |
|  | n751,2 | 28.1 | 25.3 | 24.0 | 22.8 | 21.8 | 21.0 | 19.7 | 18.7 |  |  |  |  |  |
|  | n776,7 |  | 10.4 | 8.9 | 7.8 |  |  | 4.7 | 3.7 | 3 |  | 1.7 | 1.2 | 0.7 |
|  | n786,7 |  | 10.4 | 8.9 | 7.8 | 6.7 | 6 | 4.7 | 3.7 | 3 | 2.3 | 1.7 | 1.2 | 0.7 |
| n66 | n481,2 | 27.1 | 23.9 | 22.1 | 20.9 |  |  | 17.9 | 16.912 | 16.112 |  | 14.812 | 14.312 | 13.812 |
|  | n483 | 1.9 | 1.1 | 0.8 | 0.3 |  |  |  |  |  |  |  |  |  |
| n66 | n771,2 |  | 23.9 | 22.1 | 20.9 | 19.8 | 19.0 | 17.9 | 16.8 | 16.0 |  | 15.3 | 14.8 | 14.3 |
|  | n773 |  | 1.1 | 0.8 | 0.3 | 0.1 |  |  |  |  |  |  |  |  |
| n66 | n781,2 |  | 23.9 | 22.1 | 20.9 |  |  | 17.9 | 16.8 | 16.0 |  | 14.8 | 14.3 | 13.8 |
|  | n783 |  | 1.1 | 0.8 | 0.3 |  |  |  |  |  |  |  |  |  |
| n71 | n2510 | 10 | 7.5 | 6 | 5.1 | 4.1 | 3.0 | 2.1 |  |  |  |  |  |  |
|  | n414,5 |  | 10.8 | 9.1 | 8.0 |  |  | 5.1 | 4.2 | 3.5 |  | 2.3 | 2.1 | 1.4 |
|  | n708,9 | 9.9 | 7.1 | 6.7 | 4.9 | 4.1 |  |  |  |  |  |  |  |  |
| n92 | n784,5 |  | 10.8 | 9.1 | 8 |  |  | 6 | 4.0 | 3.2 |  | 2.0 | 1.5 | 1.0 |
| NOTE 1: These requirements apply when there is at least one individual RE within the uplink transmission bandwidth of the aggressor (lower) band for which the 2nd transmitter harmonic is within the downlink transmission bandwidth of a victim (higher) band and a range ∆FHD above and below the edge of this downlink transmission bandwidth. The value ∆FHD depends on the band combination: ∆FHD = 10 MHz for CA\_n1-n77, CA\_n2-n78, CA\_n3-n77, CA\_n3-n78, CA\_n2-n48, CA\_n25-n48, CA\_n25-n78, CA\_n48-n66, CA\_n66-n78.  NOTE 2: The requirements should be verified for UL NR-ARFCN of the aggressor (lower) band (superscript LB) such that in MHz and  with carrier frequency in the victim (higher) band in MHz and  the channel bandwidth configured in the lower band.  NOTE 3: The requirements are only applicable to channel bandwidths no larger than 20 MHz and with a carrier frequency at  MHz offset from  in the victim (higher band) with , whereandare the channel bandwidths configured in the aggressor (lower) and victim (higher) bands in MHz, respectively.  NOTE 4: These requirements apply when there is at least one individual RE within the uplink transmission bandwidth of a low band for which the 4th transmitter harmonic is within the downlink transmission bandwidth of a high band.  NOTE 5: The requirements should be verified for UL NR‑ARFCN of a low band (superscript LB) such that in MHz and  with the carrier frequency of a high band in MHz and  the channel bandwidth configured in the low band.  NOTE 6: These requirements apply when there is at least one individual RE within the uplink transmission bandwidth of a low band for which the 5th transmitter harmonic is within the downlink transmission bandwidth of a high band.  NOTE 7: The requirements should be verified for UL NR‑ARFCN of a low band (superscript LB) such that in MHz and  with the carrier frequency of a high band in MHz and  the channel bandwidth configured in the low band.  NOTE 8: These requirements apply when there is at least one individual RE within the uplink transmission bandwidth of the aggressor (lower) band for which the 3nd transmitter harmonic is within the downlink transmission bandwidth of a victim (higher) band.  NOTE 9: The requirements should be verified for UL NR-ARFCN of the aggressor (lower) band (superscript LB) such that in MHz and  with carrier frequency in the victim (higher) band in MHz and  the channel bandwidth configured in the lower band.  NOTE 10: These requirements apply when the lower edge frequency of the 10 MHz, 15 MHz, or 20 MHz uplink channel in Band 71 is located at or below 668 MHz and the downlink channel in Band n25 is located with its upper edge at 1995 MHz.  NOTE 11: No requirements apply when there is at least one individual RE within the uplink transmission bandwidth of the low band for which the 2nd transmitter harmonic is within the downlink transmission bandwidth of the high band. The reference sensitivity for all active downlink component carriers is only verified when this is not the case (the requirements specified in clause 7.3.2 apply unless otherwise specified).  NOTE 12: For these bandwidths, the minimum requirements are restricted to operation when carrier is configured as a downlink carrier part of CA configuration. | | | | | | | | | | | | | | |

Table 7.3A.4-2: Uplink configuration for reference sensitivity exceptions due to UL harmonic interference for NR CA, FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR Band / Channel bandwidth of the high band | | | | | | | | | | | | | | |
| UL band | DL band | 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 |
| n1 | n77 |  | 25 | 36 | 50 |  |  | 100 | 100 | 100 |  | 100 | 100 | 100 |
| n2 | n48 | 25 | 50 | 50 | 50 |  |  | 50 | 50 | 50 |  | 50 | 50 | 50 |
| n2 | n77 |  | 25 | 36 | 50 | 50 | 50 | 50 | 50 | 50 |  | 50 | 50 | 50 |
| n2 | n78 |  | 25 | 36 | 50 |  |  | 50 | 50 | 50 |  | 50 | 50 | 50 |
| n3 | n77 |  | 25 | 36 | 50 |  |  | 50 | 50 | 50 |  | 50 | 50 | 50 |
| n3 | n78 |  | 25 | 36 | 50 |  |  | 50 | 50 | 50 |  | 50 | 50 | 50 |
| n5 | n77 |  | 16 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |  | 25 | 25 | 25 |
| n5 | n78 |  | 16 | 25 | 25 |  |  | 25 | 25 | 25 |  | 25 | 25 | 25 |
| n8 | n41 |  | 16 | 25 | 25 |  |  | 25 | 25 | 25 |  | 25 | 25 | 25 |
| n8 | n78 |  | 16 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |  | 25 | 25 | 25 |
| n8 | n79 |  |  |  |  |  |  | 25 | 25 | 25 |  | 25 |  | 25 |
| n20 | n78 |  | 16 | 25 | 25 |  |  | 25 | 25 | 25 |  | 25 | 25 | 25 |
| n25 | n48 | 25 | 50 | 50 | 50 |  |  | 50 | 50 | 50 |  | 50 | 50 | 50 |
| n25 | n77 |  | 25 | 36 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | n2 |
| n25 | n78 |  | 25 | 36 | 50 |  |  | 50 | 50 | 50 |  | 50 | 50 | 50 |
| n28 | n1 | 8 | 16 | 25 | 25 |  |  |  |  |  |  |  |  |  |
| n28 | n50 |  | 25 | 25 | 25 |  |  | 25 | 25 | 25 |  | 25 |  |  |
| n28 | n75 | 12 | 25 | 36 | 50 | 50 | 50 | 50 | 50 |  |  |  |  |  |
| n28 | n77 |  | 10 | 15 | 20 |  |  | 25 | 25 | 25 |  | 25 | 25 | 25 |
| n28 | n78 |  | 10 | 15 | 20 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| n66 | n48 | 12 | 25 | 36 | 50 |  |  | 100 | 128 | 160 |  | 200 | 200 | 200 |
| n66 | n77 |  | 25 | 36 | 50 | 64 | 80 | 100 | 100 | 100 |  | 100 | 100 | 100 |
| n66 | n78 |  | 25 | 36 | 50 |  |  | 100 | 100 | 100 |  | 100 | 100 | 100 |
| n71 | n25 | 84 | 84 | 84 | 84 | 84 | 84 | 84 |  |  |  |  |  |  |
| n71 | n41 |  | 16 | 25 | 25 |  |  | 25 | 25 | 25 |  | 25 | 25 | 25 |
| n71 | n70 | 8 | 16 | 20 | 20 | 20 |  |  |  |  |  |  |  |  |
| n92 | n78 |  | 16 | 25 | 25 |  |  | 25 | 25 | 25 |  | 25 | 25 | 25 |
| NOTE 1: 15 kHz SCS is assumed for UL band.  NOTE 2: The UL configuration applies regardless of the channel bandwidth of the low 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 3: Unless stated otherwise, UL resource blocks shall be centred within the transmission bandwidth configuration for the channel bandwidth.  NOTE 4: These requirements apply when the lower edge frequency of the uplink channel in Band n71 is located at or below 668 MHz and the downlink channel in Band n25 is located with its upper edge at 1990 MHz. | | | | | | | | | | | | | | |

Table 7.3A.4-3: Void

Table 7.3A.4-3a: Void

Sensitivity degradation is allowed for a band if it is impacted by receiver harmonic mixing due to another band part of the same CA configuration. Reference sensitivity exceptions are specified in Table 7.3A.4-4 and 7.3A.4-4a with uplink configuration specified in Table 7.3A.4-5.

