**3GPP TSG-RAN WG4 Meeting #111 R4-2408765
Fukuoka, Japan, 20th – 24th May, 2024**

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| --- |
| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.101-1** | **CR** | **2311** | **rev** |  | **Current version:** | **18.5.0** |  |
|  |
| *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)*.* |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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| --- |
|  |
| ***Title:***  | Big CR for 3Tx NR inter-band basket WI 38.101-1 |
|  |  |
| ***Source to WG:*** | OPPO |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | R18\_3Tx\_NR\_CA\_ENDC-Core |  | ***Date:*** | 2024-05-06 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-18 |
|  | *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 canbe 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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | Introduce requirements to TS for below completed 3Tx band combinations.* R4-2407640 CA\_n70A-n77A, Samsung, DISH, Qualcomm, Fujitsu
 |
|  |  |
| ***Summary of change:*** | Introduce the requirements for completed 3Tx Inter-band UL CA band combinations. |
|  |  |
| ***Consequences if not approved:*** | The band combination requirements for inter-band UL CA with 3Tx will not be defined. |
|  |  |
| ***Clauses affected:*** | 5.5A; 6.2H; 6.2L; 7.3A |
|  |  |
|  | **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 >>>

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NR CA configuration | Uplink CA configuration or single uplink carrier10 | NR Band | Channel bandwidth (MHz) (NOTE 3) | Bandwidth combination set |
| CA\_n70A-n71A | CA\_n70A-n71A | n70 | 5, 10, 15, 201, 251 | 0 |
|  |  | n71 | 5, 10, 15, 20 |  |
| CA\_n70A-n71(2A) | CA\_n70A-n71A | n70 | 5, 10, 15, 201, 251 | 0 |
|  |  | n71 | CA\_n71(2A)\_BCS0 |  |
| CA\_n70A-n77A | CA\_n70A-n77A13,14 | n70 | 5, 10, 15, 201, 251 | 0 |
|  |  | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  |
| CA\_n70A-n78A | CA\_n70A-n78A | n70 | 5, 10, 15, 201, 251 | 0 |
|  |  | n78 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  |
| CA\_n71A-n77A | n778, 9CA\_n71A-n77A8,13 | n71 | 5, 10, 15, 20 | 0 |
|  |  | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  |
|  |  | n71 | n71 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n77 | n77 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n71A-n77(2A) | n778, 9CA\_n77(2A)8CA\_n71A-n77A8 | n71 | 5, 10, 15, 20 | 0 |
|  |  | n77 | CA\_n77(2A)\_BCS1 |  |
|  |  | n71 | n71 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n77 | CA\_n77(2A)\_BCS 4 and 5 |  |
| CA\_n71A-n77(3A) | 778, 9CA\_n77(2A)8CA\_n71A-n77A8 | n71 | 5, 10, 15, 20 | 0 |
|  |  | n77 | CA\_n77(3A)\_BCS1 |  |
| CA\_n71A-n77B | - | n71 | n71 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n77 | CA\_n77B\_BCS 4 and 5 |  |
| CA\_n71A-n77C | - | n71 | n71 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n77 | CA\_n77C\_BCS 4 and 5 |  |
| CA\_n71B-n77A | n778, 9CA\_n71A-n77A8 | n71 | CA\_n71B\_BCS2 | 0 |
|  |  | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  |
|  |  | n71 | CA\_n71B\_BCS 4 and 5 | 4 and 5 |
|  |  | n77 | n77 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n71B-n77(2A) | n778, 9CA\_n71A-n77A8 | n71 | CA\_n71B\_BCS2 | 0 |
|  |  | n77 | CA\_n77(2A)\_BCS1 |  |
|  |  | n71 | CA\_n71B\_BCS 4 and 5 | 4 and 5 |
|  |  | n77 | CA\_n77(2A)\_BCS 4 and 5 |  |
| CA\_n71(2A)-n77A | n778, 9CA\_n71A-n77A8 | n71 | CA\_n71(2A)\_BCS0 | 0 |
|  |  | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  |
|  |  | n71 | CA\_n71(2A)\_BCS 4 and 5 | 4 and 5 |
|  |  | n77 | n77 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n71(2A)-n77(2A) | n778, 9CA\_n71A-n77A8 | n71 | CA\_n71(2A)\_BCS0 | 0 |
|  |  | n77 | CA\_n77(2A)\_BCS1 |  |
|  |  | n71 | CA\_n71(2A)\_BCS 4 and 5 | 4 and 5 |
|  |  | n77 | CA\_n77(2A)\_BCS 4 and 5 |  |
| CA\_n71(2A)-n77B | - | n71 | CA\_n71(2A)\_BCS 4 and 5 | 4 and 5 |
|  |  | n77 | CA\_n77B\_BCS 4 and 5 |  |
| CA\_n71(2A)-n77C | - | n71 | CA\_n71(2A)\_BCS 4 and 5 | 4 and 5 |
|  |  | n77 | CA\_n77C\_BCS 4 and 5 |  |
| CA\_n71A-n78A | n788,9CA\_n71A-n78A8 | n71 | 5, 10, 15, 20 | 0 |
|  |  | n78 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  |
|  |  | n71 | See n71 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n78 | See n78 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n71A-n78(2A) | n788,9CA\_n71A-n78A8 | n71 | 10, 15, 20 | 0 |
|  |  | n78 | CA\_n78(2A)\_BCS2 |  |
|  |  | n71 | See n71 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n78 | CA\_n78(2A)\_BCS4 and 5 |  |
| CA\_n71A-n85A | - | n71 | See n71 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n85 | See n85 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n71(2A)-n85A | - | n71 | CA\_n71(2A) BCS 4 and 5 | 4 and 5 |
|  |  | n85 | See n85 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n71B-n85A | - | n71 | CA\_n71B BCS 4 and 5 | 4 and 5 |
|  |  | n85 | See n85 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n74A-n77A | CA\_n74A-n77A | n74 | 5, 10, 15, 20 | 0 |
|  |  | n77 | 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |
| CA\_n74A-n78A | CA\_n74A-n78A | n74 | 5, 10, 15, 20 | 0 |
|  |  | n78 | 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |
| CA\_n75A-n78A | - | n75 | 5, 10, 15, 20 | 0 |
|  |  | n78 | 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |
|  |  | n75 | n75 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n78 | n78 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n75A-n78(2A) | - | n75 | 5, 10, 15, 20 | 0 |
|  |  | n78 | CA\_n78(2A)\_BCS1 |  |
|  |  | n75 | n75 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n78 | CA\_n78(2A)\_BCS4 and 5 |  |
| CA\_n76A-n78A | - | n76 | 5 | 0 |
|  |  | n78 | 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |
