**3GPP T****SG-RAN WG4 Meeting#99 R4-2108936**

**E-meeting, 19th – 27th May, 2021**

**Title: TP to TR 38.717-03-01: CA\_n5-n30-n66**

**Source: Nokia, AT&T**

**Agenda item: 8.11.2**

**Document for: Approval**

# Introduction

This is a TP into TR 38.717-03-01 to introduce CA\_n5-n30-n66.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of TP \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

## 6.7 CA\_n5-n30-n66

6.7.1 Operating bands for CA

Table 6.7.1-1: 3DL Inter-band CA operating bands

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NR CA Band** | **NR Band** | **Uplink (UL) operating band** | | | **Downlink (DL) operating band** | | | **Duplex Mode** |
| **BS receive / UE transmit** | | | **BS transmit / UE receive** | | |
| **FUL\_low – FUL\_high** | | | **FDL\_low – FDL\_high** | | |
| CA\_n5-n30-n66 | n5 | 824 MHz | – | 849 MHz | 869 MHz | – | 894 MHz | FDD |
| n30 | 2305 MHz | – | 2315 MHz | 2350 MHz | – | 2360 MHz | TDD |
| n66 | 1710 MHz | – | 1780 MHz | 2110 MHz | – | 2200 MHz | FDD |

6.7.2 Channel bandwidths per operating band for CA

Table 6.7.2-1: Supported channel bandwidths per CA configuration for 3DL inter-band CA

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NR CA Configuration** | **UL Config** | **NR Band** | **5** | **10** | **15** | **20** | **25** | **30** | **40** | **50** | **60** | **70** | **80** | **90** | **100** | **BCS** |
|  |  | n5 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |
| CA\_n5A-n30A-n66A | - | n30 | 5 | 10 |  |  |  |  |  |  |  |  |  |  |  | 0 |
|  |  | n66 | 5 | 10 | 15 | 20 |  |  | 40 |  |  |  |  |  |  |  |
| CA\_n5A-n30A-n66(2A) | - | n5 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  | 0 |
| n30 | 5 | 10 |  |  |  |  |  |  |  |  |  |  |  |
| n66 | See CA\_n66(2A) Bandwidth Combination Set 0 in Table 5.5A.2-1 in TS 38.101-1 | | | | | | | | | | | | |

6.7.3 Co-existence studies

Table 6.7.3-1 summarizes frequency ranges where harmonics occur due to 3DL bands CA with 1 UL. There is no harmonic interference.

Table 6.7.3-1: Harmonic Interference for 3DLs/1UL

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | **2nd Harmonic** | | **3rd Harmonic** | | **4th Harmonic** | |
| **Band** | **UL Low Band Edge** | **UL High Band Edge** | **DL Low Band Edge** | **DL High Band Edge** | **UL Low Band Edge** | **UL High Band Edge** | **UL Low Band Edge** | **UL High Band Edge** | **UL Low Band Edge** | **UL High Band Edge** |
| **5** | 824 | 849 | 869 | 894 | 1648 | 1698 | 2472 | 2547 | 3296 | 3396 |
| **30** | 2305 | 2315 | 2350 | 2360 | 4610 | 4630 | 6915 | 6945 | 9220 | 9260 |
| **66** | 1710 | 1780 | 2110 | 2200 | 3420 | 3560 | 5130 | 5340 | 6840 | 7120 |

Table 6.7.3-2 gives harmonic mixing issue for the 3DL bands CA with 1 UL. There are no harmonic mixing interference.

Table 6.7.3-2 Harmonic mixing for 3DLs/1UL

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | **2nd Harmonic** | | **3rd Harmonic** | | **4th Harmonic** | |
| **Band** | **UL Low Band Edge** | **UL High Band Edge** | **DL Low Band Edge** | **DL High Band Edge** | **DL Low Band Edge** | **DL High Band Edge** | **DL Low Band Edge** | **DL High Band Edge** | **DL Low Band Edge** | **DL High Band Edge** |
| **5** | 824 | 849 | 869 | 894 | 1738 | 1788 | 2607 | 2682 | 3476 | 3576 |
| **30** | 2305 | 2315 | 2350 | 2360 | 4700 | 4720 | 7050 | 7080 | 9400 | 9440 |
| **66** | 1710 | 1780 | 2110 | 2200 | 4220 | 4400 | 6330 | 6600 | 8440 | 8800 |

For single uplink, the UE coexistence is already considered for these bands in TS 38.101-1.

6.7.4 ∆TIB,c and ∆RIB,c values

It is proposed to re-use ΔTIB,c and ΔRIB,c  values from DC\_5-30\_n66.

Table 6.7.4-1: ΔTIB,c for 3DL aggregation

| **Inter-band CA Configuration** | **NR Band** | **ΔTIB,c [dB]** |
| --- | --- | --- |
| CA\_n5-n30-n66 | n2 | 0.3 |
| n30 | 0.3 |
| n66 | 0.5 |

Table 6.7.4-2: ΔRIB,c for 3DL aggregation

| **Inter-band CA Configuration** | **NR Band** | **ΔRIB,c [dB]** |
| --- | --- | --- |
| CA\_n5-n30-n66 | n2 | 0 |
| n30 | 0.5 |
| n66 | 0.4 |

6.7.5 REFSENS requirements

Compared to its fallback modes, there are no additional MSD requirements for this band combination.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of TP \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*