**3GPP T****SG-RAN WG4 Meeting#111 R4-2410536**

**Fukuoka Meeting, May 20th – May 24th, 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-1** | **CR** |  | **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:*** | Draft CR 38.101-1 to add PC1.5 and PC2 intra-band CA combinations | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, nbn | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | HPUE\_NR\_FR1\_TDD\_intra\_CA\_R18 | | | | |  | ***Date:*** | | | 2024-30-04 |
|  |  | | | |  | |  | | |  |
| ***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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Operator wants to have HPUE support in their bands | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Addition of PC1.5 and PC2 UL configuration for intra-band CA combinations:  PC1.5 UL configuration n40 to DL configuration CA\_n40B  PC1.5 UL configurationn n40 to DL configuration CA\_n40(2A)  PC2 UL configuration n40 to DL configuration CA\_n40(2A)  PC2 UL configuration CA\_n40(2A) to DL configuration CA\_n40(2A)  PC2 UL configuration n40 to DL configuration CA\_n40B  PC2 UL configuration CA\_n40B to DL configuration CA\_n40B | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | No support for requested combinations | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.5A.1, 5.5A.2, 6.2A.1.1, 6.2A.2.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 38.521 series | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of changes \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

## 5.5A Configurations for CA

### 5.5A.0 General

The configurations for CA operating band including Band n41 also apply for the corresponding CA operating bands with Band n90 replacing Band n41 but with otherwise identical parameters. For brevity the said configuration for CA operating bands with Band n90 are not listed in the tables below but are covered by this specification.

Non‑contiguous resource allocation and almost contiguous allocation are not applicable for each NR carrier of intra‑band contiguous and non-contiguous CA configurations.

For a CA configuration with one or more operating band supporting asymmetric channel bandwidths as specified in sub-clause 5.3.6, requirements are defined for an asymmetric UL and DL channel bandwidth combination of a supported asymmetric channel bandwidth combination set for an operating band of the CA configuration when the said UL and DL channel bandwidths are also contained in a supported bandwidth combination set of the CA configuration.

For a higher order band combination of which CA\_n20-n28 is a subset, the frequency range in band n28 is restricted for the higher order band combination to 703-733 MHz for the UL and 758-788 MHz for the DL.

The configuration tables for CA describe Bandwidth Combination Sets. Bandwidth Combination Set 4 and 5 contain all possible defined channel bandwidths for each band in the combination. The fact that BCS4 and BCS5 contain all channel bandwidths for each band does not alter if a bandwidth is mandatory or optional for a given band. Bandwidths that are identified as optional in Table 5.3.5-1 for a given release are still optional for UEs that support BCS4 or BCS5, where the bandwidths the UE supports for each band, the maximum bandwidth and/or minimum bandwidth for the band in the band combination are indicated in the UE capabilities. The minimum bandwidth per CC and maximum aggregated FDD, TDD and total bandwidth per band combination may be indicated only for BCS5 as described in 38.306 [15] and BCS5 shall not be indicated together with BCS4 for a CA configuration. For inter-band CA combinations including FR1 intra-band CA and with BCS4 or BCS5 in the following configuration tables, the Bandwidth Combination Sets for the FR1 intra-band CA are BCS4 or BCS5, respectively.

By default, power class 3 is applicable for the CA configurations listed in the following clauses. The applicability of higher power class(es) is explicitly indicated in the CA configuration tables in clauses 5.5A.1, 5.5A.2 and 5.5A.3. A UE supporting a given power class for a CA configuration shall meet the corresponding transmitter and receiver requirements in Clause 6 and Clause 7, respectively.

