**3GPP TSG-RAN WG4 Meeting # 99-e *R4-2108535***

**Electronic Meeting, May. 19-27, 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-4** | **CR** | **-** | **rev** | **-** | **Current version:** | **16.3.0** |  |
|  | | | | | | | | |
| *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:*** | Draft CR for TS 38.101-4: Introduction of PSCCH decoding capability test for NR V2X | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | RAN4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_V2X\_NRSL-Perf | | | | |  | ***Date:*** | | | 2021-05-24 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | RAN 4 has agreed to introduce new test setup for NR V2X PSCCH decoding capability test. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Replace the old test setup with the new test setup. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The test setup will not be aligned with agreement. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 11.1.8.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS38.521-4 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**----- << Start of Change 1>> -----**

### 11.1.8 PSCCH decoding capability test

#### 11.1.8.1 2RX requirements

##### 11.1.8.1.1 Minimum requirements

The purpose of this test is to verify the maximum number of received PSCCHs per TTI supported by the V2X UE.

The minimum requirements are specified in Table 11.1.8.1.1-2 with the test parameters specified in Table 11.1.8.1.1-1 and the test procedure is specified as follows:

10 UEs transmit PSCCHs and corresponding PSSCHs to the tested UE per slot with each UE occupying one subchannel.

x UEs transmit PSCCHs and corresponding PSSCHs with high priority level on x subchannels that are randomly selected from 10 subchannels per slot and 10-x UEs transmit PSCCHs and corresponding PSSCHs with low priority level on the remaining subchannels. The indication of priority level specified in Clause 5.4.3.3 of TS 23.287 [12] and Clause 5.22.1.3.1 of TS 38.321 [8] is included in PSCCH.

Where x equals to:

* + The number of PSFCH(s) resources that the tested UE can transmit in a slot (i.e. IE *psfch-TxNumber* specified in clause 4.2.16.1.6 of TS 38.306 [14]) if the number of PSFCH(s) resources that the tested UE can transmit in a slot is less than 10
  + 10, otherwise.

The test time for UE supporting transmission of less than 10 PSFCH(s) resources in a slot should be 10/x times that of UE supporting transmission of more than 10 PSFCH(s) resources in a slot.

The probability of PSCCH miss detection is calculated as follows:

Where:

* + # (Tx high priority PSCCH/PSSCH) denotes the total number of transmitted PSCCHs/PSSCHs with high priority level.
  + # (false ACK/NACK) denotes the total number of PSFCH resuorces with high priority level where no ACK/NACK is detected.

Table 11.1.8.1.1-1: Test Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | | | **Unit** | **value** |
| Member ID (Note 1) | | |  | 0 |
| Sidelink UE i,  0 ≤ i ≤ 9 (Note 5) | Sidelink Transmissions | |  | PSCCH + PSSCH |
| Timing offset (Note 2) | | μs | 0 |
| Frequency offset (Note 3) | | Hz | 0 |
| Synchronization source | |  | GNSS |
| Propagation Channel | |  | Static propagation condition without external noise |
| Antenna configuration | |  | 1x2 Low |
| PSSCH RMC | |  | R.PSSCH.2-1.1 |
| PSCCH RMC (Note 4) | |  | R.PSCCH.2-1.1 |
| Source ID | |  | 0 |
| PSFCH periodicity | | Slots | 1 |
| MinTimeGapPSFCH | | Slots | 2 |
| PSFCH Resource (Note 5) | RB index |  | 10i |
| CS pair index |  | 0 |
| Note 1: Member ID is an identifier uniquely identifying a member  Note 2: Time offset of received signal by Sidelink UE with respect to GNSS reference timing.  Note 3: Frequency offset of Sidelink UE with respect to GNSS reference frequency.  Note 4: OCC index for PSCCH DMRS is randomly selected between {0, 1, 2} for each PSCCH transmission as per in Clause 8.4.1.3.2 of TS 38.211[9].  Note 5: Each UE occupies one sub-channel so that all sub-channels are filled.  Note 6: The mapping procedure of PSSCH resource and PSFCH resource is specified in Clause 16.3 of TS 38.213 [11]. | | | | |

Table 11.1.8.1.1-2: Minimum performance

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test  Number | Bandwidth (MHz) / Subcarrier spacing(kHz) | PSCCH Reference channel | Propagation Channel | Reference value |
| Probability of missed PSCCH (%) |
| 1 | 40 / 30 | R.PSCCH.2-1.1 | Static propagation condition without external noise | 1 |