**3GPP TSG-RAN4 Meeting #113 *R4-2419078***

**, US, November 18- November 22, 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **38.101-1** | **CR** | **2571** | **rev** | **1** | **Current version:** | **.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:***  | Corrections to Harmonic Mixing UL RB allocations and MSD for NR CA |
|  |  |
| ***Source to WG:*** | Qualcomm France |
| ***Source to TSG:*** | RAN4 |
|  |  |
| ***Work item code:*** | NR\_CADC\_R18\_2BDL\_xBUL-Core,HPUE\_FR1\_TDD\_NR\_CADC\_SUL\_R18,HPUE\_FR1\_FDD\_NR\_CADC\_R18 |  | ***Date:*** | 2024-11-07 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** | Rel-18 |
|  | *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 canbe 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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | Some UL RB allocations and MSD for harmonic mixing are misaligned |
|  |  |
| ***Summary of change:*** | Correcting misaligned allocations and MSD |
|  |  |
| ***Consequences if not approved:*** | Misalingment remains |
|  |  |
| ***Clauses affected:*** | 7.3A.4  |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** | **X** |  |  Test specifications | TS38.521-1  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

**---Start of changes---**

Table 7.3A.4-2b: Void

Table 7.3A.4-3: Void

Table 7.3A.4-3a: Void

Sensitivity degradation is allowed for different combinations of UL configurations and DL channel bandwidths if a band is impacted by receiver harmonic mixing due to another band part which belongs to PC3 NR band or PC2 NR band of the same CA configuration. Reference sensitivity exceptions and uplink/downlink configurations due to harmonic mixing from a PC3 aggressor NR UL band for either PC3 or PC2 CA are specified in Table 7.3A.4-4 and from a PC2 aggressor NR UL band for PC2 CA are specified in Table 7.3A.4-4a.For these exceptions, only the listed test points in Table 7.3A.4-4, Table 7.3A.4-4a and Table 7.3A.4-4b are needed to be tested. Sensitivity degradation is not required for receiver even order harmonic mixing with aggressor 3rd order and above harmonic interference.

Table 7.3A.4-4: Reference sensitivity exceptions and uplink/downlink configurations due to harmonic mixing from a PC3 aggressor NR UL band for DL NR 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) |
| n1 | n1053 | 5 | 15 | 25 | 5 | 26.8 | NOTE 4 | UL1/DL3 |
| n2 | n713 | 5 | 15 | 25 | 5 | 26.8 | NOTE 4 | UL1/DL3 |
| n2 | n713 | 5 | 15 | 25 | 20 | 15.6 | NOTE 4 | UL1/DL3 |
| n3 | n5 | 5 | 15 | 25 | 5 | 4 | NOTE 7 | UL1/DL2 |
| n3 | n26 | 5 | 15 | 25 | 5 | 3.7 | NOTE 7  | UL1/DL2 |
| n7 | n263 | 5 | 15 | 25 | 5 | 2.0 | NOTE 10 | UL1/DL3Near miss |
| n7 | n71 | 5 | 15 | 25 | 5 | 5.7 | NOTE 8 | UL1/DL4 |
| n25 | n41 | 5 | 15 | 6 | 10 | 1.3 | NOTE 11 | UL4/DL3 |
| n25 | n713 | 5 | 15 | 25 | 5 | 26.8 | NOTE 4 | UL1/DL3 |
| n25 | n713 | 5 | 15 | 25 | 20 | 15.6 | NOTE 4 | UL1/DL3 |