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

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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR CA configuration / Bandwidth combination set | | | | | | | | |
| NR CA configuration | Uplink CA configurations or single uplink carrier5 | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | Maximum aggregated  bandwidth (MHz) | Bandwidth combination set |
| CA\_n1B | - | 10 | 10,15 |  |  |  | 40 | 0 |
|  |  | 15 | 15,20 |  |  |  |  |  |
|  |  | 20 | 20 |  |  |  |  |  |
| CA\_n2B | - | 5 | 15 |  |  |  | 20 | 0 |
|  |  | 10 | 10 |  |  |  |  |  |
| CA\_n3B | - | 5 | 15, 20, 25, 30 |  |  |  | 60 | 0 |
|  |  | 10 | 10, 15, 20, 25, 30 |  |  |  |  |  |
|  |  | 15, 20, 25, 30 | 5, 10, 15, 20, 25, 30 |  |  |  |  |  |
|  |  | See n3 channel bandwidths in Table 5.3.5-1 for each carrier2 | |  |  |  | 75 | 4 and 5 |
| CA\_n5B | CA\_n5B | 5, 10, 15 | 5, 10, 15 |  |  |  | 20 | 0 |
|  |  | 5, 10, 15, 20 | 5, 10, 15, 20 |  |  |  | 25 | 1 |
| CA\_n7B | CA\_n7B | 10 | 10, 15, 20, 30, 40 |  |  |  | 50 | 0 |
|  |  | 15 | 15, 20, 30 |  |  |  |  |  |
|  |  | 20 | 20, 30 |  |  |  |  |  |
|  | - | See n7 channel bandwidths in Table 5.3.5-1 for each carrier2 | |  |  |  | 70 | 4 and 5 |
| CA\_n25B | - | 5 | 15 |  |  |  | 20 | 0 |
|  |  | 10 | 10 |  |  |  |  |  |
| CA\_n38B | - | 5 | 15, 20, 25 |  |  |  | 50 | 0 |
|  |  | 10 | 10, 15, 20, 25 |  |  |  |  |  |
|  |  | 15, 20, 25 | 5, 10, 15, 20, 25 |  |  |  |  |  |
| CA\_n40B | - | 20 | 80 |  |  |  | 100 | 0 |
|  |  | 50 | 50 |  |  |  |  |  |
|  | n403,4  CA\_n40B3 | 10,15, 20, 30, 40, 50, 60, 80 | 10, 15, 20, 30, 40, 50, 60, 80 |  |  |  | 100 | 1 |
| CA\_n41B | n413  CA\_n41B | 10, 20, 30, 40, 50 | 10, 20, 30, 40, 50 |  |  |  | 100 | 0 |
|  |  | See n41 channel bandwidths in Table 5.3.5-1 for each carrier2 | |  |  |  | 100 | 4 and 5 |
| CA\_n41C | n413,4  CA\_n41C3 | 40 | 80, 100 |  |  |  | 180 | 0 |
| 50, 60, 80 | 60, 80, 100 |  |  |  |  |  |
| 10 | 100 |  |  |  | 190 | 1 |
| 15, 20 | 90, 100 |  |  |  |  |  |
| 40 | 80, 90, 100 |  |  |  |  |  |
| 50, 60, 80, 90 | 60, 80, 90, 100 |  |  |  |  |  |
| 10 | 100 |  |  |  | 190 | 2 |
| 15, 20 | 90, 100 |  |  |  |  |  |
| 30, 40 | 80, 90, 100 |  |  |  |  |  |
| 50, 60, 80, 90 | 60, 80, 90, 100 |  |  |  |  |  |
|  |  | See n41 channel bandwidths in Table 5.3.5-1 for each carrier2 | |  |  |  | 190 | 4 and 5 |
| CA\_n46B | - | 20, 40, 60 | 20, 40 |  |  |  | 100 | 0 |
| CA\_n46C | - | 60, 80 | 60, 80 |  |  |  | 160 | 0 |
| CA\_n46D | - | 60, 80 | 80 | 80 |  |  | 240 | 0 |
| CA\_n46M | - | 20, 40, 60 | 20, 40 | 20, 40 |  |  | 140 | 0 |
| CA\_n46N | - | Void |  |  |  |  |  | 0 |
|  |  | 20, 40, 60 | 20, 40 | 20, 40 | 20, 40 |  | 180 | 1 |
| CA\_n46O | - | 20, 60 | 20, 40 | 20, 40 | 20, 40 | 20, 40 | 220 | 0 |
| CA\_n48B | CA\_n48B | 5 | 15, 20 |  |  |  | 40 | 0 |
|  |  | 10, 15, 20 | 10, 15, 20 |  |  |  |  |  |
|  |  | 15, 20 | 15, 20 |  |  |  |  |  |
|  | - | 10 | 50, 60, 80, 90 |  |  |  | 100 | 1 |
|  |  | 15, 20 | 40, 50, 60, 80 |  |  |  |  |  |
|  |  | 40 | 40, 50, 60 |  |  |  |  |  |
|  | - | 10, 15, 20, 30, 40 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90 |  |  |  | 100 | 2 |
|  | - | See n48 channel bandwidths in Table 5.3.5-1 for each carrier2 | |  |  |  | 100 | 4 and 5 |
| CA\_n48C | - | 10 | 100 |  |  |  | 140 | 0 |
|  |  | 15 | 90, 100 |  |  |  |  |  |
|  |  | 20 | 90, 100 |  |  |  |  |  |
|  |  | 40 | 80, 90, 100 |  |  |  |  |  |
|  | - | 10, 15, 20, 30, 40 | 70, 80, 90, 100 |  |  |  | 140 | 1 |
|  | - | See n48 channel bandwidths in Table 5.3.5-1 for each carrier2 | |  |  |  | 140 | 4 and 5 |
