3GPP TSG-RAN WG4 Meeting # 97-e R4-2015560

Electronic Meeting, 2nd – 13th November, 2020

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-1** | **CR** | **0542** | **rev** | **-** | **Current version:** | **16.5.0** |  |
|  | | | | | | | | |
| *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:*** | CR for 38.101-1 to adjust the structure of NR CA REFSENS | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_newRAT-Core | | | | |  | ***Date:*** | | | 2020-11-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **A** |  | | | | | ***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:*** | | 1. There are some reasons to move the SDL requirements in 7.3A.2.4 to 7.3.   **Firstly**, the REFSENS for SDL bands are band combination independent. RAN4 don’t need to list SDL band REFSENS one by one for different inter-band CA combinations.  **Secondly**, it’s helpful to reduce the coupling between clause 7.3 and clause 7.3A.2.4. It can cause some misalignment between 7.3A.2.4 and 7.3 that the REFSENS other than SDL bands are also listed in clause 7.3A.2.4.  **Thirdly**, the requirements in clause 7.3A.2.4 are totally same with REFSENS requirements for inter-band CA in clause 7.3A.2.3. For SDL bands, the reference sensitivity requirements can be verified by inter-band CA combinations with SDL band.   1. IMD exception is the only one that depends on specific DL configuration for all the NR CA requirements. From RF technical perspective, the different configurations of NR CA band combinations have the same IMD exception requirements. Listing all the different configurations not only brings the risks of missing and errors, but also makes spec redundant because of no additional information. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. The SDL requirements are moved from 7.3A.2.4 to 7.3 especially for n75 and n76. For SDL bands, the reference sensitivity requirements shall be verified by inter-band CA combinations with SDL band. The contents in clause 7.3A.2.4 are voided since the requirements specified in clause 7.3A.2.3 can be reused. 2. The NR CA configurations are replaced by band combination in clause 7.3A.5. The brackets are removed. 3. To reorder the table list in clause 7.3A.6 based on the UL bands. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The structure of NR CA REFSENS won’t be improved and simplified. There is a mismatch risk. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 7.3.2, 7.3A.2.4, 7.3A.5, 7.3A.6 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 Change1>>**

