**3GPP TSG-RAN WG4 Meeting #104-e *Rev R4-2213152***

**Electronic Meeting, 15 - 26 August, 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-1** | **CR** | **1160** | **rev** | **1** | **Current version:** | **17.6.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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| ***Title:*** | CR for 38.101-1 to introduce the missing MSD due to cross band isolation | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon, Skyworks Solutions Inc | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_BCS4-Core | | | | |  | ***Date:*** | | | 2022-07-11 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Referring to WF R4-2210565, some additional test points need to be further re-evaluated for MSD due to cross band isolation.   1. For UL\_n1A\_DL\_n3A with 50MHz UL band n1, 22.5dB MSD can be considered based on the analysis in contribution R4-2119591. But band n1 UL RB allocation is restricted as 128RB, 19.7dB MSD can be considered based on the contribution R4-2214004. 2. For UL\_n1A\_DL\_n40A, even if we configure 20MHz on band n1, the spurious emission has less impacts on DL band n40 with 5MHz.   Option 1: not to specify the second test point currently  Option 2: To re-evaluate the MSD considering Band n1 UL 20MHz and Band n40 DL 80MHz.   1. For UL\_n3A\_DL\_n41A, it seems that current requirements have been specified since Rel-16 and stable enough. 2. For UL\_n3A\_DL\_n74A, which is similar to CA\_n1A-n40A, even if we configure 40MHz on band n3, the spurious emission has less impacts on DL band n74 with 5MHz.   Option 1: not to specify the second test point currently  Option 2: To re-evaluate the MSD considering Band n3 UL 40MHz and Band n74 DL 20MHz.   1. For UL\_n7A\_DL\_n40A, which is similar to CA\_n1A-n40A, even if we configure 50MHz on band n7 with UL 45 RB restriction, the spurious emission has less impacts on DL band n40 with 5MHz.   Option 1: not to specify the second test point currently  Option 2: To re-evaluate the MSD considering Band n7 UL 50MHz and Band n40 DL 100MHz.   1. For UL\_n40A\_DL\_n1A, the 2nd adjacent channel interference of UL band n40 may fall into the DL band n1. 18.1dB MSD is proposed based on the contribution R4-2214004. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 7.3A.6 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 38.521-1 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

## **<<Start of Change>>**

### 7.3A.6 Reference sensitivity exceptions due to cross band isolation for CA

Sensitivity degradation is allowed for a band if it is impacted by UL of another band part which belongs to NR band of the same NR CA configuration due to cross band isolation issues. The reference sensitivity degradation for the victim band due to cross band isolation is specified only for the specific uplink and downlink test points specified in Table 7.3A.6-1 for either PC3 and PC2 NR CA from a PC3 aggressor NR UL band, and for PC2 NR CA, in Table 7.3A.6-1afrom a PC2 aggressor NR UL band, and in Table 7.3A.6-1b from a PC1.5 aggressor NR single band uplink

In Tables 7.3A.6-1, 7.3A.6-1a and 7.3A.6-1b the following terminology is used to define the source of cross-band isolation interference:

* “ACLR1” indicates that the first adjacent channel of the aggressor UL band falls into the Rx channel of victim band.
* “ACLR2” indicates that the second adjacent channel of the aggressor UL band falls into the Rx channel of victim band.
* “>ACLR2” indicates that neither the first, nor the second adjacent channel of the aggressor UL band falls into the Rx channel of victim band.