| CA\_n77A-n78A2 | - | n77 | 10, 15, 20, 40, 50, 60, 80, 90, 100 | 0 |
|  |  | n78 | 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |
|  |  | n77 | See n77 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n78 | See n78 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n77A-n78C2 | - | n77 | 10,15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n78 | CA\_n78C\_BCS1 |  |
| CA\_n77A-n78(2A)2 | - | n77 | 10,15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n78 | CA\_n78(2A)\_BCS2 |  |
|  |  | n77 | See n77 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n78 | CA\_n78(2A)\_BCS4 and 5 |  |
| CA\_n77A-n79A | n778,9n798,9CA\_n77A-n79A8 | n77 | 10, 15, 20, 40, 50, 60, 80, 90, 100 | 0 |
|  |  | n79 | 40, 50, 60, 80, 100 |  |
| CA\_n77(2A)-n79A | n778,9n798,9CA\_n77(2A)12CA\_n77A-n79A8 | n77 | CA\_n77(2A)\_BCS1 | 0 |
|  |  | n79 | 40, 50, 60, 80, 100 |  |
| CA\_n77(3A)-n79A | n778,9n798,9CA\_n77(2A)12CA\_n77A-n79A8 | n77 | CA\_n77(3A)\_BCS1 | 0 |
|  |  | n79 | 40, 50, 60, 80, 100 |  |
| CA\_n77A-n85A | n778,9CA\_n77A-n85A8 | n77 | See n77 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n85 | See n85 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n77(2A)-n85A | CA\_n77A-n85A | n77 | CA\_n77(2A)\_BCS 4 and 5 | 4 and 5 |
|  |  | n85 | See n85 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n77A-n102A | CA\_n77A-n102A | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n102 | 20, 40, 60, 80, 100 |  |
| CA\_n77A-n102(2A) | CA\_n77A-n102A | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n102 | CA\_n102(2A)\_BCS0 |  |
| CA\_n77A-n102B | CA\_n77A-n102ACA\_n77A-n102B | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n102 | CA\_n102B\_BCS0 |  |
| CA\_n77A-n102C | CA\_n77A-n102ACA\_n77A-n102C | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n102 | CA\_n102C\_BCS0 |  |
| CA\_n77A-n102D | CA\_n77A-n102A | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n102 | CA\_n102D\_BCS0 |  |
| CA\_n77A-n102E | CA\_n77A-n102A | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n102 | CA\_n102E\_BCS0 |  |
| CA\_n77(2A)-n102A | CA\_n77(2A) CA\_n77A-n102A | n77 | CA\_n77(2A)\_BCS4 and 5 | 0 |
|  |  | n102 | 20, 40, 60, 80, 100 |  |
| CA\_n77(2A)-n102(2A) | CA\_n77(2A) CA\_n77A-n102A | n77 | CA\_n77(2A)\_BCS4 and 5 | 0 |
|  |  | n102 | CA\_n102(2A)\_BCS0 |  |
| CA\_n77(2A)-n102B | CA\_n77(2A) CA\_n77A-n102ACA\_n77A-n102B | n77 | CA\_n77(2A)\_BCS4 and 5 | 0 |
|  |  | n102 | CA\_n102B\_BCS0 |  |
| CA\_n77(2A)-n102C | CA\_n77(2A) CA\_n77A-n102ACA\_n77A-n102C | n77 | CA\_n77(2A)\_BCS4 and 5 | 0 |
|  |  | n102 | CA\_n102C\_BCS0 |  |
| CA\_n77(2A)-n102D | CA\_n77(2A) CA\_n77A-n102A | n77 | CA\_n77(2A)\_BCS4 and 5 | 0 |
|  |  | n102 | CA\_n102D\_BCS0 |  |
| CA\_n77(2A)-n102E | CA\_n77(2A) CA\_n77A-n102A | n77 | CA\_n77(2A)\_BCS4 and 5 | 0 |
|  |  | n102 | CA\_n102E\_BCS0 |  |
| CA\_n78A-n79A | n78A8,9n79A8,9CA\_n78A-n79A8 | n78 | 10, 15, 20, 40, 50, 60, 80, 90, 100 | 0 |
|  |  | n79 | 40, 50, 60, 80, 100 |  |
|  |  | n78 | 10, 15, 20, 25, 30, 40, 50, 60, 80, 90, 100 | 1 |
|  |  | n79 | 40, 50, 60, 80, 100 |  |
|  |  | n78 | See n78 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n79 | See n79 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n78A-n79C | - | n78 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n79 | CA\_n79C\_BCS0 |  |
|  |  | n78 | See n78 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n79 | CA\_n79C\_BCS4 and 5 |  |
| CA\_n78(2A)-n79A | CA\_n78A-n79A | n78 | CA\_n78(2A)\_BCS1 | 0 |
|  |  | n79 | 40, 50, 60, 80, 100 |  |
|  |  | n78 | CA\_n78(2A)\_BCS4 and 5 | 4 and 5 |
|  |  | n79 | See n79 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n78A-n92A | CA\_n78A-n92A | n78 | 10, 15, 20, 40, 50, 60, 80, 90, 100 | 0 |
|  |  | n92 | 5, 10, 15, 20 |  |
|  |  | n78 | See n78 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n92 | See n92 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n78(2A)-n92A | CA\_n78A-n92A | n78 | CA\_n78(2A)\_BCS0 | 0 |
|  |  | n92 | 5, 10, 15, 20 |  |
|  |  | n78 | CA\_n78(2A)\_BCS4 and 5 | 4 and 5 |
|  |  | n92 | See n92 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n78A-n94A | - | n78 | 10, 15, 20, 40, 50, 60, 80, 90, 100 | 0 |
|  |  | n94 | 5, 10, 15, 20 |  |
| CA\_n78A-n102A | CA\_n78A-n102A | n78 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n102 | 20, 40, 60, 80, 100 |  |
| CA\_n78A-n102(2A) | CA\_n78A-n102A | n78 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n102 | CA\_n102(2A)\_BCS0 |  |
| CA\_n78A-n102B | CA\_n78A-n102ACA\_n78A-n102B | n78 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n102 | CA\_n102B\_BCS0 |  |
| CA\_n78A-n102C | CA\_n78A-n102ACA\_n78A-n102C | n78 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n102 | CA\_n102C\_BCS0 |  |
| CA\_n78A-n102D | CA\_n78A-n102A | n78 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n102 | CA\_n102D\_BCS0 |  |
| CA\_n78A-n102E | CA\_n78A-n102A | n78 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n102 | CA\_n102E\_BCS0 |  |
| CA\_n78(2A)-n102A | CA\_n78A-n102ACA\_n78(2A) | n78 | CA\_n78(2A)\_BCS2 | 0 |
|  |  | n102 | 20, 40, 60, 80, 100 |  |
| CA\_n78(2A)-n102B | CA\_n78A-n102ACA\_n78(2A)CA\_n78A-n102B | n78 | CA\_n78(2A)\_BCS2 | 0 |
|  |  | n102 | CA\_n102B\_BCS0 |  |
| CA\_n78(2A)-n102C | CA\_n78A-n102ACA\_n78(2A)CA\_n78A-n102C | n78 | CA\_n78(2A)\_BCS2 | 0 |
|  |  | n102 | CA\_n102C\_BCS0 |  |
| CA\_n78(2A)-n102D | CA\_n78A-n102ACA\_n78(2A) | n78 | CA\_n78(2A)\_BCS2 | 0 |
|  |  | n102 | CA\_n102D\_BCS0 |  |
| CA\_n78(2A)-n102E | CA\_n78A-n102ACA\_n78(2A) | n78 | CA\_n78(2A)\_BCS2 | 0 |
|  |  | n102 | CA\_n102E\_BCS0 |  |
| CA\_n78(2A)-n102(2A) | CA\_n78A-n102ACA\_n78(2A) | n78 | CA\_n78(2A)\_BCS2 | 0 |
|  |  | n102 | CA\_n102(2A)\_BCS0 |  |
| CA\_n78A-n105A | CA\_n78A-n105A | n78 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n105 | 5, 10, 15, 20, 25, 30, 35 |  |