### 7.3.2 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 7.3.2-1 and Table 7.3.2-2.

Table 7.3.2-1: Two antenna port reference sensitivity QPSK PREFSENS

| Operating band / SCS / Channel bandwidth / Duplex-mode | | | | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Operating Band | SCS kHz | 5  MHz (dBm) | 10  MHz (dBm) | 15  MHz (dBm) | 20  MHz (dBm) | 25  MHz (dBm) | 30 MHz (dBm) | 40  MHz (dBm) | 50  MHz (dBm) | 60  MHz (dBm) | 70  MHz (dBm) | 80  MHz (dBm) | 90  MHz (dBm) | 100 MHz (dBm) | Duplex Mode | |
| n1 | 15 | -100.0 | -96.8 | -95.0 | -93.8 | -92.7 | -91.9 | -90.6 | -89.6 |  |  |  |  |  | FDD | |
| 30 |  | -97.1 | -95.1 | -94.0 | -92.8 | -92.0 | -90.7 | -89.7 |  |  |  |  |  |
| 60 |  | -97.5 | -95.4 | -94.2 | -93.0 | -92.1 | -90.9 | -89.7 |  |  |  |  |  |
| n2 | 15 | -98.0 | -94.8 | -93.0 | -91.8 |  |  |  |  |  |  |  |  |  | FDD | |
| 30 |  | -95.1 | -93.1 | -92.0 |  |  |  |  |  |  |  |  |  |
| 60 |  | -95.5 | -93.4 | -92.2 |  |  |  |  |  |  |  |  |  |
| n3 | 15 | -97.0 | -93.8 | -92.0 | -90.8 | -89.7 | -88.9 | -82.3 |  |  |  |  |  |  | FDD | |
| 30 |  | -94.1 | -92.1 | -91.0 | -89.8 | -89.0 | -82.4 |  |  |  |  |  |  |
| 60 |  | -94.5 | -92.4 | -91.2 | -90.0 | -89.1 | -82.6 |  |  |  |  |  |  |
| n5 | 15 | -98.0 | -94.8 | -93.0 | -86.8 |  |  |  |  |  |  |  |  |  | FDD | |
| 30 |  | -95.1 | -93.1 | -88.6 |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n71 | 15 | -98.0 | -94.8 | -93.0 | -91.8 | -90.7 | -89.9 | -88.6 | -81.5 |  |  |  |  |  | FDD | |
| 30 |  | -95.1 | -93.1 | -92.0 | -90.8 | -90.0 | -88.7 | -81.5 |  |  |  |  |  |
| 60 |  | -95.5 | -93.4 | -92.2 | -91.0 | -90.1 | -88.9 | -81.5 |  |  |  |  |  |
| n8 | 15 | -97.0 | -93.8 | -91.4 | -85.8 |  |  |  |  |  |  |  |  |  | FDD | |
| 30 |  | -94.1 | -91.7 | -87.2 |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n12 | 15 | -97.0 | -93.8 | -84.0 |  |  |  |  |  |  |  |  |  |  | FDD | |
| 30 |  | -94.1 | -84.1 |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n14 | 15 | -97.0 | -93.8 |  |  |  |  |  |  |  |  |  |  |  | FDD | |
| 30 |  | -94.1 |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n18 | 15 | -100.0 | -96.8 | -95.0 |  |  |  |  |  |  |  |  |  |  | FDD | |
| 30 |  | -97.1 | -95.1 |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n20 | 15 | -97.0 | -93.8 | -91.0 | -89.8 |  |  |  |  |  |  |  |  |  | FDD | |
| 30 |  | -94.1 | -91.1 | -90.0 |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n25 | 15 | -96.5 | -93.3 | -91.5 | -90.3 | -89.3 | -82.2 | -79.5 |  |  |  |  |  |  | FDD | |
| 30 |  | -93.6 | -91.6 | -90.5 | -89.4 | -82.3 | -79.6 |  |  |  |  |  |  |
| 60 |  | -94.0 | -91.9 | -90.7 | -89.6 | -82.4 | -79.7 |  |  |  |  |  |  |
| n26 | 15 | -97.56 | -94.56 | -92.76 | -87.6 |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  | -94.86 | -92.76 | -87.7 |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n28 | 15 | -98.5 | -95.5 | -93.5 | -90.8 |  | -78.5 |  |  |  |  |  |  |  | FDD | |
| 30 |  | -95.6 | -93.6 | -91.0 |  | -78.6 |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n29x | 15 | -97.0 | -93.8 |  |  |  |  |  |  |  |  |  |  |  | SDL | |
