**3GPP TSG-RAN WG4 Meeting #95-e R4-2006608**

**Online, 25 May – 5 June, 2020**

**Source:** Huawei, HiSilicon, Bell Mobility, Telus

**Title:** TP to TR 38.716-03-02 for CA\_n7-n66-n78

**Agenda item:** 8.11.2

**Document for:** Approval

# Background

This contribution provides text proposal on the NR CA band combination CA\_n7-n66-n78 as defined in Revised WID on NR inter-band Carrier Aggregation/Dual connectivity for 3 bands DL with 2 bands UL [1].

# Text Proposal

##### ---Start of changes---

### 5.1.x CA\_n7-n66-n78

#### 5.1.x.1 Operating bands for CA

Table 5.1.x.1-1: CA band combination of band n7+n66+n78

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| NR Band | Uplink (UL) band | | | Downlink (DL) band | | | Duplex  mode |
| BS receive / UE transmit | | | BS transmit / UE receive | | |
| FUL\_low – FUL\_high | | | FDL\_low – FDL\_high | | |
| n7 | 2500 MHz | – | 2570 MHz | 2620 MHz | – | 2690 MHz | FDD |
| n66 | 1710 MHz | – | 1780 MHz | 2110 MHz | – | 2200 MHz | FDD |
| n78 | 3300 MHz | – | 3800 MHz | 3300 MHz | – | 3800 MHz | TDD |

#### 5.1.x.2 Channel bandwidths per operating band for CA

Table 5.1.x.2-1: Supported bandwidths per CA band combination of band n7+n66+n78

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **CA operating / channel bandwidth [MHz]** | | | | | | | | | | | | | | | | | | |
| **NR CA Configuration** | | **UL Configuration** | **NR Band** | **SCS [kHz]** | | **5** | **10** | **15** | **20** | **25** | **30** | **40** | **50** | **60** | **70** | **80** | **90** | **100** | **Bandwidth combination set** |
| CA\_n7A-n66A-n78A | | CA\_n7A-n66A, CA\_n7A-n78A, CA\_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 |  |  |  |  |  |
| 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 |
| CA\_n7A-n66A-n78(2A) | | CA\_n7A-n66A, CA\_n7A-n78A, CA\_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 |  |  |  |  |  |
| n66 | 15 | | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 30 | |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 | |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| n78 |  | See CA\_n78(2A) Bandwidth Combination Set 1 in Table 5.5A.2-1 | | | | | | | | | | | | | |

#### 5.1.x.3 UE co-existence studies

The coexistence study for DC\_66\_n7-n78 has been presented in TR 37.716-21-21 and the coexistence study for DC\_7-66\_n78 has been included in TR 37.716-21-11. It can be seen that:

* the IMD3 product of UL CA\_n7A-n66A may fall into the Rx frequency of n78,
* the IMD4 product of UL CA\_n7A-n78A may fall into the Rx frequency of n66.

#### 5.1.x.4 ∆TIB and ∆RIB values

For CA\_n7-n66-n78 , the ΔTIB,c and ΔRIB,c values are given in the tables below.

Table 5.1.x.4-1: ΔTIB,c

| Inter-band CA Configuration | NR Band | ΔTIB,c [dB] |
| --- | --- | --- |
| CA\_n7-n66-n78 | n7 | 0.5 |
| n66 | 0.6 |
| n78 | 0.8 |

Table 5.1.x.4-2: ΔRIB,c

| Inter-band CA Configuration | NR Band | ΔRIB,c [dB] |
| --- | --- | --- |
| CA\_n7-n66-n78 | n7 | 0.5 |
| n66 | 0.2 |
| n78 | 0.5 |

#### 5.1.x.5 REFSENS requirements

The n78 DL is affected by the IMD3 of UL CA\_n7A-n66A and the MSD value for DC\_66\_n7-n78 in TR 37.716-21-21 is reused. Moreover, the n66 DL is affected by the IMD4 of UL CA\_n7A-n78A and the MSD value for DC\_7-66\_n78 in TR 37.716-21-11 is reused.

Table 5.1.x.5-1: MSD for the CA configuration

| **NR Band / Channel bandwidth / NRB / MSD** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CA Configuration** | **NR band** | **UL Fc  (MHz)** | **UL/DL BW  (MHz)** | **UL**  **LCRB** | **DL Fc (MHz)** | **MSD  (dB)** | **IMD order** |
| CA\_n7A-n66A-n78A, CA\_n7A-n66A-n78(2A) | n7 | 2560 | 5 | 25 | 2680 | N/A | N/A |
| n66 | 1730 | 5 | 25 | 2130 | N/A | N/A |
| n78 | 3390 | 10 | 50 | 3390 | 16.1 | IMD3  | 2\*fn7- fn66| |
| CA\_n7A-n66A-n78A, CA\_n7A-n66A-n78(2A) | n7 | 2550 | 5 | 25 | 2670 | N/A | N/A |
| n66 | 1750 | 5 | 25 | 2150 | 8.7 | IMD4  |2\*fn7 -2\*fn78| |
| n78 | 3625 | 10 | 50 | 3625 | N/A | N/A |

##### ---End of changes---

# Reference

[1] R4-2004181, “Revised WID on Rel-16 NR Inter-band Carrier Aggregation/Dual Connectivity for 3 bands DL with 2 bands UL”, ZTE Corporation