| CA\_n66B | - | 5 1 | 20, 40 |  |  |  | 50 | 0 |
|  |  | 10 | 15, 20, 40 |  |  |  |  |  |
|  |  | 15 | 15, 20 |  |  |  |  |  |
| CA\_n71B | - | 5 | 20 |  |  |  | 25 | 0 |
|  |  | 10 | 15 |  |  |  |  |  |
|  |  | 10 | 20 |  |  |  | 35 | 1 |
|  |  | 15 | 15, 20 |  |  |  |  |  |
|  |  | 5, 10, 15 | 15, 20 |  |  |  | 35 | 2 |
|  |  | See n71 channel bandwidths in Table 5.3.5-1 for each carrier2 | |  |  |  | 35 | 4 and 5 |
| CA\_n77B | n773 | 20 | 25, 30, 40 |  |  |  | 60 | 0 |
|  |  | 25 | 30 |  |  |  |  |  |
|  |  | See n77 channel bandwidths in Table 5.3.5-1 for each carrier2 | |  |  |  | 100 | 4 and 5 |
| CA\_n77C | n773,4  CA\_n77C3 | 50 | 60, 80, 100 |  |  |  | 200 | 0 |
|  |  | 60 | 60, 80, 100 |  |  |  |  |  |
|  |  | 80 | 80, 100 |  |  |  |  |  |
|  |  | 100 | 100 |  |  |  |  |  |
|  |  | 10 | 100 |  |  |  | 200 | 1 |
|  |  | 15, 20 | 90, 100 |  |  |  |  |  |
|  |  | 25, 30 | 80, 90, 100 |  |  |  |  |  |
|  |  | 40 | 70, 80, 90, 100 |  |  |  |  |  |
|  |  | 50, 60, 70, 80, 90, 100 | 60, 70, 80, 90, 100 |  |  |  |  |  |
|  |  | See n77 channel bandwidths in Table 5.3.5-1 for each carrier2 | |  |  |  | 200 | 4 and 5 |
| CA\_n77D | n773 | 100 | 100 | 100 |  |  | 300 | 0 |
|  |  | See n77 channel bandwidths in Table 5.3.5-1 for each carrier2 | | |  |  | 300 | 4 and 5 |
| CA\_n78B | n783 | 20 | 50 |  |  |  | 70 | 0 |
| CA\_n78C | n783  CA\_n78C3 | 50 | 60, 80, 100 |  |  |  | 200 | 0 |
|  |  | 60 | 60, 80, 100 |  |  |  |  |  |
|  |  | 80 | 80, 100 |  |  |  |  |  |
|  |  | 100 | 100 |  |  |  |  |  |
|  |  | 10 | 100 |  |  |  | 200 | 1 |
|  |  | 15, 20 | 90, 100 |  |  |  |  |  |
|  |  | 25, 30 | 80, 90, 100 |  |  |  |  |  |
|  |  | 40 | 70, 80, 90, 100 |  |  |  |  |  |
|  |  | 50, 60, 70, 80, 90, 100 | 60, 70, 80, 90, 100 |  |  |  |  |  |
|  |  | See n78 channel bandwidths in Table 5.3.5-1 for each carrier2 | |  |  |  | 200 | 4 and 5 |
| CA\_n78D | n783 | 100 | 100 | 100 |  |  | 300 | 0 |
|  |  | See n78 channel bandwidths in Table 5.3.5-1 for each carrier2 | | |  |  | 300 | 4 and 5 |
| CA\_n79C | CA\_n79C3 | 50 | 60, 80, 100 |  |  |  | 200 | 0 |
|  |  | 60 | 60, 80, 100 |  |  |  |  |  |
|  |  | 80 | 80, 100 |  |  |  |  |  |
|  |  | 100 | 100 |  |  |  |  |  |
|  |  | See n79 channel bandwidths in Table 5.3.5-1 for each carrier2 | |  |  |  | 200 | 4 and 5 |
| CA\_n79D | - | 100 | 100 | 100 |  |  | 300 | 0 |
|  |  | See n79 channel bandwidths in Table 5.3.5-1 for each carrier2 | | |  |  | 300 | 4 and 5 |
| CA\_n96B | CA\_n96B | 20, 40 | 20, 40, 60, 80 |  |  |  | 100 | 0 |
| CA\_n96C | CA\_n96C | 80 | 40, 60, 80 |  |  |  | 160 | 0 |
| CA\_n96D |  | 80 | 80 | 60, 80 |  |  | 240 | 0 |
| CA\_n96E |  | 80 | 80 | 80 | 80 |  | 320 | 0 |
| CA\_n102B | CA\_n102B | 20, 40 | 20, 40, 60, 80 |  |  |  | 100 | 0 |
| CA\_n102C | CA\_n102C | 80 | 40, 60, 80 |  |  |  | 160 | 0 |
| CA\_n102D | - | 80 | 80 | 60, 80 |  |  | 240 | 0 |
| CA\_n102E | - | 80 | 80 | 80 | 80 |  | 320 | 0 |
| NOTE 1: 5 MHz is not applicable for 30/60 kHz SCS.  NOTE 2: The aggregated bandwidth must be greater than or equal to the minimum for the bandwidth class defined in Table 5.3A.5-1, and smaller than or equal to the maximum aggregated bandwidth.  NOTE 3: Minimum requirements for Power Class 2 are applicable for this uplink combination or single uplink carrier in this downlink/uplink combination  NOTE 4: Minimum requirements for Power Class 1.5 are applicable for this uplink combination or single uplink carrier in this downlink/uplink combination  NOTE 5: Only single uplink carriers with power class other than PC3 are listed. | | | | | | | | |