The following notes are applied to the above tables:

NOTE 1: This UE channel bandwidth is applicable only to downlink.

NOTE 2: The minimum requirements for intra-band contiguous or non-contiguous CA apply.

NOTE 3: The SCS of each channel bandwidth for NR band refers to Table 5.3.5-1.

NOTE 4: This UE channel bandwidth is optional in this release of the specification.

NOTE 5: For this bandwidth, the minimum requirements are restricted to operation when carrier is configured as an SCell part of DC or CA configuration.

NOTE 6: For this bandwidth, the minimum requirements are restricted to operation when carrier is configured as an downlink SCell part of CA configuration

NOTE 7: Limited to operation at 3450-3550 MHz and 3700–3980 MHz.

NOTE 8: Minimum requirements for Power Class 2 are applicable for this uplink combination with 1Tx antenna connector in each band or single uplink carrier with up to 2Tx antenna connectors in this downlink/uplink combination

NOTE 9: Minimum requirements for Power Class 1.5 are applicable for this single uplink carrier with up to 2Tx antenna connectors in this downlink/uplink combination

NOTE 10: Only single uplink carriers with power class other than PC3 are listed.

NOTE 11: The CA configurations are given in Table 5.5A.1-1 or Table 5.5A.2-1 in this specification

NOTE 12: UL configurations are for non simultaneous Rx/Tx operation.

NOTE 13: Minimum requirements for Power Class 2 are applicable for this uplink configuration with 1Tx antenna connector in one band and 2Tx antenna connectors in the other band.

NOTE 14 Minimum requirements for Power Class 1.5 are applicable for this uplink configuration with 1Tx antenna connector in one band and 2Tx antenna connectors in the other band.

NOTE 15: Uplink is only in n5 for CA\_n5-n8.

NOTE 16: For UEs only supporting DL CA\_n26-n28, uplink support in band n26 is optional, if the UE supports CA\_n26-n28 UL configuration, it should also support UL in band n26 and n28.

## <<< Unchanged sections omitted >>>

#### 6.2H.3.1 UE maximum output power for inter-band UL CA with UL MIMO

For inter-band UL CA with UL MIMO in one of the two frequency bands, the maximum output power is defined as the sum of the maximum output power from all UE antenna connectors and all UL CCs, as specified in Table 6.2H.3.1-1. The period of measurement shall be at least one sub frame (1 ms). The requirements shall be met with the UL MIMO configurations specified in Table 6.2D.1-2 and 6.2D.1-3 for 2-layer configuration and ULFPTx configuration respectively for the component carrier configured with UL MIMO.

Table 6.2H.3.1-1: UE Power Class for inter-band UL CA with UL MIMO in one frequency band

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| NR UL CA Configuration | Class 1.5 (dBm) | Tolerance (dB) | Class 2 (dBm) | Tolerance (dB) | Class 3 (dBm) | Tolerance (dB) |
| CA\_n2A-n77A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n5A-n77A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n7A-n77A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n8A-n78A |  |  | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n25A-n41A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n25A-n77A | 293 | +2/-3 |  |  | 23 | +2/-3 |
| CA\_n26A-n78A |  |  | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n28A-n41A |  |  | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n28A-n78A |  |  | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n41A-n66A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n41A-n71A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n41A-n77A |  |  | 264 | +2/-3 | 23 | +2/-3 |
| CA\_n66A-n77A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n70A-n77A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n71A-n77A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| NOTE 1: An uplink CA configuration in which at least one of the bands has NOTE 3 in Table 6.2.1-1 is allowed to reduce the lower tolerance limit by 1.5 dB when the transmission bandwidths of at least one of the bands is confined within FUL\_low and FUL\_low + 4 MHz or FUL\_high - 4 MHz and FUL\_high.NOTE 2: The UE supports PC3 in FDD band and PC3 or PC2 with UL MIMO in TDD band.NOTE 3: The UE supports PC3 in FDD band and PC1.5 with UL MIMO in TDD band.NOTE 4: The UE supports PC2 with UL MIMO in either one of the TDD bands and PC2 in the other TDD band.NOTE 5: Power class 3 is default power class unless otherwise stated.NOTE 6: FWA form factor is targeted unless otherwise stated. |

## <<< Unchanged sections omitted >>>

#### 6.2L.3.1 UE maximum output power for inter-band UL CA with Tx Diversity

For inter-band UL CA with Tx Diversity in one of the two frequency bands, the maximum output power is defined as the sum of the maximum output power from all UE antenna connectors and all UL CCs, as specified in Table 6.2L.3.1-1. The period of measurement shall be at least one sub frame (1 ms).

Table 6.2L.3.1-1: UE Power Class for inter-band UL CA with Tx Diversity in one frequency band

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| NR UL CA Configuration | Class 1.5 (dBm) | Tolerance (dB) | Class 2 (dBm) | Tolerance (dB) | Class 3 (dBm) | Tolerance (dB) |
| CA\_n2A-n77A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n5A-n77A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n7A-n77A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n8A-n78A |  |  | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n25A-n41A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n25A-n77A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n26A-n78A |  |  | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n28A-n41A |  |  | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n28A-n78A |  |  | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n41A-n66A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n41A-n71A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n41A-n77A |  |  | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n66A-n77A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n70A-n77A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n71A-n77A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| NOTE 1: An uplink CA configuration in which at least one of the bands has NOTE 3 in Table 6.2.1-1 is allowed to reduce the lower tolerance limit by 1.5 dB when the transmission bandwidths of at least one of the bands is confined within FUL\_low and FUL\_low + 4 MHz or FUL\_high - 4 MHz and FUL\_high.NOTE 2: The UE supports PC3 in FDD band and PC2 with Tx Diversity in TDD band.NOTE 3: The UE supports PC3 in FDD band and PC1.5 with Tx Diversity in TDD band.NOTE 4: Power class 3 is the default power class unless otherwise stated.NOTE 5: FWA form factor is targeted unless otherwise stated. |

