**3GPP TSG-RAN WG4 Meeting #104-e R4-2213092**

**Electronic Meeting, 15 August – 26 August 2022**

**Source:** Ericsson

**Title:** TP for TR 36.718-02-01: CA\_8-48

**Agenda item:**  10.4.3

**Document for:** Approval

1. Introduction

This contribution is a text proposal for TR 36.718-02-01 to CA\_8A-48A according to the request in [1].

# 2. Reference

1. RP-221831, New WID: Rel-18 LTE Advanced Carrier Aggregation for x bands (x<= 6) DL with y bands (y=1, 2) UL, Huawei, HiSilicon

3. Text Proposal

---Start of changes---

5.2.x CA\_8-48

5.2.x.1 Channel bandwidths per operating band for CA

Table 5.2.x.1-1: Inter-band CA operating bands

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| E‑UTRA Operating Band | Uplink (UL) operating band BS receive UE transmit | | | Downlink (DL) operating band BS transmit  UE receive | | | Duplex Mode |
| FUL\_low – FUL\_high | | | FDL\_low – FDL\_high | | |
| 8 | 880 MHz | – | 915 MHz | 925 MHz | – | 960 MHz | FDD |
| 48 | 3550 MHz | – | 3700 MHz | 3550 MHz | – | 3700 MHz | TDD |

**Table 5.2.1-1: E-UTRA CA configurations and bandwidth combination sets**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **E-UTRA CA configuration / Bandwidth combination set** | | | | | | | | | | |
| **E-UTRA CA Configuration** | **Uplink CA configurations** | **E-UTRA Bands** | **1.4 MHz** | **3 MHz** | **5 MHz** | **10 MHz** | **15 MHz** | **20 MHz** | **Maximum aggregated bandwidth**  **[MHz]** | **Bandwidth combination set** |
| CA\_8A-48A | - | 8 | Yes | Yes | Yes | Yes |  |  | 30 | 0 |
| 48 |  |  | Yes | Yes | Yes | Yes |

5.2.x.2 Co-existence studies

Table 5.2.x-1 summarizes frequency ranges where harmonics occur for CA\_8-48.

**Table 5.2.x.2-1: Impact of UL/DL Harmonic**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | **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 |
| 8 | 880 | 915 | 925 | 960 | 1760 | 1830 | 2640 | 2745 | 3520 | 3660 |
| 48 | 3550 | 3700 | 3550 | 3700 | 7100 | 7400 | 10650 | 11100 | 14200 | 14800 |

Table 5.2.x-2 summarizes frequency ranges where harmonics mixing occur for CA\_8-48.

**Table 5.2.x.2-2: Impact of UL/DL Harmonic mixing**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | **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 |
| 8 | 880 | 915 | 925 | 960 | 1850 | 1920 | 2775 | 2880 | 3700 | 3840 |
| 48 | 3550 | 3700 | 3550 | 3700 | 7100 | 7400 | 10650 | 11100 | 14200 | 14800 |

5.2.x.3 ∆TIB and ∆RIB values

Values are same as for CA\_8-42.

Table 5.2.x.3-1: IB,c

|  |  |  |
| --- | --- | --- |
| CA\_8-48 | 8 | 0.6 |
| 48 | 0.8 |

Table 5.2.x.3-2: R IB,c

|  |  |  |
| --- | --- | --- |
| CA\_8-48 | 8 | 0.2 |
| 48 | 0.5 |

5.2.x.4 REFSENS requirements

Based on analysis of 5.2.x.2, there are MSD requirements for band 8 UL 4th harmonics into DL of band 48. MSD values same as for CA\_8A-42A and to be added in Table 7.3.1A-0a and Table 7.3.1A-0b of TS 36.101.

Table 5.2.x.4-1: Reference sensitivity for carrier aggregation QPSK PREFSENS, CA (exceptions due to harmonic issue)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Channel bandwidth | | | | | | | | |
| EUTRA CA Configuration | EUTRA band | 1.4 MHz (dBm) | 3 MHz (dBm) | 5 MHz (dBm) | 10 MHz (dBm) | 15 MHz (dBm) | 20 MHz (dBm) | Duplex mode |
| CA\_8A-48A12,13 | 4833 |  |  | -84.8 | -84.7 | -84.6 | -84.5 | TDD |
| NOTE 12: These requirements apply when there is at least one individual RE within the uplink transmission bandwidth of a low band for which the 4th transmitter harmonic is within the downlink transmission bandwidth of a high band.  NOTE 13: The requirements should be verified for UL EARFCN of a low band (superscript LB) such that in MHz and  with the carrier frequency of a high band in MHz and  the channel bandwidth configured in the low band.  NOTE 33: Applicable for the operations with 2 or 4 antenna ports supported in the band with carrier aggregation configured. | | | | | | | | |

Table 5.2.x.4-2: Uplink configuration for the low band (exceptions due to harmonic issue)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| E-UTRA Band / Channel bandwidth of the high band / NRB / Duplex mode | | | | | | | | |
| EUTRA CA Configuration | UL band | 1.4 MHz | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | Duplex mode |
| CA\_8A-48A | 8 | 2 | 5 | 8 | 16 | 25 | 25 | FDD |

---End of changes---