Table 7.3A.4-4: Reference sensitivity exceptions due to harmonic mixing for PC3 CA in NR FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR Band / Channel bandwidth of the affected DL band | | | | | | | | | | | | | | |
| 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) | 70  MHz(dB) | 80 MHz  (dB) | 90 MHz  (dB) | 100 MHz  (dB) |
| n25 | n713,4 | 26.5 | 23.3 | 20.9 | 15.3 |  |  |  |  |  |  |  |  |  |
| n40 | n284 | 37.8 | 34.8 | 33 | 30.3 |  |  |  |  |  |  |  |  |  |
| n40 | n781 |  | 8.3 | 8.0 | 6.9 |  |  | 3.9 | 3 | 2.3 |  | 1.2 |  | 0.4 |
| n413,4 | n18 | [24.3] | [24.3] | [22.5] |  |  |  |  |  |  |  |  |  |  |
| n41 | n781 |  | 8.3 | 8.0 | 6.9 |  |  | 3.9 | 3 | 2.3 |  | 1.2 |  | 0.4 |
| n77 | n2 | 6.7 | 5.0 | 4.0 | 3.7 |  |  |  |  |  |  |  |  |  |
| n77 | n5 | 5.7 | 4.0 | 3.0 | 2.7 |  |  |  |  |  |  |  |  |  |
| n77 | n25 | 6.7 | 5.0 | 4.0 | 3.7 |  |  |  |  |  |  |  |  |  |
| n77 | 412 |  | 10.4 | 10.4 | 10.4 |  | 10.4 | 10.4 | 10.4 | 10.4 |  | 10.4 | 10.4 | 10.4 |
| n78 | n402 | 10.4 | 10.4 | 10.4 | 10.4 |  |  | 7.2 | 6.2 | 5.5 |  | 4.5 |  |  |
| n78 | n412 |  | 10.4 | 10.4 | 10.4 |  |  | 8.2 | 7.6 | 7.3 |  | 6.6 | 6.4 | 6.3 |
| NOTE 1: The requirements should be verified for UL NR-ARFCN of the aggressor (lower) band (superscript LB) such that in MHz and  with carrier frequency in the victim (higher) band in MHz and  the channel bandwidth configured in the lower band.  NOTE 2: The requirements should be verified for UL NR-ARFCN of the aggressor (high) band (superscript HB) such that in MHz and  with carrier frequency in the victim (lower) band in MHz and  the channel bandwidth configured in the higher band.  NOTE 3: These requirements apply when there is at least one individual RE within the downlink transmission bandwidth of the victim (lower) band for which the 3rd harmonic is within the uplink transmission bandwidth or the uplink adjacent channel's transmission bandwidth of an aggressor (higher) band.  NOTE 4: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and  with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band. | | | | | | | | | | | | | | |

Table 7.3A.4-4a: Reference sensitivity exceptions due to harmonic mixing for PC2 CA in NR FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR Band / Channel bandwidth of the affected DL band | | | | | | | | | | | | | | |
| 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) | 70  MHz(dB) | 80 MHz  (dB) | 90 MHz  (dB) | 100 MHz  (dB) |
| n77 | n2 | 9.1 | 8.0 | 7.0 | 6.7 |  |  |  |  |  |  |  |  |  |
| n77 | n25 | 9.1 | 8.0 | 7.0 | 6.7 |  |  |  |  |  |  |  |  |  |

Table 7.3A.4-5: Uplink configuration for reference sensitivity exceptions due to receiver harmonic mixing for CA in NR FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR Band / SCS / Channel bandwidth of the affected DL band | | | | | | | | | | | | | | | |
| UL band | DL 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 |
| n25 | n71 | 15 | 25 | 50 | 75 | 100 |  |  |  |  |  |  |  |  |  |
| n40 | n28 | 15 | 25 | 50 | 75 | 100 |  |  |  |  |  |  |  |  |  |
| n40 | n78 | 30 |  | 24 | 24 | 24 |  |  | 24 | 24 | 24 |  | 24 |  | 24 |
| n41 | n18 | 15 | 25 | 50 | 75 |  |  |  |  |  |  |  |  |  |  |
| n41 | n78 | 30 |  | 24 | 24 | 24 |  |  | 24 | 24 | 24 |  | 24 |  | 24 |
| n77 | n2 | 15 | 25 | 50 | 75 | 100 |  |  |  |  |  |  |  |  |  |
| n77 | n5 | 25 | 25 | 20 | 20 |  |  |  |  |  |  |  |  |  |  |
| n77 | n25 | 15 | 25 | 50 | 75 | 100 |  |  |  |  |  |  |  |  |  |
| n77 | 41 | 15 |  | 25 | 36 | 50 |  | 50 | 50 | 50 | 50 |  | 50 | 50 | 50 |
| n78 | n40 | 30 | 50 | 50 | 50 | 50 |  |  | 50 | 50 | 50 |  | 50 |  |  |
| n78 | n41 | 30 |  | 50 | 50 | 50 |  | 50 | 50 | 50 | 50 |  | 50 | 50 | 50 |
| 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. | | | | | | | | | | | | | | | |

### 7.3A.5 Reference sensitivity exceptions due to intermodulation interference due to 2UL CA

For inter-band carrier aggregation with uplink assigned to two NR bands given in Table 7.3A.5-1, Table 7.3A.5-1a and Table 7.3A.5-2 the reference sensitivity is defined only for the specific uplink and downlink test points specified in Table 7.3A.5-1, Table 7.3A.5-1a and Table 7.3A.5-2. For these test points the reference sensitivity requirement specified in Table 7.3.2-1 and Table 7.3.2-2 are relaxed by the amount of the corresponding parameter MSD given in Table 7.3A.5-1, Table 7.3A.5-1a and Table 7.3A.5-2.

Table 7.3A.5-1: 2DL/2UL interband Reference sensitivity QPSK PREFSENS and uplink/downlink configurations for PC3 CA