Table 5.5A.1-2: Void

### 5.5A.2 Configurations for intra-band non-contiguous CA

Table 5.5A.2-1: NR CA configurations and bandwidth combination sets defined for intra-band non-contiguous CA

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| NR CA Configuration | Uplink CA Configurations or single uplink carrier5 | Channel bandwidths for carrier  (MHz) | Channel bandwidths for carrier  (MHz) | Channel bandwidths for carrier  (MHz) | Channel bandwidths for carrier  (MHz) | Maximum  Aggregated bandwidth  (MHz) | Bandwidth combination set |
| CA\_n1(2A) | - | 5, 10, 15, 20 | 5, 10, 15, 20 |  |  | 40 | 0 |
|  |  | See n1 channel bandwidths in Table 5.3.5-1 for each carrier | |  |  | 55 | 4 and 5 |
| CA\_n2(2A) | - | 5, 10, 15, 20 | 5, 10, 15, 20 |  |  | 40 | 0 |
|  | - | See n2 channel bandwidths in Table 5.3.5-1 for each carrier | |  |  | 40 | 4 and 5 |
| CA\_n3(2A) | - | 5, 10, 15, 20 | 5, 10, 15, 20 |  |  | 40 | 0 |
|  |  | 5, 10, 15, 20, 25, 30 | 5, 10, 15, 20, 25, 30 |  |  | 60 | 1 |
|  |  | See n3 channel bandwidths in Table 5.3.5-1 for each carrier | |  |  | 70 | 4 and 5 |
| CA\_n5(2A) | - | 5, 10, 15, 20 | 5, 10, 15, 20 |  |  | 25 | 0 |
| CA\_n7(2A) | - | 5, 10, 15, 20 | 5, 10, 15, 20 |  |  | 40 | 0 |
|  |  | See n7 channel bandwidths in Table 5.3.5-1 for each carrier | |  |  | 65 | 4 and 5 |
| CA\_n12(2A) | - | 5 | 5 |  |  | 10 | 0 |
| CA\_n25(2A) | - | 5, 10, 15, 20 | 5, 10, 15, 20 |  |  | 40 | 0 |
|  |  | 5, 10, 15, 20, 25, 30, 40 | 5, 10, 15, 20, 25, 30, 40 |  |  | 60 | 1 |
|  |  | See n25 channel bandwidths in Table 5.3.5-1 for each carrier | |  |  | 60 | 4 and 5 |
| CA\_n25(3A) | - | 5, 10, 15, 20, 25, 30, 40 | 5, 10, 15, 20, 25, 30, 40 | 5, 10, 15, 20, 25, 30, 40 |  | 55 | 0 |
|  |  | See n25 channel bandwidths in Table 5.3.5-1 for each carrier | |  |  | 55 | 4 and 5 |
| CA\_n26(2A) | CA\_n26(2A)7 | 5, 10, 15 | 5, 10, 15 |  |  | 30 | 0 |
| CA\_n40(2A) | n403,4  CA\_n40(2A)3 | See n40 channel bandwidths in Table 5.3.5-1 for each carrier | |  |  | 95 | 4 and 5 |
| CA\_n41(2A) | n413,4 CA\_n41(2A) | 40, 50, 60, 80, 100 | 40, 50, 60, 80, 100 |  |  | 180 | 0 |
|  |  | 10, 15, 20, 40, 50, 60, 80, 90, 100 | 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |  | 190 | 1 |
|  |  | 10, 15, 20, 30, 40, 50, 60, 80, 90 | 15, 20, 30, 40, 50, 60, 80, 90, 100 |  |  | 190 | 2 |
|  |  | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 |  |  | 190 | 3 |
|  |  | See n41 channel bandwidths in Table 5.3.5-1 for each carrier | |  |  | 190 | 4 and 5 |
| CA\_n41(3A) | n413,4 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 |  | 190 | 0 |
|  |  | See n41 channel bandwidths in Table 5.3.5-1 for each carrier | | |  | 190 | 4 and 5 |
| CA\_n41(4A) | n413 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 190 | 0 |
|  |  | See n41 channel bandwidths in Table 5.3.5-1 for each carrier | | | | 190 | 4 and 5 |
| CA\_n46(2A) | - | 10, 20, 40, 60, 80 | 10, 20, 40, 60, 80 |  |  | 160 | 0 |
| CA\_n48(2A) | - | 10, 15, 20, 40, 50, 60, 80, 90, 100 | 10, 15, 20, 40, 50, 60, 80, 90, 100 |  |  | 1402 | 0 |
|  |  | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 |  |  | 1402 | 1 |
|  |  | See n48 channel bandwidths in Table 5.3.5-1 for each carrier | |  |  | 1402 | 4 and 5 |
| CA\_n48(3A) | - | 10, 15, 20, 40,50, 60, 80, 90, 100 | 10, 15, 20, 40,50, 60, 80, 90, 100 | 10, 15, 20, 40,50, 60, 80, 90, 100 |  | 1402 | 0 |
|  |  | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 |  | 1402 | 1 |
| CA\_n48(4A) | - | 10, 15, 20, 40, 50, 60, 80, 90, 100 | 10, 15, 20, 40, 50, 60, 80, 90, 100 | 10, 15, 20, 40, 50, 60, 80, 90, 100 | 10, 15, 20, 40, 50, 60, 80, 90, 100 | 1352 | 0 |
|  |  | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 1352 | 1 |
| CA\_n66(2A) | - | 5, 10, 15, 20 | 5, 10, 15, 20, 40 |  |  | 60 | 0 |
|  |  | 5, 10, 15, 20, 25, 30, 40 | 5, 10, 15, 20, 25, 30, 40 |  |  | 80 | 1 |
