3GPP TSG-RAN WG4 Meeting # 97-e R4-2015400

Electronic Meeting, 2nd – 13th November, 2020

**Source:** Huawei, HiSilicon

**Title:** Updated TP for TR 36.717-04-01 CA\_1A-3C-20A-38A with UL CA\_3C

**Agenda item:** 14.3.2

**Document for:** Approval

# Background

This contribution provides text proposal on the LTE CA configuration CA\_1A-3C-20A-38A 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---

## 5.3 CA\_1-3-20-38

### 5.3.1 Channel bandwidths per operating band for CA

Table 5.3.1-1: Supported channel bandwidths per CA configuration for 4DL inter-band CA

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **E-UTRA CA Configuration** | **UL CA configurations** | **E-UTRA Bands** | **1.4** | **3** | **5** | **10** | **15** | **20** | **Maximum aggregated bandwidth** | **Bandwidth combination set** |
| **MHz** | **MHz** | **MHz** | **MHz** | **MHz** | **MHz** | **[MHz]** |
| CA\_1A-3A-20A-38A | - | 1 |  |  | Yes | Yes | Yes | Yes | 80 | 0 |
| 3 | Yes | Yes | Yes | Yes | Yes | Yes |
| 20 |  |  | Yes | Yes | Yes | Yes |
| 38 |  |  | Yes | Yes | Yes | Yes |
| CA\_1A-3C-20A-38A | CA\_3C | 1 |  |  | Yes | Yes | Yes | Yes | 100 | 0 |
| 3 | See CA\_3C Bandwidth combination set 0 in Table 5.6A.1-1 |
| 20 |  |  | Yes | Yes | Yes | Yes |
| 38 |  |  | Yes | Yes | Yes | Yes |

### 5.3.2 ∆TIB and ∆RIB values

For CA\_1A-3A-20A-38A, the ΔTIB,c and ΔRIB,c values are shown in table 5.3.2-1 and table 5.3.2-2, respectively.

Table 5.3.2-1: ΔTIB,c for 4DL aggregation

| **Inter-band CA Configuration** | **E-UTRA Band** | **ΔTIB,c [dB]** |
| --- | --- | --- |
| **CA\_1A-3A-20A-38A** | **1** | **0.3** |
| **3** | **0.3** |
| **20** | **0.3** |
| **38** | **0.3** |
|  |

Table 5.3.2-2: ΔRIB,c for 4DL aggregation

| **Inter-band CA Configuration** | **E-UTRA Band** | **ΔRIB,c [dB]** |
| --- | --- | --- |
| **CA\_1A-3A-20A-38A** | **1** | **0** |
| **3** | **0** |
| **20** | **0** |
| **38** | **0** |
|  |

### 5.3.3 REFSENS requirements

REFSENS requirements are defined in table 5.3.3-1 for inclusion in TS36.101 table 7.3.1A-0a.

Table 5.3.3-1: 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\_1A-3A-20A-38A8CA\_1A-3C-20A-38A8 | 38 |  |  | N/A | N/A | N/A | N/A | TDD |
| NOTE 8: No requirements apply when there is at least one individual RE within the uplink transmission bandwidth of the low band for which the 3rd transmitter harmonic is within the downlink transmission bandwidth of the high band. The reference sensitivity is only verified when this is not the case (the requirements specified in clause 7.3.1 apply). |

Table 5.3.3-1a: 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-20A-38ACA\_1A-3C-20A-38A | 20 |  |  | 8 | 16 | 25 | 25 | FDD |

REFSENS requirements are defined in table 5.3.3-2 for inclusion in TS36.101 table 7.3.1A-0bD1.

Table 5.3.3-2: 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-20A-38ACA\_1A-3C-20A-38A | 34,9 |  |  | -93.8 | -91.3 | -89.8 | -88.8 | FDD |
| 35 |  |  | -96.8 | -93.8 | -92 | -90.8 |
| 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 9: Applicable for the operations with 2 or 4 antenna ports supported in the band with carrier aggregation configured. |

Table 5.3.3-2a: 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-20A-38ACA\_1A-3C-20A-38A | 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 MHzNOTE 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. |

REFSENS requirements are defined in table 5.3.3-3 for inclusion in TS36.101 table 7.3.1A-0bE.

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Table 5.3.3-3: Void

Table 5.x.3-4: 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-20A-38A XCA\_1A-3C-20A-38A X | 319 |  |  | -94 | -91.5 | -90 | -89 | FDD | 1 |
| 38 |  |  | -97.1 | -94.4 | -92.8 | -91.7 | TDD |
| 38 |  |  | -97.1 | -94.4 | -92.8 | -91.7 | TDD | 3 |
| 119 |  |  | -98.1 | -95.1 | -93.3 | -92.1 | FDD | 38 |
| 319 |  |  | -95.1 | -92.1 | -90.3 | -89.1 |
| CA\_1A-3A-20A-38AY CA\_1A-3C-20A-38AY | 3 |  |  | -97 | -94 | -92.2 | -91 | FDD | 1 |
| 38 |  |  | -97.1 | -94.4 | -92.8 | -91.7 | TDD |
| 38 |  |  | -97.1 | -94.4 | -92.8 | -91.7 | TDD | 3 |
| 119 |  |  | -98.1 | -95.1 | -93.3 | -92.1 | FDD | 38 |
| 319 |  |  | -95.1 | -92.1 | -90.3 | -89.1 |
| NOTE X: 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 Band 3 and Band 38, the requirement applies regardless of channel bandwidth in Band 1.NOTE Y: 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 Band 3 and Band 38, 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.3-5: 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-20A-38ACA\_1A-3C-20A-38A | 11,3 |  |  | 25 | 25 | 25 | 25 | FDD |
| 11,4 |  |  | 25 | 45 | 45 | 45 | FDD |
| 3 |  |  | 25 | 50 | 501 | 501 | FDD |
| 38 |  |  | 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 2: the UL configuration applies regardless of the channel bandwidth of the low band unless the UL resource blocks exceed that specified in Table 7.3.1-2 for the uplink bandwidth in which case the allocation according to Table 7.3.1-2 applies.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. |

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