## <<< Unchanged sections omitted >>>

Table 7.3A.4-4a: Reference sensitivity exceptions and uplink/downlink configurations due to harmonic mixing from a PC2 aggressor NR UL band for NR DL CA FR1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| UL band | DL band | UL BW | SCS of UL band | UL RB Allocation | DL BW | MSD | UL/DL fc condition | UL/DL harmonic order |
| (MHz) | (kHz) | LCRB | (MHz) | (dB) |
| n41 | n186 | 5 | 15 | 25 (RBstart=0) | 5 | 27.3 | NOTE 7 | UL1/DL3 |
| n41 | n186 | 10 | 15 | 25 (RBstart=0) | 5 | 27.3 | NOTE 7 | UL1/DL3 |
| n77 | n2 | 10 | 15 | 25 (RBstart=0) | 5 | 9.1 | NOTE 4 | UL1/DL2 |
| n77 | n2 | 20 | 15 | 100 (RBstart=0) | 20 | 6.7 | NOTE 4 | UL1/DL2 |
| n77 | n3 | 10 | 15 | 25 (RBstart=0) | 5 | 8.1 | NOTE 4 | UL1/DL2 |
| n77 | n3 | 40 | 15 | 216 (RBstart=0) | 40 | 1 | NOTE 4 | UL1/DL2 |
| n77 | n5 | 10 | 15 | 25 (RBstart=0) | 5 | 8.1 | NOTE 5 | UL1/DL4 |
| n77 | n5 | 20 | 15 | 20 (RBstart=0) | 20 | 4.3 | NOTE 5 | UL1/DL4 |
| n77 | n7 | 20 | 30 | 50 (RBstart=0) | 10 | 13.2 | NOTE 3 | UL2/DL3 |
| n77 | n7 | 20 | 30 | 50 (RBstart=0) | 50 | 8.8 | NOTE 3 | UL2/DL3 |
| n77 | n12 | 10 | 15 | 25 (RBstart=0) | 5 | 34 | NOTE 1 | UL1/DL5 |
| n77 | n12 | 15 | 15 | 75 (RBstart=0) | 15 | 29.2 | NOTE 1 | UL1/DL5 |
| n77 | n13 | 10 | 15 | 25 (RBstart=0) | 5 | 34 | NOTE 1 | UL1/DL5 |
| n77 | n13 | 10 | 15 | 50 (RBstart=0) | 10 | 31 | NOTE 1 | UL1/DL5 |
| n77 | n14 | 10 | 15 | 25 (RBstart=0) | 5 | 34 | NOTE 1 | UL1/DL5 |
| n77 | n14 | 10 | 15 | 50 (RBstart=0) | 10 | 31 | NOTE 1 | UL1/DL5 |
| n77 | n25 | 10 | 15 | 25 (RBstart=0) | 5 | 9.2 | NOTE 4 | UL1/DL2 |
| n77 | n25 | 20 | 15 | 100 (RBstart=0) | 40 | 2.0 | NOTE 4 | UL1/DL2 |
| n77 | n28 | 10 | 15 | 25 (RBstart=0) | 5 | 31 | NOTE 1 | UL1/DL5 |
| n77 | n28 | 30 | 15 | 160 (RBstart=0) | 30 | 11.7 | NOTE 1 | UL1/DL5 |
| n772 | n29 | 10 | 15 | 25 (RBstart=0) | 5 | 34 | NOTE 1 | UL1/DL5 |
| n772 | n29 | 10 | 15 | 50 (RBstart=0) | 10 | 31 | NOTE 1 | UL1/DL5 |
| n77 | n30 | 10 | 15 | 12 (RBstart=0) | 5 | 13.2 | NOTE 3 | UL2/DL3 |
| n77 | n30 | 10 | 15 | 25 (RBstart=0) | 10 | 10.6 | NOTE 3 | UL2/DL3 |
| n77 | n40 | 20 | 30 | 50 (RBstart=0) | 10 | 13.2 | NOTE 3 | UL2/DL3 |
| n77 | n40 | 20 | 30 | 50 (RBstart=0) | 100 | 4.4 | NOTE 3 | UL2/DL3 |
| n77 | n41 | 20 | 30 | 50 (RBstart=0) | 10 | 13.2 | NOTE 3 | UL2/DL3 |
| n77 | n41 | 20 | 30 | 50 (RBstart=0) | 100 | 8.8 | NOTE 3 | UL2/DL3 |
| n772 | n70 | N/A | N/A | N/A | N/A | N/A | NOTE 4 | UL1/DL2 |
| n77 | n85 | 10 | 15 | 25 (RBstart=0) | 5 | 34 | NOTE 1 | UL1/DL5 |
| n77 | n85 | 15 | 15 | 75 (RBstart=0) | 15 | 29.2 | NOTE 1 | UL1/DL5 |
| n78 | n3 | 5 | 15 | 25 (RBstart=0) | 5 | 8.1 | NOTE 4 | UL1/DL2 |
| n78 | n3 | 40 | 15 | 216 (RBstart=0) | 40 | 1 | NOTE 4 | UL1/DL2 |
| n78 | n5 | 10 | 15 | 25 (RBstart=0) | 5 | [8.1] | NOTE 5 | UL1/DL4 |
| n78 | n5 | 20 | 15 | 20 (RBstart=0) | 20 | [4.3] | NOTE 5 | UL1/DL4 |
| n78 | n8 | 10 | 15 | 25 (RBstart=0) | 5 | 8.1 | NOTE 5 | UL1/DL4 |
| n78 | n8 | 20 | 15 | 20 (RBstart=0) | 20 | 4.3 | NOTE 5 | UL1/DL4 |
| n78 | n28 | 5 | 15 | 25 (RBstart=0) | 5 | 31 | NOTE 1 | UL1/DL5 |
| n78 | n28 | 30 | 15 | 160 (RBstart=0) | 30 | 11.7 | NOTE 1 | UL1/DL5 |
| n79 | n8 | 10 | 15 | 25 (RBstart=0) | 5 | 28.0 | NOTE 1 | UL1/DL5 |
| NOTE 1: The requirements should be verified for DL NR-ARFCN of the victim (lower) band (superscript LB) such that  and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with $f\_{UL}^{HB}$ the UL carrier frequency and $BW\_{Channel}^{HB}$ the channel bandwidth configured in the higher band, both in MHz.NOTE 2: For a UE which supports this band combination only when the Band n77 frequency range restriction defined in NOTE 12 of Table 5.2-1 from TS 38.101-1 applies, the MSD test point(s) cannot be verified for the band combination and the test point(s) can be skipped.NOTE 3: The requirements should be verified for DL NR-ARFCN of the Victim (lower) band (superscript LB) such that $f\_{DL}^{LB}=\left⌊f\_{UL}^{HB}/0.15\right⌋0.1$ and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with $f\_{UL}^{HB}$ the UL carrier frequency and $BW\_{Channel}^{HB}$ the channel bandwidth configured in the higher band, both in MHz.NOTE 4: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band.NOTE 5: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and$ F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band.NOTE 6: 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 7: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and $ F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band. |

