**3GPP TSG-RAN WG4 Meeting #98-e R4-2101889**

**Electronic Meeting, 25 January – 5 February 2021**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-1** | **CR** | **0658** | **rev** |  | **Current version:** | **17.0.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | CR to add NR Inter-band CA for 4 bands in TS 38.101-1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_CA\_R17\_4BDL\_1BUL-Core | | | | |  | ***Date:*** | | | 2021-02-22 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Adding approved NR Inter-band CA for 4 band combinations | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Adding the following from RAN 98-e:  CA\_n41-n66-n71-n77 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Approved NR Inter-band CA for 4 band combination is not added | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2, 5.5, 6.2, 7.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 38.521-3 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

---Start of changes---

Table 5.2A.2.3-1: Inter-band CA operating bands involving FR1 (four bands)

|  |  |
| --- | --- |
| NR CA Band | NR Band  (Table 5.2-1) |
| CA\_n1-n3-n7-n28 | n1, n3, n7, n28 |
| CA\_n1-n3-n7-n78 | n1, n3, n7, n78 |
| CA\_n1-n3-n8-n78 | n1, n3, n8, n78 |
| CA\_n1-n3-n28-n78 | n1, n3, n28, n78 |
| CA\_n3-n5-n7-n78 | n3, n5, n7, n78 |
| CA\_n3-n7-n28-n78 | n3, n7, n28, n78 |
| CA\_n3-n28-n41-n77 | n3, n28, n41, n77 |
| CA\_n3-n28-n41-n78 | n3, n28, n41, n78 |
| CA\_n7-n25-n66-n78 | n7, n25, n66, n78 |
| CA\_n25-n41-n66-n71 | n25, n41, n66, n71 |
| CA\_n41-n66-n71-n77 | n41, n66, n71, n77 |

