**3GPP TSG-RAN WG4 Meeting #94bis-e R4-200xxxx**

**Online, 20th April-30th April, 2020**

**Source:** Samsung, KDDI

**Title:** TP for TR 36.716-02-01: CA\_18-41

**Agenda item:**  5.2.3

**Document for:** Approval

1. Introduction

This contribution is a text proposal for TR 36.716-02-01 to include CA\_18A-41A and CA\_18A-41C according to the request in [1].

# 2. Reference

1. RP-200231, Revised WID: Rel16 LTE inter-band CA for 2 bands DL with 1 band UL.

3. Text Proposal

**<Start of Text Proposal>**

## 5.x CA\_18-41

### 5.x.1 Channel bandwidths per operating band for CA

Table 5.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 | | |
| 18 | 815 MHz | – | 830 MHz | 860 MHz | – | 875 MHz | FDD |
| 41 | 2496 MHz | – | 2690 MHz | 2496 MHz | – | 2690 MHz | TDD |

Table 5.x.1-2: Supported E-UTRA bandwidths per CA configuration for inter-band CA

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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\_18A-41A | - | 18 |  |  | Yes | Yes | Yes |  | 35 | 0 |
| 41 |  |  | Yes | Yes | Yes | Yes |
| CA\_18A-41C | CA\_41C | 18 |  |  | Yes | Yes | Yes |  | 55 | 0 |
| 41 | See CA\_41C Bandwidth Combination Set 1 in Table 5.6A.1-1 | | | | | |

### 5.x.2 Co-existence studies

Table 5.x.2-1 summarizes frequency ranges where harmonics occur due to Band 18 and Band 41 CA with 1 UL.

Table 5.x.2-1: Impact of 1 UL Harmonic Interference

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | | **2nd Harmonic** | | **3rd Harmonic** | | **2nd Harmonic** | | **3rd 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** | **DL Low Band Edge** | **DL High Band Edge** | **DL Low Band Edge** | **DL High Band Edge** |
| 18 | 815 | 830 | 860 | 875 | 1630 | 1660 | 2445 | 2490 | 1720 | 1750 | 2580 | 2625 |
| 41 | 2496 | 2690 | 2496 | 2690 | 4992 | 5380 | 7488 | 8070 | 4992 | 5380 | 7488 | 8070 |

It can be seen from Table 5.x.2-1 that there is 3rd harmonic mixing may impact Band18 Rx, and no requirements apply similar with CA\_5-41.

### 5.x.3 ΔTIB,c and ΔRIB,c values

Table 5.x.3-1 and table 5.x.3-2 show the ΔTIB,c and ΔRIB,c  for CA\_18-41 according to Low-High band combinations’ values.

Table 5.x.3-1: ΔTIB,c for 2DLs aggregation

|  |  |  |
| --- | --- | --- |
| Inter-band CA Configuration | E-UTRA Band | ΔTIB,c [dB] |
| CA\_18-41 | 18 | 0.3 |
| 41 | 0.3 |

Table 5.x.3-2: ΔRIB,c for 2DLs aggregation

|  |  |  |
| --- | --- | --- |
| Inter-band CA Configuration | E-UTRA Band | ΔRIB,c [dB] |
| CA\_18-41 | 18 | 0 |
| 41 | 0 |

### 5.x.4 REFSENS

Table 5.x.4-1 shows the required MSD levels for CA\_18-41 due to harmonic mixing.

Table 5.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\_18A-41A19  CA\_18A-41C19 | 41 |  |  | N/A | N/A | N/A | N/A | TDD |
| NOTE 19: No requirements apply for the case that there is at least one individual RE within the uplink transmission bandwidth of the relative higher band and when the frequency range of relative higher band’s uplink channel bandwidth or uplink 1st adjacent channel bandwidth is fully or partially overlapped with the 3 times of the frequency range of the relative lower band’s downlink channel bandwidth. The reference sensitivity is only verified when this is not the case (the requirements specified in clause 7.3.1 apply). | | | | | | | | |

<End of Text Proposal>