Table 7.3A.4-4b: Reference sensitivity exceptions and uplink/downlink configurations due to harmonic mixing from a PC1.5 aggressor NR UL band for NR DL CA FR1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| UL band | DL band | UL BW | SCS of UL band | UL RB Allocation | DL BW | MSD | UL/DL fc condition | UL/DL harmonic order |
| (MHz) | (kHz) | LCRB | (MHz) | (dB) |
| n77 | n2 | 10 | 15 | 25 (RBstart=0) | 5 | 11.8 | NOTE 4 | UL1/DL2 |
| n77 | n2 | 20 | 15 | 100 (RBstart=0) | 20 | 9.2 | NOTE 4 | UL1/DL2 |
| n77 | n3 | 5 | 15 | 25 (RBstart=0) | 5 | 11.1 | NOTE 4 | UL1/DL2 |
| n77 | n3 | 40 | 15 | 216 (RBstart=0) | 40 | 4 | NOTE 4 | UL1/DL2 |
| n77 | n5 | 10 | 15 | 25 (RBstart=0) | 5 | 10.7 | NOTE 5 | UL1/DL4 |
| n77 | n5 | 20 | 15 | 20 (RBstart=0) | 20 | 6.4 | NOTE 5 | UL1/DL4 |
| n77 | n7 | 20 | 30 | 50 (RBstart=0) | 10 | 16.1 | NOTE 3 | UL2/DL3 |
| n77 | n7 | 20 | 30 | 50 (RBstart=0) | 100 | 11.5 | NOTE 3 | UL2/DL3 |
| n77 | n12 | 10 | 15 | 25 (RBstart=0) | 5 | 37 | NOTE 1 | UL1/DL5 |
| n77 | n12 | 15 | 15 | 75 (RBstart=0) | 15 | 32.2 | NOTE 1 | UL1/DL5 |
| n77 | n13 | 10 | 15 | 25 (RBstart=0) | 5 | 37 | NOTE 1 | UL1/DL5 |
| n77 | n13 | 10 | 15 | 50 (RBstart=0) | 10 | 34 | NOTE 1 | UL1/DL5 |
| n77 | n14 | 10 | 15 | 25 (RBstart=0) | 5 | 37 | NOTE 1 | UL1/DL5 |
| n77 | n14 | 10 | 15 | 50 (RBstart=0) | 10 | 34 | NOTE 1 | UL1/DL5 |
| n77 | n25 | 10 | 15 | 25 (RBstart=0) | 5 | 11.9 | NOTE 4 | UL1/DL2 |
| n77 | n25 | 20 | 15 | 100 (RBstart=0) | 40 | 3.3 | NOTE 4 | UL1/DL2 |
| n77 | n28 | 5 | 15 | 25 (RBstart=0) | 5 | 34 | NOTE 1 | UL1/DL5 |
| n77 | n28 | 30 | 15 | 160 (RBstart=0) | 30 | 14.7 | NOTE 1 | UL1/DL5 |
| n772 | n29 | 10 | 15 | 25 (RBstart=0) | 5 | 37 | NOTE 1 | UL1/DL5 |
| n772 | n29 | 10 | 15 | 50 (RBstart=0) | 10 | 34 | NOTE 1 | UL1/DL5 |
| n77 | n30 | 10 | 15 | 12 (RBstart=0) | 5 | 16.1 | NOTE 3 | UL2/DL3 |
| n77 | n30 | 10 | 15 | 25 (RBstart=0) | 10 | 13.5 | NOTE 3 | UL2/DL3 |
| n77 | n41 | 20 | 30 | 50 (RBstart=0) | 10 | 16.1 | NOTE 3 | UL2/DL3 |
| n77 | n41 | 20 | 30 | 50 (RBstart=0) | 100 | 11.5 | NOTE 3 | UL2/DL3 |
| n772 | n70 | N/A | N/A | N/A | N/A | N/A | NOTE 4 | UL1/DL2 |
| n77 | n85 | 10 | 15 | 25 (RBstart=0) | 5 | 37 | NOTE 1 | UL1/DL5 |
| n77 | n85 | 15 | 15 | 75 (RBstart=0) | 15 | 32.2 | NOTE 1 | UL1/DL5 |
| n78 | n3 | 5 | 15 | 25 (RBstart=0) | 5 | 11.1 | NOTE 4 | UL1/DL2 |
| n78 | n3 | 40 | 15 | 216 (RBstart=0) | 40 | 4 | NOTE 4 | UL1/DL2 |
| n78 | n8 | 10 | 15 | 25 (RBstart=0) | 5 | 10.5 | NOTE 5 | UL1/DL4 |
| n78 | n8 | 20 | 15 | 20 (RBstart=0) | 20 | 6.7 | NOTE 5 | UL1/DL4 |
| n78 | n28 | 5 | 15 | 25 (RBstart=0) | 5 | 34 | NOTE 1 | UL1/DL5 |
| n78 | n28 | 30 | 15 | 160 (Rbstart=0) | 30 | 14.7 | NOTE 1 | UL1/DL5 |
| n79 | n8 | 10 | 15 | 25 (RBstart=0) | 5 | 31.0 | NOTE 1 | UL1/DL5 |
| NOTE 1: The requirements should be verified for DL NR-ARFCN of the victim (lower) band (superscript LB) such that  and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with $f\_{UL}^{HB}$ the UL carrier frequency and $BW\_{Channel}^{HB}$ the channel bandwidth configured in the higher band, both in MHz.NOTE 2: For a UE which supports this band combination only when the Band n77 frequency range restriction defined in NOTE 12 of Table 5.2-1 from TS 38.101-1 applies, the MSD test point(s) cannot be verified for the band combination and the test point(s) can be skipped.NOTE 3: The requirements should be verified for DL NR-ARFCN of the Victim (lower) band (superscript LB) such that $f\_{DL}^{LB}=\left⌊f\_{UL}^{HB}/0.15\right⌋0.1$ and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with $f\_{UL}^{HB}$ the UL carrier frequency and $BW\_{Channel}^{HB}$ the channel bandwidth configured in the higher band, both in MHz.NOTE 4: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band.NOTE 5: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band. |

