**3GPP TSG-RAN WG4 Meeting #109 draft R4-2321731  
Chicago, US, 13 – 17 Nov, 2023**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-1** | **CR** | **1978** | **rev** |  | **Current version:** | **18.3.0** |  |
|  | | | | | | | | |
| *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:*** | Big CR for 3Tx NR inter-band UL CA and EN-DC basket WI 38.101-1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | OPPO | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | R18\_3Tx\_NR\_CA\_ENDC-Core | | | | |  | ***Date:*** | | | 2023-11-21 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Introduce the approved Inter-band UL CA with 3Tx band combinations. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduce the approved Inter-band UL CA with 3Tx 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.3.1-1b: 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\_n2A-n5A | CA\_n2A-n5A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n5 | 5, 10, 15, 20 |  |
| CA\_n2A-n5B | CA\_n2A-n5A  CA\_n5B | n2 | 5, 10, 15, 20 | 0 |
|  |  | n5 | CA\_n5B\_BCS0 |  |
| CA\_n2(2A)-n5A | CA\_n2A-n5A | n2 | CA\_n2(2A)\_BCS0 | 0 |
|  |  | n5 | 5, 10, 15, 20 |  |
| CA\_n2A-n7A | CA\_n2A-n7A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n7 | 5, 10, 15, 20, 25, 30, 40, 50 |  |
| CA\_n2A-n7(2A) | CA\_n2A-n7A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n7 | CA\_n7(2A)\_BCS0 |  |
| CA\_n2A-n12A | CA\_n2A-n12A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n12 | 5, 10, 15 |  |
| CA\_n2(2A)-n12A | CA\_n2A-n12A | n2 | CA\_n2(2A)\_BCS0 | 0 |
|  |  | n12 | 5, 10, 15 |  |
| CA\_n2A-n14A | CA\_n2A-n14A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n14 | 5, 10 |  |
| CA\_n2(2A)-n14A | CA\_n2A-n14A | n2 | CA\_n2(2A)\_BCS0 | 0 |
|  |  | n14 | 5, 10 |  |
| CA\_n2A-n29A | - | n2 | 5, 10, 15, 20 | 0 |
|  |  | n29 | 5, 10 |  |
| CA\_n2(2A)-n29A | - | n2 | CA\_n2(2A)\_BCS0 | 0 |
|  |  | n29 | 5, 10 |  |
| CA\_n2A-n30A | CA\_n2A-n30A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n30 | 5, 10 |  |
| CA\_n2(2A)-n30A | CA\_n2A-n30A | n2 | CA\_n2(2A)\_BCS0 | 0 |
|  |  | n30 | 5, 10 |  |
| CA\_n2A-n38A | - | n2 | 5, 10, 15, 20 | 0 |
|  |  | n38 | 5, 10, 15, 20, 40 |  |
| CA\_n2A-n41A | CA\_n2A-n41A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n41 | 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |
| CA\_n2(2A)-n41A | CA\_n2A-n41A | n2 | CA\_n2(2A)\_BCS0 | 0 |
|  |  | n41 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 |  |
| CA\_n2A-n48A | CA\_n2A-n48A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n48 | 5, 10, 15, 20, 40, 501, 601, 801, 901, 1001 |  |
