**3GPP TSG-RAN WG4 Meeting # 102-e R4-2204172 R4-22xxxxx**

**Electronic Meeting, February 21 – March 3, 2022**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-1** | **CR** | **-** | **rev** | **-** | **Current version:** | **17.4.0** |  |
|  | | | | | | | | |
| *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:*** | Big CR for 38.101-1, Introduce new band combination for V2X con-current operation | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | CATT | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_LTE\_V2X\_PC5\_combos-Core | | | | |  | ***Date:*** | | | 2022-03-04 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***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:*** | | The con-current operation should be introduced based on request. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The following endorsed CR are merged:  1. R4-2200146\_Draft CR for TS 38.101-1, Introduce new band combinations of V2X\_n8A-n47A  2. R4-2206400\_Draft CR for TS 38.101-1, Introduce new band combinations of V2X\_n1A-n47A | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The con-current operation of such band combinations would not be defined in 38.101-1. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2E.2, 5.3E.2 , 6.5E.3.1.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 38.521-3 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

*<Start of Change 1>*

### 5.2E.2 V2X operating bands for con-current operation

NR V2X operation is designed to operate concurrent with NR uplink/downlink on the operating bands combinations listed in Table 5.2E.2-1.

Table 5.2E.2-1 Inter-band con-current V2X operating bands

|  |  |  |
| --- | --- | --- |
| V2X con-current operating Band | NR or V2X Operating Band | Interface |
| V2X\_n1-n47 | n1 | Uu |
| n47 | PC5 |
| V2X\_n8-n47 | n8 | Uu |
| n47 | PC5 |
| V2X\_n39-n47 | n39 | Uu |
|  | n47 | PC5 |
| V2X\_n40-n47 | n40 | Uu |
|  | n47 | PC5 |
| V2X\_n41-n47 | n41 | Uu |
|  | n47 | PC5 |
| V2X\_n71-n47 | n71 | Uu |
|  | n47 | PC5 |
| V2X\_n78-n47 | n78 | Uu |
|  | n47 | PC5 |
| V2X\_n79-n47 | n79 | Uu |
|  | n47 | PC5 |

*<End of Change 1>*

*<Start of Change 2>*

### 5.3E.2 Channel bandwidth for V2X concurrent operation

For NR V2X inter-band con-current operation in FR1, the NR V2X channel bandwidths for each operating band is specified in Table 5.3E.2-1.

Table 5.3E.2-1: Inter-band con-current V2X configurations

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR V2X inter-band con-current operating configuration | | NR Band | Channel bandwidth (MHz) (NOTE 1) | | | | | | | | | | | | | | | Bandwidth combination set |
|  | |  | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 60 | 70 | 80 | 90 | 100 |  |
| V2X\_n1A-n47A | | n1 | 5 | 10 | 15 | 20 | 25 | 30 |  | 40 | 45 | 50 |  |  |  |  |  | 0 |
|  | | n47 |  | 10 |  | 20 |  | 30 |  | 40 |  |  |  |  |  |  |  |  |
| V2X\_n8A-n47A | | n8 | 5 | 10 | 15 | 20 |  |  | 35 |  |  |  |  |  |  |  |  | 0 |
|  | | n47 |  | 10 |  | 20 |  | 30 |  | 40 |  |  |  |  |  |  |  |  |
| V2X\_n39A-n47A | | n39 | 5 | 10 | 15 | 20 | 25 | 30 |  | 40 |  |  |  |  |  |  |  | 0 |
|  | | n47 |  | 10 |  | 20 |  | 30 |  | 40 |  |  |  |  |  |  |  |  |
| V2X\_n40A-n47A | | n40 | 5 | 10 | 15 | 20 | 25 | 30 |  | 40 |  | 50 | 60 |  | 80 |  |  | 0 |
|  | | n47 |  | 10 |  | 20 |  | 30 |  | 40 |  |  |  |  |  |  |  |  |
| V2X\_n41A-n47A | | n41 | 5 | 10 | 15 | 20 |  | 30 |  | 40 |  | 50 | 60 |  | 80 | 90 | 100 | 0 |
|  | | n47 |  | 10 |  | 20 |  | 30 |  | 40 |  |  |  |  |  |  |  |  |
| V2X\_n71A-n47A | | n71 | 5 | 10 | 15 | 20 |  |  |  |  |  |  |  |  |  |  |  | 0 |
|  | | n47 |  | 10 |  | 20 |  | 30 |  | 40 |  |  |  |  |  |  |  |  |
| V2X\_n78A-n47A | | n78 |  | 10 | 15 | 20 | 25 | 30 |  | 40 |  | 50 | 60 | 70 | 80 | 90 | 100 | 0 |
| n47 |  | 10 |  | 20 |  | 30 |  | 40 |  |  |  |  |  |  |  |
| V2X\_n79A-n47A | | n79 |  |  |  |  |  |  |  | 40 |  | 50 | 60 |  | 80 |  | 100 | 0 |
| n47 |  | 10 |  | 20 |  | 30 |  | 40 |  |  |  |  |  |  |  |
|  | NOTE 1: The SCS of each channel bandwidth for NR band refers to Table 5.3.5-1. | | | | | | | | | | | | | | | | | |

*<End of Change 2>*

*<Start of Change 3>*

#### 6.5E.3.3 Spurious emissions for UE co-existence for V2X con-current operation

For the inter-band con-current NR V2X operation, the UE-coexistence requirements in Table 6.5E.3.1.1-1 apply for the corresponding inter-band con-current operation with transmission assigned to both uplink in licensed band and sidelink in Band n47.