## <<< Unchanged sections omitted >>>

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

|  |  |
| --- | --- |
| Band / Channel bandwidth / NRB / Duplex mode | Source of IMD |
| NR CAConfiguration | NR band | UL Fc (MHz) | UL/DL BW (MHz) | UL LCRB | DL Fc (MHz) | MSD (dB) | Duplex mode |  |
| CA\_n1-n774 | n1 | 1950 | 5 | 25 | 2140 | 35.8 | FDD | IMD2 |
|  | n77 | 4090 | 10 | 50 | 4090 | N/A | TDD | N/A |
|  | n1 | 1950 | 5 | 25 | 2140 | 17.8 | FDD | IMD4 |
|  | n77 | 3710 | 10 | 50 | 3710 | N/A | TDD | N/A |
|  | n1 | N/A | 5 | N/A | 2130 | 31 | FDD | IMD515 |
|  | n7712 | 3310 | 10 | 1 (RBSTART=25) | 3310 | N/A | TDD | N/A |
|  |  | 3900 | 10 | 1 (RBSTART=25) | 3900 | N/A | TDD | N/A |
| CA\_n1-n78 | n1 | 1950 | 5 | 25 | 2140 | 17.8 | FDD | IMD4 |
|  | n78 | 3710 | 10 | 50 | 3710 | N/A | TDD | N/A |
| CA\_n2-n77 | n2 | 1855 | 5 | 25 | 1935 | 32.10 | FDD | IMD2 |
|  | n77 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
|  | n2 | 1885 | 5 | 25 | 1965 | 20.0 | FDD | IMD5 |
|  | n77 | 3810 | 10 | 50 | 3810 | N/A | TDD | N/A |
|  | n2 | 1900 | 5 | 25 | 1980 | 19.10 | FDD | IMD4 |
|  | n77 | 3720 | 10 | 50 | 3720 | 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\_n3-n774 | n3 | 1740 | 5 | 25 | 1835 | 31.9 | FDD | IMD2 |
|  | n77 | 3575 | 10 | 50 | 3575 | N/A | TDD | N/A |
|  | n3 | 1765 | 5 | 25 | 1860 | 18.5 | FDD | IMD4 |
|  | 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 |
|  | n3 | N/A | 5 | N/A | 1877.5 | 13.6 | FDD | IMD7 |
|  | n7712 | 3427.5 | 10 | 1 (RBstart=10) | 3427.5 | N/A | TDD | N/A |
|  |  | 3945 | 10 | 1 (RBstart=0) | 3945 | N/A | TDD | N/A |
| CA\_n3-n78 | n3 | 1740 | 5 | 25 | 1835 | 31.9 | FDD | IMD2 |
|  | n78 | 3575 | 10 | 50 | 3575 | N/A | TDD | N/A |
|  | n3 | 1765 | 5 | 25 | 1860 | 18.5 | FDD | IMD4 |
|  | n78 | 3435 | 10 | 50 | 3435 | N/A | TDD | N/A |
| CA\_n5-n77 | n5 | 844 | 5 | 25 | 889 | 18.6 | FDD | IMD44,13 |
|  | n77 | 3421 | 10 | 50 | 3421 | N/A | TDD | N/A |
|  | n5 | N/A | 5 | N/A | 880 | 18.5 | FDD | IMD4 |
|  | n7712 | 3410 | 10 | 1 (RBSTART=25) | 3410 | N/A | TDD | N/A |
|  |  | 3850 | 10 | 1 (RBSTART=25) | 3850 | N/A | TDD | N/A |
| CA\_n5-n78 | n5 | 844 | 5 | 25 | 889 | 18.6 | FDD | IMD4 |
|  | n78 | 3421 | 10 | 50 | 3421 | N/A | TDD | N/A |
| CA\_n5-n784 | n5 | N/A | 5 | N/A | 880 | 18.5 | FDD | IMD4 |
|  | n7812 | 3340 | 10 | 1 (RBSTART=25) | 3340 | N/A | TDD | N/A |
|  |  | 3780 | 10 | 1 (RBSTART=25) | 3780 |  |  |  |
| CA\_n7-n20 | n7 | 2512 | 10 | 50 | 2632 | N/A | FDD | N/A |
|  | n20 | 851 | 5 | 25 | 810 | 12 | FDD | IMD311 |
| CA\_n7-n77 | n7 | 2540 | 5 | 25 | 2660 | [15.8] | FDD | IMD4 |
|  | n77 | 3870 | 10 | 50 | 3870 | N/A | TDD | N/A |
|  | n7 | N/A | 5 | N/A | 2687.5 | 29.9 | FDD | IMD515 |
|  | n7712 | 3455 | 10 | 1 (RBSTART=0) | 3455 | N/A | TDD | N/A |
|  |  | 3835 | 10 | 1 (RBSTART=7) | 3835 | N/A | TDD | N/A |
| CA\_n7-n78 | n7 | N/A | 5 | N/A | 2650 | 29.9 | FDD | IMD515 |
|  | n7812 | 3350 | 10 | 1 (RBSTART=25) | 3350 | N/A | TDD | N/A |
|  |  | 3700 | 10 | 1 (RBSTART=25) | 3700 | N/A | TDD | N/A |
| CA\_n8-n77 | n8 | 897.5 | 5 | 25 | 942.5 | 8.3 | FDD | IMD4 |
|  | n77 | 3635 | 10 | 50 | 3635 | N/A | TDD | N/A |
|  | n8 | 897.5 | 5 | 25 | 942.5 | 15.5 | FDD | IMD4 |
|  | n77 | 3635 | 10 | 50 | 3635 | N/A | TDD | N/A |
| CA\_n8-n78 | n8 | 897.5 | 5 | 25 | 942.5 | 15.5 | FDD | IMD4 |
|  | n78 | 3635 | 10 | 50 | 3635 | N/A | TDD | N/A |
| CA\_n8-n79 | n8 | 897.5 | 5 | 25 | 942.5 | 21.5 | FDD | IMD5 |
|  | n79 | 4532.5 | 40 | 216 | 4532.5 | N/A | TDD | N/A |
| CA\_n12-n77 | 12 | 702 | 5 | 20 | 732 | 11.7 | FDD | IMD5 |
|  | n77 | 3540 | 10 | 50 | 3540 | N/A | TDD | N/A |
| CA\_n13-n77 | n13 | N/A | 5 | N/A | 750 | 8.6 | FDD | IMD415 |
|  | n7712 | 3510 | 10 | 1 (RBSTART=25) | 3510 | N/A | TDD | N/A |
|  |  | 3885 | 10 | 1 (RBSTART=25) | 3885 |  |  |  |
|  | n13 | 781 | 5 | 25 | 750 | 18.5 | FDD | IMD414 |
|  | n7712 | 3510 | 10 | 1 (RBSTART=25) | 3510 | N/A | TDD | N/A |
|  |  | 3885 | 10 | 1 (RBSTART=25) | 3885 | N/A | TDD | N/A |
|  | n13 | 782 | 5 | 20 | 751 | 20.5 | FDD | IMD5 |
|  | n77 | 3880 | 10 | 50 | 3880 | N/A | TDD | N/A |
| CA\_n14-n77 | n14 | 795.5 | 5 | 15 | 765.5 | 11.7 | FDD | IMD5 |
|  | n77 | 3947.5 | 10 | 50 | 3947.5 | N/A | TDD | N/A |
| CA\_n18-n41 | n18 | 820 | 5 | 25 | 865 | 24.6 | FDD | IMD3 |
|  | n41 | 2505 | 5 | 25 | 2505 | N/A | TDD | N/A |
| CA\_n18-n77 | n18 | 827.5 | 5 | 25 | 872.5 | 17.5 | FDD | IMD416 |
|  | n77 | 3355 | 10 | 50 | 3355 | N/A | TDD | N/A |
|  | n18 | 817.5 | 5 | 25 | 862.5 | 10.5 | FDD | IMD516 |
|  | n77 | 4130 | 10 | 50 | 4130 | N/A | TDD | N/A |
|  | n18 | 827.5 | 5 | 25 | 872.5 | 18.4 | FDD | IMD48 |
|  | n77 | 3355 | 10 | 50 | 3355 | N/A | TDD | N/A |
|  | n18 | 817.5 | 5 | 25 | 862.5 | 11.7 | FDD | IMD58 |
|  | n77 | 4130 | 10 | 50 | 4130 | N/A | TDD | N/A |
| CA\_n20-n78 | n20 | N/A | 5 | N/A | 800 | 8.6 | FDD | IMD415 |
|  | n7812 | 3350 | 10 | 1 (RBSTART=25) | 3350 | N/A | TDD | N/A |
|  |  | 3750 | 10 | 1 (RBSTART=25) | 3750 |  |  |  |