Table 7.3A.6-1: Reference sensitivity exceptions (MSD) and uplink/downlink configurations due to cross band isolation from a PC3 aggressor NR UL band for NR CA FR1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| UL band | DL band | UL Fc | UL BW | SCS of UL band | UL RB Allocation | DL Fc | DL BW | MSD | Cross-band  Interference  source |
| (MHz) | (MHz) | (kHz) | LCRB | (MHz) | (MHz) | (dB) |
| n1 | n3 | 1922.5 | 5 | 15 | 25 (RBstart=0) | 1877.5 | 5 | 3 | >ACLR2 |
| n1 | n3 | 1945 | 50 | 15 | 128 (RBstart=0) | 1877.5 | 5 | [19.7] | ACLR1 |
| n1 | n38 | 1955 | 50 | 15 | 128 (RBstart=142) | 2572.5 | 5 | 2.9 | >ACLR2 |
| n1 | n38 | 1955 | 50 | 15 | 128 (RBstart=142) | 2590 | 40 | 2.9 | >ACLR2 |
| n1 | n40 | 1977.5 | 5 | 15 | 25 (RBstart=0) | 2302.5 | 5 | 6.6 | >ACLR2 |
| n1 | n41 | 1955 | 50 | 15 | 128 (RBstart=142) | 2501 | 10 | 6.1 | >ACLR2 |
| n1 | n41 | 1970 | 20 | 15 | 100 (RBstart=6) | 2546 | 100 | 0.7 | >ACLR2 |
| n3 | n41 | 1765 | 40 | 15 | 50 (RBstart=166) | 2501 | 10 | 0.7 | >ACLR2 |
| n3 | n41 | 1765 | 40 | 15 | 50 (RBstart=166) | 2546 | 100 | 0.7 | >ACLR2 |
| n3 | n74 | 1712.5 | 5 | 15 | 25 (RBstart=0) | 1515.5 | 5 | 2.6 | >ACLR2 |
| n5 | n28 | 834 | 20 | 15 | 20 (RBstart=0) | 800.5 | 5 | [17.5] | ACLR2 |
| n7 | n3 | 2525 | 50 | 15 | 45 (RBstart=0) | 1877.5 | 5 | 0.6 | >ACLR2 |
| n7 | n40 | 2502.5 | 5 | 15 | 25 (RBstart=0) | 2397.5 | 5 | 3.7 | >ACLR2 |
| n18 | n285 | 822.5 | 15 | 15 | 25 (RBstart=0) | 800.5 | 5 | 31.3 | ACLR1 |
| n34 | n3 | 2012.5 | 5 | 15 | 25 (RBstart=0) | 1877.5 | 5 | 3 | >ACLR2 |
| n38 | n1 | 2580 | 20 | 15 | 100 (RBstart=0) | 2167.5 | 5 | 1.9 | >ACLR2 |
| n38 | n25 | 2585 | 30 | 15 | 160 (RBstart=0) | 1992.5 | 5 | 0.6 | >ACLR2 |
| n38 | n78 | 2610 | 20 | 15 | 100 (RBstart=0) | 3305 | 10 | 8.3 | >ACLR2 |
| n40 | n1 | 2302.5 | 10 | 30 | 24 (RBstart=0) | 2167.5 | 5 | 8.3 | >ACLR2 |
| n40 | n1 | 2340 | 80 | 30 | 216 (RBstart=0) | 2167.5 | 5 | [18.1] | ACLR2 |
| n40 | n7 | 2350 | 100 | 30 | 270 (RBstart=3) | 2622.5 | 5 | [21.9] | >ACLR2 |
| n40 | n7 | 2350 | 100 | 30 | 270 (RBstart=3) | 2645 | 50 | [13.5] | >ACLR2 |
| n41 | n1 | 2521 | 50 | 30 | 128 (RBstart=0) | 2167.5 | 5 | 9.1 | >ACLR2 |
| n41 | n3 | 2526 | 60 | 30 | 160 (RBstart=0) | 1877.5 | 5 | 0.6 | >ACLR2 |
| n41 | n25 | 2511 | 30 | 15 | 160 (RBstart=0) | 1992.5 | 5 | 0.6 | >ACLR2 |
| n41 | n48 | 2680 | 20 | 15 | 100 (RBstart=0) | 3552.5 | 5 | 8.3 | >ACLR2 |
| n411 | n66 | 2521 | 50 | 30 | 128 (RBstart=0) | 2197.5 | 5 | 3.5 | >ACLR2 |
| n41 | n70 | 2511 | 30 | 15 | 160 (RBstart=0) | 2017.5 | 5 | 0.6 | >ACLR2 |
| n41 | n77 | 2680 | 20 | 15 | 100 (RBstart=6) | 3305 | 10 | 8.3 | >ACLR2 |
| n41 | n78 | 2680 | 20 | 15 | 100 (RBstart=6) | 3305 | 10 | 8.3 | >ACLR2 |
| n46 | n48 | 5190 | 80 | 30 | 216 (RBstart=0) | 3697.5 | 5 | 13.3 | >ACLR2 |
| n46 | n48 | 5190 | 80 | 30 | 216 (RBstart=0) | 3650 | 100 | 6.2 | >ACLR2 |
| n46 | n78 | 5190 | 80 | 30 | 216 (RBstart=0) | 3795 | 10 | 10.4 | >ACLR2 |
| n46 | n78 | 5190 | 80 | 30 | 216 (RBstart=0) | 3750 | 100 | 5.1 | >ACLR2 |
| n48 | n411 | 3570 | 40 | 15 | 216 (RBstart=0) | 2685 | 10 | [4.5] | >ACLR2 |
| n48 | n411 | 3570 | 40 | 15 | 216 (RBstart=0) | 2640 | 100 | [4.5] | >ACLR2 |
| n48 | n46 | 3680 | 40 | 15 | 216 (RBstart=0) | 5160 | 20 | 15.7 | >ACLR2 |
| n48 | n96 | 3680 | 40 | 15 | 216 (RBstart=0) | 5935 | 20 | 15.7 | >ACLR2 |
| n71 | n29 | 688 | 20 | 15 | 20 (RBstart=86) | 719.5 | 5 | 17.5 | ACLR2 |
| n77 | n401 | 3350 | 100 | 30 | 270 (RBstart=0) | 2397.5 | 10 | 4.5 | >ACLR2 |
| n77 | n401 | 3350 | 100 | 30 | 270 (RBstart=0) | 2350 | 100 | 4.5 | >ACLR2 |
| n77 | n411 | 3350 | 100 | 30 | 270 (RBstart=0) | 2685 | 10 | 4.5 | >ACLR2 |
| n77 | n411 | 3350 | 100 | 30 | 270 (RBstart=0) | 2640 | 100 | 4.5 | >ACLR2 |
| n78 | n71 | 3350 | 100 | 30 | 270 (RBstart=0) | 2687.5 | 5 | 4.5 | >ACLR2 |
| n78 | n38 | 3350 | 100 | 30 | 270 (RBstart=0) | 2617.5 | 5 | 3.3 | >ACLR2 |
| n78 | n38 | 3350 | 100 | 30 | 270 (RBstart=0) | 2600 | 40 | 3.3 | >ACLR2 |
| n78 | n401 | 3350 | 100 | 30 | 270 (RBstart=0) | 2397.5 | 5 | 4.5 | >ACLR2 |
| n78 | n401 | 3350 | 100 | 30 | 270 (RBstart=0) | 2350 | 100 | 4.5 | >ACLR2 |
| n78 | n411 | 3350 | 100 | 30 | 270 (RBstart=0) | 2685 | 10 | 4.5 | >ACLR2 |
| n78 | n411 | 3350 | 100 | 30 | 270 (RBstart=0) | 2640 | 100 | 4.5 | >ACLR2 |
| n78 | n46 | 3750 | 100 | 30 | 270 (RBstart=3) | 5160 | 20 | 13.5 | >ACLR2 |
| n783 | n79 | 3750 | 100 | 30 | 270 (RBstart=3) | 4420 | 40 | 2 | >ACLR2 |
| n783 | n79 | 3750 | 100 | 30 | 270 (RBstart=3) | 4450 | 100 | 2 | >ACLR2 |
| n79 | n783 | 4450 | 100 | 30 | 270 (RBstart=0) | 3795 | 10 | 2.6 | >ACLR2 |
| n79 | n783 | 4450 | 100 | 30 | 270 (RBstart=0) | 3750 | 100 | 2.6 | >ACLR2 |
| n96 | n48 | 5965 | 80 | 30 | 216 (RBstart=0) | 3697.5 | 5 | 13.3 | >ACLR2 |
| n96 | n48 | 5965 | 80 | 30 | 216 (RBstart=0) | 3650 | 100 | 6.2 | >ACLR2 |
| NOTE 1: Applicable only when harmonic mixing MSD for this combination is not applied.  NOTE 2: Void  NOTE 3: The requirements only apply for UEs supporting inter-band carrier aggregation with simultaneous Rx/Tx capability. Simultaneous Rx/Tx capability does not apply for UEs supporting band n78 with a n77 implementation.  NOTE 4: Void  NOTE 5: The MSD exceptions are applicable to the case that interference of UL band 3rd order IMD product falls into the affected DL channels. | | | | | | | | | |