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Band / Channel bandwidth / NRB / Duplex mode | | | | | | | | Source of IMD |
| NR CA band combination | NR band | UL Fc  (MHz) | UL/DL BW  (MHz) | UL  CLRB | DL Fc (MHz) | MSD  (dB) | Duplex mode |  |
| CA\_n1-n3 | n1 | 1950 | 5 | 25 | 2140 | 23 | FDD | IMD3 |
|  | n3 | 1760 | 5 | 25 | 1855 | N/A | TDD | N/A |
| CA\_n1-n8 | n1 | 1965 | 5 | 25 | 2155 | 6.0 | FDD | IMD4 |
|  | n8 | 887.5 | 5 | 25 | 932.5 | N/A | FDD | N/A |
| CA\_n1-n77 | 1 | 1950 | 5 | 25 | 2140 | 29.8 | FDD | IMD24 |
|  |  |  |  |  |  | 32.5 5 |  |  |
|  | n77 | 4090 | 10 | 50 | 4090 | N/A | TDD | N/A |
|  | 1 | 1950 | 5 | 25 | 2140 | 8.0 | FDD | IMD44 |
|  |  |  |  |  |  | 10.75 |  |  |
|  | n77 | 3710 | 10 | 50 | 3710 | N/A | TDD | N/A |
| CA\_n1-n78 | n1 | 1950 | 5 | 25 | 2140 | 8.0 | FDD | IMD4 |
|  |  |  |  |  |  | 10.75 |  |  |
|  | n78 | 3710 | 10 | 50 | 3710 | N/A | TDD | N/A |
| CA\_n2-n48 | n2 | 1852.5 | 5 | 25 | 1932.5 | 12 | FDD | IMD4 |
|  | n48 | 3625 | 20 | 100 | 3625 | N/A | TDD | N/A |
| CA\_n2-n66 | n2 | 1855 | 5 | 25 | 1935 | 20 | FDD | IMD3 |
|  | n66 | 1775 | 5 | 25 | 2175 | N/A | FDD | N/A |
|  | n2 | 1883.3 | 5 | 25 | 1963.3 | N/A | FDD | N/A |
|  | n66 | 1750 | 5 | 25 | 2150 | 4 | FDD | IMD5 |
| CA\_n2-n77 | n2 | 1855 | 5 | 25 | 1935 | 26 | FDD | IMD2 |
|  |  |  |  |  |  | 28.75 |  |  |
|  | n77 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
|  | n2 | 1885 | 5 | 25 | 1965 | 8.0 | FDD | IMD4 |
|  |  |  |  |  |  | 10.75 |  |  |
|  | n77 | 3690 | 10 | 50 | 3690 | N/A | TDD | N/A |
|  | n2 | 1885 | 5 | 25 | 1965 | 5 | FDD | IMD5 |
|  | n77 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
| CA\_n2-n78 | n2 | 1855 | 5 | 25 | 1935 | 26 | FDD | IMD24 |
|  |  |  |  |  |  | 28.75 |  |  |
|  | n78 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
| CA\_n3-n7 | n3 | 1730 | 5 | 25 | 1825 | N/A | FDD | N/A |
|  | n7 | 2535 | 10 | 50 | 2655 | 10.2 | FDD | IMD4 |
| CA\_n3-n8 | n3 | 1755 | 10 | 50 | 1850 | N/A | FDD | N/A |
|  | n8 | 900 | 5 | 25 | 945 | 8 | FDD | IMD44 |
|  | n3 | 1747.5 | 10 | 50 | 1842.5 | 6.4 | FDD | IMD5 |
|  | n8 | 897.5 | 5 | 25 | 942.5 | N/A | FDD | N/A |
| CA\_n3-n18 | n18 | 818 | 5 | 25 | 863 | N/A | FDD | N/A |
|  | n3 | 1731 | 5 | 25 | 1826 | 4 | FDD | IMD4 |
| CA\_n3-n38 | n3 | 1713 | 5 | 25 | 1808 | 8.2 | FDD | IMD4 |
| n38 | 2617 | 5 | 25 | 2617 | N/A | TDD | N/A |
| CA\_n3-n41 | n3 | 1740 | 5 | 25 | 1835 | 8.2 | FDD | IMD4 |
|  | n41 | 2657.5 | 10 | 50 | 2657.5 | N/A | TDD | N/A |
| CA\_n3-n77 | n3 | 1740 | 5 | 25 | 1835 | 26 | FDD | IMD24 |
|  |  |  |  |  |  | 28.74 |  |  |
|  | n77 | 3575 | 10 | 50 | 3575 | N/A | TDD | N/A |
|  | n3 | 1765 | 5 | 25 | 1860 | 8.0 | FDD | IMD44 |
|  |  |  |  |  |  | 10.74 |  |  |
|  | n77 | 3435 | 10 | 50 | 3435 | N/A | TDD | N/A |
|  | n3 | N/A | N/A | N/A | N/A | N/A6 | FDD | IMD5 |
|  | n77 | N/A | N/A | N/A | N/A | N/A | TDD | N/A |
| CA\_n3-n78 | n3 | 1740 | 5 | 25 | 1835 | 26 | FDD | IMD24 |
|  |  |  |  |  |  | 28.75 |  |  |
|  | n78 | 3575 | 10 | 25 | 3575 | N/A | TDD | N/A |
|  | n3 | 1765 | 5 | 25 | 1860 | 8.0 | FDD | IMD44 |
|  |  |  |  |  |  | 10.75 |  |  |
|  | n78 | 3435 | 10 | 25 | 3435 | N/A | TDD | N/A |
| CA\_n5-n66  ) | n5 | 838 | 5 | 25 | 883 | 30 | FDD | IMD24 |
|  | n66 | 1721 | 5 | 25 | 2121 | N/A | FDD | N/A |
| CA\_n5-n77 | 5 | 844 | 5 | 25 | 889 | 8.3 | FDD | IMD4 |
|  | n77 | 3421 | 10 | 50 | 3421 | N/A | TDD | N/A |
|  | 5 | 829 | 5 | 25 | 875 | 5.5 | FDD | IMD5 |
|  | n77 | 3600 | 10 | 50 | 3600 | N/A | TDD | N/A |
| CA\_n5-n78 | n5 | 844 | 5 | 25 | 889 | 8.3 | FDD | IMD4 |
|  | n78 | 3421 | 10 | 50 | 3421 | N/A | TDD | N/A |
| CA\_n7-n66 | n7 | 2535 | 10 | 50 | 2655 | 15 | FDD | IMD4 |
|  | n66 | 1730 | 5 | 25 | 2130 | N/A | FDD | N/A |
| CA\_n8-n41 | n8 | 882.5 | 5 | 25 | 927.5 | 12.1 | FDD | IMD34 |
|  | n41 | 2685 | 10 | 50 | 2685 | N/A | TDD | N/A |
| CA\_n7-n77 | n7 | 2540 | 5 | 25 | 2660 | 7.1 | FDD | IMD4 |
|  | n77 | 3870 | 10 | 50 | 3870 | N/A | TDD | N/A |
| CA\_n8-n78 | n8 | 897.5 | 5 | 25 | 942.5 | 8.3 | FDD | IMD4 |
|  | n78 | 3635 | 10 | 50 | 3635 | N/A | TDD | N/A |
| CA\_n8-n79 | n8 | 897.5 | 5 | 25 | 942.5 | 4.8 | FDD | IMD5 |
|  | n79 | 4532.5 | 40 | 216 | 4532.5 | N/A | TDD | N/A |
| CA\_n20-n78 | n20 | 850 | 5 | 25 | 809 | 11 | FDD | IMD4 |
|  | n78 | 3359 | 10 | 50 | 3359 | N/A | TDD | N/A |
| CA\_n25-n66 | n66 | 1775 | 5 | 25 | 2175 | N/A | FDD | N/A |
|  | n25 | 1855 | 5 | 25 | 1935 | 20 | FDD | IMD3 |
|  | n66 | 1712.5 | 5 | 25 | 2112.5 | 23 | FDD | IMD3 |
|  | n25 | 1912.5 | 5 | 25 | 1992.5 | N/A | FDD | N/A |
|  | n66 | 1750 | 5 | 25 | 2150 | 4 | FDD | IMD5 |
|  | n25 | 1883.3 | 5 | 25 | 1963.3 | N/A | FDD | N/A |
| CA\_n25-n77 | n25 | 1855 | 5 | 25 | 1935 | 26 | FDD | IMD2 |
|  | n77 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
|  | n25 | 1885 | 5 | 25 | 1965 | 8.0 | FDD | IMD4 |
|  | n77 | 3690 | 10 | 50 | 3690 | N/A | TDD | N/A |
|  | n25 | 1885 | 5 | 25 | 1965 | 5 | FDD | IMD5 |
|  | n77 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
| CA\_n25-n78 | n25 | 1855 | 5 | 25 | 1935 | 26 | FDD | IMD24 |
|  | n78 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
| CA\_n28-n50 | n28 | 730 | 10 | 50 | 775 | 15.3 | FDD | IMD2 |
|  | n50 | 1500 | 10 | 50 | 1500 | N/A | TDD | N/A |
|  | n28 | 740 | 10 | 50 | 785 | 6.0 | FDD | IMD44 |
|  | n50 | 1500 | 10 | 50 | 1500 | N/A | TDD | N/A |
| CA\_n28-n77 | n28 | N/A | N/A | N/A | N/A | N/A7 | FDD | IMD2 |
|  | n77 | N/A | N/A | N/A | N/A | N/A | TDD | N/A |
| CA\_n28-n77 | n28 | 705.5 | 5 | 25 | 760.5 | 5.5 | FDD | IMD5 |
|  | n77/n78 | 3582.5 | 10 | 50 | 3582.5 | N/A | TDD | N/A |
| CA\_n41-n71 | n41 | 2614 | 5 | 25 | 2614 | N/A | TDD | N/A |
|  | n71 | 665 | 5 | 25 | 619 | 11 | FDD | IMD4 |
| CA\_n48-n66 | n48 | 3660 | 5 | 25 | 3660 | N/A | TDD | N/A |
|  | n66 | 1730 | 5 | 25 | 2130 | 5.0 | FDD | IMD5 |
| CA\_n66-n71 | n66 | 1750 | 5 | 25 | 2150 | 5 | FDD | IMD4 |
|  | n71 | 675 | 5 | 25 | 629 | N/A | FDD | N/A |
| CA\_n66-n77 | n66 | 1775 | 5 | 25 | 2175 | 31 | FDD | IMD2 |
|  | n77 | 3950 | 10 | 50 | 3950 | N/A | TDD | N/A |
|  | n66 | 1730 | 5 | 25 | 2130 | 5.0 | FDD | IMD5 |
|  | n77 | 3660 | 10 | 50 | 3660 | N/A | TDD | N/A |
| CA\_n66-n78 | n66 | 1730 | 5 | 25 | 2130 | 5.0 | FDD | IMD5 |
|  | n78 | 3660 | 10 | 50 | 3660 | N/A | TDD | N/A |
| CA\_n70-n71 | n70 | 1697.5 | 5 | 25 | 1997.5 | 5 | FDD | IMD4 |
|  | n71 | 695.5 | 5 | 25 | 649.5 | N/A | FDD | N/A |
| CA\_n71-n77 | n71 | 671 | 5 | 25 | 625 | 5.5 | FDD | IMD5 |
|  | n77 | 3300 | 10 | 50 | 3300 | N/A | TDD | N/A |
| CA\_n71-n78 | n71 | 681.5 | 5 | 25 | 635.5 | 5.5 | FDD | IMD5 |
|  | n78 | 3361.5 | 10 | 50 | 3582.5 | N/A | TDD | N/A |
| NOTE 1: Both of the transmitters shall be set min(+20 dBm, PCMAX\_L,f,c) as defined in clause 6.2A.4  NOTE 2: RBSTART = 0, 15 kHz SCS is assumed.  NOTE 3: No requirements apply when there is at least one individual RE within the intermodulation generated by the dual uplink is within the downlink transmission bandwidth of the FDD band. The reference sensitivity should only be verified when this is not the case (the requirements specified in clause 7.3 apply).  NOTE 4: This band is subject to IMD5 also which MSD is not specified.  NOTE 5: Applicable only if operation with 4 antenna ports is supported in the band with carrier aggregation configured.  NOTE 6: Considering the spectrum holdings of the operator for CA\_n77(2A) (when one uplink sub block is assigned within 3300-3400MHz, the other uplink sub block is not assigned within 4000-4200MHz or vice versa), no IMD5 result will fall in Rx frequency range of band n3. Therefore, no MSD requirement apply for this CA configuration when two uplink sub blocks are assigned within CA\_77(2A).  NOTE 7: Considering the spectrum holdings of the operator for CA\_n77(2A) (when one uplink sub block is assigned within 3300-3400MHz, the other uplink sub block is not assigned within 4000-4200MHz or vice versa), no IMD2 result will fall in Rx frequency range of band n28. Therefore, no MSD requirement apply for this CA configuration when two uplink sub blocks are assigned within CA\_77(2A). | | | | | | | | |

