**3GPP TSG-RAN WG4 Meeting #111 R4-2408459**

**Fukuoka, Japan, 20th May – 24th May 2024**

**Source:** Ericsson, Telstra, Skyworks, Murata, Qualcomm

**Title:** TP for 37.718-11-11 to include UL CA\_n3B

**Agenda item:** 6.9.2

**Document for:** Approval

# 1. Introduction

A text proposal for TR 37.718-11-11 to add to include UL CA\_n3B based on the agreement as captured in R4-2406681, “WF on MSD test point selection for intra-band uplink CA” at the RAN4 110bis meeting.

# 2. Text Proposal

---Start of changes---

## 5.x CA\_2DL\_n3B\_2UL\_n3B

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

Table 5.x.1-1: Intra-band contiguous CA operating bands in FR1

|  |  |
| --- | --- |
| NR CA Band | NR Band  (Table 5.2-1) |
| CA\_n3 | n3 |

Table 5.x.1-2: NR CA configurations and bandwidth combination sets defined for intra-band contiguous CA

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR CA configuration / Bandwidth combination set | | | | | | | | | |
| NR CA configuration | Uplink CA configurations or single uplink carrier5 | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | Maximum aggregated  bandwidth (MHz) | Bandwidth combination set |
| CA\_n3B | - | 5 | 15, 20, 25, 30 | |  |  |  | 60 | 0 |
|  |  | 10 | 10, 15, 20, 25, 30 | |  |  |  |  |  |
|  |  | 15, 20, 25, 30 | 5, 10, 15, 20, 25, 30 | |  |  |  |  |  |
|  | CA\_n3B | 5, 10, 15, 20 | | 5, 10, 15, 20 |  |  |  | 40 | 1 |
|  | - | See n3 channel bandwidths in Table 5.3.5-1 for each carrier2 | | |  |  |  | 75 | 4 and 5 |

### 5.x.2 UE maximum output power for Intra-band contiguous CA

Table 5.x.2.1-1: UE Power Class for intra-band contiguous CA

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR CA Configuration | Class 1 (dBm) | Tolerance (dB) | Class 2 (dBm) | Tolerance (dB) | Class 3 (dBm) | Tolerance (dB) | Class 5 (dBm) | Tolerance (dB) |
| CA\_n3B |  |  |  |  | 23 | +2/-2 |  |  |

### 5.x.3 UE additional maximum output power reduction for CA

No additional A-MPR is needed for this configuration.

### 5.x.4 Spurious emissions for UE co-existence for intra-band contiguous CA

Table 5.x.4-1: Requirements for uplink intra-band contiguous carrier aggregation

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| NR CA combination | Spurious emission | | | | | | |
|  | Protected Band | Frequency range (MHz) | | | Maximum Level (dBm) | MBW (MHz) | NOTE |
| CA\_n3 | E-UTRA Band 1, 5, 7, 8, 11, 18, 19, 20, 21, 26, 27, 28, 31, 32, 33, 34, 38, 39, 40, 41, 43, 44, 45, 50, 51, 65, 67, 68, 69, 72, 73,74, 75, 76, 87, 88  NR Band n79, n100, n101, n105 | FDL\_low | - | FDL\_high | -50 | 1 |  |
|  | E-UTRA Band 3 | FDL\_low | - | FDL\_high | -50 | 1 | 8 |
|  | E-UTRA Band 22, 42, 52  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 4 |
|  | Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 | 5 |
| NOTE 4: As exceptions, measurements with a level up to the applicable requirements defined in Table 6.5.3.1-2 are permitted for each assigned NR carrier used in the measurement due to 2nd, 3rd, 4th or 5th harmonic spurious emissions. Due to spreading of the harmonic emission the exception is also allowed for the first 1 MHz frequency range immediately outside the harmonic emission on both sides of the harmonic emission. This results in an overall exception interval centred at the harmonic emission of (2 MHz + N x LCRB x RBsize kHz), where N is 2, 3, 4, 5 for the 2nd, 3rd, 4th or 5th harmonic respectively. The exception is allowed if the measurement bandwidth (MBW) totally or partially overlaps the overall exception interval.  NOTE 5: Applicable when co-existence with PHS system operating in 1884.5 - 1915.7 MHz.  NOTE 8: These requirements also apply for the frequency ranges that are less than FOOB (MHz) in Table 6.5.3.1-1 from the edge of the aggregated uplink channel bandwidth. | | | | | | | |

### 5.x.5 Reference sensitivity power level for Intra-band contiguous CA

The MSD value used is based on an agreement at RAN4 #110-bis inputs based on the inputs from Qualcomm, Murata and Skyworks.

Table 5.x.5-1: Intra-band contiguous CA uplink configuration for reference sensitivity.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CA configuration** | **SCS**  **(PCC/SCC)**  **(kHz)** | **Aggregated channel bandwidth (PCC+SCC)** | **UL PCC allocation**  **(LCRB)** | **UL SCC allocation**  **(LCRB)** | **PCC ΔRIBC (dB)** | **SCC ΔRIBC (dB)** | **Duplex mode** |
| CA\_n3B5 | 15/15 | 20MHz + 20MHz | 25 (RBSTART = 0) | 25 (RBSTART = 81) | 25.1 | 12.4 | FDD |
| NOTE 1: All combinations of channel bandwidths defined in Table 5.5A.1-1.  NOTE 2: The carrier centre frequency of SCC in the UL operating band is configured closer to the DL operating band.  NOTE 3: The transmitted power over both PCC and SCC shall be set to PUMAX as defined in subclause 6.2A.4.  NOTE 4: The PCC allocation is same as Transmission bandwidth configuration NRB as defined in Table 5.3.2-1.  NOTE 5: Applicable only to BCS 1 | | | | | | | |

### 5.x.6 In-band blocking

This update adds intra-band contiguous CA for the uplink, so no additional impact on receiver requirements.

### 5.x.7 Out-of-band blocking

This update adds intra-band contiguous CA for the uplink, so no additional impact on receiver requirements.

### 5.x.8 Narrow band blocking

This update adds intra-band contiguous CA for the uplink, so no additional impact on receiver requirements.

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