|  |  | 5, 10, 15, 20, 40 | 5, 10, 15, 20, 40 |  |  | 80 | 2 |
|  |  | See n66 channel bandwidths in Table 5.3.5-1 for each carrier | |  |  | 85 | 4 and 5 |
| CA\_n66(3A) | - | 5, 10, 15, 20, 40 | 5, 10, 15, 20, 40 | 5, 10, 15, 20, 40 |  | 80 | 0 |
| CA\_n71(2A) | - | 5, 10, 15, 20 | 5,10,15, 20 |  |  | 30 | 0 |
|  |  | See n71 channel bandwidths in Table 5.3.5-1 for each carrier up to 25 MHz per carrier | |  |  | 30 | 4 and 5 |
| CA\_n77(2A)6 | n773,4  CA\_n77(2A)3 | 20, 40, 80, 100 | 20, 40, 80, 100 |  |  | 200 | 0 |
|  |  | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  |  | 200 | 1 |
|  |  | See n77 channel bandwidths in Table 5.3.5-1 for each carrier | |  |  | 200 | 4 and 5 |
| CA\_n77(3A) | n773,4  CA\_n77(2A)3 | 20, 40, 80, 100 | 20, 40, 80, 100 | 20, 40, 80, 100 |  | 300 | 0 |
| 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  | 300 | 1 |
|  |  | See n77 channel bandwidths in Table 5.3.5-1 for each carrier | | |  | 300 | 4 and 5 |
| CA\_n78(2A)6 | n783,4  CA\_n78(2A)3 | 10, 20, 40, 50, 60, 80, 90, 100 | 10, 20, 40, 50, 60, 80, 90, 100 |  |  | 200 | 0 |
|  |  | 10, 20, 25, 30, 40, 50, 60, 80, 90, 100 | 10, 20, 25, 30, 40, 50, 60, 80, 90, 100 |  |  | 200 | 1 |
|  |  | 10, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 10, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  |  | 200 | 2 |
|  |  | See n78 channel bandwidths in Table 5.3.5-1 for each carrier | |  |  | 200 | 4 and 5 |
| CA\_n79(2A) | CA\_n79(2A) | See n79 channel bandwidths in Table 5.3.5-1 for each carrier | |  |  | 200 | 4 and 5 |
| CA\_n96(2A) | - | 20, 40, 60, 80 | 20, 40, 60, 80 |  |  | 160 | 0 |
| CA\_n96(3A) | - | 20, 40, 60, 80 | 20, 40, 60, 80 | 20, 40, 60, 80 |  | 240 | 0 |
| CA\_n96(4A) | - | 20, 40, 60, 80 | 20, 40, 60, 80 | 20, 40, 60, 80 | 20, 40, 60, 80 | 320 | 0 |
| CA\_n102(2A) | - | 20, 40, 60, 80 | 20, 40, 60, 80 |  |  | 160 | 0 |
| CA\_n102(3A) | - | 20, 40, 60, 80 | 20, 40, 60, 80 | 20, 40, 60, 80 |  | 240 | 0 |
| CA\_n102(4A) | - | 20, 40, 60, 80 | 20, 40, 60, 80 | 20, 40, 60, 80 | 20, 40, 60, 80 | 320 | 0 |
| NOTE 1: Void.  NOTE 2: Parameter value accounts for both, the maximum frequency range of band n48 (150 MHz), and the minimum frequency gaps in between NR non-contiguous component carriers.  NOTE 3: Minimum requirements for Power Class 2 are applicable for this uplink combination or single uplink carrier in this downlink/uplink combination  NOTE 4: Minimum requirements for Power Class 1.5 are applicable for this uplink combination or single uplink carrier in this downlink/uplink combination  NOTE 5: Only single uplink carriers with power class other than PC3 are listed.  NOTE 6: For a UE not indicating *intraBandNR-CA-non-collocated-r18*, the minimum requirements for intra-band non-contiguous CA apply when the maximum power spectral density imbalance between downlink carriers is within 6 dB. For a UE indicating *intraBandNR-CA-non-collocated-r18* and if *nonCollocatedTypeNR-CA-r18* is not provided and UE is configured with *maxMIMO-Layers* with value less than or equal to 2, the power imbalance requirement defined in subclause 7.10A apply. For a UE indicating *intraBandNR-CA-non-collocated-r18* and when *nonCollocatedTypeNR-CA-r18* is provided, the minimum requirements for intra-band non-contiguous CA apply when the maximum power spectral density imbalance between downlink carriers is within 6 dB. For these UEs, the power spectral density imbalance condition also applies for these carriers when applicable intra-band non-contiguous NR CA configuration is a subset of a higher order NR CA configuration.  NOTE 7: Unless otherwise stated, only RF requirements for dual PA architecture are applicable for UL CA\_n26(2A) and UE shall indicate the *dualPA-Architecture* for UL CA\_n26(2A). | | | | | | | |

