3GPP TSG-RAN WG4 Meeting # 98-e R4-2100274

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

Source: Verizon, Ericsson, MediaTek, LGE

Title: TP for TR38.xxx for PC2 CA\_n5A-n77A

Agenda item: 9.19.2

Document for: Approval

# **Introduction**

This contribution is a text proposal to introduce PC2 2DL/2UL CA\_n5-n77 according to the request in [1].

# **Reference**

[1] RP-202373, Revised basket WID: High power UE for NR inter-band Carrier Aggregation with 2 bands downlink and x bands uplink (x =1,2)

# **Text Proposal**

**<Start of Text Proposal>**

## 5.x CA\_n5-n77

### 5.x.1 Configurations

**Table 5.x.1-1: NR CA configurations and bandwidth combinations sets for supporting power class 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR CA configuration | Uplink CA configuration | NR Band | SCS(kHz) | 5 MHz | 10MHz | 15MHz | 20MHz | 25 MHz | 30 MHz | 40MHz | 50MHz | 60MHz | 70MHz | 80MHz | 90 MHz | 100 MHz | Bandwidth combination set |
| CA\_n5A-n77ACA\_n5A-n77(2A) | CA\_n5A-n77A | n5 | 15 | Yes | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| n77 | 15 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes4 | Yes | Yes4 | Yes |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes4 | Yes | Yes4 | Yes |
| NOTE 4: This UE channel bandwidth is optional in this release of the specification |

### 5.x.2 Maximum output power

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Uplink CA configuration** | **Power class 2 cases for CA\_n5A-n77A** | **CA power class** | **Carrier n5 power class** | **Carrier n77 power class** |
| CA\_n5A-n77A | Case a | 26dBm | 23dBm | 23dBm |
| Case b | 26dBm | 23dBm | 26dBm |

The tolerance +2/-3 dB is applied. Also when the transmission bandwidths confined within FUL\_low and FUL\_low + 4 MHz or FUL\_high – 4 MHz and FUL\_high, the maximum output power requirement is relaxed by reducing the lower tolerance limit by 1.5 dB.

### 5.x.3 REFSENS requirements

According to the PC3 CA\_n5A-n77A study, the 4th and 5th IMD products from dual uplink of band 5 and n77 may fall into band 5 Rx frequency range. Thus additional MSD should be considered to mitigate the impact of the interference for PC2 CA\_n5A-n77A combination.

#### 5.x.3.1 Power class 2 case a

The additional MSD due to intermodulation for PC2 CA\_n5A-n77A are defined in table 5.x.3.1-1.

Table 5.x.3.1-1: MSD test points for PCell due to dual uplink operation for PC2 NR CA in NR FR1 (two bands)

|  |
| --- |
| **Band / Channel bandwidth / NRB / Duplex mode** |
| **NR CA****Configuration** | **NR band** | **UL Fc****(MHz)** | **UL/DL BW****(MHz)** | **UL****CLRB** | **DL Fc (MHz)** | **MSD for PC2****(dB)** | **Duplex mode** | **Source of IMD** |
| CA\_n5A-n77A | n5 | 844 | 5 | 25 | 889 | 18.6 | FDD | IMD4 |
| n77 | 3421 | 10 | 50 | 3421 | N/A | TDD | N/A |
| n5 | 829 | 5 | 25 | 875 | [17.95] | FDD | IMD5 |
| n77 | 3600 | 10 | 50 | 3600 | N/A | TDD | N/A |

#### 5.x.3.2 Power class 2 case b

The additional MSD due to intermodulation for PC2 CA\_n5A-n77A are defined in table 5.x.3.2-1.

Table 5.x.3.2-1: MSD test points for PCell due to dual uplink operation for PC2 NR CA in NR FR1 (two bands)

|  |
| --- |
| **Band / Channel bandwidth / NRB / Duplex mode** |
| **NR CA****Configuration** | **NR band** | **UL Fc****(MHz)** | **UL/DL BW****(MHz)** | **UL****CLRB** | **DL Fc (MHz)** | **MSD for PC2****(dB)** | **Duplex mode** | **Source of IMD** |
| CA\_n5A-n77A | n5 | 844 | 5 | 25 | 889 | 21.6 | FDD | IMD4 |
| n77 | 3421 | 10 | 50 | 3421 | N/A | TDD | N/A |
| n5 | 829 | 5 | 25 | 875 | [20.95] | FDD | IMD5 |
| n77 | 3600 | 10 | 50 | 3600 | N/A | TDD | N/A |

#### 5.x.3.3 OOB blocking exception requirements

Since band n5 is a low band and n77 is a wide band, the OOBB exception is needed.

Table 5.x.4-1: NR DC band combination with exceptions allowed

|  |
| --- |
| CA band combination |
| CA\_n5-n77 |

### 5.x.4 ∆TIB and ∆RIB values

For the ∆TIB,c and ∆RIB,c values, same PC3 CA\_n5A-n77A requirements are applied for PC2 CA\_n5A-n77A.

**<End of Text Proposal>**