| n39 | n41 | 5 | 15 | 6 | 10 | 9.3 | NOTE 11 | UL4/DL3 |
| n39 | n41 | 5 | 15 | 6 | 100 | 2.2 | NOTE 11 | UL4/DL3 |
| n40 | n203 | 10 | 15 | 25 | 5 | 27.8 | NOTE 4 | UL1/DL3 |
| n40 | n203 | 10 | 15 | 25 | 20 | 20.6 | NOTE 4 | UL1/DL3 |
| n40 | n283 | 10 | 15 | 25 | 5 | 37.8 | NOTE 4 | UL1/DL3 |
| n40 | n283 | 10 | 15 | 25 | 20 | 30.1 | NOTE 4 | UL1/DL3 |
| n41 | n53 | 10 | 15 | 25 | 5 | 24.3 | NOTE 4 | UL1/DL3 |
| n41 | n183 | 10 | 15 | 25 | 5 | 26.3 | NOTE 4 | UL1/DL3 |
| n41 | n183 | 10 | 15 | 25 | 15 | 21.3 | NOTE 4 | UL1/DL3 |
| n41 | n39 | 10 | 15 | 8 | 5 | 4.3 | NOTE 12 | UL3/DL4 |
| n41 | n39 | 10 | 15 | 8 | 40 | 0.8 | NOTE 12 | UL3/DL4 |
| n41 | n48 | 10 | 15 | 6 | 5 | 12.3 | NOTE 9 | UL4/DL3 |
| n41 | n48 | 10 | 15 | 6 | 100 | 2.3 | NOTE 9 | UL4/DL3 |
| n41 | n77 | 10 | 15 | 6 | 10 | 8.9 | NOTE 9 | UL4/DL3 |
| n41 | n77 | 10 | 15 | 6 | 100 | 2.1 | NOTE 9 | UL4/DL3 |
| n41 | n78 | 10 | 15 | 6 | 10 | 9.3 | NOTE 9 | UL4/DL3 |
| n41 | n78 | 10 | 15 | 6 | 100 | 2.3 | NOTE 9 | UL4/DL3 |
| n46 | n7 | 20 | 15 | 25 | 5 | 10.9 | NOTE 7 | UL1/DL2 |
| n46 | n7 | 20 | 15 | 25 | 50 | 1 | NOTE 7 | UL1/DL2 |
| n46 | n48 | 20 | 15 | 12 | 5 | 26.8 | NOTE 2 | UL2/DL3 |
| n46 | n48 | 20 | 15 | 12 | 100 | 13.5 | NOTE 2 | UL2/DL3 |
| n46 | n77 | 20 | 15 | 12 | 10 | 20.6 | NOTE 2 | UL2/DL3 |
| n46 | n77 | 20 | 15 | 12 | 100 | 10.6 | NOTE 2 | UL2/DL3 |
| n46 | n78 | 20 | 15 | 12 | 10 | 21.1 | NOTE 2 | UL2/DL3 |
| n46 | n78 | 20 | 15 | 12 | 100 | 11.1 | NOTE 2 | UL2/DL3 |
| n48 | n12 | 10 | 15 | 25 | 5 | 31 | NOTE 5 | UL1/DL5 |
| n48 | n12 | 10 | 15 | 25 | 15 | 18 | NOTE 5 | UL1/DL5 |
| n48 | n26 | 10 | 15 | 25 | 5 | 5.4 | NOTE 8 | UL1/DL4 |
| n48 | n26 | 10 | 15 | 25 | 20 | 1 | NOTE 8 | UL1/DL4 |
| n48 | n29 | 10 | 15 | 25 | 5 | 31 | NOTE 5 | UL1/DL5 |
| n48 | n29 | 10 | 15 | 25 | 10 | 27.8 | NOTE 5 | UL1/DL5 |
| n77 | n2 | 10 | 15 | 25 | 5 | 6.7 | NOTE 7 | UL1/DL2 |
| n77 | n2 | 10 | 15 | 25 | 20 | 2.8 | NOTE 7 | UL1/DL2 |
| n77 | n3 | 10 | 15 | 25 | 5 | 5.7 | NOTE 7 | UL1/DL2 |
| n77 | n3 | 10 | 15 | 25 | 20 | 2.2 | NOTE 7 | UL1/DL2 |
| n77 | n5 | 10  | 15 | 25 | 5 | [5.7] | NOTE 8 | UL1/DL4 |
| n77 | n5 | 10 | 15 | 25 | 20 | [0.8] | NOTE 8 | UL1/DL4 |
| n77 | n7 | 10 | 15 | 12 | 5 | 14.7 | NOTE 2 | UL2/DL3 |
| n77 | n7 | 10 | 15 | 12 | 50 | 2.2 | NOTE 2 | UL2/DL3 |
| n77 | n8 | 10 | 15 | 25 | 5 | [5.7] | NOTE 8 | UL1/DL4 |
| n77 | n8 | 10 | 15 | 25 | 20 | [0.8] | NOTE 8 | UL1/DL4 |
| n77 | n12 | 10 | 15 | 25 | 5 | 31 | NOTE 5 | UL1/DL5 |
| n77 | n12 | 10 | 15 | 25 | 15 | 18 | NOTE 5 | UL1/DL5 |
| n77 | n13 | 10 | 15 | 25 | 5 | 31 | NOTE 5 | UL1/DL5 |
| n77 | n13 | 10 | 15 | 25 | 10 | 27.8 | NOTE 5 | UL1/DL5 |
| n77 | n14 | 10 | 15 | 25 | 5 | 31 | NOTE 5 | UL1/DL5 |
| n77 | n14 | 10 | 15 | 25 | 10 | 27.8 | NOTE 5 | UL1/DL5 |
| n77 | n25 | 10 | 15 | 25 | 5 | 5.6 | NOTE 7 | UL1/DL2 |
| n77 | n25 | 10 | 15 | 25 | 40 | 0.3 | NOTE 7 | UL1/DL2 |
| n77 | n26 | 10 | 15 | 25 | 5 | 5.4 | NOTE 8 | UL1/DL4 |
