**3GPP TSG-RAN WG4 Meeting #110 R4-24xxxxx**

**Athens, Greece, February 26 – March 1, 2024** Was R4-2402468

**Source:** T-Mobile USA

**Title:** TP for TR38.850: FDD PC2 for n25 with DL CA\_n25A-n77A

**Agenda item:** 7.19.2

**Document for:** Approval

1. **Introduction**

This contribution is a text proposal to introduce PC2 n25 for DL CA\_n25A-n77A.

In other PC2 and PC1.5 MSD analysis, T-Mobile USA has been using calculations that increase the Interference by 3dB, but not the noise. This contribution proposes new MSD values based on this approach for single Tx.

This revision corrects the PC2 harmonic MSD by increasing the interference power by the harmonic order times the aggressor power increase for the n25 harmonic into n77.

1. **Reference**

[1]

1. **Text Proposal**

<Start of text proposal>

## 5.x CA\_ n25A-n77A

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

Table 5.5A.3.1-1: NR CA configurations and bandwidth combinations sets defined for inter-band CA (two bands)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NR CA configuration | Uplink CA configuration or single uplink carrier10 | NR Band | Channel bandwidth (MHz) (NOTE 3) | Bandwidth combination set |
| CA\_n25A-n77A | n258n778,9CA\_n25A-n77A8,14 | n25 | 5, 10, 15, 20 | 0 |
|  |  | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  |
|  |  | n25 | 5, 10, 15, 20, 25, 30, 40 | 1 |
|  |  | n77 | 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100 |  |
|  |  | n25 | n25 channel bandwidths in Table 5.3.5-1 | 4 and 5 |
|  |  | n77 | n77 channel bandwidths in Table 5.3.5-1 |  |

NOTE 8: Minimum requirements for Power Class 2 are applicable for this uplink combination with 1Tx antenna connector in each band or single uplink carrier with up to 2Tx antenna connectors in this downlink/uplink combination

NOTE 10: Only single uplink carriers with power class other than PC3 are listed.

### 5.x.2 Reference sensitivity requirements

#### 5.x.2.0 General

For PC2, CA\_n25-n77 has harmonic MSD for UL n25. This section will examine the existing PC3 MSD and propose MSD for PC2 FDD.

#### 5.x.2.1 Reference sensitivity requirements with PC2 on n25 without TxD

For CA\_n25-n77, this is the configuration and MSD for UL n25 with PC3

Table 7.3A.4-1: Reference sensitivity exceptions and uplink/downlink configurations due to UL harmonic from a PC3 aggressor NR UL band for NR DL CA FR1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| UL band | DL band | UL BW | SCS of UL band | UL RB Allocation | DL BW | MSD | UL/DL fc condition | UL/DL harmonic order |
| (MHz) | (kHz) | LCRB | (MHz) | (dB) |
| n25 | n77 | 5 | 15 | 25 (RBstart=0) | 10 | 23.9 | NOTE 2 | UL2/DL1direct-hit |
| n25 | n77 | 10 | 15 | 50 (RBstart=0) | 100 | 13.8 | NOTE 2 | UL2/DL1direct-hit |
| n25 | n77 | 5 | 15 | 25 (RBstart=0) | 10 | 1.1 | NOTE 6 | UL2/DL1near-miss |

For PC3 MSD we have N+IPC3. For PC2 MSD we have N+IPC2. So, for PC2 compared to PC3, I increases by harmonic order \* 3 dB or 6 dB. For our other PC2 and PC1.5 MSD analysis we have been using the following approach:

MSD due to interference power *I* is given by:

where *N* is the noise spectral density and BW is the bandwidth of the carrier. If the initial MSD is known,

then we have:

 

If *I* is increased by *X* dB, then *MSD(X)* is given by







Using that approach, the following is proposed as a the PC2 MSD:

Table 7.3A.4-2a: Reference sensitivity exceptions and uplink/downlink configurations due to UL harmonic from a PC2 aggressor NR UL band for NR DL CA FR1 for UE not supporting Tx Diversity

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| UL band | DL band | UL BW | SCS of UL band | UL RB Allocation | DL BW | MSD | UL/DL fc condition | UL/DL harmonic order |
| (MHz) | (kHz) | LCRB | (MHz) | (dB) |
| n25 | n77 | 5 | 15 | 25 (RBstart=0) | 10 | 29.9 | NOTE 2 | UL2/DL1direct-hit |
| n25 | n77 | 10 | 15 | 50 (RBstart=0) | 100 | 19.7 | NOTE 2 | UL2/DL1direct-hit |
| n25 | n77 | 5 | 15 | 25 (RBstart=0) | 10 | 3.3 | NOTE 6 | UL2/DL1near-miss |

#### 5.x.2.2 Reference sensitivity requirements with PC2 on n25 with TxD

[TBD]