Table 7.3A.5-1a: 2DL/2UL interband Reference sensitivity QPSK PREFSENS and uplink/downlink configurations for PC2 CA

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Band / Channel bandwidth / NRB / Duplex mode | | | | | | | | Source of IMD |
| NR CA  Configuration | NR band | UL Fc  (MHz) | UL/DL BW  (MHz) | UL  CLRB | DL Fc (MHz) | MSD  (dB) | Duplex mode |  |
| CA\_n1-n78 | n1 | 1950 | 5 | 25 | 2140 | [17.8] | FDD | IMD4 |
|  | n78 | 3710 | 10 | 50 | 3710 | N/A | TDD | N/A |
| CA\_n3-n41 | n3 | 1740 | 5 | 25 | 1835 | 18.4 | FDD | IMD4 |
|  | n41 | 2657.5 | 10 | 50 | 2657.5 | N/A | TDD | N/A |
| CA\_n2-n774 | n2 | 1855 | 5 | 25 | 1935 | 32.10 | FDD | IMD2 |
|  |  |  |  |  |  | 34.755 |  |  |
|  | n77 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
|  | n2 | 1885 | 5 | 25 | 1965 | 19.10 | FDD | IMD4 |
|  |  |  |  |  |  | 21.855 |  |  |
|  | n77 | 3690 | 10 | 50 | 3690 | N/A | TDD | N/A |
| CA\_n5-n774 | 5 | 844 | 5 | 25 | 889 | 18.6 | FDD | IMD4 |
|  | n77 | 3421 | 10 | 50 | 3421 | N/A | TDD | N/A |
| CA\_n66-n77 | n66 | 1730 | 5 | 25 | 1730 | 34.33 | FDD | IMD2 |
|  | n77 | 3860 | 10 | 50 | 3860 | N/A | TDD | N/A |
|  | n66 | 1730 | 5 | 25 | 2130 | 11.27 | FDD | IMD5 |
|  | n77 | 3660 | 10 | 50 | 3660 | N/A | TDD | N/A |
| CA\_n71-n77 | n71 | 681.5 | 5 | 25 | 635.5 | 11.4 | FDD | IMD5 |
|  | n77 | 3361.5 | 10 | 50 | 3361.5 | N/A | TDD | N/A |
| CA\_n25-n77 | n25 | 1855 | 5 | 25 | 1935 | 32.10 | FDD | IMD2 |
|  | n77 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
|  | n25 | 1885 | 5 | 25 | 1965 | 19.10 | FDD | IMD44 |
|  | n77 | 3690 | 10 | 50 | 3690 | N/A | TDD | N/A |
| NOTE 1: Both of the transmitters shall be set min(+20 dBm, PCMAX\_L,f,c) as defined in clause 6.2A.4  NOTE 2: RBSTART = 0, 15 kHz SCS is assumed.  NOTE 3: No requirements apply when there is at least one individual RE within the intermodulation generated by the dual uplink is within the downlink transmission bandwidth of the FDD band. The reference sensitivity should only be verified when this is not the case (the requirements specified in clause 7.3 apply).  NOTE 4: This band is subject to IMD5 also which MSD is not specified.  NOTE 5: Applicable only if operation with 4 antenna ports is supported in the band with carrier aggregation configured. | | | | | | | | |

Table 7.3A.5-2: 3DL/2UL interband Reference sensitivity QPSK PREFSENS and uplink/downlink configurations