| n77 | n28 | 10 | 15 | 25 | 5 | 31 | NOTE 5 | UL1/DL5 |
| n77 | n28 | 10 | 15 | 25 | 30 | 11.4 | NOTE 5 | UL1/DL5 |
| n776 | n29 | 10 | 15 | 25 | 5 | 31 | NOTE 5 | UL1/DL5 |
| n776 | n29 | 10 | 15 | 25 | 10 | 27.8 | NOTE 5 | UL1/DL5 |
| n77 | n30 | 10 | 15 | 12 | 5 | 10.4 | NOTE 2 | UL2/DL3 |
| n77 | n30 | 10 | 15 | 12 | 10 | 7.6 | NOTE 2 | UL2/DL3 |
| n77 | n40 | 10 | 15 | 12 | 10 | 11.7 | NOTE 2 | UL2/DL3 |
| n77 | n40 | 10 | 15 | 12 | 100 | 3.6 | NOTE 2 | UL2/DL3 |
| n77 | n41 | 10 | 15 | 12 | 10 | 11.7 | NOTE 2 | UL2/DL3 |
| n77 | n41 | 10 | 15 | 12 | 100 | 3.6 | NOTE 2 | UL2/DL3 |
| n776 | n70 | N/A | N/A | N/A | N/A | N/A | NOTE 7 | UL1/DL2 |
| n77 | n85 | 10 | 15 | 25 | 5 | 31 | NOTE 5 | UL1/DL5 |
| n77 | n85 | 10 | 15 | 25 | 15 | 18 | NOTE 5 | UL1/DL5 |
| n78 | n2 | 10 | 15 | 25 | 5 | 6.7 | NOTE 7 | UL1/DL2 |
| n78 | n2 | 10 | 15 | 25 | 20 | 2.8 | NOTE 7 | UL1/DL2 |
| n78 | n3 | 10 | 15 | 25 | 5 | 5.7 | NOTE 7 | UL1/DL2 |
| n78 | n3 | 10 | 15 | 25 | 20 | 2.2 | NOTE 7 | UL1/DL2 |
| n78 | n5 | 10 | 15 | 25 | 5 | [5.7] | NOTE 8 | UL1/DL4 |
| n78 | n8 | 10 | 15 | 25 | 5 | [5.7] | NOTE 8 | UL1/DL4 |
| n78 | n12 | 10 | 15 | 25 | 5 | 31 | NOTE 5 | UL1/DL5 |
| n78 | n26 | 10 | 15 | 25 | 5 | 5.4 | NOTE 8 | UL1/DL4 |
| n78 | n28 | 10 | 15 | 25 | 5 | 31 | NOTE 5 | UL1/DL5 |
| n78 | n40 | 10 | 15 | 12 | 10 | 11.7 | NOTE 2 | UL2/DL3 |
| n78 | n40 | 10 | 15 | 12 | 100 | 3.6 | NOTE 2 | UL2/DL3 |
| n78 | n41 | 10 | 15 | 12 | 10 | 11.7 | NOTE 2 | UL2/DL3 |
| n78 | n41 | 10 | 15 | 12 | 100 | 3.6 | NOTE 2 | UL2/DL3 |
| n78 | n67 | 10 | 15 | 25 | 5 | 31 | NOTE 5 | UL1/DL5 |
| n78 | n67 | 10 | 15 | 25 | 10 | 27.8 | NOTE 5 | UL1/DL5 |
| n79 | n5 | 10 | 15 | 25 | 5 | 27.5 | NOTE 5 | UL1/DL5 |
| n79 | n8 | 10 | 15 | 25 | 5 | 25 | NOTE 5 | UL1/DL5 |
| n96 | n48 | 20 | 15 | 25 | 5 | [31] | NOTE 7 | UL1/DL2 |
| n96 | n48 | 20 | 15 | 25 | 100 | [17.5] | NOTE 7 | UL1/DL2 |
| n102 | n13 | 20 | 15 | 25 | 5 | 30 | NOTE 4 | UL1/DL3 |
| n104 | n78 | 20 | 15 | 50 | 10 | 29 | NOTE 1 | UL1/DL2 |
| n104 | n78 | 20 | 15 | 50 | 100 | 18.8 | NOTE 1 | UL1/DL2 |
| NOTE 1: Void.NOTE 2: The requirements should be verified for DL NR-ARFCN of the Victim (lower) band (superscript LB) such that $f\_{DL}^{LB}=\left⌊f\_{UL}^{HB}/0.15\right⌋0.1$ and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with $f\_{UL}^{HB}$ the UL carrier frequency and $BW\_{Channel}^{HB}$ the channel bandwidth configured in the higher band, both in MHz.NOTE 3: These requirements apply when there is at least one individual RE within the downlink transmission bandwidth of the victim (lower) band for which the 3rd harmonic is within the uplink transmission bandwidth or the uplink adjacent channel's transmission bandwidth of an aggressor (higher) band.NOTE 4: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band.NOTE 5: The requirements should be verified for DL EARFCN of the victim (lower) band (superscript LB) such that  