**3GPP TSG-RAN WG4 Meeting # 95-e R4-2007608**

**Electronic Meeting, 25 May – 5 June, 2020**

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| --- |
| *CR-Form-v12.0* |
| **DRAFT CHANGE REQUEST** |
|  |
|  | **38.101-1** | **CR** | **0361** | **rev** |  | **Current version:** | **16.3.0** |  |
|  |
| *For* [***HELP***](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 |  |

|  |
| --- |
|  |
| ***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\_R16\_4BDL\_1BUL-Core  |  | ***Date:*** | 2010-06-09 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories 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-12 (Release 12)Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | Adding approved NR Inter-band CA for 4 band combination at RAN4 94bis-e and RAN4 95 |
|  |  |
| ***Summary of change:*** | Adding the following from RAN 94bis-e:CA\_n7-n25-n66-n78Adding the following from RAN 95:CA\_n7-n25-n66-n78 (correction)CA\_n1-n3-n7-n28CA\_n1-n3-n7-n78CA\_n3-n7-n28-n78 |
|  |  |
| ***Consequences if not approved:*** | Approved NR Inter-band CA for 4 band combination is not added |
|  |  |
| ***Clauses affected:*** | 5.5 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  |  |
| ***affected:*** | **X** |  |  Test specifications | TS 38.521 series |
| ***(show related CRs)*** |  | **X** |  O&M Specifications |  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

---Start of changes---

Table 5.2A.2-3: 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-n7-n28-n78 | n3, n7, n28, n78 |
| CA\_n7-n25-n66-n78 | n7, n25, n66, n78 |

---Text omitted---

Table 5.5A.3-3: NR CA configurations and bandwith combinations sets defined for inter-band CA (four bands)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR CA configuration | Uplink CA configuration | NR Band | SCS(kHz) | 5MHz | 10MHz | 15MHz | 20MHz | 25 MHz | 30 MHz | 40MHz | 50MHz | 60MHz | 70 MHz | 80MHz | 90 MHz | 100 MHz | Bandwidth combination set |
| CA\_n1A-n3A-n7A-n28A | - | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n7 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n1A-n3A-n7B-n28A | - | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n7 | See CA\_n7B Bandwidth Combination Set 0 in Table 5.5A.1-1 |
| n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CA\_n1A-n3A-n7A-n78A | - | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n7 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| CA\_n1A-n3A-n7B-n78A | - | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n7 | See CA\_n7B Bandwidth Combination Set 0 in Table 5.5A.1-1 |
| n78 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| CA\_n1A-n3A-n8A-n78A | - | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n8 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes1 | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes1 | Yes |
| CA\_n1A-n3A-n28A-n78A | - | n1 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n28 | 15 | Yes | Yes | Yes | Yes2 |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes2 |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes1 | Yes |
| 60 |  | Yes | Yes | Yes |  |  | Yes | Yes | Yes |  | Yes | Yes1 | Yes |
| CA\_n3A-n7A-n28A-n78A | - | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n7 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| CA\_n3A-n7B-n28A-n78A | - | n3 | 15 | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |
| n7 | See CA\_n7B Bandwidth Combination Set 0 in Table 5.5A.1-1 |
| n28 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| CA\_n7A-n25A-n66A-n78A | - | n7 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| n25 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n66 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n78 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 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. |

---Text omitted---

Table 6.2A.4.2.3-3: 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-n7-n28-n78 | n3 | 0.6 |
| n7 | 0.6 |
| n28 | 0.6 |
| n78 | 0.6 |
| CA\_n7-n25-n66-n78 | n7 | 0.5 |
| n25 | 0.6 |
| n66 | 0.6 |
| n78 | 0.8 |

---Text omitted---

##### 7.3A.3.2.4 ΔRIB,c for four bands

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-n7-n28-n78 | n3 | 0.2 |
| n7 | 0.2 |
| n28 | 0.2 |
| n78 | 0.5 |
| CA\_n7-n25-n66-n78 | n7 | 0.5 |
| n25 | 0.6 |
| n66 | 0.6 |
| n78 | 0.8 |

---End of changes---