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Band / Channel bandwidth / NRB / Duplex mode | | | | | | | | Source of IMD |
| NR CA band combination | NR band | UL Fc  (MHz) | UL/DL BW  (MHz) | UL  CLRB | DL Fc (MHz) | MSD  (dB) | Duplex mode |  |
| CA\_n1-n3-n41 | n1 | 1977.5 | 5 | 25 | 2167.5 | N/A | FDD | N/A |
|  | n3 | 1712.5 | 5 | 25 | 1807.5 | N/A | FDD | N/A |
|  | n41 | 2507.5 | 10 | 25 | 2507.5 | 5.0 | TDD | IMD5 |
| CA\_n1-n3-n78 | n1 | 1950 | 5 | 25 | 2140 | N/A | FDD | N/A |
|  | n3 | 1750 | 5 | 25 | 1845 | N/A |  | N/A |
|  | n78 | 3700 | 10 | 52 | 3700 | 28.4 | TDD | IMD2 |
|  | n1 | 1950 | 5 | 25 | 2140 | N/A | FDD | N/A |
|  | n3 | 1770 | 5 | 25 | 1865 | N/A |  | N/A |
|  | n78 | 3360 | 10 | 52 | 3360 | 11.2 | TDD | IMD4 |
|  | n1 | 1950 | 5 | 25 | 2140 | N/A | FDD | N/A |
|  | n3 | 1735 | 5 | 25 | 1830 | 27.9 |  | IMD2 |
|  | n78 | 3780 | 10 | 52 | 3780 | N/A | TDD | N/A |
| CA\_n1-n7-n28 | n1 | 1935 | 5 | 25 | 2125 | N/A | FDD | N/A |
|  | n7 | 2533 | 10 | 50 | 2653 | 30.0 | FDD | IMD2 |
|  | n28 | 718 | 5 | 25 | 773 | N/A | FDD | N/A |
|  | n1 | 1935 | 5 | 25 | 2125 | N/A | FDD | N/A |
|  | n7 | 2510 | 10 | 50 | 2630 | N/A | FDD | N/A |
|  | n28 | 730 | 10 | 50 | 785 | 4.5 | FDD | IMD5 |
| CA\_n1-n7-n78 | n1 | 1977.5 | 5 | 25 | 2167.5 | N/A | FDD | N/A |
|  | n7 | 2507.5 | 5 | 25 | 2627.5 | 9.1 | FDD | IMD4 |
|  | n78 | 3305 | 10 | 50 | 3305 | N/A | TDD | N/A |
|  | n1 | 1950 | 5 | 25 | 2140 | 8.7 | FDD | IMD4 |
|  | n7 | 2510 | 10 | 50 | 2630 | N/A | FDD | N/A |
|  | n78 | 3580 | 10 | 50 | 3580 | N/A | TDD | N/A |
|  | n1 | 1970 | 5 | 25 | 2160 | N/A | FDD | N/A |
|  | n7 | 2520 | 5 | 25 | 2640 | N/A | FDD | N/A |
|  | n78 | 3390 | 10 | 50 | 3390 | 10.1 | TDD | IMD4 |
| CA\_n1-n77-n79 | n1 | 1950 | 5 | 25 | 2140 | 6.0 | FDD | IMD31,2 |
|  | n77 | 3400 | 10 | 50 | 3400 | N/A | TDD | N/A |
|  | n79 | 4660 | 40 | 216 | 4660 | N/A | TDD | N/A |
| CA\_n1-n78-n79 | n1 | 1950 | 5 | 25 | 2140 | N/A | FDD | N/A |
|  | n78 | 3410 | 10 | 50 | 3410 | N/A | TDD | N/A |
|  | n79 | 4870 | 40 | 216 | 4870 | 15.9 | TDD | IMD31,3 |
|  | n1 | 1950 | 5 | 25 | 2140 | N/A | FDD | N/A |
|  | n78 | 3490 | 10 | 50 | 3490 | 4.6 | TDD | IMD53 |
|  | n79 | 4670 | 40 | 216 | 4670 | N/A | TDD | N/A |
|  | n1 | 1950 | 5 | 25 | 2140 | 15.6 | FDD | IMD31,2 |
|  | n78 | 3400 | 10 | 50 | 3400 | N/A | TDD | N/A |
|  | n79 | 4660 | 40 | 216 | 4660 | N/A | TDD | N/A |
| CA\_n2-n66-n77 | n2 | 1880 | 5 | 25 | 1960 | N/A | FDD | N/A |
|  | n66 | 1740 | 5 | 25 | 2140 | N/A | FDD | N/A |
|  | n77 | 3620 | 10 | 50 | 3620 | 29.4 | TDD | IMD2 |
|  | n2 | 1880 | 5 | 25 | 1960 | N/A | FDD | N/A |
|  | n66 | 1740 | 5 | 25 | 2140 | N/A | FDD | N/A |
|  | n77 | 3340 | 10 | 50 | 3340 | 8.9 | TDD | IMD4 |
|  | n2 | 1860 | 5 | 25 | 1940 | N/A | FDD | N/A |
|  | n66 | 1750 | 5 | 25 | 2150 | 31.2 | FDD | IMD2 |
|  | n77 | 4010 | 10 | 50 | 4010 | N/A | TDD | N/A |
|  | n2 | 1880 | 5 | 25 | 1960 | N/A | FDD | N/A |
|  | n66 | 1760 | 5 | 25 | 2160 | 10.3 | FDD | IMD4 |
|  | n77 | 3480 | 10 | 50 | 3480 | N/A | TDD | N/A |
|  | n2 | 1860 | 5 | 25 | 1940 | N/A | FDD | N/A |
|  | n66 | 1740 | 5 | 25 | 2140 | 2.8 | FDD | IMD5 |
|  | n77 | 3860 | 10 | 50 | 3860 | N/A | TDD | N/A |
|  | n2 | 1880 | 5 | 25 | 1960 | 32.1 | FDD | IMD2 |
|  | n66 | 1740 | 5 | 25 | 2140 | N/A | FDD | N/A |
|  | n77 | 3700 | 10 | 50 | 3700 | N/A | TDD | N/A |
|  | n2 | 1880 | 5 | 25 | 1960 | 9.1 | FDD | IMD4 |
|  | n66 | 1770 | 5 | 25 | 2170 | N/A | FDD | N/A |
|  | n77 | 3350 | 10 | 50 | 3350 | N/A | TDD | N/A |
|  | n2 | 1880 | 5 | 25 | 1960 | 2.1 | FDD | IMD5 |
|  | n66 | 1760 | 5 | 25 | 2160 | N/A | FDD | N/A |
|  | n77 | 3620 | 10 | 50 | 3620 | N/A | TDD | N/A |
| CA\_n3-n8-n78 | n3 | 1730 | 5 | 25 | 1825 | N/A | FDD | N/A |
|  | n8 | 910 | 5 | 25 | 955 | N/A | FDD | N/A |
|  | n78 | 3550 | 10 | 50 | 3550 | 16.1 | TDD | IMD3 |
|  | n3 | 1730 | 5 | 25 | 1825 | N/A | FDD | N/A |
|  | n8 | 910 | 5 | 25 | 955 | N/A | FDD | N/A |
|  | n78 | 3370 | 10 | 50 | 3370 | 4.5 | TDD | IMD5 |
|  | n3 | 1725 | 5 | 25 | 1820 | 15.7 | FDD | IMD3 |
|  | n8 | 910 | 5 | 25 | 955 | N/A | FDD | N/A |
|  | n78 | 3640 | 10 | 50 | 3640 | N/A | TDD | N/A |
| CA\_n3-n18-n41 | n18 | 820 | 5 | 25 | 865 | N/A | FDD | N/A |
|  | n3 | 1720 | 5 | 25 | 1815 | N/A | FDD | N/A |
|  | n41 | 2540 | 10 | 50 | 2540 | [N/A]1 | TDD | IMD2 |
|  | n18 | 820 | 5 | 25 | 865 | N/A | FDD | N/A |
|  | n3 | 1725 | 5 | 25 | 1820 | N/A | FDD | N/A |
|  | n41 | 2630 | 10 | 50 | 2630 | 16.0 | TDD | IMD3 |
|  | n18 | 820 | 5 | 25 | 865 | 28.9 | FDD | IMD2 |
|  | n3 | 1765 | 5 | 25 | 1860 | N/A | FDD | N/A |
|  | n41 | 2630 | 10 | 50 | 2630 | N/A | TDD | N/A |
|  | n18 | 830 | 5 | 25 | 875 | [19.0] | FDD | IMD3 |
|  | n3 | 1725 | 5 | 25 | 1820 | N/A | FDD | N/A |
|  | n41 | 2670 | 5 | 25 | 2670 | N/A | TDD | N/A |
|  | n3 | 1755 | 5 | 25 | 1850 | 28.8 | FDD | IMD2 |
|  | n41 | 2670 | 10 | 50 | 2670 | N/A | TDD | N/A |
|  | n18 | 820 | 5 | 25 | 865 | N/A | FDD | N/A |
| CA\_n3-n28-n41 | n3 | 1715 | 5 | 25 | 1810 | N/A | FDD | N/A |
|  | n28 | 743 | 5 | 25 | 798 | N/A | FDD | N/A |
|  | n41 | 2518 | 5 | 25 | 2518 | 27.4 | TDD | IMD2 |
|  | n3 | 1715 | 5 | 25 | 1810 | N/A | FDD | N/A |
|  | n28 | 743 | 5 | 25 | 798 | N/A | FDD | N/A |
|  | n41 | 2687 | 5 | 25 | 2687 | 15.9 | TDD | IMD3 |
| CA\_n3-n28-n77 | n3 | 1720 | 5 | 25 | 1815 | N/A | FDD | N/A |
|  | n28 | 733 | 5 | 25 | 788 | N/A | FDD | N/A |
|  | n77 | 4173 | 10 | 50 | 4173 | 15.9 | TDD | IMD3 |
|  | n28 | 735 | 5 | 25 | 790 | N/A | FDD | N/A |
|  | n77 | 3320 | 10 | 50 | 3320 | N/A | TDD | N/A |
|  | n3 | 1755 | 5 | 25 | 1850 | 17.0 | FDD | IMD3 |
|  | n3 | 1712.5 | 5 | 25 | 1807.5 | N/A | FDD | N/A |
|  | n77 | 4195 | 10 | 50 | 4195 | N/A | TDD | N/A |
|  | n28 | 715 | 5 | 25 | 770 | 15.3 | FDD | IMD3 |
| CA\_n3-n28-n78 | n28 | 735 | 5 | 25 | 790 | N/A | FDD | N/A |
|  | n78 | 3320 | 10 | 50 | 3320 | N/A | TDD | IMD3 |
|  | n3 | 1755 | 5 | 25 | 1850 | 17.3 | FDD | N/A |
|  | n3 | 1750 | 5 | 25 | 1845 | N/A | FDD | N/A |
|  | n28 | 743 | 5 | 25 | 798 | N/A | FDD | N/A |
|  | n78 | 3764 | 10 | 50 | 3764 | 4.5 | TDD | IMD5 |
| CA\_n3-40-n41 | n3 | 1747.5 | 5 | 25 | 1842.5 | 1.0 | FDD | IMD5 |
|  | n40 | 2347.5 | 5 | 25 | 2347.5 | N/A | TDD | N/A |
|  | n41 | 2600 | 10 | 50 | 2600 | N/A | TDD | N/A |
| CA\_n3-n41-n77 | n3 | 1720 | 5 | 25 | 1815 | N/A | FDD | N/A |
|  | n77 | 3900 | 10 | 50 | 3900 | N/A | TDD | N/A |
|  | n41 | 2640 | 5 | 25 | 2640 | 5.3 | TDD | IMD5 |
|  | n41 | 2620 | 5 | 25 | 2620 | N/A | TDD | N/A |
|  | n77 | 3400 | 10 | 50 | 3400 | N/A | TDD | N/A |
|  | n3 | 1745 | 5 | 25 | 1840 | 16.4 | FDD | IMD3 |
|  | n41 | 2580 | 5 | 25 | 2580 | N/A | TDD | N/A |
|  | n3 | 1720 | 5 | 25 | 1815 | N/A | FDD | N/A |
|  | n77 | 3440 | 10 | 50 | 3440 | 16.8 | TDD | IMD31 |
| CA\_n3-n41-n78 | n3 | 1730 | 5 | 25 | 1825 | N/A | FDD | N/A |
|  | n41 | 2560 | 10 | 50 | 2560 | N/A | TDD | N/A |
|  | n78 | 3390 | 10 | 50 | 3390 | 16.4 | TDD | IMD3 |
|  | n3 | 1745 | 5 | 25 | 1840 | 16.4 | TDD | IMD3 |
|  | n41 | 2620 | 5 | 25 | 2620 | N/A | FDD | N/A |
|  | n78 | 3400 | 10 | 50 | 3400 | N/A | TDD | N/A |
| CA\_n5-n25-n66 | n5 | 834 | 5 | 25 | 879 | N/A | FDD | N/A |
|  | n25 | 1900 | 5 | 25 | 1980 | N/A | FDD | N/A |
|  | n66 | 1712 | 5 | 25 | 2132 | 7.2 | FDD | IMD4 |
| CA\_n5-n25-n77 | n5 | 830 | 5 | 25 | 875 | N/A | FDD | N/A |
|  | n25 | 1880 | 5 | 25 | 1960 | N/A | FDD | N/A |
|  | n77 | 3540 | 10 | 50 | 3540 | 16.0 | TDD | IMD3 |
|  | n5 | 844 | 5 | 25 | 889 | 3.8 | FDD | IMD5 |
|  | n25 | 1907 | 5 | 25 | 1987 | N/A | FDD | N/A |
|  | n77 | 3305 | 10 | 50 | 3305 | N/A | TDD | N/A |
|  | n5 | 846.5 | 5 | 25 | 891.5 | N/A | FDD | N/A |
|  | n25 | 1907 | 5 | 25 | 1987 | 16.5 | FDD | IMD3 |
|  | n77 | 3680 | 10 | 25 | 3680 | N/A | TDD | N/A |
| CA\_n5-n25-n78 | n5 | 830 | 5 | 25 | 875 | N/A | FDD | N/A |
|  | n25 | 1900 | 5 | 25 | 1980 | N/A | FDD | N/A |
|  | n78 | 3560 | 10 | 50 | 3560 | 16.1 | TDD | IMD3 |
| CA\_n5-n66-n77 | n5 | 830 | 5 | 25 | 875 | N/A | FDD | N/A |
|  | n66 | 1750 | 5 | 25 | 2150 | N/A | FDD | N/A |
|  | n77 | 3410 | 10 | 50 | 3410 | 16.1 | TDD | IMD3 |
|  | n5 | 826.5 | 5 | 25 | 871.5 | N/A | FDD | N/A |
|  | n66 | 1712.5 | 5 | 25 | 2112.5 | N/A | FDD | N/A |
|  | n77 | 4192 | 10 | 50 | 4192 | 8.2 | TDD | IMD4 |
|  | n5 | 830 | 5 | 25 | 875 | N/A | FDD | N/A |
|  | n66 | 1750 | 5 | 25 | 2150 | N/A | FDD | N/A |
|  | n77 | 3590 | 10 | 50 | 3590 | 3.3 | TDD | IMD5 |
|  | n5 | 830 | 5 | 25 | 875 | N/A | FDD | N/A |
|  | n66 | 1730 | 5 | 25 | 2130 | 14.4 | FDD | IMD3 |
|  | n77 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
| CA\_n5-n66-n78 | n5 | 830 | 5 | 25 | 875 | N/A | FDD | N/A |
|  | n66 | 1720 | 5 | 25 | 2120 | N/A | FDD | N/A |
