3GPP TSG-RAN WG4 Meeting # 97-e R4-2015543

Electronic Meeting, 2nd – 13th November, 2020

**Source:** Huawei, HiSilicon

**Title:** TP for TR 37.717-00-00 for CA\_n41A\_SUL\_n79A-n80A

**Agenda Item:** 10.8.2

**Document for:** Approval

# 1 Introduction

The WID for SUL band combinations was updated in RAN #89 meeting. This contribution provides a TP for CA\_n41A\_SUL\_n79A-n80A for TR 37.717-00-00.

# References

[1] RP-201729, “New WID on Rel-17 Band combinations for SA NR Supplementary uplink (SUL), NSA NR SUL, NSA NR SUL with UL sharing from the UE perspective (ULSUP)”, RAN #89e

# Text Proposal

**<TP for TR 37.717-00-00>**

5.x CA\_n41A\_SUL\_n79A-n80A

5.x.1 Operating bands

**Table 5.x.1-1: SUL band combination**

|  |  |
| --- | --- |
| NR Band combination for SUL | NR Band  (Table 5.2-1) |
| CA\_n41\_SUL\_n79-n80 | n41, n79, n80 |
| NOTE 1: If a UE is configured with both NR UL and NR SUL carriers in a cell, the switching time between NR UL carrier and NR SUL carrier is 0 us.  NOTE 2: For UE supporting SUL band combination simultaneous Rx/Tx capability is mandatory. | |

5.x.2 Channel bandwidths per operating band

**Table 5.x.2-1: Supported bandwidths per SUL band combination**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SUL band combination with CA** | **UL configuration** | **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** | **Bandwidth combination set** |
| CA\_n41A\_SUL\_n79A-n80A | SUL\_n79A-n80A | n41 | 15 |  | Yes | Yes | Yes |  | Yes | Yes | Yes |  |  |  |  |  | 0 |
| 30 |  | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| 60 |  | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes |
| n79 | 15 |  |  |  |  |  |  | Yes | Yes |  |  |  |  |  |
| 30 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| 60 |  |  |  |  |  |  | Yes | Yes | Yes |  | Yes |  | Yes |
| n80 | 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 30 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |
| 60 |  | Yes | Yes | Yes | Yes | Yes | Yes |  |  |  |  |  |  |

5.x.3 Maximum output power

There is only single UL in uplink so this requirement is not applicable.

5.x.4 Spurious emission band UE co-existence

There is only single UL in uplink so this requirement specified in clause 6.5.3.2 from 38.101-1 is applicable.

Table 5.x.4-1 summarizes frequency ranges where harmonics and/or harmonics mixing occur for CA\_n41\_SUL\_n79-n80.

**Table 5.x.4-1: Impact of UL/DL Harmonic/Harmonic mixing**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **2nd Harmonic** | | **3rd Harmonic** | | **4th Harmonic** | |
| **Band** | | **Low Band Edge** | High Band Edge | Low Band Edge | High Band Edge | Low Band Edge | High Band Edge | Low Band Edge | High Band Edge |
| n41 | DL frequency range | 2490 | 2690 | 4992 | 5380 | 7488 | 8070 | 9984 | 10760 |
| n79 | UL/DL frequency range | 4400 | 5000 | 8800 | 10000 | 13200 | 15000 | 17600 | 20000 |
| n80 | UL frequency range | 1710 | 1785 | 3420 | 3570 | 5130 | 5355 | 6840 | 7140 |

There is no harmonic/harmonic mixing issue for this combination. The MSD due to cross band isolation between band n80 and n41 has been specified into the 38.101-1

5.x.5 REFSENS requirements

For SUL operation with CA, the reference receive sensitivity (REFSENS) requirement for downlink bands specified in clause 7.3A.2 from TS 38.101-1 shall be met when supplementary uplink configuration for reference sensitivity are specified as below.

Table 5.x.5-1: Supplementary uplink configuration for reference sensitivity

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | NR Band / SCS of SUL band / Channel bandwidth of the DL band / NRB | | | | | | | | | | | | | | |
| DL band | SUL band | SCS of SUL band  (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 |
| n41 | n80 | 15 |  | 160 | 160 | 160 |  | 160 | 160 | 160 | 160 |  | 160 | 160 | 160 |
| n79 | n80 | 15 |  |  |  |  |  |  | 160 | 160 | 160 | 160 | 160 | 160 | 160 |
|  | | | | | | | | | | | | | | | |

5.x.6 ∆TIB and ∆RIB values

For CA\_n41\_SUL\_n79-n80, the ΔTIB,c and ΔRIB,c values are given in the tables below.

**Table 5.x.6-1: ΔTIB,c**

| SUL Band combination | NR Band | ΔTIB,c [dB] |
| --- | --- | --- |
| CA\_n41\_SUL\_n79-n80 | n41 | 0.31 |
| 0.82 |
| n79 | 0.8 |
| n80 | 0.3 |
| NOTE 1: The requirement is applied for UE transmitting on the frequency range of 2515-2690 MHz.  NOTE 2: The requirement is applied for UE transmitting on the frequency range of 2496-2515 MHz. | | |

**Table 5.x.6-2: ΔRIB,c**

| SUL Band combination | NR Band | ΔRIB,c [dB] |
| --- | --- | --- |
| CA\_n41\_SUL\_n79-n80 | n41 | 0.5 |
| n79 | 0.5 |

**<End of TP >**