| 30 |  | -94.1 |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n30 | 15 | -99.0 | -95.8 |  |  |  |  |  |  |  |  |  |  |  | FDD | |
| 30 |  | -96.1 |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n34 | 15 | -100.0 | -96.8 | -95.0 |  |  |  |  |  |  |  |  |  |  | TDD | |
| 30 |  | -97.1 | -95.1 |  |  |  |  |  |  |  |  |  |  |
| 60 |  | -97.5 | -95.4 |  |  |  |  |  |  |  |  |  |  |
| n381 | 15 | -100.0 | -96.8 | -95.0 | -93.8 | -92.7 | -91.9 | -90.6 |  |  |  |  |  |  | TDD | |
| 30 |  | -97.1 | -95.1 | -94.0 | -92.8 | -92.0 | -90.7 |  |  |  |  |  |  |
| 60 |  | -97.5 | -95.4 | -94.2 | -93.0 | -92.1 | -90.9 |  |  |  |  |  |  |
| n39 | 15 | -100.0 | -96.8 | -95.0 | -93.8 | -92.7 | -91.9 | -90.6 |  |  |  |  |  |  | TDD | |
| 30 |  | -97.1 | -95.1 | -94.0 | -92.8 | -92.0 | -90.7 |  |  |  |  |  |  |
| 60 |  | -97.5 | -95.4 | -94.2 | -93.0 | -92.1 | -90.9 |  |  |  |  |  |  |
| n40 | 15 | -100.0 | -96.8 | -95.0 | -93.8 | -92.7 | -91.9 | -90.6 | -89.6 |  |  |  |  |  | TDD | |
| 30 |  | -97.1 | -95.1 | -94.0 | -92.8 | -92.0 | -90.7 | -89.7 | -88.9 |  | -87.6 |  |  |
| 60 |  | -97.5 | -95.4 | -94.2 | -93.0 | -92.1 | -90.9 | -89.8 | -89.1 |  | -87.6 |  |  |
| n411 | 15 |  | -94.8 | -93.0 | -91.8 |  | -89.9 | -88.6 | -87.6 |  |  |  |  |  | TDD | |
| 30 |  | -95.1 | -93.1 | -92.0 |  | -90.0 | -88.7 | -87.7 | -86.9 |  | -85.6 | -85.1 | -84.7 |
| 60 |  | -95.5 | -93.4 | -92.2 |  | -90.1 | -88.9 | -87.8 | -87.1 |  | -85.6 | -85.1 | -84.7 |
| n481 | 15 | -99 | -95.8 | -94.0 | -92.7 |  |  | -89.6 | -88.65 |  |  |  |  |  | TDD | |
| 30 |  | -96.1 | -94.1 | -92.9 |  |  | -89.7 | -88.75 | -87.95 |  | -86.65 | -86.15 | -85.65 |
| 60 |  | -96.5 | -94.4 | -93.1 |  |  | -89.9 | -88.85 | -88.05 |  | -86.75 | -86.25 | -85.75 |
| n50 | 15 | -100.0 | -96.8 | -95.0 | -93.8 |  | -91.9 | -90.6 | -89.6 |  |  |  |  |  | TDD | |
| 30 |  | -97.1 | -95.1 | -94.0 |  | -92.0 | -90.7 | -89.7 | -88.9 |  | -87.6 |  |  |
| 60 |  | -97.5 | -95.4 | -94.2 |  | -92.1 | -90.9 | -89.8 | -89.1 |  | -87.6 |  |  |
| n51 | 15 | -100.0 |  |  |  |  |  |  |  |  |  |  |  |  | TDD | |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n53 | 15 | -100.0 | -96.8 |  |  |  |  |  |  |  |  |  |  |  | TDD | |
| 30 |  | -97.1 |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  | -97.5 |  |  |  |  |  |  |  |  |  |  |  |
| n65 | 15 | -99.5 | -96.3 | -94.5 | -93.3 |  |  |  | -89.2 |  |  |  |  |  | FDD | |
| 30 |  | -96.6 | -94.6 | -93.5 |  |  |  | -89.3 |  |  |  |  |  |
| 60 |  | -97.0 | -94.9 | -93.7 |  |  |  | -89.4 |  |  |  |  |  |
| n66 | 15 | -99.5 | -96.3 | -94.5 | -93.3 | -92.2 | -91.4 | -90.1 |  |  |  |  |  |  | FDD | |
| 30 |  | -96.6 | -94.6 | -93.5 | -92.3 | -91.5 | -90.2 |  |  |  |  |  |  |
| 60 |  | -97.0 | -94.9 | -93.7 | -92.5 | -91.6 | -90.4 |  |  |  |  |  |  |
| n70 | 15 | -100.0 | -96.8 | -95.0 | -93.8 | -92.7 |  |  |  |  |  |  |  |  | FDD | |
| 30 |  | -97.1 | -95.1 | -94.0 | -92.8 |  |  |  |  |  |  |  |  |
| 60 |  | -97.5 | -95.4 | -94.2 | -93.0 |  |  |  |  |  |  |  |  |