and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with $f\_{UL}^{HB}$ the UL carrier frequency and $BW\_{Channel}^{HB}$ the channel bandwidth configured in the higher band, both in MHz.NOTE 6: For a UE which supports this band combination only when the Band n77 frequency range restriction defined in NOTE 12 of Table 5.2-1 applies, the MSD test point(s) cannot be verified for the band combination and the test point(s) can be skipped.NOTE 7: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band.NOTE 8: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band.NOTE 9: The requirements should be verified for DL NR-ARFCN of the victim (higher) band (superscript HB) such that $f\_{DL}^{HB}=\left⌊f\_{UL}^{LB}/0.75\right⌋$ and $F\_{UL\\_low}^{LB}+BW\_{Channel}^{LB}/2\leq f\_{UL}^{LB}\leq F\_{UL\\_high}^{LB}-BW\_{Channel}^{LB}/2$ with $f\_{UL}^{LB}$ the UL carrier frequency and $BW\_{Channel}^{LB}$ the channel bandwidth configured in the lower band, both in MHz.NOTE 10: The requirements should be verified for the lowest NR ARFCN of the affected DL (lower) band and for the highest NR ARFCN of the UL (higher) bandNOTE 11: The requirements should be verified for UL NR-ARFCN of the aggressor (lower) band (superscript LB) such that in MHz and  with carrier frequency in the victim (higher) band in MHz and  the channel bandwidth configured in the lower band.NOTE 12: The requirements should be verified for UL NR-ARFCN of the aggressor (lower) band (superscript LB) such that in MHz and  with carrier frequency in the victim (higher) band in MHz and  the channel bandwidth configured in the lower band.NOTE 13: The requirements should be verified using RBstart = floor((NRB-LCRB)/2), where floor(x) is the greatest integer less than or equal to x, and where the UL parameters NRB and LCRB are respectively, the transmission bandwidth configuration and the number of RB’s for the specified UL band channel bandwidth and the UL band subcarrier spacing. |

Table 7.3A.4-4a-1: Reference sensitivity exceptions and uplink/downlink configurations due to harmonic mixing 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 | n41 | 5 | 15 | 6 | 10 | 2.2 | NOTE 11 | UL4/DL3 |
| n25 | n713 | 5 | 15 | 25 | 5 | 29.5 | NOTE 4 | UL1/DL3 |
| n25 | n713 | 20 | 15 | 25 | 20 | 18.2 | NOTE 4 | UL1/DL3 |
| n39 | n41 | 5 | 15 | 6 | 5 | 10.6 | NOTE 8 | UL4/DL3 |
| n39 | n41 | 5 | 15 | 6 | 100 | 4.9 | NOTE 8 | UL4/DL3 |
| n40 | n28 | 5 | 15 | 25 | 5 | 40.8 | NOTE 7 | UL1/DL3 |
| n40 | n28 | 20 | 15 | 25 | 20 | 33.3 | NOTE 7 | UL1/DL3 |
| n41 | n186 | 10 | 15 | 25 | 5 | 29.3 | NOTE 7 | UL1/DL3 |
| n41 | n186 | 10 | 15 | 25 | 15 | 24.3 | NOTE 7 | UL1/DL3 |
| n41 | n39 | 10 | 15 | 8 | 5 | 6.1 | NOTE 9 | UL3/DL4 |
| n41 | n39 | 10 | 15 | 8 | 40 | 1.5 | NOTE 9 | UL3/DL4 |
| n41 | n77 | 10 | 15 | 6 | 10 | 11.6 | NOTE 8 | UL4/DL3 |
| n41 | n77 | 10 | 15 | 6 | 100 | 3.6 | NOTE 8 | UL4/DL3 |
| n41 | n78 | 10 | 15 | 6 | 10 | 12.1 | NOTE 8 | UL4/DL3 |
