**3GPP TSG-RAN WG4 Meeting # 99-e *R4-2108534***

**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 38.101-4: Introduction of PSFCH 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 the new test setup for PSFCH decoding capability test at RAN 4 99-e meeting. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Replace the old test setup for V2X PSFCH decoding capability test with the agreed new test setup. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The test setup and requirements will not be aligned with agreemet | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 11.1.9.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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>> -----**

### 11.1.9 PSFCH decoding capability test

#### 11.1.9.1 2RX requirements

##### 11.1.9.1.1 Minimum requirements

The purpose of this test is to verify the maximum number of PSFCHs received by UE per slot in group cast scenario by using ACK/NACK feedback mode. In each slot, a group of UEs transmits PSFCHs to the tested UE. Information transmitted in each PSFCH is randomly selected from Option A, Option B and Option C with probability of 50%, 25% and 25% respectively. Transmitted PSFCHs are related to one PSSCH which is transmitted by tested UE and occupies all the subchannels.

* Option A: All the UEs in the group transmit ACKs
* Option B: One UE transmits NACK and the rest of UEs transmit ACKs. The PSFCH resource index with NACK is random per slot
* Option C: One UE transmits nothing (i.e.DTX) and the rest of UEs transmit ACKs. The PSFCH resource index of the DTX is random per slot.

The minimum requirements are specified in Table 11.1.9.1.1-2 with the test parameters specified in Table 11.1.9.1.1-1

**Table 11.1.9.1.1-1: Test parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | | Unit | Test 1 |
| HARQ-ACK information | |  | ACK or NACK |
| Source ID of tested UE | |  | 0 |
| Sidelink UE i,  0 ≤ i ≤ N-1(Note 3) | Sidelink transmissions for |  | PSFCH |
| Timing offset (Note 1) | μs | 0 |
| Frequency offset (Note 2) | Hz | 0 |
| Synchronization source |  | GNSS or GNSS-equivalent |
| Propagation Channel |  | Static propagation condition  No external noise sources are applied |
| Antenna configuration |  | 1x2 Low |
| Member ID(Note 4) |  | i |
| PSFCH resource allocation(Note 5) |  | N UEs transmit PSFCHs one by one on each RB with CS pair index 0. i.e. UE 0 transmits PSFCH on RB 0, UE 1 transmits PSFCH on RB 1,…, UE (N-1) transmits PSFCH on RB N-1 |
| PSFCH periodicity | Slots | 1 |
| Note 1: Time offset of received signal by Sidelink UE with respect to GNSS reference timing.  Note 2: Frequency offset of received signal by Sidelink UE with respect to GNSS reference frequency.  Note 3: N equals to the number of PSFCH(s) resources that UE can receive in a slot as specified in Clause 4.2.16.1.6 of TS 38.306[14]( IE *psfch-RxNumber*)) .  Note 4: Member ID is an identifier uniquely identifying a member  Note 5: All PSFCHs in a slot are corresponding to one PSSCH that occupies all sub channels. | | | |

**Table 11.1.9.1.1-2: Minimum requirement**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test  Number | Bandwidth (MHz) / Subcarrier spacing(kHz) | Propagation Channel | Reference value | |
| Probability of success detection slot with ACK only | Probability of success detection slot with NACK or DTX |
| 1 | 40 / 30 | Static propagation condition without external noise | 99 | 99 |
| Note 1: The probability of success detection slot with ACK only is the probability that the corresponding PSSCH is not retransmitted when Option A is selected.  Note 2: The probability of success detection slot with NACK or DTX is the probability that the corresponding PSSCH is retransmitted when Option B or option C is selected. | | | | |

**----- << End of Change 1>> -----**

**----- << Start of Change 2>> -----**