| CA\_n25-n41 | n25 | N/A | 5 | N/A | 1992.5 | 8.5 | FDD | IMD7 |
|  | n41 | 2545 | 90 | 1 (RBstart=0) | 2545 | N/A | TDD | N/A |
|  |  | 2640 | 100 | 1 (RBstart=221) | 2640 |  |  |  |
|  | n25 | 1860 | 5 | 25 | 1940 | 15.3 | FDD | IMD3 |
|  | n41 | 2501 | 10 | 1 (RBstart = 25) | 2501 | N/A | TDD | N/A |
|  |  | 2556 | 100 | 1 (RBstart = 208) | 2556 |  |  |  |
| CA\_n25-n77 | n25 | 1855 | 5 | 25 | 1935 | 32.1 | FDD | IMD24 |
|  | n77 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
|  | n25 | 1900 | 5 | 25 | 1980 | 19.1 | FDD | IMD4 |
|  | n77 | 3720 | 10 | 50 | 3720 | N/A | TDD | N/A |
|  | n25 | N/A | 5 | N/A | 1987.5 | 13.6 | FDD | IMD7 |
|  | n7712 | 3455 | 10 | 1 (RBSTART=10) | 3455 | N/A | TDD | N/A |
|  |  | 3945 | 10 | 1 (RBSTART=0) | 3945 | N/A | TDD | N/A |
| CA\_n25-n78 | n25 | 1855 | 5 | 25 | 1935 | 32.10 | FDD | IMD24 |
|  | n78 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
|  | n25 | N/A | 5 | N/A | 1980 | 13.6 | FDD | IMD7 |
|  | n7812 | 3315 | 10 | 1 (RBSTART=7) | 3315 | N/A | TDD | N/A |
|  |  | 3760 | 10 | 1 (RBSTART=0) | 3760 |  |  |  |
| CA\_n26-n78 | n26 | 836.5 | 5 | 25 | 881.5 | 23.8 | FDD | IMD4 |
|  | n78 | 3391 | 10 | 50 | 3391 | N/A | TDD | N/A |
| CA\_n28-n77 | n28 | N/A | N/A | N/A | N/A | N/A | FDD | IMD27 |
|  | n7712 | N/A | N/A | N/A | N/A | N/A | TDD | N/A |
|  | n28 | 705.5 | 5 | 25 | 760.5 | 19.2 | FDD | IMD5 |
|  | n77 | 3582.5 | 10 | 50 | 3582.5 | N/A | TDD | N/A |
|  | n28 | 725 | 5 | 25 | 780 | 18.5 | FDD | IMD414 |
|  | n7712 | 3510 | 10 | 1 (RBSTART=25) | 3510 | N/A | TDD | N/A |
|  |  | 3900 | 10 | 1 (RBSTART=25) | 3900 | N/A | TDD | N/A |
| CA\_n30-n77 | n30 | 2310 | 5 | 25 | 2355 | 17.6 | FDD | IMD4 |
|  | n77 | 3487.5 | 10 | 50 | 3487.5 | N/A | TDD | N/A |
| CA\_n41-n66 | n41 | 2545 | 90 | 1 (RBstart=0) | 2545 | N/A | TDD | N/A |
|  |  | 2640 | 100 | 1 (RBstart=171) | 2640 |  |  |  |
|  | n66 | N/A | 5 | N/A | 2197.5 | 32.5 | FDD | IMD5 |
| CA\_n41-n71 | n41 | 2614 | 5 | 25 | 2614 | N/A | TDD | N/A |
|  | n71 | 665 | 5 | 25 | 619 | 16.3 | FDD | IMD4 |
| CA\_n41-n77 | n41 | 2545 | 60 | 1 (RBstart=0) | 2545 | N/A | TDD | N/A |
|  |  | 2625 | 100 | 1 (RBstart=272) | 2625 |  |  |  |
| CA\_n66-n77 | n66 | 1775  | 5 | 25 | 2175  | 34.33 | FDD | IMD2 |
|  | n77 | 3950  | 10 | 50 | 3950  | N/A | TDD | N/A |
|  | n66 | 1760 | 5 | 25 | 2160 | 11.27 | FDD | IMD5 |
|  | n77 | 3720 | 10 | 50 | 3720 | N/A | TDD | N/A |
|  | n66 | N/A | 5 | N/A | 2197.5 | 31 | FDD | IMD515 |
|  | n7712 | 3305 | 10 | 1 (RBstart=0) | 3305 | N/A | TDD | N/A |
|  |  | 3855 | 10 | 1 (RBstart=8) | 3855 | N/A | TDD | N/A |
| CA\_n66-n78 | n66 | 1760 | 5 | 25 | 2160 | 11.27 | FDD | IMD5 |
|  | n78 | 3720 | 10 | 50 | 3720 | N/A | TDD | N/A |
|  | n66 | N/A | 5 | 25 | 2150 | 13.6 | FDD | IMD7 |
|  | n7812 | 3350 | 10 | 1 (RBSTART=7) | 3350 | N/A | TDD | N/A |
|  |  | 3750 | 10 | 1 (RBSTART=0) | 3750 |  |  |  |
| CA\_n70-n77 | n70 | 1702.5 | 5 | 25 | 2002.5 | 37 | FDD | IMD2 |
|  | n77 | 3705 | 10 | 50 | 3705 | N/A | TDD | N/A |
|  | n70 | 1697.5 | 5 | 25 | 1997.5 | 18.4 | FDD | IMD5 |
|  | n77 | 3545 | 10 | 50 | 3545 | N/A | TDD | N/A |
| CA\_n71-n77 | n71 | 681.5 | 5 | 25 | 635.5 | 11.4 | FDD | IMD513 |
|  | n77 | 3361.5 | 10 | 50 | 3361.5 | N/A | TDD | N/A |
|  | n71 | N/A | 5 | N/A | 640 | 18.5 | FDD | IMD414 |
|  | n7712 | 3480 | 10 | 1 (RBSTART=25) | 3480 | N/A | TDD | N/A |
|  |  | 3800 | 10 | 1 (RBSTART=25) | 3800 |  |  |  |
| CA\_n71-n78 | n71 | 681.5 | 5 | 25 | 635.5 | 11.4 | FDD | IMD5 |
|  | n78 | 3361.5 | 10 | 50 | 3361.5 | N/A | TDD | N/A |
| CA\_n77-n85 | n77 | 3540 | 10 | 50 | 3540 | N/A | TDD | N/A |
|  | n85 | 702 | 5 | 20 | 732 | 11.7 | FDD | IMD5 |
| NOTE 1: Both of the transmitters shall be set min(+23 dBm, PCMAX\_L,f,c) as defined in clause 6.2A.4NOTE 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: Void.NOTE 6: Void.NOTE 7: In current release the maximum separation bandwidth class is 600MHz, therefore, no IMD2 MSD requirement apply for this CA configuration when two uplink sub blocks are assigned within CA\_77(2A).NOTE8: For a UE which supports this band combination only when the Band n77 frequency range restriction of 3400 – 4100 MHz applies, the MSD test point(s) cannot be verified for the band combination and the test point(s) can be skipped.NOTE 9: Void.NOTE 10: Void.NOTE 11: Void.NOTE 12: This band supports intra-band non-contiguous uplink configuration.NOTE 13: For a UE which supports this band combination only when the Band n77 frequency range restriction defined in NOTE 12 of Table 5.2-1 applies, the MSD test point(s) cannot be verified for the band combination and the test point(s) can be skipped.NOTE 14: This band is subject to IMD6 also which MSD is not specified.NOTE 15: This band is subject to IMD7 also which MSD is not specified.NOTE 16: In Japan, n77 band is restricted to 3400 – 4100 MHz frequency range, and there are no valid MSD test points when using this restricted frequency range. |

