3GPP TSG-RAN WG4 Meeting # 97-e R4-201xxxx

Electronic Meeting, 2nd – 13th November, 2020

**Source:** Huawei, HiSilicon

**Title:** TP for TR 36.717-04-01 CA\_1A-3A-7A-8A-40A / CA\_1A-3A-7A-8A-40C

**Agenda item:** 14.3.3

**Document for:** Approval

# Background

This contribution provides text proposal on the LTE CA configuration CA\_1A-3A-7A-8A-40A / CA\_1A-3A-7A-8A-40C as defined in the revised WID [1].

# Reference

[1] RP-201911, “Revised WID: LTE Advanced inter-band CA Rel-17 for x bands DL (x=4, 5) with 1 band UL”, Nokia, Nokia Shanghai Bell

# Text Proposal

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

## 5.x CA\_1-3-7-8-40

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

Table 5.x.1-1: E-UTRA CA configurations and bandwidth combination sets defined 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\_1A-3A-7A-8A-40A  CA\_1A-3A-7A-8A-40C | - | 1 |  |  | Yes | Yes | Yes | Yes | 90 | 0 |
| 3 |  |  | Yes | Yes | Yes | Yes |
| 7 |  |  | Yes | Yes | Yes | Yes |
| 8 |  |  | Yes | Yes |  |  |
| 40 |  |  | Yes | Yes | Yes | Yes |

### 5.x.2 ∆TIB and ∆RIB values

Table 5.x.2-1: IB,c

|  |  |  |
| --- | --- | --- |
| CA\_1-3-7-8-40 | 1 | 0.6 |
| 3 | 0.6 |
| 7 | 0.8 |
| 8 | 0.3 |
| 40 | 0.9 |

Table 5.x.2-2: R IB,c

|  |  |  |
| --- | --- | --- |
| CA\_1-3-7-8-40 | 1 | 0 |
| 3 | 0 |
| 7 | 0.3 |
| 8 | 0 |
| 40 | 0.8 |

### 5.x.3 REFSENS requirements

Table 5.x.3-1: Reference sensitivity for carrier aggregation QPSK PREFSENS, CA (exceptions due to cross band isolation issues of TDD and FDD bands)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| EUTRA CA Configuration | EUTRA band | Channel bandwidth | | | | | | Duplex mode | Applicable active UL band |
| 1.4 MHz (dBm) | 3 MHz (dBm) | 5 MHz (dBm) | 10 MHz (dBm) | 15 MHz (dBm) | 20 MHz (dBm) |
| CA\_1A-3A-7A-8A-40A 15  CA\_1A-3A-7A-8A-40C | 319 |  |  | -94 | -91.5 | -90 | -89 | FDD | 1 |
| 4019 |  |  | -92.6 | -90.5 | -89.2 | -88.1 | TDD |
| CA\_1A-3A-7A-8A-40A 16  CA\_1A-3A-7A-8A-40C | 3 |  |  | -97 | -94 | -92.2 | -91 | FDD | 1 |
| 4019 |  |  | -92.6 | -90.5 | -89.2 | -88.1 | TDD |
| CA\_1A-3A-7A-8A-40A  CA\_1A-3A-7A-8A-40C | 4019 |  |  | -94.6 | -92.1 | -90.5 | -89.4 | TDD | 3 |
| CA\_1A-3A-7A-8A-40A  CA\_1A-3A-7A-8A-40C | 4019 |  |  | -96 | -93.3 | -91.7 | -90.6 | TDD | 7 |
| CA\_1A-3A-7A-8A-40A  CA\_1A-3A-7A-8A-40C | 119 |  |  | -91.7 | -89.5 | -87.9 | -86.9 | FDD | 40 |
| 319 |  |  | -94.2 | -91.2 | -89.5 | -88.3 |
| 719 |  |  |  | -94 | -92.4 | -91.2 |
| NOTE 15: These requirements apply when the uplink is active in Band 1 and the separation between the lower edge of the uplink channel in Band 1 and the upper edge of the downlink channel in Band 3 is < 60 MHz. For each channel bandwidth other than Band 1, the requirement applies regardless of channel bandwidth in Band 1  NOTE 16: These requirements apply when the uplink is active in Band 1 and the separation between the lower edge of the uplink channel in Band 1 and the upper edge of the downlink channel in Band 3 is ≥ 60 MHz. For each channel bandwidth other than Band 1, the requirement applies regardless of channel bandwidth in Band 1.  NOTE 19: Applicable for the operations with 2 or 4 antenna ports supported in the band with carrier aggregation configured. | | | | | | | | | |

