**3GPP TSG-RAN WG4 Meeting #105 R4-2218444**

**Toulouse, France, November 14 – November 18, 2022**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.101-3** | **CR** | **0775** | **rev** | **-** | **Current version:** | **17.7.0** |  |
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| *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 TS 38.101-3, Introduction of new R18 Uu+V2X band combinations |
|  |  |
| ***Source to WG:*** | CATT |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_LTE\_V2X\_PC5\_combos\_R18-Core |  | ***Date:*** | 2022-11-29 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | This big CR merges the multiple endorsed draft CRs in RAN4#105. The reason for change in each endorsed draft CR is copied below.1. R4-2220460 Draft CR for TS 38.101-3, Introduce new band combinations of V2X\_n3A\_47A
	* The con-current operation of V2X\_n3A\_47A should be introduced based on request.
2. R4-2220461 Draft CR for TS 38.101-3, Introduce new band combination of V2X\_n34A\_47A and 34A\_n47A
	* The con-current operation of V2X\_n34A\_47A and V2X\_34A\_n47A.
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|  |  |
| ***Summary of change:*** | The summary of change in each endorsed draft CR is copied below.1. R4-2220460 Draft CR for TS 38.101-3, Introduce new band combinations of V2X\_n3A\_47A
	* Add operating bands for V2X\_n3A\_47A in Table 5.2E.2-1 in clause 5.2E.2 and in table Table 5.5E.4-1 in clause 5.5E.4.
	* Add spurious emissions for UE co-existence in Table 6.5E.3.2.2-1 in clause 6.5E.3.2.2.
2. R4-2220461 Draft CR for TS 38.101-3, Introduce new band combination of V2X\_n34A\_47A and 34A\_n47A
	* Add operating bands for V2X\_n34A\_47A and V2X\_34A\_n47A in Table 5.2E.2-1 in clause 5.2E.2.
	* Add channel bandwidths for V2X\_n34A\_47A and V2X\_34A\_n47A in table Table 5.5E.4-1 in clause 5.5E.4.
	* Add spurious emissions for UE co-existence in Table 6.5E.3.2.2-1 in clause 6.5E.3.2.2.
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|  |  |
| ***Consequences if not approved:*** | The consequences if not approved for each endorsed draft CR are coppied below.1. R4-2220460 Draft CR for TS 38.101-3, Introduce new band combinations of V2X\_n3A\_47A
	* The con-current operation of V2X\_n3A\_47A would not be defined in 38.101-3.
2. R4-2220461 Draft CR for TS 38.101-3, Introduce new band combination of V2X\_n34A\_47A and 34A\_n47A
	* The con-current operation of V2X\_n34A\_47A and V2X\_34A\_n47A would not be defined in 38.101-3.
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|  |  |
| ***Clauses affected:*** | The clauses affected for each endorsed draft CR are coppied below.1. R4-2220460 Draft CR for TS 38.101-3, Introduce new band combinations of V2X\_n3A\_47A
	* 5.2E.2, 5.5E.4, 6.5E.3.2.2
2. R4-2220461 Draft CR for TS 38.101-3, Introduce new band combination of V2X\_n34A\_47A and 34A\_n47A
	* 5.2E.2, 5.5E.4, 6.5E.3.2.2
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|  |  |
|  | **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:*** | Introduction of Release 18 specification |
|  |  |
| ***This CR's revision history:*** |  |