| n41 | n78 | 10 | 15 | 6 | 100 | 3.8 | NOTE 8 | UL4/DL3 |
| n77 | n2 | 10 | 15 | 25 | 5 | 9.2 | NOTE 4 | UL1/DL2 |
| n77 | n2 | 10 | 15 | 25 | 20 | 4.4 | NOTE 4 | UL1/DL2 |
| n77 | n3 | 10 | 15 | 25 | 5 | 8.1 | NOTE 4 | UL1/DL2 |
| n77 | n3 | 10 | 15 | 25 | 40 | 0.8 | NOTE 4 | UL1/DL2 |
| n77 | n5 | 10 | 15 | 25 | 5 | 8.1 | NOTE 5 | UL1/DL4 |
| n77 | n5 | 10 | 15 | 25 | 20 | 1.5 | NOTE 5 | UL1/DL4 |
| n77 | n7 | 10 | 15 | 12 | 5 | 17.7 | NOTE 3 | UL2/DL3 |
| n77 | n7 | 10 | 15 | 12 | 50 | 3.6 | NOTE 3 | UL2/DL3 |
| n77 | n8 | 10 | 15 | 25 | 5 | 8.1 | NOTE 5 | UL1/DL4 |
| n77 | n8 | 10 | 15 | 25 | 20 | 1.5 | NOTE 5 | UL1/DL4 |
| n77 | n12 | 10 | 15 | 25 | 5 | 34 | NOTE 1 | UL1/DL5 |
| n77 | n12 | 10 | 15 | 25 | 15 | 21 | NOTE 1 | UL1/DL5 |
| n77 | n13 | 10 | 15 | 25 | 5 | 34 | NOTE 1 | UL1/DL5 |
| n77 | n13 | 10 | 15 | 25 | 10 | 30.8 | NOTE 1 | UL1/DL5 |
| n77 | n14 | 10 | 15 | 25 | 5 | 34 | NOTE 1 | UL1/DL5 |
| n77 | n14 | 10 | 15 | 25 | 10 | 30.8 | NOTE 1 | UL1/DL5 |
| n77 | n25 | 10 | 15 | 25 | 5 | 7.9 | NOTE 4 | UL1/DL2 |
| n77 | n25 | 10 | 15 | 25 | 40 | 0.5 | NOTE 4 | UL1/DL2 |
| n77 | n28 | 10 | 15 | 25 | 5 | 34 | NOTE 1 | UL1/DL5 |
| n77 | n28 | 10 | 15 | 25 | 30 | 14.1 | NOTE 1 | UL1/DL5 |
| n772 | n29 | 10 | 15 | 25 | 5 | 34 | NOTE 1 | UL1/DL5 |
| n772 | n29 | 10 | 15 | 25 | 10 | 30.8 | NOTE 1 | UL1/DL5 |
| n77 | n30 | 10 | 15 | 12 | 5 | 13.2 | NOTE 3 | UL2/DL3 |
| n77 | n30 | 10 | 15 | 12 | 10 | 10.2 | NOTE 3 | UL2/DL3 |
| n77 | n40 | 10 | 15 | 12 | 10 | 14.5 | NOTE 3 | UL2/DL3 |
| n77 | n40 | 10 | 15 | 12 | 100 | 5.5 | NOTE 3 | UL2/DL3 |
| n77 | n41 | 10 | 15 | 12 | 10 | 14.5 | NOTE 3 | UL2/DL3 |
| n77 | n41 | 10 | 15 | 12 | 100 | 5.5 | NOTE 3 | UL2/DL3 |
| n772 | n70 | N/A | N/A | N/A | N/A | N/A | NOTE 4 | UL1/DL2 |
| n77 | n85 | 10 | 15 | 25 | 5 | 34 | NOTE 1 | UL1/DL5 |
| n77 | n85 | 10 | 15 | 25 | 15 | 21 | NOTE 1 | UL1/DL5 |
| n78 | n3 | 10 | 15 | 25 | 5 | 8.1 | NOTE 4 | UL1/DL2 |
| n78 | n3 | 10 | 15 | 25 | 40 | 0.8 | NOTE 4 | UL1/DL2 |
| n78 | n5 | 10 | 15 | 25 | 5 | [8.1] | NOTE 5 | UL1/DL4 |
| n78 | n5 | 10 | 15 | 25 | 20 | [1.5] | NOTE 5 | UL1/DL4 |
| n78 | n8 | 10 | 15 | 25 | 5 | 8.1 | NOTE 5 | UL1/DL4 |
| n78 | n8 | 10 | 15 | 25  | 20 | 1.5 | NOTE 5 | UL1/DL4 |
| n78 | n28 | 10 | 15 | 25 | 5 | 34 | NOTE 1 | UL1/DL5 |
| n78 | n28 | 10 | 15 | 25  | 30 | 11.3 | NOTE 1 | UL1/DL5 |
| n78 | n40 | 10 | 15 | 12 | 10 | 14.5 | NOTE 3 | UL2/DL3 |
| n78 | n40 | 10 | 15 | 12 | 100 | 5.5 | NOTE 3 | UL2/DL3 |
| n79 | n8 | 10 | 15 | 25 | 5 | 28.0 | NOTE 1 | UL1/DL5 |
