**3GPP TSG-RAN WG2 Meeting #121 *R2-2302028***

**Athens, Greece,** **27th Feb – 3rd Mar 2023**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  | **38.300** | **CR** | **xxxx** | **rev** |  | **Current version:** | **17.3.0** |  |
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| *For* [***HELP***](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 | **X** | Core Network |  |

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| ***Title:***  | Miscellaneous corrections on TS 38.300 for NR sidelink  |
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| ***Source to WG:*** | CATT, ZTE, Sharp, Ericsson |
| ***Source to TSG:*** | R2 |
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| ***Work item code:*** | NR\_SL\_enh-Core |  | ***Date:*** | 2023-3-02 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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 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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* *Rel-19 (Release 19)* |
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| ***Reason for change:*** | 1. According to the LS(R1-2212822) received from RAN1 and RAN2 agreements shown as follows, the supported cast type of IUC information needs to be clarified in stage 2.

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| RAN1 Agreement:* The following working assumption is confirmed as follows:
* Working Assumption (RAN1#107bis-e meeting):
* For Scheme 1, following cast type(s) are supported for inter-UE coordination information transmission triggered by a condition other than explicit request reception
* Groupcast/Broadcast for non-preferred resource set~~, FFS for preferred resource set~~
* ~~FFS: Under which conditions groupcast/broadcast can be supported~~
* Unicast for preferred resource set and non-preferred resource set
* ~~FFS: Under which conditions unicast can be supported~~
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In RAN2#121, the following agreements were reached on the cast type of IUC information triggered by condition:

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| RAN2#121 Agreements:* Option 1 is agreed. IUC in GC/BC can be supported with option1.
* We will have a note in MAC. Detailed wordings be handled in MAC CR email discussion.
* Continue the discussion whether we need to capture for a case when there is data to send in GC/BC in separate in a note as part of email discussion [AT121][506].
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TS38.300 should be updated based on the LS in and RAN2 agreements.1. In the current specification, it is described that “Physical Sidelink Broadcast Channel (PSBCH) occupies 9 and 5 symbols for normal and extended CP cases respectively, including the associated DM-RS.”

However, according to the following description in TS38.211, the number of symbols for extended CP case is not 5 but 7.

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| 8.4.3.1 Time-frequency structure of an S-SS/PSBCH blockIn the time domain, an S-SS/PSBCH block consists of $N\_{symb}^{S-SSB}$ OFDM symbols, numbered in increasing order from 0 to $N\_{symb}^{S-SSB}-1$ within the S-SS/PSBCH block, where S-PSS, S-SSS, and PSBCH with associated DM-RS are mapped to symbols as given by Table 8.4.3.1-1. The number of OFDM symbols in an S-SS/PSBCH block $N\_{symb}^{S-SSB}=13$ for normal cyclic prefix and $N\_{symb}^{S-SSB}=11$ for extended cyclic prefix. The first OFDM symbol in an S-SS/PSBCH block is the first OFDM symbol in the slot.**Table 8.4.3.1-1: Resources within an S-SS/PSBCH block for S-PSS, S-SSS, PSBCH, and DM-RS.**

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| **Channel or signal** | **OFDM symbol number** $l$**relative to the start of an S-SS/PSBCH block** | **Subcarrier number** $k$**relative to the start of an S-SS/PSBCH block** |
| S-PSS | 1, 2 | 2, 3, …, 127, 128 |
| S-SSS | 3, 4 | 2, 3, …, 127, 128 |
| Set to zero | 1, 2, 3, 4 | 0, 1, 129, 130, 131 |
| PSBCH | 0, 5, 6, …, $N\_{symb}^{S-SSB}-1$ | 0, 1,…, 131 |
| DM-RS for PSBCH | 0, 5, 6, …, $N\_{symb}^{S-SSB}-1$ | 0, 4, 8, …., 128 |

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1. The two terminologies “UE-A” and “UE-B” are used in the description texts on IUC. However, the two terminologies are not defined, and therefore should be avoided to be used.
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| ***Summary of change:*** | 1. In section 16.9.8, add the description of supported cast type of IUC information triggered by condition.
2. In section 5.7.3, change the description to “Physical Sidelink Broadcast Channel (PSBCH) occupies 9 and 7 symbols for normal and extended CP cases respectively, including the associated DM-RS.”
3. In section 16.9.8, removal of terminologies “UE-A” and “UE-B”.