## *<Start of Change 1>*

### 5.2E.2 Inter-band V2X bands

NR V2X operation is designed to operate concurrent with E-UTRA 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**

|  |  |  |
| --- | --- | --- |
| **E-UTRA-NR V2X Band Combination** | **E-UTRA or NR Band** | **Interface** |
| V2X\_1\_n47 | 1 | Uu |
|  | n47 | PC5 |
| V2X\_n1\_47 | n1 | Uu |
|  | 47 | PC5 |
| V2X\_8\_n47 | 8 | Uu |
|  | n47 | PC5 |
| V2X\_5\_n47 | 5 | Uu |
|  | n47 | PC5 |
| V2X\_n5\_47 | n5 | Uu |
|  | 47 | PC5 |
| V2X\_n8\_47 | n8 | Uu |
|  | 47 | PC5 |
| V2X\_3\_n47 | 3 | Uu |
| n47 | PC5 |
| V2X\_n3\_47 | n3 | Uu |
| 47 | PC5 |
| V2X\_n34\_47 | n34 | Uu |
| 47 | PC5 |
| V2X\_34\_n47 | 34 | Uu |
| n47 | PC5 |
| V2X\_20\_n38 | 20 | Uu |
|  | n38 | PC5 |
| V2X\_n39\_47 | 47 | PC5 |
|  | n39 | Uu |
| V2X\_39\_n47 | 39 | Uu |
|  | n47 | PC5 |
| V2X\_n40\_47 | 47 | PC5 |
|  | n40 | Uu |
| V2X\_40\_n47 | 40 | Uu |
|  | n47 | PC5 |
| V2X\_n71\_47 | 47 | PC5 |
|  | n71 | Uu |
| V2X\_41\_n47 | 41 | Uu |
| n47 | PC5 |
| V2X\_n71\_47 | 47 | PC5 |
| n71 | Uu |
| V2X\_n71-(n)471 | 47 | PC5 |
|  | n47 | PC5 |
|  | n71 | Uu |
| V2X\_n78\_47 | 47 | PC5 |
| n78 | Uu |
| V2X\_n79\_47 | 47 | PC5 |
| n79 | Uu |
| NOTE 1: Only single switched SL in ITS band is supported. |

## *<End of Change 1>*

## *<Start of Change 2>*

### 5.5E.4 Inter-band V2X operation in FR1

#### 5.5E.4.1 Inter-band V2X configurations within FR1 (two bands)

**Table 5.5E.4.1-1: Inter-band V2X configurations**

|  |  |
| --- | --- |
| **V2X****configuration** | **V2X transmission configuration** |
| V2X\_1A\_n47A | V2X\_1A\_n47A |
| V2X\_n1A\_47A | V2X\_n1A\_47A |
| V2X\_5A\_n47A | V2X\_5A\_n47A |
| V2X\_n5A\_47A | V2X\_n5A\_47A |
| V2X\_8A\_n47A | V2X\_8A\_n47A |
| V2X\_n8A\_47A | V2X\_n8A\_47A |
| V2X\_3A\_n47A | V2X\_3A\_n47A |
| V2X\_n3A\_47A | V2X\_n3A\_47A |
| V2X\_n34A\_47A | V2X\_n34A\_47A |
| V2X\_34A\_n47A | V2X\_34A\_n47A |
| V2X\_20A\_n38A | V2X\_20A\_n38A |
| V2X\_n39A\_47A | V2X\_n39A\_47A |
| V2X\_39A\_n47A | V2X\_39A\_n47A |
| V2X\_n40A\_47A | V2X\_n40A\_47A |
| V2X\_40A\_n47A | V2X\_40A\_n47A |
| V2X\_n71A\_47A | V2X\_n71A\_47A |
| V2X\_n78A\_47A | V2X\_n78A\_47A |
| V2X\_n79A\_47A | V2X\_n79A\_47A |
| NOTE 1: V2X transmission configurations are the configurations supported by the present release of specifications. |

## *<End of Change 2>*

## *<Start of Change 3>*

##### 6.5E.3.2.2 Spurious emission band UE co-existence

For the inter-band con-current NR V2X operation, the UE-coexistence requirements in Table 6.5E.3.2.2-1 apply for the corresponding inter-band con-current operation with transmission assigned to both E-UTRA uplink in licensed band and sidelink in NR Band n47.