| NOTE 1: The requirements should be verified for DL NR-ARFCN of the victim (lower) band (superscript LB) such that  and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with $f\_{UL}^{HB}$ the UL carrier frequency and $BW\_{Channel}^{HB}$ the channel bandwidth configured in the higher band, both in MHz.NOTE 2: For a UE which supports this band combination only when the Band n77 frequency range restriction defined in NOTE 12 of Table 5.2-1 from TS 38.101-1 applies, the MSD test point(s) cannot be verified for the band combination and the test point(s) can be skipped.NOTE 3: The requirements should be verified for DL NR-ARFCN of the Victim (lower) band (superscript LB) such that $f\_{DL}^{LB}=\left⌊f\_{UL}^{HB}/0.15\right⌋0.1$ and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with $f\_{UL}^{HB}$ the UL carrier frequency and $BW\_{Channel}^{HB}$ the channel bandwidth configured in the higher band, both in MHz.NOTE 4: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band.NOTE 5: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and$ F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band.NOTE 6: These requirements apply when there is at least one individual RE within the downlink transmission bandwidth of the victim (lower) band for which the 3rd harmonic is within the uplink transmission bandwidth or the uplink adjacent channel's transmission bandwidth of an aggressor (higher) band.NOTE 7: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and $ F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band.NOTE 8: The requirements should be verified for UL NR-ARFCN of the aggressor (lower) band (superscript LB) such that in MHz and  with carrier frequency in the victim (higher) band in MHz and  the channel bandwidth configured in the lower band.NOTE 9: The requirements should be verified for UL NR-ARFCN of the aggressor (lower) band (superscript LB) such that in MHz and  with carrier frequency in the victim (higher) band in MHz and  the channel bandwidth configured in the lower band.NOTE 10: VoidNOTE 11: The requirements should be verified for UL NR-ARFCN of the aggressor (lower) band (superscript LB) such that in MHz and  with carrier frequency in the victim (higher) band in MHz and  the channel bandwidth configured in the lower band.NOTE 12: The requirements should be verified using RBstart = floor((NRB-LCRB)/2), where floor(x) is the greatest integer less than or equal to x, and where the UL parameters NRB and LCRB are respectively, the transmission bandwidth configuration and the number of RB’s for the specified UL band channel bandwidth and the UL band subcarrier spacing. |

Table 7.3A.4-4a-2: Reference sensitivity exceptions and uplink/downlink configurations due to harmonic mixing from a PC2 aggressor NR UL band for NR DL CA FR1 for UE 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 | n713 | 5 | 15 | 25  | 5 | 34.5 | NOTE 4 | UL1/DL3 |
| n25 | n713 | 5 | 15 | 25  | 20 | 23.3 | NOTE 4 | UL1/DL3 |
| n25 | n41 | 5 | 15 | 6  | 10 | 3.2 | NOTE 11 | UL4/DL3 |