Table 5.x.3-2: Uplink configuration for reference sensitivity (exceptions due to cross band isolation issues of TDD and FDD bands)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| E-UTRA Band / Channel bandwidth of the affected DL band / NRB / Duplex mode | | | | | | | | |
| EUTRA CA Configuration | E-UTRA Band | 1.4 MHz | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | Duplex Mode |
| CA\_1A-3A-7A-8A-40A  CA\_1A-3A-7A-8A-40C | 11,3 |  |  | 25 | 25 | 25 | 25 | FDD |
| 11,4 |  |  | 25 | 45 | 45 | 45 | FDD |
| 3 |  |  | 25 | 50 | 501 | 501 | FDD |
| 7 |  |  | 25 | 50 | 75 | 751 | FDD |
| 40 |  |  | 25 | 50 | 75 | 100 | TDD |
| NOTE 1: 1 refers to the UL resource blocks shall be located as close as possible to the downlink operating band but confined within the transmission bandwidth configuration for the channel bandwidth (Table 5.6-1).  NOTE 3: UL allocation when the separation between the lower edge of the uplink channel in Band 1 and the upper edge of the downlink channel in Band 3 is < 60 MHz.  NOTE 4: UL allocation when the separation between the lower edge of the uplink channel in Band 1 and the upper edge of the downlink channel in Band 3 is ≥ 60 MHz. | | | | | | | | |

Table 5.x.3-3: Reference sensitivity for carrier aggregation QPSK PREFSENS, CA (exceptions for four bands due to close proximity of UL to DL channel)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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\_1A-3A-7A-8A-40A  CA\_1A-3A-7A-8A-40C | 34,9 |  |  | -94 | -91.5 | -90 | -89 | FDD |
| NOTE 1: The transmitter shall be set to PUMAX as defined in subclause 6.2.5A.  NOTE 2: Reference measurement channel is A.3.2 with one sided dynamic OCNG Pattern OP.1 FDD/TDD as described in Annex A.5.1.1/A.5.2.1  NOTE 3: The signal power is specified per port  NOTE 4: These requirements apply when the uplink is active in Band 1 and the separation between the lower edge of the uplink channel in Band 1 and the upper edge of the downlink channel in Band 3 is < 60 MHz. For each channel bandwidth in the bands other than Band 1, the requirement applies regardless of channel bandwidth in Band 1.  NOTE 5: These requirements apply when the uplink is active in Band 1 and the separation between the lower edge of the uplink channel in Band 1 and the upper edge of the downlink channel in Band 3 is ≥ 60 MHz. For each channel bandwidth in the bands other than Band 1, the requirement applies regardless of channel bandwidth in Band 1.  NOTE 6: Void  NOTE 7: The Band 41 requirements are modified by -0.5dB when carrier frequency of the assigned E-UTRA channel bandwidth is within 2545-2690MHz.  NOTE 8: The Band 41 requirements also apply to the supported CA\_1A-41A.  NOTE 9: Applicable for the operations with 2 or 4 antenna ports supported in the band with carrier aggregation configured. | | | | | | | | |

Table 5.x.3-4: Uplink configuration for the low band (exceptions for four bands due to close proximity of UL to DL channel)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| E-UTRA Band / Channel bandwidth of the affected DL 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\_1A-3A-7A-8A-40A  CA\_1A-3A-7A-8A-40C | 11,2 |  |  | 25 | 25 | 25 | 25 | FDD |
| 11,3 |  |  | 25 | 45 | 45 | 45 |
| NOTE 1: refers to the UL resource blocks shall be located as close as possible to the downlink channel in Band 3 but confined within the transmission bandwidth configuration for the channel bandwidth (Table 5.6-1) in the uplink channel in Band 1.  NOTE 2: UL allocation when the separation between the lower edge of the uplink channel in Band 1 and the upper edge of the downlink channel in Band 3 is < 60 MHz  NOTE 3: UL allocation when the separation between the lower edge of the uplink channel in Band 1 and the upper edge of the downlink channel in Band 3 is ≥ 60 MHz. | | | | | | | | |

Table 5.x.3-5: Reference sensitivity for carrier aggregation QPSK PREFSENS, CA (exceptions due to harmonic issues in the combinations of intra-band and inter-band CA)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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\_1A-3A-7A-8A-40A4  CA\_1A-3A-7A-8A-40C4 | 3 |  |  | N/A | N/A | N/A | N/A | FDD |
| CA\_1A-3A-7A-8A-40A 4,5,6  CA\_1A-3A-7A-8A-40C 4,5,6 | 733 |  |  | -88 | -87.4 | -87 | -86.7 | FDD |
| NOTE 4: No requirements apply when there is at least one individual RE within the uplink transmission bandwidth of the low band for which the 2nd transmitter harmonic is within the downlink transmission bandwidth of the high band. The reference sensitivity for all active downlink component carriers is only verified when this is not the case (the requirements specified in clause 7.3.1 apply unless otherwise specified).  NOTE 5: These requirements apply when there is at least one individual RE within the uplink transmission bandwidth of a low band for which the 3rd transmitter harmonic is within the downlink transmission bandwidth of a high band.  NOTE 6: 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.x.3-6: Uplink configuration for the low band (exceptions due to harmonic issues in the combinations of intra-band and inter-band CA)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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\_1A-3A-7A-8A-40A  CA\_1A-3A-7A-8A-40C | 8 |  |  | 8 | 16 | 25 | 25 | FDD |

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