| n71 | 15 | -97.2 | -94.0 | -91.6 | -86.0 |  |  |  |  |  |  |  |  |  | FDD | |
| 30 |  | -94.3 | -91.9 | -87.4 |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n74 | 15 | -99.53 | -96.33 | -94.53 | -89.33 |  |  |  |  |  |  |  |  |  | FDD | |
| 30 |  | -96.63 | -94.63 | -89.53 |  |  |  |  |  |  |  |  |  |
| 60 |  | -97.03 | -94.93 | -89.63 |  |  |  |  |  |  |  |  |  |
| n75x | 15 | -100 | -96.8 | -95.0 | -93.8 | -92.7 | -91.9 | -90.6 | -89.6 |  |  |  |  |  | SDL | |
| 30 |  | -97.1 | -95.1 | -94.0 | -92.8 | -92.0 | -90.7 | -89.7 |  |  |  |  |  |
| 60 |  | -97.5 | -95.4 | -94.2 | -93.0 | -92.1 | -90.9 | -89.8 |  |  |  |  |  |
| n75x | 15 | -100 |  |  |  |  |  |  |  |  |  |  |  |  | SDL | |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n771,4 | 15 |  | -95.3 | -93.5 | -92.2 | -91.2 | -90.4 | -89.1 | -88.1 |  |  |  |  |  | TDD | |
| 30 |  | -95.6 | -93.6 | -92.4 | -91.3 | -90.5 | -89.2 | -88.2 | -87.4 | -86.7 | -86.1 | -85.6 | -85.1 |
| 60 |  | -96.0 | -93.9 | -92.6 | -91.5 | -90.6 | -89.4 | -88.3 | -87.5 | -86.8 | -86.2 | -85.7 | -85.2 |
| n781 | 15 |  | -95.8 | -94.0 | -92.7 | -91.7 | -90.9 | -89.6 | -88.6 |  |  |  |  |  | TDD | |
| 30 |  | -96.1 | -94.1 | -92.9 | -91.8 | -91 | -89.7 | -88.7 | -87.9 | -87.2 | -86.6 | -86.1 | -85.6 |
| 60 |  | -96.5 | -94.4 | -93.1 | -92 | -91.1 | -89.9 | -88.8 | -88.0 | -87.3 | -86.7 | -86.2 | -85.7 |
| n791 | 15 |  |  |  |  |  |  | -89.6 | -88.6 |  |  |  |  |  | TDD | |
| 30 |  |  |  |  |  |  | -89.7 | -88.7 | -87.9 |  | -86.6 |  | -85.6 |
| 60 |  |  |  |  |  |  | -89.9 | -88.8 | -88.0 |  | -86.7 |  | -85.7 |
| n91 | 15 | -100 |  |  |  |  |  |  |  |  |  |  |  |  | FDD | |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n92 | 15 | -100 | -96.8 | -95.0 | -93.8 |  |  |  |  |  |  |  |  |  | FDD | |
| 30 |  | -97.1 | -95.1 | -94.0 |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n93 | 15 | -100 |  |  |  |  |  |  |  |  |  |  |  |  | FDD | |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n94 | 15 | -100 | -96.8 | -95.0 | -93.8 |  |  |  |  |  |  |  |  |  | FDD | |
| 30 |  | -97.1 | -95.1 | -94.0 |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| NOTE 1: Four Rx antenna ports shall be the baseline for this operating band except for two Rx vehicular UE.  NOTE 2: The transmitter shall be set to PUMAX as defined in clause 6.2.4  NOTE 3: The requirement is modified by -0.5 dB when the assigned NR channel bandwidth is confined within 1475.9 - 1510.9 MHz.  NOTE 4: The requirement is modified by -0.5 dB when the assigned UE channel bandwidth is confined within 3300 - 3800 MHz.  NOTE 5: For these bandwidths, the minimum requirements are restricted to operation when carrier is configured as a downlink carrier part of CA configuration.  NOTE 6: Values are modified by -0.5dB when carrier channel BW is between 865MHz and 894MHz.  NOTE x: For SDL bands, the reference sensitivity requirements shall be verified by inter-band CA combinations with SDL band, which are supported by UE. | | | | | | | | | | | | | | | | |