|  |  | n2 | 5, 10, 15, 20 | 1 |
|  |  | n48 | 5, 10, 15, 20, 30, 40, 501, 601,701, 801, 901, 1001 |  |
| CA\_n2A-n48B | CA\_n48B  CA\_n2A-n48A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n48 | CA\_n48B\_BCS0 |  |
|  |  | n2 | 5, 10, 15, 20 | 1 |
|  |  | n48 | CA\_n48B\_BCS2 |  |
| CA\_n2A-n48C | CA\_n2A-n48A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n48 | CA\_n48C\_BCS0 |  |
| CA\_n2A-n48(2A) | CA\_n2A-n48A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n48 | CA\_n48(2A)\_BCS0 |  |
|  |  | n2 | 5, 10, 15, 20 | 1 |
|  |  | n48 | CA\_n48(2A)\_BCS1 |  |
| CA\_n2A-n48(A-B) | CA\_n2A-n48A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n48 | CA\_n48(A-B)\_BCS0 |  |
|  |  | n2 | 5, 10, 15, 20 | 1 |
|  |  | n48 | CA\_n48(A-B)\_BCS1 |  |
| CA\_n2A-n48(A-C) | CA\_n2A-n48A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n48 | CA\_n48(A-C)\_BCS0 |  |
| CA\_n2A-n66A | - | n2 | 5, 10, 15, 20 | 0 |
|  |  | n66 | 5, 10, 15, 20, 40 |  |
|  | CA\_n2A-n66A | n2 | 5, 10, 15, 20 | 1 |
|  |  | n66 | 5, 10, 15, 20, 25, 30, 40 |  |
| CA\_n2(2A)-n66A | CA\_n2A-n66A | n2 | CA\_n2(2A)\_BCS0 | 0 |
|  |  | n66 | 5, 10, 15, 20, 25, 30, 40 |  |
| CA\_n2A-n66(2A) | CA\_n2A-n66A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n66 | CA\_n66(2A)\_BCS1 |  |
| CA\_n2(2A)-n66(2A) | CA\_n2A-n66A | n2 | CA\_n2(2A)\_BCS0 | 0 |
|  |  | n66 | CA\_n66(2A)\_BCS1 |  |
| CA\_n2(2A)-n66(3A) | CA\_n2A-n66A | n2 | CA\_n2(2A)\_BCS0 | 0 |
|  |  | n66 | CA\_n66(3A)\_BCS0 |  |
| CA\_n2A-n66(3A) | CA\_n2A-n66A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n66 | CA\_n66(3A)\_BCS0 |  |
| CA\_n2A-n66B | CA\_n2A-n66A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n66 | CA\_n66B\_BCS0 |  |
| CA\_n2A-n71A | CA\_n2A-n71A | n2 | 5, 10, 15, 20 | 0 |
|  |  | n71 | 5, 10, 15, 20 |  |
| CA\_n2(2A)-n71A | CA\_n2A-n71A | n2 | CA\_n2(2A)\_BCS0 | 0 |
|  |  | n71 | 5, 10, 15, 20 |  |
|  | - | n2 | See n2 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n71 | See n71 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n2A-n77AX,Y | n778,9  CA\_n2A-n77A8,X,Y | n2 | 5, 10, 15, 20 | 0 |
|  |  | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  |
|  |  | n2 | n2 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n77 | n77 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n2A-n77(2A) | n778,9  CA\_n2A-n77A8  CA\_n77(2A)7 | n2 | 5, 10, 15, 20 | 0 |
|  |  | n77 | CA\_n77(2A)\_BCS0 |  |
|  |  | n2 | 5, 10, 15, 20 | 1 |
|  |  | n77 | CA\_n77(2A)\_BCS1 |  |
| CA\_n2A-n77B | - | n2 | n2 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n77 | CA\_n77B\_BCS 4 and 5 |  |