Table 7.3A.6-1a: Reference sensitivity exceptions (MSD) and uplink/downlink configurations due to cross band isolation from a PC2 aggressor NR UL band for NR CA FR1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **UL band** | **DL band** | **UL Fc** | **UL BW** | **SCS of UL band** | **UL RB Allocation** | **DL Fc** | **DL BW** | **MSD** | **Cross-band**  **Interference**  **source** |
| **(MHz)** | **(MHz)** | **(kHz)** | **LCRB** | **(MHz)** | **(MHz)** | **(dB)** |
| n41 | n3 | 2526 | 60 | 30 | 160 (RBstart=0) | 1877.5 | 5 | 2.3 | >ACLR2 |
| n41 | n25 | 2511 | 30 | 15 | 160 (RBstart=0) | 1992.5 | 5 | 1.6 | >ACLR2 |
| n41 | n66 | 2521 | 50 | 30 | 128 (RBstart=0) | 2197.5 | 5 | 5.4 | >ACLR2 |
| n41 | n77 | 2680 | 20 | 15 | 100 (RBstart=6) | 3305 | 10 | 10.5 | >ACLR2 |
| n41 | n79 | 2640 | 100 | 30 | 270 (RBstart=3) | 4420 | 40 | 3.1 | >ACLR2 |
| n77 | n2 | 3305 | 100 | 30 | 270 (RBstart=0) | 1987.5 | 5 | 1.0 | >ACLR2 |
| n77 | n25 | 3305 | 100 | 30 | 270 (RBstart=0) | 1992.5 | 5 | 1.0 | >ACLR2 |
| n77 | n30 | 3350 | 100 | 30 | 270 (RBstart=0) | 2357.5 | 5 | 1.0 | >ACLR2 |
| n77 | n411 | 3350 | 100 | 30 | 270 (RBstart=0) | 2685 | 10 | 6.5 | >ACLR2 |
| n77 | n411 | 3350 | 100 | 30 | 270 (RBstart=0) | 2640 | 100 | 6.5 | >ACLR2 |
| n77 | n66 | 3350 | 100 | 30 | 270 (RBstart=0) | 2197.5 | 5 | 1.0 | >ACLR2 |
| n78 | n7 | 3350 | 100 | 30 | 270 (RBstart=0) | 2687.5 | 5 | 6.5 | >ACLR2 |
| n79 | n41 | 4450 | 100 | 30 | 270 (RBstart=0) | 2685 | 10 | 3.5 | >ACLR2 |
| NOTE 1: Applicable only when harmonic mixing MSD for this combination is not applied.  NOTE 2: Void. | | | | | | | | | |