Table 6.5E.3.3.1-1: Requirements for inter-band con-current V2X operation

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| V2X | Spurious emission | | | | | | |
| con-current operating band configuration | Protected band | Frequency range (MHz) | | | Maximum Level (dBm) | MBW (MHz) | NOTE |
| V2X\_n1A-n47A | E-UTRA Band 1, 3, 5, 7, 8, 22 26, 28, 34, 40, 41, 42, 44, 45, 65, 68, 72, 73 | FDL\_low | - | FDL\_high | -50 | 1 |  |
|  | NR Band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 | 1 |
| V2X\_n8A-n47A | E-UTRA Band 1, 3, 7, 8, 22, 28, 34, 39, 40, 41, 42, 45, 65, 68, 72, 73 | FDL\_low | - | FDL\_high | -50 | 1 |  |
|  | NR Band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 | 1 |
| V2X\_n39A-n47A | E-UTRA Band 1, 8, 22, 26, 28, 34, 40, 41, 42, 44, 45  NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
|  | NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 1 |
|  | Frequency range | 5925 | - | 5950 | -30 | 1 | 3, 4 |
|  | Frequency range | 5815 | - | 5855 | -30 | 1 | 3 |
| V2X\_n40A-n47A | E-UTRA Band 1, 3, 5, 7, 8, 22, 26, 28, 34, 39, 42, 44, 45, 68, 72  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 |  |
|  | NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 | 1 |
|  | Frequency range | 5925 | - | 5950 | -30 | 1 | 3, 4 |
|  | Frequency range | 5815 | - | 5855 | -30 | 1 | 3 |
| V2X\_n41A-n47A | E-UTRA Band 1, 3, 5, 8, 26, 28, 34, 39, 42, 44, 45, 65, 73  NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 | 1 |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 3, 4 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 3 |
| V2X\_n71A-n47A | E-UTRA Band 4, 5, 12, 13, 14, 17, 24, 26, 30, 48, 66, 85 | FDL\_low | - | FDL\_high | -50 | 1 |  |
|  | E-UTRA Band 2, 25, 41, 70 | FDL\_low | - | FDL\_high | -50 | 1 | 1 |
|  | E-UTRA Band 29 | FDL\_low | - | FDL\_high | -38 | 1 | 2 |
|  | NR Band n71 | FDL\_low | - | FDL\_high | -50 | 1 |  |
|  | Frequency range | 5925 | - | 5950 | -30 | 1 | 3, 4 |
|  | Frequency range | 5815 | - | 5855 | -30 | 1 | 3 |
| V2X\_n78A-n47A | E-UTRA Band 1, 3, 5, 7, 8, 26 28, 34, 39, 40, 41, 65 | FDL\_low | - | FDL\_high | -50 | 1 |  |
|  | Frequency range | 5925 | - | 5950 | -30 | 1 | 3, 4 |
|  | Frequency range | 5815 | - | 5855 | -30 | 1 | 3 |
| V2X\_n79A-n47A | E-UTRA Band 1, 3, 5, 8, 28, 34, 39, 40, 41, 42, 65 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| NOTE 1: As exceptions, measurements with a level up to the applicable requirements defined in Table 6.6.3.1-2 are permitted for each assigned E-UTRA carrier used in the measurement due to 2nd, 3rd, 4th or 5th harmonic spurious emissions. In case the exceptions are allowed due to spreading of the harmonic emission the exception is also allowed for the first 1 MHz frequency range immediately outside the harmonic emission on both sides of the harmonic emission. This results in an overall exception interval centred at the harmonic emission of (2MHz + N x LCRB x 180kHz), where N is 2, 3 or 4 for the 2nd, 3rd or 4th harmonic respectively. The exception is allowed if the measurement bandwidth (MBW) totally or partially overlaps the overall exception interval.  NOTE 2: These requirements also apply for the frequency ranges that are less than FOOB (MHz) in Table 6.6.3.1-1 and Table 6.6.3.1A-1 from the edge of the aggregated channel bandwidth.  NOTE 3: Applicable when NS\_33 is configured by the pre-configured radio parameters for power class 3 V2X UE.  NOTE 4: In the frequency range x-5950MHz, SE requirement of -30dBm/MHz should be applied; where x = max (5925, fc + 15), where fc is the channel centre frequency. | | | | | | | |

*<End of Change 3>*