## <<< Unchanged sections omitted >>>

Table 5.5A.3.1-1g: 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\_n20A-n28A | CA\_n20A-n28A | n20 | 5, 10, 15, 20 | 0 |
|  |  | n28 | 5, 10, 15, 20 |  |
|  |  | n20 | 5, 10, 15, 20 | 1 |
|  |  | n28 | 5, 10, 15, 20, 30 |  |
| CA\_n20A-n40A | - | n20 | 5, 10, 15, 20 | 0 |
|  |  | n40 | 5, 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 |  |
| CA\_n20A-n67A | - | n20 | 5, 10, 15, 20 | 0 |
|  |  | n67 | 5, 10, 15, 20 |  |
| CA\_n20A-n75A | - | n20 | 5, 10, 15, 20 | 0 |
|  |  | n75 | 5, 10, 15, 20 |  |
|  |  | n20 | 5, 10,15, 20 | 1 |
|  |  | n75 | 5, 10,15, 20, 25, 30, 40, 50 |  |
| CA\_n20A-n78A | CA\_n20A-n78A | n20 | 5, 10, 15, 20 | 0 |
|  |  | n78 | 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |
|  |  | n20 | See n20 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n78 | See n78 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n20A-n78C | - | n20 | 5, 10, 15, 20 | 0 |
|  |  | n78 | CA\_n78C\_BCS1 |  |
| CA\_n24A-n41A | CA\_n24A-n41A | n24 | 5, 10 | 0 |
|  |  | n41 | 10, 15, 20, 30, 40, 50, 60, 80, 90, 100 |  |
|  |  | n24 | See n24 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n41 | See n41 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n24A-n41(2A) | CA\_n24A-n41A | n24 | 5, 10 | 0 |
|  |  | n41 | CA\_n41(2A)\_BCS1 |  |
|  |  | n24 | See n24 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n41 | CA\_n41(2A)\_BCS4 and 5 |  |
| CA\_n24A-n48A | CA\_n24A-n48A | n24 | 5, 10 | 0 |
|  |  | n48 | 5, 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |
| CA\_n24A-n48B | CA\_n24A-n48A | n24 | 5, 10 | 0 |
|  |  | n48 | CA\_n48B\_BCS1 |  |
| CA\_n24A-n48(2A) | CA\_n24A-n48A | n24 | 5, 10 | 0 |
|  |  | n48 | CA\_n48(2A)\_BCS0 |  |
| CA\_n24A-n48(3A) | CA\_n24A-n48A | n24 | 5, 10 | 0 |
|  |  | n48 | CA\_n48(3A)\_BCS0 |  |
| CA\_n24A-n77A | CA\_n24A-n77A | n24 | 5, 10 | 0 |
|  |  | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  |
|  |  | n24 | See n24 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n77 | See n77 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n24A-n77C | CA\_n24A-n77A | n24 | 5, 10 | 0 |
|  |  | n77 | CA\_n77C\_BCS1 |  |
| CA\_n24A-n77(2A) | CA\_n24A-n77A | n24 | 5, 10 | 0 |
|  |  | n77 | CA\_n77(2A)\_BCS0 |  |
|  |  | n24 | See n25 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n77 | CA\_n77(2A)\_BCS4 and 5 |  |
| CA\_n25A-n29A | - | n25 | 5, 10, 15, 20, 25, 30, 40 | 0 |
|  |  | n29 | 5, 10 |  |
| CA\_n25A-n38A | CA\_n25A-n38A | n25 | 5, 10, 15, 20, 25, 30, 40 | 0 |
|  |  | n38 | 5, 10, 15, 20, 25, 30, 40 |  |
| CA\_n25(2A)-n38A | CA\_n25A-n38A | n25 | CA\_n25(2A)\_BCS0 | 0 |
|  |  | n38 | 5, 10, 15, 20, 25, 30, 40 |  |
| CA\_n25A-n41AX,Y | n418,9  CA\_n25A-n41A8,X,Y | n25 | 5, 10, 15, 20 | 0 |
|  |  | n41 | 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |
|  |  | n25 | 5, 10, 15, 20, 25, 30, 40 | 1 |
|  |  | n41 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 |  |
|  |  | n25 | See n25 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n41 | See n41 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n25(2A)-n41A | n418,9  CA\_n25A-n41A8 | n25 | CA\_n25(2A)\_BCS0 | 0 |
|  |  | n41 | 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |
|  |  | n25 | CA\_n25(2A)\_BCS1 | 1 |
|  |  | n41 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 |  |
|  |  | n25 | CA\_n25(2A)\_BCS 4 and 5 | 4 and 5 |
|  |  | n41 | See n41 channel bandwidths in Table 5.3.5-1 |  |