---Text omitted---

#### 5.5A.3.3 Configurations for inter-band CA (four bands)

Table 5.5A.3.3-1: NR CA configurations and bandwidth combinations sets defined for inter-band CA (four bands)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR CA configuration | Uplink CA configuration | NR Band | Channel bandwidth (MHz) (NOTE 3) | | | | | | | | | | | | | Bandwidth combination set |
|  |  |  | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| CA\_n1A-n3A-n7A-n28A | - | n1 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  | 0 |
|  |  | n3 | 5 | 10 | 15 | 20 | 25 | 30 |  |  |  |  |  |  |  |  |
|  |  | n7 | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 |  |  |  |  |  |  |
|  |  | n28 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
| CA\_n1A-n3A-n7B-n28A | - | n1 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  | 0 |
|  |  | n3 | 5 | 10 | 15 | 20 | 25 | 30 |  |  |  |  |  |  |  |  |
|  |  | n7 | See CA\_n7B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | |  |
|  |  | n28 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
| CA\_n1A-n3A-n7A-n78A | - | n1 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  | 0 |
|  |  | n3 | 5 | 10 | 15 | 20 | 25 | 30 |  |  |  |  |  |  |  |  |
|  |  | n7 | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 |  |  |  |  |  |  |
|  |  | n78 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| CA\_n1A-n3A-n7B-n78A | - | n1 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  | 0 |
|  |  | n3 | 5 | 10 | 15 | 20 | 25 | 30 |  |  |  |  |  |  |  |  |
|  |  | n7 | See CA\_n7B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | |  |
|  |  | n78 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| CA\_n1A-n3A-n8A-n78A | - | n1 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  | 0 |
|  |  | n3 | 5 | 10 | 15 | 20 | 25 | 30 |  |  |  |  |  |  |  |  |
|  |  | n8 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
|  |  | n78 |  | 10 | 15 | 20 |  |  | 40 | 50 | 60 |  | 80 | 901 | 100 |  |
| CA\_n1A-n3A-n28A-n78A | - | n1 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  | 0 |
|  |  | n3 | 5 | 10 | 15 | 20 | 25 | 30 |  |  |  |  |  |  |  |  |
|  |  | n28 | 5 | 10 | 15 | 202 |  |  |  |  |  |  |  |  |  |  |
|  |  | n78 |  | 10 | 15 | 20 |  |  | 40 | 50 | 60 |  | 80 | 901 | 100 |  |
| CA\_n3A-n5A-n7A-n78A | - | n3 | 5 | 10 | 15 | 20 | 25 | 30 | 40 |  |  |  |  |  |  | 0 |
|  |  | n5 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
|  |  | n7 | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 |  |  |  |  |  |  |
|  |  | n78 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| CA\_n3A-n5A-n7B-n78A | - | n3 | 5 | 10 | 15 | 20 | 25 | 30 | 40 |  |  |  |  |  |  | 0 |
|  |  | n5 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
|  |  | n7 | See CA\_n7B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | |  |
|  |  | n78 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| CA\_n3A-n7A-n28A-n78A | - | n3 | 5 | 10 | 15 | 20 | 25 | 30 |  |  |  |  |  |  |  | 0 |
|  |  | n7 | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 |  |  |  |  |  |  |
|  |  | n28 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
|  |  | n78 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| CA\_n3A-n7B-n28A-n78A | - | n3 | 5 | 10 | 15 | 20 | 25 | 30 |  |  |  |  |  |  |  | 0 |
|  |  | n7 | See CA\_n7B Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | |  |
|  |  | n28 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
|  |  | n78 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| CA\_n3A-n28A-n41A-n77A | - | n3 | 5 | 10 | 15 | 20 | 25 | 30 | 40 |  |  |  |  |  |  | 0 |
|  |  | n28 | 5 | 10 | 15 | 20 |  | 30 |  |  |  |  |  |  |  |  |
|  |  | n41 |  | 10 | 15 | 20 |  | 30 | 40 | 50 | 60 |  | 80 | 90 | 100 |  |
|  |  | n77 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| CA\_n3A-n28A-n41A-n78A | - | n3 | 5 | 10 | 15 | 20 | 25 | 30 | 40 |  |  |  |  |  |  | 0 |
|  |  | n28 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
|  |  | n41 |  | 10 | 15 | 20 |  | 30 | 40 | 50 | 60 |  | 80 | 90 | 100 |  |
|  |  | n78 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| CA\_n7A-n25A-n66A-n78A | - | n7 | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 |  |  |  |  |  | 0 |
|  |  | n25 | 5 | 10 | 15 | 20 | 25 | 30 | 40 |  |  |  |  |  |  |  |
|  |  | n66 | 5 | 10 | 15 | 20 | 25 | 30 | 40 |  |  |  |  |  |  |  |
|  |  | n78 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| CA\_n3A-n28A-n41A-n77A | CA\_n3A-n28A | n3 | 5 | 10 | 15 | 20 | 25 | 30 | 40 |  |  |  |  |  |  | 0 |
|  |  | n28 | 5 | 10 | 15 | 20 |  | 30 |  |  |  |  |  |  |  |  |
|  |  | n41 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 |  | 80 | 90 | 100 |  |
|  |  | n77 |  | 10 | 15 | 20 |  | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| CA\_n3A-n28A-n41A-n78A | CA\_n3A-n28A | n3 | 5 | 10 | 15 | 20 | 25 | 30 | 40 |  |  |  |  |  |  | 0 |
|  |  | n28 | 5 | 10 | 15 | 20 |  | 30 |  |  |  |  |  |  |  |  |
|  |  | n41 |  | 10 | 15 | 20 |  | 30 | 40 | 50 | 60 |  | 80 | 90 | 100 |  |
|  |  | n77 |  | 10 | 15 | 20 |  | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| CA\_n25A-n41A-n66A-n71A | - | n25 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  | 0 |
|  |  | n41 |  | 10 | 15 | 20 |  | 30 | 40 | 50 | 60 |  | 80 | 90 | 100 |  |
|  |  | n66 | 5 | 10 | 15 | 20 |  |  | 40 |  |  |  |  |  |  |  |
|  |  | n71 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
| CA\_n25A-n41(2A)-n66A-n71A | - | n25 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  | 0 |
|  |  | n41 | See CA\_n41(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 | | | | | | | | | | | | |  |
|  |  | n66 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
|  |  | n71 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
| CA\_n25A-n41C-n66A-n71A | - | n25 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  | 0 |
|  |  | n41 | See CA\_n41C Bandwidth Combination Set 0 in Table 5.5A.1-1 | | | | | | | | | | | | |  |
|  |  | n66 | 5 | 10 | 15 | 20 |  |  | 40 |  |  |  |  |  |  |  |
|  |  | n71 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
| CA\_n41A-n66A-n71A-n77A | - | n41 |  | 10 | 15 | 20 |  | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 0 |
|  | n66 | 5 | 10 | 15 | 20 | 25 | 30 | 40 |  |  |  |  |  |  |  |
|  | n71 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
|  | n77 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| CA\_n41C-n66A-n71A-n77A | - | n41 | See CA\_n41C Bandwidth Combination Set 1 in Table 5.5A.1-1 | | | | | | | | | | | | | 0 |
|  | n66 | 5 | 10 | 15 | 20 | 25 | 30 | 40 |  |  |  |  |  |  |  |
|  | n71 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
|  | n77 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| CA\_n41(2A)-n66A-n71A-n77A | - | n41 | See CA\_n41(2A) Bandwidth Combination Set 1 in Table 5.5A.2-1 | | | | | | | | | | | | | 0 |
|  | n66 | 5 | 10 | 15 | 20 | 25 | 30 | 40 |  |  |  |  |  |  |  |
|  | n71 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
|  | n77 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| NOTE 1: This UE channel bandwidth is optional in this release of the specification.  NOTE 2: For the 20 MHz bandwidth, the minimum requirements are specified for NR UL carrier frequencies confined to either 713-723 MHz or 728-738 MHz.  NOTE 3: The SCS of each channel bandwidth for NR band refers to Table 5.3.5-1. | | | | | | | | | | | | | | | | |