For UE(s) equipped with 4 Rx antenna ports, reference sensitivity for 2Rx antenna ports in Table 7.3.2-1 shall be modified by the amount given in ΔRIB,4R in Table 7.3.2-2 for the applicable operating bands.

Table 7.3.2-2: Four antenna port reference sensitivity allowance ΔRIB,4R

|  |  |
| --- | --- |
| Operating band | ΔRIB,4R (dB) |
| n28, n71 | -2.71 |
| n1, n2, n3, n30, n40, n7, n34, n38, n39, n41, n66, n70 | -2.7 |
| n48, n77, n78, n79 | -2.2 |
| NOTE 1: 4 Rx operation is targeted for FWA form factor | |

The reference receive sensitivity (REFSENS) requirement specified in Table 7.3.2-1 and Table 7.3.2-2 shall be met with uplink transmission bandwidth less than or equal to that specified in Table 7.3.2-3.

Table 7.3.2-3: Uplink configuration for reference sensitivity

|  | Operating band / SCS / Channel bandwidth / Duplex mode | | | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Operating 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 | Duplex Mode |
| n1 | | 15 | 25 | 501 | 751 | 1001 | 1281 | 1281 | 1281 | 1281 |  |  |  |  |  | FDD |
| 30 |  | 24 | 361 | 501 | 641 | 641 | 641 | 641 |  |  |  |  |  |
| 60 |  | 101 | 18 | 24 | 301 | 301 | 301 | 301 |  |  |  |  |  |
| n2 | | 15 | 25 | 501 | 501 | 501 |  |  |  |  |  |  |  |  |  | FDD |
| 30 | 101 | 24 | 241 | 241 |  |  |  |  |  |  |  |  |  |
| 60 |  | 101 | 101 | 101 |  |  |  |  |  |  |  |  |  |
| n3 | | 15 | 25 | 501 | 501 | 501 | 501 | 501 | 501 |  |  |  |  |  |  | FDD |
| 30 |  | 24 | 241 | 241 | 241 | 241 | 241 |  |  |  |  |  |  |
| 60 |  | 101 | 101 | 101 | 101 | 101 | 101 |  |  |  |  |  |  |
| n5 | | 15 | 25 | 251 | 201 | 201 |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  | 121 | 101 | 101 |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n7 | | 15 | 25 | 501 | 751 | 751 | 721 | 641 | 451 | 451 |  |  |  |  |  | FDD |
| 30 |  | 24 | 361 | 361 | 361 | 321 | 201 | 201 |  |  |  |  |  |
| 60 |  | 101 | 18 | 181 | 181 | 161 | 101 | 101 |  |  |  |  |  |
| n8 | | 15 | 25 | 251 | 201 | 201 |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  | 121 | 101 | 101 |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n12 | | 15 | 201 | 201 | 201 |  |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  | 101 | 101 |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n14 | | 15 | 201 | 201 |  |  |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  | 101 |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n18 | | 15 | 25 | 251 | 251 |  |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  | 101 | 101 |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n20 | | 15 | 25 | 201 | 202 | 202 |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  | 101 | 102 | 102 |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n25 | | 15 | 25 | 501 | 501 | 501 | 501 | 481 | 401 |  |  |  |  |  |  | FDD |
| 30 |  | 24 | 241 | 241 | 241 | 241 | 201 |  |  |  |  |  |  |
| 60 |  | 101 | 101 | 101 | 101 | 101 | 101 |  |  |  |  |  |  |
| n26 | | 15 | 25 | 251 | 251 | 251 |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  | 121 | 121 | 121 |  |  |  |  |  |  |  |  |  |
| n28 | | 15 | 25 | 251 | 251 | 251 |  | 251 |  |  |  |  |  |  |  | FDD |
| 30 |  | 101 | 101 | 101 |  | 101 |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n30 | | 15 | 201 | 201 |  |  |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  | 101 |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n34 | | 15 | 25 | 50 | 75 |  |  |  |  |  |  |  |  |  |  | TDD |
| 30 |  | 24 | 36 |  |  |  |  |  |  |  |  |  |  |
| 60 |  | 10 | 18 |  |  |  |  |  |  |  |  |  |  |
| n38 | | 15 | 25 | 50 | 75 | 100 | 128 | 160 | 216 |  |  |  |  |  |  | TDD |
| 30 |  | 24 | 36 | 50 | 64 | 75 | 100 |  |  |  |  |  |  |
| 60 |  | 10 | 18 | 24 | 30 | 36 | 50 |  |  |  |  |  |  |
| n39 | | 15 | 25 | 50 | 75 | 100 | 128 | 160 | 216 |  |  |  |  |  |  | TDD |
| 30 |  | 24 | 36 | 50 | 64 | 75 | 100 |  |  |  |  |  |  |
| 60 |  | 10 | 18 | 24 | 30 | 36 | 50 |  |  |  |  |  |  |
| n40 | | 15 | 25 | 50 | 75 | 100 | 128 | 160 | 216 | 270 |  |  |  |  |  | TDD |
| 30 |  | 24 | 36 | 50 | 64 | 75 | 100 | 128 | 162 |  | 216 |  |  |