**Impact analysis**Impacted 5G architecture options:  NG-RAN Architecture supporting the PC5 interfaceImpacted functionalityNR Sidelink CommunicationInter-operability:If the network is implemented according to this CR while the UE is not, there is no inter-operability issue.If the UE is implemented according to this CR while the network is not, there is no inter-operability issue. |
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| ***Consequences if not approved:*** | 1. Supported cast type of IUC information triggerred by condition is not clarified.
2. The description in the current spec is imprecise and confusing.
3. UEs may have different interpretation to IUC functions as captured in clause 16.9.8. This may affect IUC trigger and report between UEs.
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| ***Clauses affected:*** | 5.7.3, 16.9.8 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ... |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
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| ***This CR's revision history:*** |  |

START OF CHANGE

5.7.3 Physical sidelink channels and signals

Physical Sidelink Control Channel (PSCCH) indicates resource and other transmission parameters used by a UE for PSSCH. PSCCH transmission is associated with a DM-RS.

Physical Sidelink Shared Channel (PSSCH) transmits the TBs of data themselves, and control information for HARQ procedures and CSI feedback triggers, etc. At least 6 OFDM symbols within a slot are used for PSSCH transmission. PSSCH transmission is associated with a DM-RS and may be associated with a PT-RS.

Physical Sidelink Feedback Channel (PSFCH) carries HARQ feedback over the sidelink from a UE which is an intended recipient of a PSSCH transmission to the UE which performed the transmission. PSFCH sequence is transmitted in one PRB repeated over two OFDM symbols near the end of the sidelink resource in a slot.

The Sidelink synchronization signal consists of sidelink primary and sidelink secondary synchronization signals (S-PSS, S-SSS), each occupying 2 symbols and 127 subcarriers. Physical Sidelink Broadcast Channel (PSBCH) occupies 9 and 7 symbols for normal and extended CP cases respectively, including the associated DM-RS.

NEXT CHANGE

### 16.9.8 Inter-UE Coordination (IUC)

The SL UE can support inter-UE coordination (IUC) in Mode 2, whereby a UE sends information about resources to a peer UE, which the peer UE then uses for resource (re)selection. The following schemes of inter-UE coordination are supported:

- IUC scheme 1, where the IUC information sent from a UE to a peer UE is the preferred or non-preferred resources for the peer UE's transmission, and

- IUC scheme 2, where the IUC information sent from a UE to a peer UE is the presence of expected/potential resource conflict on the resources indicated by the peer UE's SCI.

In scheme 1, the transmission of IUC information from a UE can be triggered by an explicit request from a peer UE, or by a condition at the UE. The UE determines the set of resources reserved by other UEs or slots where the UE, when it is the intended receiver of a peer UE, does not expect to perform SL reception from the peer UE due to half-duplex operation. The UE uses these resources as the set of non-preferred resources, or excludes these resources to determine a set of preferred resources and sends the preferred/non-preferred resources to the peer UE. The peer UE's resources for resource (re)selection can be based on both the peer UE's sensing results (if available) and the IUC information received from the UE, or it can be based only on IUC information received from the UE. For scheme 1, MAC CE and second-stage SCI or MAC CE only can be used to send IUC information. For transmission of the explicit request and reporting for IUC information in unicast manner is supported. For IUC information transmission triggered by a condition other than explicit request reception, the IUC information indicating preferred resource set is transmitted in unicast manner, and the IUC information indicating non-preferred resource set is transmitted in unicast, groupcast or broadcast manner.

In scheme 2, a UE determines the expected/potential resource conflict within the resources indicated by a peer UE's SCI as either resources reserved by other UEs and identified by the UE as fully/partially overlapping with the resources indicated by the peer UE's SCI, or as slots where the UE is the intended receiver of the peer UE and does not expect to perform SL reception on those slots due to half-duplex operation. The peer UE uses the conflicting resources to determine the resources to be reselected and exclude the conflicting resources from the reselected resources. For scheme 2, PSFCH is used to send IUC information.

END OF CHANGE