Table 6.5E.3.2.2-1: Requirements for inter-band con-current V2X operation

|  |  |
| --- | --- |
| **V2X con-current operating band cofiguration** | **Spurious emission** |
|  | **Protected band** | **Frequency range (MHz)** | **Maximum Level (dBm)** | **MBW (MHz)** | **NOTE** |
| V2X\_1A\_n47A | E-UTRA Band 1, 3, 5, 7, 8, 22, 26, 28, 34, 40, 41, 42, 44, 45, 65, 68, 72, 73NR Band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| V2X\_n1A\_47A | E-UTRA Band 1, 3, 5, 7, 8, 22, 26, 28, 34, 40, 41, 42, 44, 45, 65, 68, 72, 73NR Band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| V2X\_5A\_n47A | E-UTRA Band 1, 3, 5, 7, 8, 26, 28, 34, 40, 41, 42, 45, 65, 73NR Band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| V2X\_n5A\_47A | E-UTRA Band 1, 3, 5, 7, 8, 26, 28, 34, 40, 42, 45, 65, 73NR Band n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| V2X\_8A\_n47A | E-UTRA Band 1, 3, 7, 8, 22, 28, 34, 39, 40, 41, 42, 45, 65, 68, 72, 73NR Band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| V2X\_n8A\_47A | E-UTRA Band 1, 3, 7, 8, 28, 34, 39, 40, 45, 65, 68, 72, 73NR Band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| V2X\_3\_n47 | E-UTRA Band 1, 5, 7, 8, 26, 28, 34, 39, 40, 41, 44, 45, 65, 68, 72, 73NR Band n77, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
|  | E-UTRA Band 42 | FDL\_low | - | FDL\_high | -50 | 1 | 1 |
|  | Frequency range | 1884.5 | - | 1915.7 | -41 | 0.3 |  |
| V2X\_n3\_47 | E-UTRA Band 1, 3, 5, 7, 8, 26, 28, 34, 39, 40, 41, 42, 44, 45, 65, 68, 72, 73NR band n77, n78, n79  | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 3, 4 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 3 |
| V2X\_n34\_47 | E-UTRA Band 1, 3, 7, 8, 26, 28, 39, 40, 41, 42, 44, 45, 65, 72,NR band n77,n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 3, 4 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 3 |
| V2X\_34\_n47 | E-UTRA Band 1, 3, 7, 8, 22, 26, 28, 39, 40, 41, 42, 44, 45, 65,72, 73NR band n77, n78, n79 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 3, 4 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 3 |
| V2X\_20\_n38 | E-UTRA Band 1, 3, 8, 22, 31, 32, 33, 34, 40, 43, 50, 51, 65, 67, 68, 72, 74, 75, 76 | FDL\_low | - | FDL\_high | -50 | 1 |  |
|  | E-UTRA Band 42, 52 | FDL\_low | - | FDL\_high | -50 | 1 | 1 |
|  | E-UTRA Band 20 | FDL\_low | - | FDL\_high | -50 | 1 | 2 |
|  | NR Band n77, n78 | FDL\_low | - | FDL\_high | -50 | 1 | 1 |
| V2X\_n39\_47 | E-UTRA Band 1, 8, 22, 26, 28, 34, 40, 41, 42, 44, 45NR 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\_39\_n47 | E-UTRA Band 1, 8, 22, 26, 28, 34, 40, 41, 42, 44, 45NR 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\_n40\_47 | E-UTRA Band 1, 3, 5, 7, 8, 22, 26, 28, 34, 39, 42, 44, 45, 65, 68, 72NR 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\_40\_n47 | E-UTRA Band 1, 3, 5, 7, 8, 22, 26, 27, 28, 34, 39, 41, 42, 44, 45, 65, 68, 72, 73NR 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\_n71\_47 | 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\_n78\_47 | 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\_n79\_47 | E-UTRA Band 1, 3, 5, 8, 28, 34, 39, 40, 41, 42, 65 | FDL\_low | - | FDL\_high | -50 | 1 |  |
| Frequency range | 5925 | - | 5950 | -30 | 1 | 3, 4 |
| Frequency range | 5815 | - | 5855 | -30 | 1 | 3 |
| 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>*