|  | n78 | 3380 | 10 | 50 | 3380 | 16.1 | TDD | IMD3 |
| CA\_n5-n66-n78 | n5 | 830 | 5 | 25 | 875 | N/A | FDD | N/A |
|  | n66 | 1720 | 5 | 25 | 2120 | 13.2 | FDD | IMD3 |
|  | n78 | 3780 | 10 | 50 | 3780 | N/A | TDD | N/A |
| CA\_n7-n66-n78 | n7 | 2560 | 5 | 25 | 2680 | N/A | FDD | N/A |
|  | n66 | 1730 | 5 | 25 | 2130 | N/A | FDD | N/A |
|  | n78 | 3390 | 10 | 50 | 3390 | 16.1 | TDD | IMD3 |
| CA\_n7-n66-n78 | n7 | 2550 | 5 | 25 | 2670 | N/A | FDD | N/A |
|  | n66 | 1750 | 5 | 25 | 2150 | 8.7 | FDD | IMD4 |
|  | n78 | 3625 | 10 | 50 | 3625 | N/A | TDD | N/A |
| CA\_n13-n25-n66 | n13 | 782 | 5 | 25 | 751 | N/A | FDD | N/A |
|  | n66 | 1736 | 5 | 25 | 2156 | 7..2 | FDD | IMD4 |
|  | n25 | 1860 | 5 | 25 | 1940 | N/A | FDD | N/A |
|  | n13 | 780 | 10 | 50 | 749 | N/A | FDD | N/A |
|  | n25 | 1860 | 5 | 25 | 1940 | 6.2 | FDD | IMD4 |
|  | n66 | 1750 | 5 | 25 | 2150 | N/A | FDD | N/A |
| CA\_n25-n38-n78 | n25 | 1852.5 | 5 | 25 | 1932.5 | 16.4 | FDD | IMD3 |
|  | n38 | 2617.5 | 5 | 25 | 2617.5 | N/A | TDD | N/A |
|  | n78 | 3305 | 10 | 50 | 3305 | N/A | TDD | N/A |
|  | n25 | 1870 | 5 | 25 | 1950 | N/A | FDD | N/A |
|  | n38 | 2610 | 5 | 25 | 2610 | N/A | TDD | N/A |
|  | n78 | 3350 | 10 | 50 | 3350 | 14.8 | TDD | IMD3 |
|  | n25 | 1880 | 5 | 25 | 1960 | 8.6 | TDD | IMD4 |
|  | n38 | 2570 | 5 | 25 | 2570 | N/A | FDD | N/A |
|  | n78 | 3550 | 10 | 50 | 3550 | N/A | TDD | N/A |
| CA\_n25-n41-n66 | n25 | 1860 | 5 | 25 | 1940 | 11.0 | FDD | IMD4 |
|  | n41 | 2685 | 10 | 50 | 2685 | N/A | TDD | N/A |
|  | n66 | 1715 | 5 | 25 | 2115 | N/A | FDD | N/A |
| CA\_n25-n41-n77 | n25 | 1870 | 5 | 25 | 1950 | N/A | FDD | N/A |
|  | n41 | 2610 | 5 | 25 | 2610 | N/A | TDD | N/A |
|  | n77 | 3350 | 10 | 50 | 3350 | 14.8 | TDD | IMD3 |
|  | n25 | 1900 | 5 | 25 | 1980 | N/A | FDD | N/A |
|  | n41 | 2525 | 5 | 25 | 2645 | N/A | TDD | N/A |
|  | n77 | 3775 | 10 | 50 | 3775 | 4.2 | TDD | IMD5 |
|  | n25 | 1870 | 5 | 25 | 1950 | N/A | FDD | N/A |
|  | n41 | 2640 | 5 | 25 | 2640 | 5.3 | TDD | IMD5 |
|  | n77 | 4125 | 10 | 50 | 4125 | N/A | TDD | N/A |
|  | n25 | 1870 | 5 | 25 | 1950 | 17.6 | FDD | IMD3 |
|  | n41 | 2565 | 5 | 25 | 2565 | N/A | TDD | N/A |
|  | n77 | 3180 | 10 | 50 | 3310 | N/A | TDD | N/A |
|  | n25 | 1870 | 5 | 25 | 1950 | 8.6 | FDD | IMD4 |
|  | n41 | 2550 | 5 | 25 | 2685 | N/A | TDD | N/A |
|  | n77 | 3525 | 10 | 50 | 3475 | N/A | TDD | N/A |
| CA\_n25-n66-n77 | n25 | 1900 | 5 | 25 | 1980 | N/A | FDD | N/A |
|  | n66 | 1760 | 5 | 25 | 2160 | 29.2 | FDD | IMD2 |
|  | n77 | 4060 | 10 | 50 | 4060 | N/A | TDD | N/A |
|  | n25 | 1900 | 5 | 25 | 1980 | N/A | FDD | N/A |
|  | n66 | 1760 | 5 | 25 | 2160 | 10.4 | FDD | IMD4 |
|  | n77 | 3540 | 10 | 50 | 3540 | 10 | TDD | N/A |
|  | n25 | 1900 | 5 | 25 | 1980 | N/A | FDD | N/A |
|  | n66 | 1760 | 5 | 25 | 2160 | 4.0 | FDD | IMD5 |
|  | n77 | 3930 | 10 | 50 | 3930 | N/A | TDD | N/A |
|  | n25 | 1880 | 5 | 25 | 1960 | 32.1 | FDD | IMD2 |
|  | n66 | 1740 | 5 | 25 | 2140 | N/A | FDD | N/A |
|  | n77 | 3700 | 10 | 50 | 3700 | N/A | TDD | N/A |
|  | n25 | 1880 | 5 | 25 | 1960 | 9.1 | FDD | IMD4 |
|  | n66 | 1770 | 5 | 25 | 2170 | N/A | FDD | N/A |
|  | n77 | 3350 | 10 | 50 | 3350 | N/A | TDD | N/A |
|  | n25 | 1880 | 5 | 25 | 1960 | 2.1 | FDD | IMD5 |
|  | n66 | 1760 | 5 | 25 | 2160 | N/A | FDD | N/A |
|  | n77 | 3620 | 10 | 50 | 3620 | N/A | TDD | N/A |
|  | n25 | 1880 | 5 | 25 | 1960 | N/A | FDD | N/A |
|  | n66 | 1740 | 5 | 25 | 2140 | N/A | FDD | N/A |
|  | n77 | 3620 | 10 | 50 | 3620 | 29.4 | TDD | IMD2 |
|  | n25 | 1880 | 5 | 25 | 1960 | N/A | FDD | N/A |
|  | n66 | 1740 | 5 | 25 | 2140 | N/A | FDD | N/A |
|  | n77 | 3340 | 10 | 50 | 3340 | 8.9 | TDD | IMD4 |
| CA\_n25-n66-n78 | n25 | 1880 | 5 | 25 | 1960 | N/A | FDD | N/A |
|  | n66 | 1740 | 5 | 25 | 2140 | N/A | FDD | N/A |
|  | n78 | 3620 | 10 | 50 | 3620 | 29.4 | TDD | IMD2 |
| CA\_n25-n71-n77 | n25 | 1907.5 | 5 | 25 | 1987.5 | N/A | FDD | N/A |
|  | n71 | 695.5 | 5 | 25 | 649.5 | N/A | FDD | N/A |
|  | n77 | 3305 | 10 | 50 | 3305 | 8.0 | TDD | IMD31,2 |
|  | n25 | 1874 | 5 | 25 | 1954 | 16.5 | FDD | IMD32 |
|  | n71 | 693 | 5 | 25 | 647 | N/A | FDD | N/A |
|  | n77 | 3340 | 10 | 50 | 3340 | N/A | TDD | N/A |
| CA\_n28-n41-n77 | n41 | 2642 | 5 | 25 | 2642 | N/A | TDD | N/A |
|  | n77 | 3440 | 10 | 50 | 3440 | N/A | TDD | N/A |
|  | n28 | 743 | 5 | 25 | 798 | 30.8 | FDD | IMD24 |
|  | n41 | 2567.5 | 10 | 50 | 2567.5 | N/A | TDD | N/A |
|  | n77 | 3460 | 10 | 50 | 3460 | N/A | TDD | N/A |
|  | n28 | 727.5 | 5 | 25 | 782.5 | 3.0 | FDD | IMD5 |
|  | n28 | 738 | 5 | 25 | 793 | N/A | FDD | N/A |
|  | n77 | 3380 | 10 | 50 | 3380 | N/A | TDD | N/A |
|  | n41 | 2642 | 5 | 25 | 2642 | 29.5 | TDD | IMD2 |
|  | n41 | 2580 | 5 | 25 | 2580 | N/A | TDD | N/A |
|  | n28 | 743 | 5 | 25 | 798 | N/A | FDD | N/A |
|  | n77 | 3323 | 10 | 50 | 3323 | 28.2 | TDD | IMD24 |
| CA\_n28-n41-n78 | n28 | 738 | 5 | 25 | 793 | N/A | FDD | N/A |
|  | n78 | 3380 | 10 | 50 | 3380 | N/A | TDD | N/A |
|  | n41 | 2642 | 5 | 25 | 2642 | 29.5 | TDD | IMD2 |
|  | n41 | 2642 | 5 | 25 | 2642 | N/A | TDD | N/A |
|  | n78 | 3440 | 10 | 50 | 3440 | N/A | TDD | N/A |
|  | n28 | 743 | 5 | 25 | 798 | 30.8 | FDD | IMD21 |
|  | n41 | 2565 | 5 | 25 | 2565 | N/A | TDD | N/A |
|  | n28 | 745 | 5 | 25 | 800 | N/A | FDD | N/A |
|  | n78 | 3310 | 10 | 50 | 3310 | 29.7 | TDD | IMD22 |
| CA\_n38-n66-n78 | n38 | 2550 | 5 | 25 | 2550 | N/A | TDD | N/A |
|  | n66 | 1750 | 5 | 25 | 2150 | 8.7 | FDD | IMD4 |
|  | n78 | 3625 | 10 | 50 | 3625 | N/A | TDD | N/A |
|  | n38 | 2610 | 5 | 25 | 2610 | N/A | TDD | N/A |
|  | n66 | 1760 | 5 | 25 | 2160 | N/A | FDD | N/A |
|  | n78 | 3460 | 10 | 50 | 3460 | 15.0 | TDD | IMD3 |
| CA\_n39-n40-n79 | n39 | 1917.5 | 5 | 25 | 1917.5 | N/A | TDD | N/A |
|  | n40 | 2302.5 | 5 | 25 | 2302.5 | N/A | TDD | N/A |
|  | n79 | 4980 | 40 | 216 | 4980 | 5.8 | TDD | IMD4 |
| CA\_n40-n41-n79 | n40 | 2340 | 5 | 25 | 2340 | N/A | TDD | N/A |
|  | n41 | 2600 | 10 | 50 | 2600 | N/A | TDD | N/A |
|  | n79 | 4940 | 40 | 216 | 4940 | 30.5 | TDD | IMD2 |
| CA\_n41-n66-n77 | n41 | 2560 | 5 | 25 | 2560 | N/A | TDD | N/A |
|  | n66 | 1730 | 5 | 25 | 2130 | N/A | FDD | N/A |
|  | n77 | 3390 | 10 | 50 | 3390 | 16.1 | TDD | IMD31,2 |
|  | n41 | 2670 | 5 | 25 | 2670 | 5.2 | TDD | IMD5 |
|  | n66 | 1715 | 5 | 25 | 2115 | N/A | FDD | N/A |
|  | n77 | 4190 | 10 | 50 | 4190 | N/A | TDD | N/A |
|  | n41 | 2530 | 5 | 25 | 2530 | N/A | TDD | N/A |
|  | n66 | 1760 | 5 | 25 | 2160 | 9.0 | FDD | IMD4 |
|  | n77 | 3610 | 10 | 50 | 3610 | N/A | TDD | N/A |
| CA\_n41-n71-n77 | n41 | 2615 | 5 | 25 | 2615 | N/A | TDD | N/A |
|  | n71 | 693 | 5 | 25 | 647 | N/A | FDD | N/A |
|  | n77 | 3308 | 10 | 50 | 3308 | 29.1 | TDD | IMD21 |
|  | n41 | 2615 | 5 | 25 | 2615 | N/A | TDD | N/A |
|  | n71 | 693 | 5 | 25 | 647 | N/A | FDD | N/A |
|  | n77 | 4001 | 10 | 50 | 4001 | 16.3 | TDD | IMD31 |
|  | n41 | 2580 | 5 | 25 | 2580 | N/A | TDD | N/A |
|  | n71 | 693 | 5 | 25 | 647 | N/A | FDD | N/A |
|  | n77 | 3774 | 10 | 50 | 3774 | 10.3 | TDD | IMD41 |
|  | n41 | 2615 | 5 | 25 | 2615 | 28.7 | TDD | IMD2 |
|  | n71 | 693 | 5 | 25 | 647 | N/A | FDD | N/A |
|  | n77 | 3308 | 10 | 50 | 3308 | N/A | TDD | N/A |
|  | n41 | 2615 | 5 | 25 | 2615 | 15.5 | TDD | IMD3 |
|  | n71 | 693 | 5 | 25 | 647 | N/A | FDD | N/A |
|  | n77 | 4001 | 10 | 50 | 4001 | N/A | TDD | N/A |
|  | 41 | 2642 | 5 | 25 | 2642 | N/A | TDD | N/A |
|  | n71 | 743 | 5 | 25 | 798 | 30.8 | FDD | IMD2 |
|  | n77 | 3440 | 10 | 50 | 3440 | N/A | TDD | N/A |
| CA\_n66-n71-n77 | n66 | 1720 | 5 | 25 | 2120 | N/A | FDD | N/A |
|  | n71 | 668 | 5 | 25 | 622 | N/A | FDD | N/A |
|  | n77 | 4108 | 10 | 50 | 4108 | 15.9 | TDD | IMD31,2 |
|  | n66 | 1760 | 5 | 25 | 2160 | 15.5 | FDD | IMD32 |
|  | n71 | 693 | 5 | 25 | 647 | N/A | FDD | N/A |
|  | n77 | 3546 | 10 | 50 | 3546 | N/A | TDD | N/A |
|  | n66 | 1720 | 5 | 25 | 2120 | N/A | FDD | N/A |
|  | n71 | 686 | 5 | 25 | 640 | 15.3 | FDD | IMD3 |
|  | n77 | 4080 | 10 | 50 | 4080 | N/A | TDD | N/A |
| CA\_n66-n71-n78 | n66 | 1720 | 5 | 25 | 2120 | N/A | FDD | N/A |
|  | n71 | 668 | 5 | 25 | 622 | N/A | FDD | N/A |
|  | n78 | 3724 | 10 | 50 | 3724 | 9 | TDD | IMD41 |
|  | n66 | 1760 | 5 | 25 | 2160 | 15.5 | FDD | IMD3 |
|  | n71 | 693 | 5 | 25 | 647 | N/A | FDD | N/A |
|  | n78 | 3546 | 10 | 50 | 3546 | N/A | TDD | N/A |
| NOTE 1: This band is subject to IMD5 also which MSD is not specified.  NOTE 2: This band is subject to IMD4 also which MSD is not specified.  NOTE 3: The requirements only apply for UEs supporting inter-band carrier aggregation with simultaneous Rx/Tx capability. Simultaneous Rx/Tx capability does not apply for UEs supporting band n78 with a n77 implementation.  NOTE 4: This band is subject to IMD3 also which MSD is not specified. | | | | | | | | |