Table 5.5A.2-2: NR CA configurations and bandwidth combination sets defined for mixed intra-band contiguous and non-contiguous CA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NR CA configuration | Uplink CA configuration or single uplink carrier4 | NR Band | Channel bandwidth (MHz) | Bandwidth combination set |
| CA\_n41(A-C) | n412,3  CA\_n41C2 | n41 | 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n41 | CA\_n41C\_BCS2 |  |
|  |  | n41 | See n41 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n41 | CA\_n41C\_BCS4 and 5 |  |
| CA\_n41(2A-C) | n412,3  CA\_n41C | n41 | CA\_n41(2A)\_BCS3 | 0 |
|  |  | n41 | CA\_n41C\_BCS1 |  |
|  |  | n41 | CA\_n41(2A)\_BCS4 and 5 | 4 and 5 |
|  |  | n41 | CA\_n41C\_BCS4 and 5 |  |
| CA\_n48(A-B) | CA\_n48B | n48 | 5, 10, 15, 20, 40, 501, 601, 801, 901, 1001 | 0 |
|  |  | n48 | CA\_n48B\_BCS0 |  |
|  |  | n48 | 5, 10, 15, 20, 30, 40, 501, 601, 701, 801, 901, 1001 | 1 |
|  |  | n48 | CA\_n48B\_BCS2 |  |
| CA\_n78(A-C) | - | n78 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 0 |
|  |  | n78 | CA\_n78C\_BCS0 |  |
|  |  | n78 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 | 1 |
|  |  | n78 | CA\_n78C\_BCS1 |  |
| NOTE 1: This UE channel bandwidth is applicable only to downlink  NOTE 2: Minimum requirements for Power Class 2 are applicable for this uplink combination or single uplink carrier in this downlink/uplink combination  NOTE 3: Minimum requirements for Power Class 1.5 are applicable for this uplink combination or single uplink carrier in this downlink/uplink combination  NOTE 4: Only single uplink carriers with power class other than PC3 are listed. | | | | |