| NOTE 1: VoidNOTE2: VoidNOTE3: VoidNOTE 4: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band.NOTE 5: VoidNOTE 6: VoidNOTE7: VoidNOTE 8: VoidNOTE 9: VoidNOTE 10: VoidNOTE 11: The requirements should be verified for UL NR-ARFCN of the aggressor (lower) band (superscript LB) such that in MHz and  with carrier frequency in the victim (higher) band in MHz and  the channel bandwidth configured in the lower band.NOTE 12: The requirements should be verified using RBstart = floor((NRB-LCRB)/2), where floor(x) is the greatest integer less than or equal to x, and where the UL parameters NRB and LCRB are respectively, the transmission bandwidth configuration and the number of RB’s for the specified UL band channel bandwidth and the UL band subcarrier spacing. |

Table 7.3A.4-4b: Reference sensitivity exceptions and uplink/downlink configurations due to harmonic mixing from a PC1.5 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) |
| n40 | n28 | 5 | 15 | 25 | 5 | 43.8 | NOTE 7 | UL1/DL3 |
| n40 | n28 | 5 | 15 | 25 | 20 | 36.3 | NOTE 7 | UL1/DL3 |
| n41 | n39 | 10 | 15 | 8 | 5 | 10.5 | NOTE 6 | UL3/DL4 |
| n41 | n39 | 10 | 15 | 8 | 40 | 3.0 | NOTE 6 | UL3/DL4 |
| n41 | n77 | 10 | 15 | 6 | 10 | 14.5 | NOTE 8 | UL4/DL3 |
| n41 | n77 | 10 | 15 | 6 | 100 | 5.5 | NOTE 8 | UL4/DL3 |
| n41 | n78 | 10 | 15 | 6 | 10 | 14.9 | NOTE 8 | UL4/DL3 |
| n41 | n78 | 10 | 15 | 6 | 100 | 5.8 | NOTE 8 | UL4/DL3 |
| n77 | n2 | 10 | 15 | 25 | 5 | 11.8 | NOTE 4 | UL1/DL2 |
| n77 | n2 | 10 | 15 | 25 | 20 | 6.5 | NOTE 4 | UL1/DL2 |
| n77 | n3 | 10 | 15 | 25 | 5 | 10.7 | NOTE 4 | UL1/DL2 |
| n77 | n3 | 10 | 15 | 25 | 40 | 1.4 | NOTE 4 | UL1/DL2 |
| n77 | n5 | 10 | 15 | 25 | 5 | 10.7 | NOTE 5 | UL1/DL4 |
| n77 | n5 | 10 | 15 | 25 | 20 | 2.6 | NOTE 5 | UL1/DL4 |
| n77 | n7 | 10 | 15 | 12 | 10 | 17.5 | NOTE 3 | UL2/DL3 |
| n77 | n7 | 10 | 15 | 12 | 100 | 5.5 | NOTE 3 | UL2/DL3 |
| n77 | n12 | 10 | 15 | 25 | 5 | 37 | NOTE 1 | UL1/DL5 |
| n77 | n12 | 10 | 15 | 25 | 15 | 24 | NOTE 1 | UL1/DL5 |
| n77 | n13 | 10 | 15 | 25 | 5 | 37 | NOTE 1 | UL1/DL5 |
| n77 | n13 | 10 | 15 | 25 | 10 | 33.8 | NOTE 1 | UL1/DL5 |
| n77 | n14 | 10 | 15 | 25 | 5 | 37 | NOTE 1 | UL1/DL5 |
| n77 | n14 | 10 | 15 | 25 | 10 | 33.8 | NOTE 1 | UL1/DL5 |
| n77 | n25 | 10 | 15 | 25 | 5 | 10.6 | NOTE 4 | UL1/DL2 |
| n77 | n25 | 10 | 15 | 25 | 40 | 0.8 | NOTE 4 | UL1/DL2 |
| n77 | n28 | 10 | 15 | 25 | 5 | 37 | NOTE 1 | UL1/DL5 |
| n77 | n28 | 10 | 15 | 25 | 30 | 17 | NOTE 1 | UL1/DL5 |
| n772 | n29 | 10 | 15 | 25 | 5 | 37 | NOTE 1 | UL1/DL5 |
| n772 | n29 | 10 | 15 | 25 | 10 | 33.8 | NOTE 1 | UL1/DL5 |
| n77 | n30 | 10 | 15 | 12 | 5 | 16.1 | NOTE 3 | UL2/DL3 |
| n77 | n30 | 10 | 15 | 12 | 10 | 13 | NOTE 3 | UL2/DL3 |
| n77 | n40 | 10 | 15 | 12 | 10 | 17.5 | NOTE 3 | UL2/DL3 |
| n77 | n40 | 10 | 15 | 12 | 100 | 7.9 | NOTE 3 | UL2/DL3 |
| n77 | n41 | 10 | 15 | 12 | 10 | 17.5 | NOTE 3 | UL2/DL3 |
| n77 | n41 | 10 | 15 | 12 | 100 | 7.9 | NOTE 3 | UL2/DL3 |
| n772 | n70 | N/A | N/A | N/A | N/A | N/A | NOTE 4 | UL1/DL2 |
| n77 | n85 | 10 | 15 | 25 | 5 | 37 | NOTE 1 | UL1/DL5 |
| n77 | n85 | 10 | 15 | 25 | 15 | 24 | NOTE 1 | UL1/DL5 |
| n78 | n3 | 10 | 15 | 25 | 5 | 10.7 | NOTE 4 | UL1/DL2 |