### 7.3A.6 Reference sensitivity exceptions due to cross band isolation for CA

Sensitivity degradation is allowed for a band if it is impacted by UL of another band part of the same NR CA configuration due to cross band isolation issues. Reference sensitivity exceptions for the victim band are specified in Table 7.3A.6-1 and 7.3A.6-1a with uplink configuration of the agressor band specified in Table 7.3A.6-2.

Table 7.3A.6-1: Reference sensitivity exceptions (MSD) due to cross band isolation for NR CA FR1 for PC3 CA

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR Band / Channel bandwidth of the affected DL band | | | | | | | | | | | | | | |
| 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) | 70  MHz  (dB) | 80 MHz (dB) | 90 MHz (dB) | 100 MHz (dB) |
| n1 | n3 | 3 | 2.2 | 1.9 | 1.7 | 1.6 | 1.5 |  |  |  |  |  |  |  |
| n1 | n40 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 |  | 6.6 |  |  |
| n1 | n41 |  | 6.1 | 6.1 | 6.1 |  |  | 6.1 | 6.1 | 6.1 |  | 6.1 | 6.1 | 6.1 |
| n3 | n41 |  | 0.7 | 0.7 | 0.7 |  |  | 0.7 | 0.7 | 0.7 |  | 0.7 | 0.7 | 0.7 |
| n38 | n78 |  | 8.3 | 8.3 | 8.3 | 7.3 | 6.5 | 6.3 | 5.3 | 4.5 |  | 4.0 | 3.9 | 3.8 |
| n40 | n1 | 8.3 | 8.3 | 8.3 | 8.3 |  |  |  |  |  |  |  |  |  |
| n41 | n1 | 9.1 | 9.1 | 9.1 | 9.1 |  |  |  |  |  |  |  |  |  |
| n41 | n3 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |  |  |  |  |  |  |  |
| n7 | n3 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |  |  |  |  |  |  |
| n41 | n25 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |  |  |  |  |  |  |
| n38 | n25 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |  |  |  |  |  |  |
| n411 | n66 | 3.5 | 3.5 | 3.5 | 3.5 |  |  | 3.5 |  |  |  |  |  |  |
| n41 | n77 |  | 8.3 | 8.3 | 8.3 | 7.3 | 6.5 | 6.3 | 5.3 | 4.5 | 4.3 | 4.0 | 3.9 | 3.8 |
| n41 | n78 |  | 8.3 | 8.3 | 8.3 | 7.3 | 6.5 | 6.3 | 5.3 | 4.5 | 4.3 | 4.0 | 3.9 | 3.8 |
| n78 | n71 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |  |  |  |  |  |
| n78 | n38 | 3.3 | 3.3 | 3.3 | 3.3 |  |  |  |  |  |  |  |  |  |
| n78 | n401 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |  | 4.5 |  |  |
| n78 | n411 |  | 4.5 | 4.5 | 4.5 |  | 4.5 | 4.5 | 4.5 | 4.5 |  | 4.5 | 4.5 | 4.5 |
| n783 | n79 |  |  |  |  |  |  | 2 | 2 | 2 |  | 2 |  | 2 |
| n79 | n783 |  | 2.6 | 2.6 | 2.6 |  |  | 2.6 | 2.6 | 2.6 |  | 2.6 | 2.6 | 2.6 |
| n77 | n411 |  | 4.5 | 4.5 | 4.5 |  | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| NOTE 1: Applicable only when harmonic mixing MSD for this combination is not applied.  NOTE 2: Void  NOTE 3: The requirements only apply for UEs supporting inter-band carrier aggregation with simultaneous Rx/Tx capability. Simultaneous Rx/Tx capability does not apply for UEs supporting band n78 with a n77 implementation.  NOTE 4: The requirements only apply for UEs supporting inter-band carrier aggregation with simultaneous Rx/Tx capability. Simultaneous Rx/Tx capability does not apply for UEs supporting band n78 with a n77 implementation. | | | | | | | | | | | | | | |

