**3GPP TSG-RAN WG4 Meeting #111 R4-2410557**

**Fukuoka, Japan, May 20-24, 2024 Revision of R4-2407712**

**Source:** T-Mobile USA

**Title:** TP for TR38.850: FDD PC2 for n71 with DL CA\_n71B

**Agenda item:** 6.18.2

**Document for:** Approval

1. **Introduction**

This contribution is a text proposal to introduce PC2 n71 for DL CA\_n71B.

There is no MSD for CA\_n71B in 38.101-1 because the max UL was 20 MHz so the Tx impairments don’t hit the SCC DL. However, since 25, 30 and 35 MHz channel bandwidths were added for n71, and BCS4 and 5 would allow for 25 and 30 MHz PCells, it is necessary to consider 25 and 30 MHz UL n71 for DL CA\_n71B.

This contribution is a placeholder for the MSD to (hopefully) be agreed at RAN4#111.

The following MSD has been proposed for PC3 based on simulations and measurements, and we propose using the average

**Table 7.3A.2.1-2: Power class 3 intra-band contiguous CA reference sensitivity with one uplink carrier.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CA configuration** | **SCS**  **(PCC/SCC)**  **(kHz)** | **Aggregated channel bandwidth (PCC+SCC)** | **UL PCC allocation**  **(LCRB)** | **SCC**  **ΔRIBC (dB)** | **Duplex mode** |
| CA\_n71B1 | 15/15 | 30MHz + 5MHz | 20 (RBSTART = 0) | 0.7 SW  4.5 QC  4.9 Murata  3.8 Avg | FDD |
| NOTE 1: Applicable only to BCS 4 and 5 and for UEs supporting the optional symmetrical UL/DL channel bandwidths. | | | | | |

The following MSD has been proposed for single Tx PC2 based on simulations and measurements, and we propose using the average

**Table 7.3A.2.1-3: Power class 2 intra-band contiguous CA reference sensitivity with one uplink carrier.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CA configuration** | **SCS**  **(kHz)** | **Aggregated channel bandwidth (PCC+SCC)** | **UL PCC allocation** | **SCC**  **ΔRIBNC1 (dB)** | **SCC**  **ΔRIBNC2 (dB)** | **Duplex mode** |
| CA\_n71B | 15/15 | 30 MHz + 5 MHz | 20 (RBstart = 0) | 1.13  SW  6.63  QC  7.03  Murata  5.63  Avg. | 1.63  SW  9.73  QC  8.43  Murata  7.73  Avg. | FDD |
| NOTE 1: Applicable to UE supporting PC2 with single Tx.  NOTE 2: Applicable to UE supporting PC2 with dual Tx.  NOTE 3: Applicable only to BCS 4 and 5 and for UEs supporting the optional symmetrical UL/DL channel bandwidths. | | | | | | |

1. **Reference**

[1]

1. **Text Proposal**

<Start of text proposal>

## 5.x CA\_ n71B

### 5.x.1 UE maximum output power

Table 5.5A.1-1: 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\_n71B | n713 | 5 | 20 |  |  |  | 25 | 0 |
|  |  | 10 | 15 |  |  |  |  |  |
|  |  | 10 | 20 |  |  |  | 35 | 1 |
|  |  | 15 | 15, 20 |  |  |  |  |  |
|  |  | 5, 10, 15 | 15, 20 |  |  |  | 35 | 2 |
|  |  | See n71 channel bandwidths in Table 5.3.5-1 for each carrier2 | |  |  |  | 35 | 4 and 5 |

### 5.x.2 Reference sensitivity requirements

#### 5.x.2.0 General

For PC3, CA\_n71B does not have self-interference for UL n71. This section will examine the existing PC3 MSD and propose MSD for PC2 FDD.

#### 5.x.2.1 Reference sensitivity requirements with PC2 on n71 without TxD

For PC3 CA\_n71B, there is currently no MSD defined. However, there is a proposal for MSD for MSD for PCC channel bandwidths >20 MHz. This is the proposed configuration and MSD for UL n71 with PC3.

**Table 7.3A.2.1-2: Power class 3 intra-band contiguous CA reference sensitivity with one uplink carrier.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CA configuration** | **SCS**  **(PCC/SCC)**  **(kHz)** | **Aggregated channel bandwidth (PCC+SCC)** | **UL PCC allocation**  **(LCRB)** | **SCC**  **ΔRIBC (dB)** | **Duplex mode** |
| CA\_n71B1 | 15/15 | 30MHz + 5MHz | 20 (RBSTART = 0) | 3.8 | FDD |
| NOTE 1: Applicable only to BCS 4 and 5 and for UEs supporting the optional symmetrical UL/DL channel bandwidths. | | | | | |

Based on simulation and measurements, the following is proposed as a the PC2 single Tx MSD which would require a new table in 38.101-1. It is based on the linear average of values proposed by Skyworks Solutions, Qualcomm and Murata.

**Table 7.3A.2.1-3: Power class 2 intra-band contiguous CA reference sensitivity with one uplink carrier.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CA configuration** | **SCS**  **(kHz)** | **Aggregated channel bandwidth (PCC+SCC)** | **UL PCC allocation** | **SCC**  **ΔRIBNC1 (dB)** | **SCC**  **ΔRIBNC2 (dB)** | **Duplex mode** |
| CA\_n71B | 15/15 | 30 MHz + 5 MHz | 20 (RBstart = 0) | 5.63 |  | FDD |
| NOTE 1: Applicable to UE supporting PC2 with single Tx.  NOTE 2: Applicable to UE supporting PC2 with dual Tx.  NOTE 3: Applicable only to BCS 4 and 5 and for UEs supporting the optional symmetrical UL/DL channel bandwidths. | | | | | | |

#### 5.x.2.2 Reference sensitivity requirements with PC2 on n71 with TxD

Based on simulation and measurements, the following is proposed as a the PC2 dual Tx MSD which would require a new table in 38.101-1. It is based on the linear average of values proposed by Skyworks Solutions, Qualcomm and Murata.

**Table 7.3A.2.1-3: Power class 2 intra-band contiguous CA reference sensitivity with one uplink carrier.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CA configuration** | **SCS**  **(kHz)** | **Aggregated channel bandwidth (PCC+SCC)** | **UL PCC allocation** | **SCC**  **ΔRIBNC1 (dB)** | **SCC**  **ΔRIBNC2 (dB)** | **Duplex mode** |
| CA\_n71B | 15/15 | 30 MHz + 5 MHz | 20 (RBstart = 0) |  | 7.7 **3** | FDD |
| NOTE 1: Applicable to UE supporting PC2 with single Tx.  NOTE 2: Applicable to UE supporting PC2 with dual Tx.  NOTE 3: Applicable only to BCS 4 and 5 and for UEs supporting the optional symmetrical UL/DL channel bandwidths. | | | | | | |