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

#### 6.2A.1.1 UE maximum output power for Intra-band contiguous CA

For uplink intra-band contiguous carrier aggregation, the maximum output power is specified in Table 6.2A.1.1-1. For downlink intra-band contiguous carrier aggregation with a single uplink component carrier configured in the NR band, the maximum output power is specified in Table 6.2.1-1 for power class 3 and other power classes if indicated in clause 5.5A.1.

Table 6.2A.1.1-1: UE Power Class for intra-band contiguous CA

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR CA Configuration | Class 1 (dBm) | Tolerance (dB) | Class 2 (dBm) | Tolerance (dB) | Class 3 (dBm) | Tolerance (dB) | Class 4 (dBm) | Tolerance (dB) |
| CA\_n5B |  |  |  |  | 23 | +2/-2 |  |  |
| CA\_n7B |  |  |  |  | 23 | +2/-2 |  |  |
| CA\_n40B |  |  | 26 | +2/-3 | 23 | +2/-2 |  |  |
| CA\_n41B |  |  |  |  | 23 | +2/-21 |  |  |
| CA\_n41C |  |  | 26 | +2/-3 | 23 | +2/-21 |  |  |
| CA\_n48B |  |  |  |  | 23 | +2/-3 |  |  |
| CA\_n77C |  |  | 26 | +2/-3 | 23 | +2/-3 |  |  |
| CA\_n78C |  |  | 26 | +2/-3 | 23 | +2/-3 |  |  |
| CA\_n79C |  |  | 26 | +2/-3 | 23 | +2/-3 |  |  |
| NOTE 1: An uplink CA configuration in which the band 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 the band are confined within FUL\_low and FUL\_low + 4 MHz or FUL\_high - 4 MHz and FUL\_high.  NOTE 2: PPowerClass is the maximum UE power specified without taking into account the tolerance.  NOTE 3: For intra-band contiguous carrier aggregation the maximum power requirement shall apply to the total transmitted power over all component carriers (per UE).  NOTE 4: Power class 3 is the default power class unless otherwise stated. | | | | | | | | |