---Text omitted---

Table 6.2A.4.2.5-1: ΔTIB,c due to NR CA (four bands)

|  |  |  |
| --- | --- | --- |
| Inter-band CA combination | NR Band | ΔTIB,c (dB) |
| CA\_n1-n3-n7-n28 | n1 | 0.6 |
|  | n3 | 0.6 |
|  | n7 | 0.6 |
|  | n28 | 0.6 |
| CA\_n1-n3-n7-n78 | n1 | 0.7 |
|  | n3 | 0.7 |
|  | n7 | 0.7 |
|  | n78 | 0.8 |
| CA\_n1-n3-n8-n78 | n1 | 0.6 |
|  | n3 | 0.6 |
|  | n8 | 0.6 |
|  | n78 | 0.8 |
| CA\_n1-n3-n28-n78 | n1 | 0.6 |
|  | n3 | 0.6 |
|  | n28 | 0.6 |
|  | n78 | 0.8 |
| CA\_n3-n5-n7-n78 | n3 | 0.6 |
|  | n5 | 0.6 |
|  | n7 | 0.6 |
|  | n78 | 0.8 |
| CA\_n3-n7-n28-n78 | n3 | 0.6 |
|  | n7 | 0.6 |
|  | n28 | 0.6 |
|  | n78 | 0.6 |
| CA\_n3-n28-n41-n77 | n3 | 1 |
|  | n28 | 0.5 |
|  | n41 | 0.31/0.82 |
|  | n77 | 0.8 |
| CA\_n3-n28-n41-n78 | n3 | 1 |
|  | n28 | 0.5 |
|  | n41 | 0.31/0.82 |
|  | n78 | 0.8 |
| CA\_n7-n25-n66-n78 | n7 | 0.5 |
|  | n25 | 0.6 |
|  | n66 | 0.6 |
|  | n78 | 0.8 |
| CA\_n25-n41-n66-n71 | n25 | 0.5 |
|  | n41 | 0.5 |
|  | n66 | 0.5 |
|  | n71 | 0.3 |
| CA\_n41-n66-n71-n77 | n41 | 0.81/1.32 |
| n66 | 0.5 |
| n71 | 0.3 |
| n77 | 0.8 |
| NOTE 1: Applicable for the frequency range of 2515-2690 MHz.  NOTE 2: Applicable for the frequency range of 2496-2515 MHz | | |

---Text omitted---

Table 7.3A.3.2.4-1: ΔRIB,c due to CA (four bands)

|  |  |  |
| --- | --- | --- |
| Inter-band CA combination | NR Band | ΔRIB,c (dB) |
| CA\_n1-n3-n7-n28 | n28 | 0.2 |
| CA\_n1-n3-n7-n78 | n1 | 0.3 |
|  | n3 | 0.3 |
|  | n7 | 0.3 |
|  | n78 | 0.5 |
| CA\_n1-n3-n8-n78 | n1 | 0.2 |
|  | n3 | 0.2 |
|  | n8 | 0.2 |
|  | n78 | 0.5 |
| CA\_n1-n3-n28-n78 | n1 | 0.2 |
|  | n3 | 0.2 |
|  | n28 | 0.2 |
|  | n78 | 0.5 |
| CA\_n3-n5-n7-n78 | n3 | 0.2 |
|  | n5 | 0.2 |
|  | n7 | 0.2 |
|  | n78 | 0.5 |
| CA\_n3-n7-n28-n78 | n3 | 0.2 |
|  | n7 | 0.2 |
|  | n28 | 0.2 |
|  | n78 | 0.5 |
| CA\_n3-n28-n41-n77 | n3 | 0.5 |
|  | n28 | 0.2 |
|  | n41 | 01/0.52 |
|  | n77 | 0.5 |
| CA\_n3-n28-n41-n78 | n3 | 0.5 |
|  | n28 | 0.2 |
|  | n41 | 01/0.52 |
|  | n78 | 0.5 |
| CA\_n7-n25-n66-n78 | n7 | 0.5 |
|  | n25 | 0.6 |
|  | n66 | 0.6 |
|  | n78 | 0.8 |
| CA\_n25-n41-n66-n71 | n25 | 0.3 |
|  | n41 | 0.5 |
|  | n66 | 0.5 |
| CA\_n41-n66-n71-n77 | n41 | 0.51/12 |
| n66 | 0.5 |
| n71 | 0 |
| n77 | 0.5 |
| NOTE 1: Applicable for the frequency range of 2515-2690 MHz.  NOTE 2: Applicable for the frequency range of 2496-2515 MHz | | |

---End of changes---