## <<< Unchanged sections omitted >>>

Table 5.5A.3.1-1j: 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\_n41A-n48A | CA\_n41A-n48A | n41 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n48 | 5, 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |
|  |  | n41 | See n41 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n48 | See n48 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n41A-n48B | CA\_n41A-n48A | n41 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n48 | CA\_n48B\_BCS2 |  |
| CA\_n41A-n48C | CA\_n41A-n48A | n41 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n48 | CA\_n48C\_BCS1 |  |
| CA\_n41A-n48(2A) | CA\_n41A-n48A | n41 | 10, 15, 20, 30, 40, 50, 60, 80, 90, 100 | 0 |
|  |  | n48 | CA\_n48(2A)\_BCS0 |  |
|  |  | n41 | See n41 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n48 | CA\_n48(2A)\_BCS4 and 5 |  |
| CA\_n41C-n48A | CA\_n41A-n48A | n41 | CA\_n41C\_BCS2 | 0 |
|  |  | n48 | 5, 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |
| CA\_n41C-n48B | CA\_n41A-n48A | n41 | CA\_n41C\_BCS2 | 0 |
|  |  | n48 | CA\_n48B\_BCS2 |  |
| CA\_n41C-n48C | CA\_n41A-n48A | n41 | CA\_n41C\_BCS2 | 0 |
|  |  | n48 | CA\_n48C\_BCS1 |  |
| CA\_n41(2A)-n48A | CA\_n41A-n48A | n41 | CA\_n41(2A)\_BCS3 | 0 |
|  |  | n48 | 5, 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |
|  |  | n41 | CA\_n41(2A)\_BCS4 and 5 | 4 and 5 |
|  |  | n48 | See n48 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n41(2A)-n48B | CA\_n41A-n48A | n41 | CA\_n41(2A)\_BCS3 | 0 |
|  |  | n48 | CA\_n48B\_BCS2 |  |
| CA\_n41(2A)-n48C | CA\_n41A-n48A | n41 | CA\_n41(2A)\_BCS3 | 0 |
|  |  | n48 | CA\_n48C\_BCS1 |  |
| CA\_n41(2A)-n48(2A) | CA\_n41A-n48A | n41 | CA\_n41(2A)\_BCS1 | 0 |
|  |  | n48 | CA\_n48(2A)\_BCS0 |  |
|  |  | n41 | CA\_n41(2A)\_BCS4 and 5 | 4 and 5 |
|  |  | n48 | CA\_n48(2A)\_BCS4 and 5 |  |
| CA\_n41A-n50A | CA\_n41A-n50A | n41 | 10, 15, 20, 40, 50, 60, 80, 90, 100 | 0 |
|  |  | n50 | 5, 10, 15, 20, 40, 50, 60, 801 |  |
| CA\_n41A-n66AX,Y | n418,9  CA\_n41A-n66A8,X,Y | n41 | 10, 15, 20, 40, 50, 60, 80, 90, 100 | 0 |
|  |  | n66 | 5, 10, 15, 20, 40 |  |
|  |  | n41 | 10, 15, 20, 30, 40, 50, 60, 80, 90, 100 | 1 |
|  |  | n66 | 5, 10, 15, 20, 25, 30, 40 |  |
|  |  | n41 | n41 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n66 | n66 channel bandwidths in Table 5.3.5-1 |  |
| CA\_n41(2A)-n66A | n418, 9  CA\_n41A-n66A8 | n41 | CA\_n41(2A)\_BCS1 | 0 |
|  |  | n66 | 5, 10, 15, 20, 40 |  |
|  |  | n41 | CA\_n41(2A)\_BCS1 | 1 |
|  |  | n66 | 5, 10, 15, 20, 25, 30, 40 |  |
|  |  | n41 | CA\_n41(2A)\_BCS 4 and 5 | 4 and 5 |
|  |  | n66 | n66 channel bandwidths in Table 5.3.5-1 |  |

## <<< Unchanged sections omitted >>>

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 or single uplink carrier in this downlink/uplink combination

NOTE 9: Minimum requirements for Power Class 1.5 are applicable for this single uplink carrier 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 X: 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 Y: 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.