Table 7.3A.6-1a: Reference sensitivity exceptions (MSD) due to cross band isolation for NR CA FR1 for PC2 CA

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR Band / Channel bandwidth of the affected DL band | | | | | | | | | | | | | | |
| 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) | 70  MHz  (dB) | 80 MHz (dB) | 90 MHz (dB) | 100 MHz (dB) |
| n3 | n41 |  | 0.7 | 0.7 | 0.7 |  |  | 0.7 | 0.7 | 0.7 |  | 0.7 | 0.7 | 0.7 |
| n41 | n3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |  |  |  |  |  |  |
| n41 | n79 |  |  |  |  |  |  | 3.1 | 3.1 | 3.1 |  | 3.1 |  | 3.1 |
| n79 | n41 |  | 3.5 | 3.3 | 3.1 |  |  | 2.6 | 2.5 | 2.5 |  | 2.4 | 2.4 | 2.4 |
| n77 | n411 |  | 6.5 | 6.5 | 6.5 |  | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| n77 | n412 |  | 13.2 | 13.2 | 13.2 |  | 13.2 | 13.2 | 13.2 | 13.2 | 13.2 | 13.2 | 13.2 | 13.2 |
| n41 | n77 |  | 10.5 | 10.5 | 10.5 | 9.5 | 8.6 | 8.3 | 7.2 | 6.3 | 6.0 | 5.7 | 5.6 | 5.6 |
| NOTE 1: Applicable only when harmonic mixing MSD for this combination is not applied.  NOTE 2: The requirements should be verified for UL NR-ARFCN of the aggressor (high) band (superscript HB) such that in MHz and  with carrier frequency in the victim (lower) band in MHz and  the channel bandwidth configured in the higher band. | | | | | | | | | | | | | | |

Table 7.3A.6.2: Uplink configuration for reference sensitivity exceptions due to cross band isolation for NR CA FR1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR 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 | 70  MHz | 80 MHz | 90 MHz | 100 MHz |
| n1 | n3 | 15 | 25 | 25 | 25 | 25 | 25 | 25 |  |  |  |  |  |  |  |
| n1 | n40 | 15 | 25 | 50 | 75 | 100 | 100 | 100 | 100 | 100 | 100 |  | 100 |  |  |
| n1 | n41 | 15 |  | 100 | 100 | 100 |  |  | 100 | 100 | 100 |  | 100 | 100 | 100 |
| n3 | n41 | 15 |  | 50 | 50 | 50 |  |  | 50 | 50 | 50 |  | 50 | 50 | 50 |
| n38 | n78 | 15 |  | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |  | 100 | 100 | 100 |
| n40 | n1 | 30 | 25 | 50 | 75 | 100 |  |  |  |  |  |  |  |  |  |
| n41 | n1 | 30 | 128 | 128 | 128 | 128 |  |  |  |  |  |  |  |  |  |
| n41 | n3 | 30 | 160 | 160 | 160 | 160 | 160 | 160 |  |  |  |  |  |  |  |
| n7 | n3 | 15 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |  |  |  |  |  |  |
| n41 | n25 | 15 | 160 | 160 | 160 | 160 | 160 | 160 | 160 |  |  |  |  |  |  |
| n38 | n25 | 15 | 160 | 160 | 160 | 160 | 160 | 160 | 160 |  |  |  |  |  |  |
| n41 | n66 | 30 | 128 | 128 | 128 | 128 | 128 | 128 | 128 |  |  |  |  |  |  |
| n41 | n77 | 15 |  | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| n41 | n78 | 15 |  | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| n78 | n7 | 30 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |  |  |  |  |  |
| n78 | n38 | 30 | 270 | 270 | 270 | 270 |  |  |  |  |  |  |  |  |  |
| n78 | n40 | 30 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |  | 270 |  |  |
| n78 | n41 | 30 |  | 270 | 270 | 270 |  | 270 | 270 | 270 | 270 |  | 270 | 270 | 270 |
| n783 | n79 | 30 |  |  |  |  |  | 270 | 270 | 270 | 270 |  | 270 |  | 270 |
| n79 | n783 | 30 |  | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |  | 270 | 270 | 270 |
| 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.  NOTE 3: The requirements only apply for UEs supporting inter-band carrier aggregation with simultaneous Rx/Tx capability. Simultaneous Rx/Tx capability does not apply for UEs supporting band n78 with a n77 implementation. | | | | | | | | | | | | | | | |

## <Next change>

#### 7.6A.3.3 Out-of-band blocking for Inter-band CA

For inter-band carrier aggregation with one component carrier per operating band and the uplink assigned to one NR band, the out-of-band blocking requirements are defined with the uplink active on the band(s) other than the band whose downlink is being tested. For NR CA configurations including an operating band without uplink band or an operating band with an unpaired DL part (as noted in Table 5.2-1), the requirements for all downlinks shall be met with the single uplink carrier active in each band capable of UL operation. The UE shall meet the requirements specified in clause 7.6.3 for each component carrier while all downlink carriers are active.

For inter-band carrier aggregation with component carriers in operating bands < 2.7GHz including n48, and for FDL\_Low(*j*) – 15 MHz ≤ f ≤ FDL\_High(*j*) + 15 MHz, the appropriate adjacent channel selectivity and in-band blocking requirements in the respective clauses 7.5 and 7.6.2 shall be applied for carrier *j*. For inter-band carrier aggregation with component carriers in operating bands > 2.7GHz excluding n48, and for FDL\_Low(*j*) – 3\* BWchannel ≤ f ≤ FDL\_High(*j*) + 3\* BWchannel, the appropriate adjacent channel selectivity and in-band blocking requirements in the respective clauses 7.5 and 7.6.2 shall be applied for carrier *j*. FDL\_Low(*j*) and FDL\_High(*j*) denote the respective lower and upper frequency limits of the operating band containing carrier *j*, *j* = 1,…,X, with carriers numbered in increasing order of carrier frequency and X the number of component carriers in the band combination. BWchannel denotes the channel bandwidth of the wanted signal component carrier j. If CW interferer falls in a gap between FDL\_High(*j*) and FDL\_Low(*j*+1) where the corresponding OOB ranges 1 and 2 overlap, then the lower level interferer limit of the overlapping OOB ranges applies.

For inter-band carrier aggregation with uplink assigned to two NR bands, the out-of-band blocking requirements specified in clause 7.6.3 shall be met with the transmitter power for the uplink set to 7 dB below PCMAX\_L,f,c for each serving cell c.

For the UE which supports inter-band CA configuration in Table 7.3A.3.2.1-1, Pinterferer power defined in Table 7.6.3-2 and 7.6.3-4 is increased by the amount given by ΔRIB,c in Table 7.3A.3.2.1-1.

For inter-band CA combination listed in Table 7.6A.3.3-1 and 7.6A.3.3-1a, exceptions to the requirement specified in Table 7.6A.3.3-2 are allowed when the second order intermodulation product of the lower frequency band UL carrier and the CW interfering signal fully or partially overlaps with the higher frequency band DL carrier.

Table 7.6A.3.3-1: PC3 CA band combination with exceptions allowed

|  |
| --- |
| CA band combination |
| CA\_n5-n77 |
| CA\_n5-n78 |
| CA\_n5-n79 |
| CA\_n8-n78 |
| CA\_n8-n79 |
| CA\_n20-n78 |
| CA\_n28-n77 |
| CA\_n28-n78 |
| CA\_n28-n79 |
| CA\_n71-n77 |
| CA\_n71-n78 |
| CA\_n78-n92 |

Table 7.6A.3.3-1a: PC2 CA band combination with exceptions allowed

|  |
| --- |
| CA band combination |
| CA\_n5-n77 |

Table 7.6A.3.3-2: Requirement for out-of-band blocking exceptions

|  |  |  |
| --- | --- | --- |
| Parameter | Unit | Level |
| PInterferer (CW) | dBm | -441 |
| NOTE 1: The requirement applies when , where and are the carrier frequencies for lower frequency band UL and higher frequency band DL, respectively. and are the channel bandwidths configured for lower frequency band UL carrier and higher frequency band DL carrier in MHz, respectively. | | |

For all interferer frequency ranges specified in clause 7.6.3 a maximum of



exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a step size of MHz with *NRB* the number of resource blocks in the downlink transmission bandwidth configuration, BWChannel 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.

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).

## <End of Changes>