**3GPP TSG-RAN WG4 Meeting #110 R4-2402267**

**Athens, Greece, 26 Feb – 01 Mar, 2024**

**Source:** Samsung, KDDI

**Title:** TP for TR 37.718-11-21: DC\_28A\_n41A-n77A

**Agenda item: 7.6.2**

**Document for:** Approval

1. Introduction

This contribution is a text proposal for TR 37.718-11-21 to include DC\_28A\_n41A-n77A according to the request in [1].

The corresponding 2-band PC3 combo has already been specified.

2. Reference

[1] RP-233488 Revised WID on Rel-18 Dual Connectivity (DC) of x bands (x=1,2,3,4) LTE inter-band CA (xDL/1UL) and 2 bands NR inter-band CA (2DL/1UL)

3. Text Proposal

**<Start of Text Proposal>**

6.x DC\_28\_n41-n77

6.x.1 Operating bands for DC

**Table 6.x.1-1: LTE 1 band DL/1UL + NR 2 bands DL/1UL DC operating bands**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **E-UTRA and NR DC Band** | **E-UTRA and NR Band** | **Uplink (UL) operating band** | | | **Downlink (DL) operating band** | | | **Duplex Mode** |
| **BS receive / UE transmit** | | | **BS transmit / UE receive** | | |
| **FUL\_low – FUL\_high** | | | **FDL\_low – FDL\_high** | | |
| DC\_28\_n41-n77 | 28 | 703 MHz | – | 748 MHz | 758 MHz | – | 803 MHz | FDD |
| n41 | 2496 MHz | – | 2690 MHz | 2496 MHz | – | 2690 MHz | TDD |
| n77 | 3300 MHz | – | 4200 MHz | 3300 MHz | – | 4200 MHz | TDD |

**Table 6.x.1-2: Inter-band EN-DC configurations within FR1 (three bands)**

| **EN-DC**  **configuration** | **Uplink EN-DC**  **configuration** |
| --- | --- |
| DC\_28A\_n41A-n77A | DC\_28A\_n41A  DC\_28A\_n77A |

6.x.2 Channel bandwidths per operating band for DC

**Table 6.x.2-1: Supported bandwidths per DC band combination of LTE 1DL/1UL + NR 2DL/1UL**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **DC operating / channel bandwidth** | | | | | | | | | | | | | | | | |
| **E-UTRA and NR DC Configuration** | | **E-UTRA and NR Band** | **Subcarrier spacing**  **[kHz]** | **5**  **MHz** | **10**  **MHz** | **15**  **MHz** | **20**  **MHz** | **25 MHz** | **30 MHz** | **40**  **MHz** | **50**  **MHz** | **60**  **MHz** | **70**  **MHz** | **80**  **MHz** | **90 MHz** | **100 MHz** | **Maximum aggregated bandwidth**  **[MHz]** |
| DC\_28A\_n41A-n77A | | 28 | 15 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  | 220 |
| n41 | 15 | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 |  |  |  |  |  |
| 30 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| 60 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| n77 | 15 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 |  |  |  |  |  |
| 30 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| 60 |  | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

6.x.3 Co-existence studies

Based on co-existence studies of DC\_28\_n41 and DC\_28\_n77, own Rx impact of the 3rd band is the followings.

- 2nd, 3rd and 4th order IMD products generated by DC\_28\_n41 uplink may fall into own Rx of band n77.

- 2nd and 3rd order IMD products generated by DC\_28\_n77 uplink may fall into own Rx of band n41.

6.x.4 ∆TIB and ∆RIB values

For DC\_28\_n41-n77, the ΔTIB,c and ΔRIB,c values are reused from DC\_28-41\_n77 and are given in the tables below.

**Table 6.x.4-1: ΔTIB,c**

| **Inter-band EN-DC configuration** | **ΔTIB,c for E-UTRA band / NR band (dB)6** | | |
| --- | --- | --- | --- |
| **Component band in order of bands in configuration7** | | |
| DC\_28\_n41-n77 | 0.5 | 0.3 | 0.8 |
| NOTE 6: “-” denotes ΔTIB,c = 0.  NOTE 7: The component band order in the configuration should be listed by the order of E-UTRA band and NR band respectively, such as for DC\_66\_(n)12 the band order from left to right is 12, 66 and n12. | | | |

**Table 6.x.4-2: ΔRIB**

| **nter-band EN-DC configuration** | **ΔRIB,c for E-UTRA band / NR band (dB)7** | | |
| --- | --- | --- | --- |
| **Component band in order of bands in configuration8** | | |
| DC\_28\_n41-n77 | 0.2 | - | 0.5 |
| NOTE 7: “-” denotes ΔRIB,c = 0.  NOTE 8: The component band order in the configuration should be listed by the order of E-UTRA band and NR band respectively, such as for DC\_5\_(n)12 the band order from left to right is 5, 12 and n12. | | | |

6.x.5 MSD requirements

Table 6.x.5-1 lists the MSD required for the dual connectivity configuration for the cases that IMD interference fall into the own 3rd Rx frequency band. The MSD values for DC\_28A-41A\_n77A, CA\_n28A-n41A-n77A and CA\_n28A-n40A-n77A are reused.

**Table 6.x.5-1: MSD for the DC configuration**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **NR or E-UTRA Band / Channel bandwidth / NRB / MSD** | | | | | | | |
| **EN-DC Configuration** | **EUTRA / NR band** | **UL Fc  (MHz)** | **UL/DL BW  (MHz)** | **UL**  **LCRB** | **DL Fc (MHz)** | **MSD  (dB)** | **IMD order** |
| DC\_28A\_n41A-n77A | 28 | 738 | 5 | 25 | 793 | N/A | N/A |
|  | n77 | 3380 | 10 | 50 | 3380 | N/A | N/A |
|  | n41 | N/A | 5 | N/A | 2642 | 29.5 | IMD21 |
|  | n41 | 2580 | 5 | 25 | 2580 | N/A | N/A |
|  | 28 | 743 | 5 | 25 | 798 | N/A | N/A |
|  | n77 | N/A | 10 | N/A | 3323 | 28.2 | IMD29 |
|  | n41 | 2580 | 5 | 25 | 2580 | N/A | N/A |
|  | 28 | 743 | 5 | 25 | 798 | N/A | N/A |
|  | n77 | N/A | 10 | N/A | 3323 | 16.0 | IMD39 |
| NOTE 1: This band is subject to IMD3 also which MSD is not specified.  NOTE 9: This band is subject to IMD4 also which MSD is not specified. | | | | | | | |

**<End of Text Proposal>**