Table 7.3A.5-1b: 2DL/2UL inter-band Reference sensitivity QPSK PREFSENS and uplink/downlink configurations for PC1.5 CA

|  |  |
| --- | --- |
| Band / Channel bandwidth / NRB / Duplex mode | Source of IMD |
| NR CAConfiguration | NR band | UL Fc (MHz) | UL/DL BW (MHz) | UL CLRB | DL Fc (MHz) | MSD (dB) | Duplex mode |  |
| CA\_n2-n77 | n2 | 1855 | 5 | 25 | 1935 | 35.2 | FDD | IMD2 |
|  | n77 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
|  | n2 | 1900 | 5 | 25 | 1980 | 26.4 | FDD | IMD4 |
|  | n77 | 3720 | 10 | 50 | 3720 | N/A | TDD | N/A |
|  | n2 | 1885 | 5 | 25 | 1965 | 28.0 | FDD | IMD5 |
|  | n77 | 3810 | 10 | 50 | 3810 | N/A | TDD | N/A |
| CA\_n5-n772 | n5 | 844 | 5 | 25 | 889 | 25.5 | FDD | IMD4 |
|  | n77 | 3421 | 10 | 50 | 3421 | N/A | TDD | N/A |
|  | n5 | 826.5 | 5 | 25 | 871.5 | 24.3 | FDD | IMD5 |
|  | n77 | 4177.5 | 10 | 50 | 4177.5 | N/A | TDD | N/A |
| CA\_n7-n77 | n7 | 2540 | 5 | 25 | 2660 | 29.7 | FDD | IMD4 |
|  | n77 | 3870 | 10 | 50 | 3870 | N/A | TDD | N/A |
| CA\_n25-n77 | n25 | 1855 | 5 | 25 | 1935 | 37.5 | FDD | IMD2 |
|  | n77 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
|  | n25 | 1900 | 5 | 25 | 1980 | 25.8 | FDD | IMD4 |
|  | n77 | 3720 | 10 | 50 | 3720 | N/A | TDD | N/A |
|  | n25 | 1885 | 5 | 25 | 1965 | 29.8 | FDD | IMD5 |
|  | n77 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
| CA\_n41-n71 | n41 | 2614 | 5 | 25 | 2614 | N/A | TDD | N/A |
|  | n71 | 665 | 5 | 25 | 619 | 25.4 | FDD | IMD4 |
| CA\_n66-n77 | n66 | 1775  | 5 | 25 | 2175  | 40.0 | FDD | IMD2 |
|  | n77 | 3950  | 10 | 50 | 3950  | N/A | TDD | N/A |
|  | n66 | 1760 | 5 | 25 | 2160 | 26.0 | FDD | IMD5 |
|  | n77 | 3720 | 10 | 50 | 3720 | N/A | TDD | N/A |
| CA\_n70-n77 | n70 | 1702.5 | 5 | 25 | 2002.5 | 41.8 | FDD | IMD2 |
|  | n77 | 3705 | 10 | 50 | 3705 | N/A | TDD | N/A |
|  | n70 | 1697.5 | 5 | 25 | 1997.5 | 27.9 | FDD | IMD5 |
|  | n77 | 3545 | 10 | 50 | 3545 | N/A | TDD | N/A |
| CA\_n71-n77 | n71 | 681.5 | 5 | 25 | 635.5 | 16.0 | FDD | IMD53 |
|  | n77 | 3361.5 | 10 | 50 | 3361.5 | N/A | TDD | N/A |
| NOTE 1: This band combination is specified for inter-band UL CA with UL MIMO or Tx diversity capabilites, and the transmitter shall be set at min (+23 dBm, PCMAX\_L,f,c) for the band with single Tx antenna connector as defined in clause 6.2A.4, and set at min (+27.8 dBm, PCMAX\_L,f,c) for the band with two Tx antenna connectors as defined in clause 6.2H.3 or 6.2L.3.4.NOTE 2: For a UE which supports this band combination only when the Band n77 frequency range restriction defined in NOTE 12 of Table 5.2-1 applies, the MSD test point(s) cannot be verified for the band combination and the test point(s) can be skipped.NOTE 3: In current release the maximum separation bandwidth class is 600MHz, therefore, no IMD2 MSD requirement apply for this CA configuration when two uplink sub blocks are assigned within CA\_77(2A). |

## <<< END OF CHANGES >>>