**3GPP T****SG-RAN WG4 Meeting#98 R4-2100158**

**E-meeting, 21st Jan – 5th** **Feb, 2021**

**Title: TP to TR 36.717-03-02: Addition of CA\_n25-n41-n71**

**Source: Nokia, T-Mobile USA**

**Agenda item: 9.11.2**

**Document for: Approval**

# 1 Introduction

This is a TP into TR 36.717-03-02 to introduce CA\_n25A-n41A-n71A, CA\_n25A-n41(2A)-n71A and CA\_n25A-n41C-n71A.

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5.X.1 CA\_n25-n41-n71

5.X.1.1 Operating bands for CA

**Table 5.X.1.1-1: CA band combination of band n25+n41+n71**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NR Band** | **NR Band** | **Uplink (UL) band** | | | **Downlink (DL) band** | | | **Duplex**  **mode** |
| **BS receive / UE transmit** | | | **BS transmit / UE receive** | | |
| **FUL\_low – FUL\_high** | | | **FDL\_low – FDL\_high** | | |
| CA\_n25-n41-n71 | n25 | 1850 MHz | – | 1915 MHz | 1930 MHz | – | 1995 MHz | FDD |
| n41 | 2496 MHz | – | 2690 MHz | 2496 MHz | – | 2690 MHz | TDD |
| n71 | 663 MHz | – | 698 MHz | 617 MHz | – | 652 MHz | FDD |

5.X.1.2 Channel bandwidths per operating band for CA

**Table 5.X.1.2-1: Supported channel bandwidths per CA configuration for band n25+n41+n71**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NR CA configuration** | **Uplink CA  configuration** | **NR Band** | **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** | **Bandwidth combination set** |
| CA\_n25A-n41A-n71A | CA\_n25A-n41A  CA\_n41A-n71A  CA\_n25A-n71A | n25 | 5 | 10 | 15 | 20 | 25 | 30 | 40 |  |  |  |  |  |  | 1 |
| n41 |  | 10 | 15 | 20 |  | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| n71 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |
| CA\_n25A-n41(2A)-n71A | CA\_n25A-n41A  CA\_n41A-n71A  CA\_n25A-n71A | n25 | 5 | 10 | 15 | 20 | 25 | 30 | 40 |  |  |  |  |  |  | 1 |
| n41 | See CA\_n41(2A) bandwidth combination set 1 in Table 5.5A.2-1 | | | | | | | | | | | | |
| n71 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |
| CA\_n25A-n41C-n71A | CA\_n25A-n41A  CA\_n41A-n71A  CA\_n25A-n71A | n25 | 5 | 10 | 15 | 20 | 25 | 30 | 40 |  |  |  |  |  |  | 1 |
| n41 | See CA\_n41C bandwidth combination set 1 in Table 5.5A.1-1 | | | | | | | | | | | | |
| n71 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |

#### 5.X.1.3 Co-existence studies

For 3DL/2UL NR CA, only the IMD issues due to dual uplink operation of two bands falling into the DL of the third band shall be verified.

The co-existence studies for dual uplink operation of two bands, i.e. CA\_n25A-n41A, CA\_n25A-n71A and CA\_n41A-n71A have been captured in TR38.716-02-00, where:

* IMD2 and IMD5 products produced by CA\_n25A-n41A impact the reference sensitivity of NR band n71.
* IMD2 and IMD4 products produced by CA\_n25A-n71A impact the reference sensitivity of NR band n41.
* IMD2 products produced by CA\_n41A-n71A impact the reference sensitivity of NR band n25.

#### 5.X.1.4 REFSENS requirements

According to clause 5.X.1.3, MSD specification is necessary. MSD values are re-used from similar band combinations. IMD2 is taken from DC\_1A\_n28A-n41A, DC\_1A-7A\_n28A, DC\_2A-71A\_n38A and IMD5 from DC\_1A-28A\_n7A. It is proposed not to specify MSD for IMD4 as with real channel allocations only part of the IMD hits victim band.

**Table 5.X.1.4-1: MSD**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Band / Channel bandwidth / NRB / Duplex mode | | | | | | | | Source of IMD |
| NR CA  Configuration | NR band | UL Fc  (MHz) | UL/DL BW  (MHz) | UL  CLRB | DL Fc (MHz) | MSD  (dB) | Duplex mode |
| CA\_n25A-n41A-n71A  CA\_n25A-n41(2A)-n71A  CA\_n25A-n41C-n71A | n25 | 1880 | 5 | 25 | 1960 | N/A | FDD | N/A |
| n41 | 2525 | 10 | 50 | 2525 | N/A | TDD | N/A |
| n71 | 691 | 5 | 25 | 645 | 29.3 | FDD | IMD2 |
| n25 | 1880 | 5 | 25 | 1960 | N/A | FDD | N/A |
| n41 | 2571 | 10 | 50 | 2571 | 30 | TDD | IMD2 |
| n71 | 691 | 5 | 25 | 645 | N/A | FDD | N/A |
| n25 | 1860 | 5 | 25 | 1940 | 26 | FDD | IMD2 |
| n41 | 2620 | 10 | 50 | 2620 | N/A | TDD | N/A |
| n71 | 680 | 5 | 25 | 634 | N/A | FDD | N/A |
| n25 | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| n41 | N/A | N/A | N/A | N/A | N/A | N/A | IMD4 |
| n71 | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| n25 | 1885 | 5 | 25 | 1960 | N/A | FDD | N/A |
| n41 | 2510 | 10 | 50 | 2510 | N/A | TDD | N/A |
| n71 | 681 | 5 | 25 | 635 | 4.5 | FDD | IMD5 |

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