If a UE supports a different power class than the default UE power class for the band combination listed in Table 6.2A.1.1-1 and the supported power class enables the higher maximum output power than that of the default power class:

- if the field of UE capability *maxUplinkDutyCycle-PC2-FR1* is absent and the percentage of total uplink symbols transmitted on all UL CCs in a certain evaluation period is larger than 50% (The exact evaluation period is no less than one radio frame); or

- if the field of UE capability *maxUplinkDutyCycle-PC2-FR1* is not absent and the percentage of total uplink symbols transmitted on all UL CCs in a certain evaluation period is larger than *maxUplinkDutyCycle-PC2-FR1* as defined in TS 38.306 (The exact evaluation period is no less than one radio frame); or

- if 10 log10 ∑ pEMAX,c or PEMAX,CA which defined in clause 6.2A.4.1.1 is 23dBm or lower;

- shall apply all requirements for the default power class to the supported power class and set the configured transmitted power as specified in clause 6.2A.4.1.1;

- else shall apply all requirements for the supported power class and set the configured transmitted power as specified in clause 6.2A.4.1.1.

#### 6.2A.1.2 UE maximum output power for Intra-band non-contiguous CA

For intra-band non-contiguous carrier aggregation with one uplink carrier on the PCC, the requirements in clause 6.2.1 apply for power class 3 and other power classes if indicated in clause 5.5A.2. For intra-band non-contiguous carrier aggregation with two uplink carriers the maximum output power is specified in Table 6.2A.1.2-1.

Table 6.2A.1.2-1: UE Power Class for intraband non-contiguous CA

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR CA Configuration | Class 1 (dBm) | Tolerance (dB) | Class 2 (dBm) | Tolerance (dB) | Class 3 (dBm) | Tolerance (dB) | Class 4 (dBm) | Tolerance (dB) |
| CA\_n26(2A) |  |  |  |  | 23 | +2/-3 |  |  |
| CA\_n40(2A) |  |  | 26 | +2/-3 | 23 | +2/-3 |  |  |
| CA\_n41(2A) |  |  | 26 | +2/-3 | 23 | +2/-3 |  |  |
| CA\_n77(2A) |  |  | 26 | +2/-3 | 23 | +2/-3 |  |  |
| CA\_n78(2A) |  |  | 26 | +2/-3 | 23 | +2/-3 |  |  |
| CA\_n79(2A) |  |  |  |  | 23 | +2/-3 |  |  |
| NOTE 1: An uplink CA configuration in which the band 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 the band are confined within FUL\_low and FUL\_low + 4 MHz or FUL\_high - 4 MHz and FUL\_high.  NOTE 2: PPowerClass is the maximum UE power specified without taking into account the tolerance.  NOTE 3: For intra-band non-contiguous carrier aggregation the maximum power requirement shall apply to the total transmitted power over all component carriers (per UE).  NOTE 4: Power class 3 is the default power class unless otherwise stated. | | | | | | | | |

If a UE supports a different power class than the default UE power class for the band combination listed in Table 6.2A.1.1-2 and the supported power class enables the higher maximum output power than that of the default power class:

- if the field of UE capability *maxUplinkDutyCycle-PC2-FR1* is absent and the percentage of total uplink symbols transmitted on all UL CCs in a certain evaluation period is larger than 50% (The exact evaluation period is no less than one radio frame); or

- if the field of UE capability *maxUplinkDutyCycle-PC2-FR1* is not absent and the percentage of total uplink symbols transmitted on all UL CCs in a certain evaluation period is larger than *maxUplinkDutyCycle-PC2-FR1* as defined in TS 38.306 (The exact evaluation period is no less than one radio frame); or

- if 10 log10 ∑ pEMAX,c or PEMAX,CA which defined in clause 6.2A.4.1.2 is 23dBm or lower;

- shall apply all requirements for the default power class to the supported power class and set the configured transmitted power as specified in clause 6.2A.4.1.2;

- else shall apply all requirements for the supported power class and set the configured transmitted power as specified in clause 6.2A.4.1.2.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of changes \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*