Table 7.3A.6-1b: Reference sensitivity exceptions (MSD) and uplink/downlink configurations due to cross band isolation from a PC1.5 aggressor NR single UL band for DL NR CA FR1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **UL band** | **DL band** | **UL Fc** | **UL BW** | **SCS of UL band** | **UL RB Allocation** | **DL Fc** | **DL BW** | **MSD** | **Cross-band**  **Interference**  **source** |
| **(MHz)** | **(MHz)** | **(kHz)** | **LCRB** | **(MHz)** | **(MHz)** | **(dB)** |
| n41 | n25 | 2511 | 30 | 15 | 160 (RBstart=0) | 1992.5 | 5 | 2.8 | >ACLR2 |
| n41 | n66 | 2521 | 50 | 30 | 128 (RBstart=0) | 2197.5 | 5 | 7.7 | >ACLR2 |
| n41 | n77 | 2680 | 20 | 15 | 100 (RBstart=6) | 3305 | 10 | 13.3 | >ACLR2 |
| n77 | n2 | 3305 | 100 | 30 | 270 (RBstart=0) | 1987.5 | 5 | 1.8 | >ACLR2 |
| n77 | n25 | 3305 | 100 | 30 | 270 (RBstart=0) | 1992.5 | 5 | 1.8 | >ACLR2 |
| n77 | n30 | 3350 | 100 | 30 | 270 (RBstart=0) | 2357.5 | 5 | 1.8 | >ACLR2 |
| n77 | n411 | 3350 | 100 | 30 | 270 (RBstart=0) | 2685 | 10 | 9.0 | >ACLR2 |
| n77 | n411 | 3350 | 100 | 30 | 270 (RBstart=0) | 2640 | 100 | 9.0 | >ACLR2 |
| n77 | n66 | 3350 | 100 | 30 | 270 (RBstart=0) | 2197.5 | 5 | 1.8 | >ACLR2 |
| NOTE 1: Applicable only when harmonic mixing MSD for this combination is not applied.  NOTE 2: Void. | | | | | | | | | |

## **<<End of Change>>**