| n78 | n3 | 10 | 15 | 25 | 40 | 1.4 | NOTE 4 | UL1/DL2 |
| n78 | n8 | 10 | 15 | 25 | 5 | 10.6 | NOTE 5 | UL1/DL4 |
| n78 | n8 | 10 | 15 | 25 | 20 | 2.6 | NOTE 5 | UL1/DL4 |
| n78 | n26 | 10 | 15 | 25  | 5 | 10.1 | NOTE 5 | UL1/DL4 |
| n78 | n28 | 10 | 15 | 25 | 5 | 37 | NOTE 1 | UL1/DL5 |
| n78 | n28 | 10 | 15 | 25  | 30 | 17 | NOTE 1 | UL1/DL5 |
| n78 | n40 | 10 | 15 | 12 | 10 | 17.5 | NOTE 3 | UL2/DL3 |
| n78 | n40 | 10 | 15 | 12 | 100 | 7.9 | NOTE 3 | UL2/DL3 |
| n79 | n8 | 10 | 15 | 25 | 5 | 31.0 | NOTE 1 | UL1/DL5 |
| NOTE 1: The requirements should be verified for DL NR-ARFCN of the victim (lower) band (superscript LB) such that  and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with $f\_{UL}^{HB}$ the UL carrier frequency and $BW\_{Channel}^{HB}$ the channel bandwidth configured in the higher band, both in MHz.NOTE 2: For a UE which supports this band combination only when the Band n77 frequency range restriction defined in NOTE 12 of Table 5.2-1 from TS 38.101-1 applies, the MSD test point(s) cannot be verified for the band combination and the test point(s) can be skipped.NOTE 3: The requirements should be verified for DL NR-ARFCN of the Victim (lower) band (superscript LB) such that $f\_{DL}^{LB}=\left⌊f\_{UL}^{HB}/0.15\right⌋0.1$ and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with $f\_{UL}^{HB}$ the UL carrier frequency and $BW\_{Channel}^{HB}$ the channel bandwidth configured in the higher band, both in MHz.NOTE 4: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band.NOTE 5: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band.NOTE 6: The requirements should be verified for UL NR-ARFCN of the aggressor (lower) band (superscript LB) such that in MHz and  with carrier frequency in the victim (higher) band in MHz and  the channel bandwidth configured in the lower band.NOTE 7: The requirements should be verified for UL NR-ARFCN of the aggressor (higher) band (superscript HB) such that  in MHz and $F\_{UL\\_low}^{HB}+BW\_{Channel}^{HB}/2\leq f\_{UL}^{HB}\leq F\_{UL\\_high}^{HB}-BW\_{Channel}^{HB}/2$ with  the carrier frequency in the victim (lower) band and  the channel bandwidth configured in the higher band.NOTE 8: The requirements should be verified for DL NR-ARFCN of the victim (higher) band (superscript HB) such that $f\_{DL}^{HB}=\left⌊f\_{UL}^{LB}/0.75\right⌋$ and $F\_{UL\\_low}^{LB}+BW\_{Channel}^{LB}/2\leq f\_{UL}^{LB}\leq F\_{UL\\_high}^{LB}-BW\_{Channel}^{LB}/2$ with $f\_{UL}^{LB}$ the UL carrier frequency and $BW\_{Channel}^{LB}$ the channel bandwidth configured in the lower band, both in MHz.NOTE 9: The requirements should be verified using RBstart = floor((NRB-LCRB)/2), where floor(x) is the greatest integer less than or equal to x, and where the UL parameters NRB and LCRB are respectively, the transmission bandwidth configuration and the number of RB’s for the specified UL band channel bandwidth and the UL band subcarrier spacing. |

**---End of changes---**