| 60 |  | 10 | 18 | 24 | 30 | 36 | 50 | 64 | 75 |  | 100 |  |  |
| n41 | | 15 |  | 50 | 75 | 100 |  | 160 | 216 | 270 |  |  |  |  |  | TDD |
| 30 |  | 24 | 36 | 50 |  | 75 | 100 | 128 | 162 |  | 216 | 243 | 270 |
| 60 |  | 10 | 18 | 24 |  | 36 | 50 | 64 | 75 |  | 100 | 120 | 135 |
| n48 | | 15 | 25 | 50 | 75 | 100 |  |  | 216 |  |  |  |  |  |  | TDD |
| 30 |  | 24 | 36 | 50 |  |  | 100 |  |  |  |  |  |  |
| 60 |  | 10 | 18 | 24 |  |  | 50 |  |  |  |  |  |  |
| n50 | | 15 | 25 | 50 | 75 | 100 |  | 160 | 216 | 270 |  |  |  |  |  | TDD |
| 30 |  | 24 | 36 | 50 |  | 75 | 100 | 128 | 162 |  | NOTE 3 |  |  |
| 60 |  | 10 | 18 | 24 |  | 36 | 50 | 64 | 75 |  | NOTE 3 |  |  |
| n51 | | 15 | 25 |  |  |  |  |  |  |  |  |  |  |  |  | TDD |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n53 | | 15 | 25 | 50 |  |  |  |  |  |  |  |  |  |  |  | TDD |
| 30 |  | 24 |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  | 10 |  |  |  |  |  |  |  |  |  |  |  |
| n65 | | 15 | 25 | 501 | 751 | 1001 |  |  |  | 1281 |  |  |  |  |  | FDD |
| 30 |  | 24 | 361 | 501 |  |  |  | 641 |  |  |  |  |  |
| 60 |  | 101 | 18 | 24 |  |  |  | 301 |  |  |  |  |  |
| n66 | | 15 | 25 | 501 | 751 | 1001 | 1281 | 160 | 216 |  |  |  |  |  |  | FDD |
| 30 |  | 24 | 361 | 501 | 641 | 751 | 1001 |  |  |  |  |  |  |
| 60 |  | 101 | 18 | 24 | 301 | 361 | 501 |  |  |  |  |  |  |
| n70 | | 15 | 25 | 501 | 751 | NOTE 3 | NOTE 3 |  |  |  |  |  |  |  |  | FDD |
| 30 |  | 24 | 361 | NOTE 3 | NOTE 3 |  |  |  |  |  |  |  |  |
| 60 |  | 101 | 18 | NOTE 3 | NOTE 3 |  |  |  |  |  |  |  |  |
| n71 | | 15 | 25 | 251 | 201 | 201 |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  | 121 | 101 | 101 |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n74 | | 15 | 25 | 251 | 251 | 251 |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  | 101 | 101 | 101 |  |  |  |  |  |  |  |  |  |
| 60 |  | 51 | 51 | 51 |  |  |  |  |  |  |  |  |  |
| n77 | | 15 |  | 50 | 75 | 100 | 128 | 160 | 216 | 270 |  |  |  |  |  | TDD |
| 30 |  | 24 | 36 | 50 | 64 | 75 | 100 | 128 | 162 | 180 | 216 | 243 | 270 |
| 60 |  | 10 | 18 | 24 | 30 | 36 | 50 | 64 | 75 | 90 | 100 | 120 | 135 |
| n78 | | 15 |  | 50 | 75 | 100 | 128 | 160 | 216 | 270 |  |  |  |  |  | TDD |
| 30 |  | 24 | 36 | 50 | 64 | 75 | 100 | 128 | 162 | 180 | 216 | 243 | 270 |
| 60 |  | 10 | 18 | 24 | 30 | 36 | 50 | 64 | 75 | 90 | 100 | 120 | 135 |
| n79 | | 15 |  |  |  |  |  |  | 216 | 270 |  |  |  |  |  | TDD |
| 30 |  |  |  |  |  |  | 100 | 128 | 162 |  | 216 |  | 270 |
| 60 |  |  |  |  |  |  | 50 | 64 | 75 |  | 100 |  | 135 |
| n91 | | 15 | 254 | 201,4 |  |  |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n92 | | 15 | 25 | 201 | 201 | 201 |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  | 101 | 101 | 101 |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n93 | | 15 | 254 | 251,4 |  |  |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n94 | | 15 | 25 | 251 | 201 | 201 |  |  |  |  |  |  |  |  |  | FDD |
| 30 |  | 121 | 101 | 101 |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| NOTE 1: 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 (Table 5.3.2-1).  NOTE 2: For Band 20; for 15 kHz SCS, in the case of 15 MHz channel bandwidth, the UL resource blocks shall be located at RBstart 11 and in the case of 20 MHz channel bandwidth, the UL resource blocks shall be located at RBstart 16; for 30 kHz SCS, in the case of 15 MHz channel bandwidth, the UL resource blocks shall be located at RBstart 6 and in the case of 20 MHz channel bandwidth, the UL resource blocks shall be located at RBstart 8; for 60 kHz SCS, in the case of 15 MHz channel bandwidth, the UL resource blocks shall be located at RBstart 3 and in the case of 20 MHz channel bandwidth, the UL resource blocks shall be located at RBstart 4;  NOTE 3: For DL channel bandwidths that do not have symmetric UL channel bandwidth, highest valid UL configuration with lowest TX-RX separation (Table 5.4.4-1) shall be used.  NOTE 4: For band n91 and n93, largest supported UL bandwidth configuration shall be used. | | | | | | | | | | | | | | | | |