## <<< Unchanged sections omitted >>>

**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\_n25A-n41A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n41A-n66A | 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 >>>

**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\_n25A-n41A | 293 | +2/-3 | 262 | +2/-3 | 23 | +2/-3 |
| CA\_n41A-n66A | 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.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 CA  Configuration | 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 |
|  | 1 | 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\_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\_n2-n77 | n2 | 1855 | 5 | 25 | 1935 | 32.10 | FDD | IMD2 |
|  | n77 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
|  | n2 | 1900 | 5 | 25 | 1980 | 19.10 | FDD | IMD4 |
|  | n77 | 3720 | 10 | 50 | 3720 | N/A | TDD | N/A |
|  | n2 | 1885 | 5 | 25 | 1965 | 20.0 | FDD | IMD5 |
|  | n77 | 3810 | 10 | 50 | 3810 | N/A | TDD | N/A |
| CA\_n5-n774,6 | 5 | 844 | 5 | 25 | 889 | 18.6 | FDD | IMD4 |
|  | n77 | 3421 | 10 | 50 | 3421 | 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\_n7-n77 | n7 | 2540 | 5 | 25 | 2660 | [15.8] | FDD | IMD4 |
|  | n77 | 3870 | 10 | 50 | 3870 | 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 | 13 | 782 | 5 | 20 | 751 | 20.5 | FDD | IMD5 |
|  | n77 | 3880 | 10 | 50 | 3880 | N/A | TDD | N/A |
| CA\_n14-n77 | 14 | 795.5 | 5 | 15 | 765.5 | 11.7 | FDD | IMD5 |
|  | n77 | 3947.5 | 10 | 50 | 3947.5 | N/A | TDD | N/A |
| 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 |  |  |  |
| CA\_n25-n774 | n25 | 1855 | 5 | 25 | 1935 | 32.1 | FDD | IMD2 |
|  | 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 |
| CA\_n25-n78 | n25 | 1855 | 5 | 25 | 1935 | 32.10 | FDD | IMD24 |
|  | n78 | 3790 | 10 | 50 | 3790 | N/A | TDD | N/A |
|  | 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 |
| CA\_n28-n77 | 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 | 30 | 2310 | 5 | 25 | 2355 | 17.6 | FDD | IMD4 |
|  | n77 | 3487.5 | 10 | 50 | 3487.5 | N/A | TDD | N/A |
| CA\_n41-n66 | n4112 | 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 | n4112 | 2545 | 60 | 1 (RBstart=0) | 2545 | N/A | TDD | N/A |
|  |  | 2625 | 100 | 1 (RBstart=272) | 2625 |  |  |  |
|  | n77 | N/A | 10 | N/A | 3305 | 2.7 | FDD | IMD9 |
| 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 |
| CA\_n66-n78 | n66 | 1760 | 5 | 25 | 2160 | 11.27 | FDD | IMD5 |
|  | n78 | 3720 | 10 | 50 | 3720 | N/A | TDD | N/A |
| CA\_n71-n776 | n71 | 681.5 | 5 | 25 | 635.5 | 11.4 | FDD | IMD5 |
|  | n77 | 3361.5 | 10 | 50 | 3361.5 | N/A | TDD | N/A |
| NOTE 1: Both of the transmitters shall be set min(+23 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: Void.  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: 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: There is no IMD4/5 products in band n18 downlink for n77 operating in 3520 – 3560 MHz, 3700 – 3800MHz and 4000 - 4100MHz frequency range.  NOTE 9: There is no IMD4 product in band n18 downlink for n78 operating in 3520 – 3560MHz and 3700-3800MHz frequency range.  NOTE 10: There is no IMD4 product in band n24 downlink for n77 operating in 3450 – 3980 MHz and n24 uplink restricted to between 1627.5 – 1637.5 MHz and between 1646.5 – 1656.5 MHz.  NOTE 11: This band is subject to IMD5 also which MSD is not specified..  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. | | | | | | | | |

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 CA  Configuration | 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 |

## <<< END OF CHANGES >>>