Unless given by Table 7.3.2-4, the minimum requirements specified in Tables 7.3.2-1 and 7.3.2-2 shall be verified with the network signalling value NS\_01 (Table 6.2.3-1) configured.

Table 7.3.2-4: Network signaling value for reference sensitivity

|  |  |
| --- | --- |
| Operating band | Network Signalling value |
| n2 | NS\_03 |
| n12 | NS\_06 |
| n14 | NS\_06 |
| n25 | NS\_03 |
| n30 | NS\_21 |
| n48 | NS\_27 |
| n53 | NS\_45 |
| n66 | NS\_03 |
| n70 | NS\_03 |
| n71 | NS\_35 |

## **<<End of Change1>>**

## **<<Start of Change2>>**

#### 7.3A.2.4 Void



## **<<End of Change2>>**

## **<<Start of Change3>>**

### 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 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 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 and Table 7.3A.5-2.

Table 7.3A.5-1: 2DL/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 | 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-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-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-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 |
| 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\_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-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 | 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 |
| 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\_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-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\_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\_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\_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\_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 |
| 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. | | | | | | | | |

## **<<End of Change3>>**

## **<<Start of Change4>>**

### 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 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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 |  |  |  |  |  |  |  |
| n41 | n25 | 0.6 | 0.6 | 0.6 | 0.6 |  |  |  |  |  |  |  |  |  |
| n411 | n66 | 3.5 | 3.5 | 3.5 | 3.5 |  |  | 3.5 |  |  |  |  |  |  |
| 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 |
| 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. | | | | | | | | | | | | | | |



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 |  |  |  |  |  |  |  |
| n41 | n25 | 15 | 160 | 160 | 160 | 160 |  |  |  |  |  |  |  |  |  |
| n41 | n66 | 30 | 128 | 128 | 128 | 128 |  |  | 128 |  |  |  |  |  |  |
| 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 |
| n78 | n79 | 30 |  |  |  |  |  | 2703 | 2703 | 2703 | 2703 |  | 2703 |  | 2703 |
| n79 | n78 | 30 |  | 2703 | 2703 | 2703 |  | 2703 | 2703 | 2703 | 2703 |  | 2703 | 2703 | 2703 |
| 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. | | | | | | | | | | | | | | | |



## **<<End of Change4>>**