**3GPP TSG-RAN WG2 Meeting #111-e *R2-2XXXXXX***

**Online, 17th – 28th Aug, 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
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|  | **38.321** | **CR** |  | **rev** | **-** | **Current version:** | **16.1.0** |  |
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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:***  | Correction on the calculaion of CG occasion |
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| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | 5G\_V2X\_NRSL-Core |  | ***Date:*** | 2020-8-17 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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 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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | 1. It is currently specified that *numberOfSLSlotsPerFrame* and *N* refer to the number of logical slots that can be used for SL transmsission in the frame and 20ms respectively. However, accoding to 38.214 subcaluse 8.1.7, *N* is the number of slots that can be used for SL transmission within 20 *ms* of the configured UL-DL configuration. Thus, the definition of N should be changed according to 38.214.
2. Currently, *sl-TimeOffsetCGType1* is specified as a offset of a resource with respect to SFN = 0 in time domain. However, the time offset should take the boundary given by *sl-TimeReferenceSFN-Type1* which can be configured as either SFN 0 or SFN 512 as a reference, not always the SFN0 as captured in the current MAC spec.
3. *timeReferenceSFN* has been captured in the equation, but its definition and/or explanation is absent. In addition, this parameter has the same name as the one indicated in the UL CG configuration which is also misleading.
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| ***Summary of change:*** | 1. Clarify that *N* refers to the the number of slots that can be used for SL transmsission within 20ms, if configured, of *TDD-UL-DL-ConfigCommon* as specified in clause 8.1.7 of TS 38.214.3. Clarify that *sl-TimeOffsetCGType1* is the offset of a resource with respect to SFN = *sl-TimeReferenceSFN-Type1* in time domain. 4. Use “*sl-TimeReferenceSFN-Type1*” in the formular and add corresponding definition of this parameter. **Impact analysis****Impacted functionality**Sidelink configured grant type 1**Inter-operability:** If the network is implemented according to this CR while the UE is not, the calculated CG occasion between the UE and the NW may be different, which may have some impact on retransmission scheduling.If the UE is implemented according to this CR while the network is not, the calculated CG occasion between the UE and the NW may be different, which may have some impact on retransmission scheduling.If one UE is implemented according to this CR while the other UE is not, there is no inter-operability issue. |
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| ***Consequences if not approved:*** | The calculaiton of CG occasion remains unclear and UE will not correctly perform NR sidelink transmission on sidelink configured grant type 1.  |
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| ***Clauses affected:*** | 5.8.3 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS/TR 38.331 CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

CHANGE START

### 5.8.3 Sidelink

There are two types of transmission without dynamic grant:

- configured grant Type 1 where an sidelink grant is provided by RRC, and stored as configured sidelink grant;

- configured grant Type 2 where an sidelink grant is provided by PDCCH, and stored or cleared as configured sidelink grant based on L1 signalling indicating configured sidelink grant activation or deactivation.

Type 1 and/or Type 2 are configured with a single BWP. Multiple configurations of up to 8 configured grants (including both Type 1 and Type 2, if configured) can be active simultaneously on the BWP.

RRC configures the following parameters when the configured grant Type 1 is configured, as specified in TS 38.331 [5] or TS 36.331 [21]:

- *sl-ConfigIndexCG*: the identifier of a configured grant for sidelink;

- *sl-CS-RNTI*: SLCS-RNTI for retransmission;

- *nrofHARQ-Processes*: the number of HARQ processes for configured grant;

- *sl-periodCG*: periodicity of the configured grant Type 1;

- *sl-TimeOffsetCGType1*: Offset of a resource with respect to SFN = *sl-TimeReferenceSFN-Type1* in time domain;

- *sl-TimeResourceCGType1*: time resource location of the configured grant Type 1;

- *sl-CG-MaxTransNumList*: the maximum number of times that a TB can be transmitted using the configured grant;

*- sl-harq-procID-offset*: offset of HARQ process for configured grant Type 1.

- *sl-TimeReferenceSFN-Type1*: SFN used for determination of the offset of a resource in time domain. The UE uses the closest SFN with the indicated number preceding the reception of the configured grant configuration Type 1.

RRC configures the following parameters when the configured grant Type 2 is configured, as specified in TS 38.331 [5]:

- *sl-ConfigIndexCG*: the identifier of a configured grant for sidelink;

- *sl-CS-RNTI*: SLCS-RNTI for activation, deactivation, and retransmission;

- *nrofHARQ-Processes*: the number of HARQ processes for configured grant;

- *sl-periodCG*: periodicity of the configured grant Type 2;

- *sl-CG-MaxTransNumList*: the maximum number of times that a TB can be transmitted using the configured grant;

*- sl-harq-procID-offset*: offset of HARQ process for configured grant Type 2.

Upon configuration of a configured grant Type 1, the MAC entity shall for each configured sidelink grant:

1> store the sidelink grant provided by upper layers as a configured sidelink grant;

1> initialise or re-initialise the configured sidelink grant to determine PSCCH duration(s) and PSSCH duration(s) according to *sl-TimeOffsetCGType1* and *sl-TimeResourceCGType1*, and to reoccur with *sl-periodCG* for transmissions of multiple MAC PDUs according to clause 8.1.2 of TS 38.214 [7].

NOTE 1: If the MAC entity is configured with multiple configured sidelink grants, collision among the configured sidelink grants may occur. How to handle the collision is left to UE implementation.

After a sidelink grant is configured for a configured grant Type 1, the MAC entity shall consider sequentially that the first slot of the Sth sidelink grant occurs in the logical slot for which:

[(SFN × *numberOfSLSlotsPerFrame*) + logical slot number in the frame] =
 (sl-*TimeReferenceSFN-Type1* × *numberOfSLSlotsPerFrame* *+* *sl-TimeOffsetCGType1*+ S × *PeriodicitySL*) modulo (1024 × *numberOfSLSlotsPerFrame*).

where $PeriodicitySL=\left⌈\frac{N}{20 ms}×sl\\_periodCG\right⌉$, *numberOfSLSlotsPerFrame* refers to the number of logical slots that can be used for SL transmsission in the frame and *N* refer to the number of slots that can be used for SL transmsission within 20ms, if configured, of *TDD-UL-DL-ConfigCommon*, as specified in TS 38.331 [5] and clause 8.1.7 of TS 38.214 [7].

After a sidelink grant is configured for a configured grant Type 2, the MAC entity shall consider sequentially that the first slot of Sth sidelink grant occurs in the logical slot for which:

[(SFN × *numberOfSLSlotsPerFrame*) + logical slot number in the frame] =
[(SFNstart time × *numberOfSLSlotsPerFrame* + slotstart time) + S × *PeriodicitySL*] modulo (1024 × *numberOfSLSlotsPerFrame*).

where SFNstart time and slotstart time are the SFN and logical slot, respectively, of the first transmission opportunity of PSSCH where the configured sidelink grant was (re-)initialised.

When a configured sidelink grant is released by upper layers, all the corresponding configurations shall be released and all corresponding sidelink grants shall be cleared.

The MAC entity shall:

1> if the configured sidelink grant confirmation has been triggered and not cancelled; and

1> if the MAC entity has UL resources allocated for new transmission:

2> instruct the Multiplexing and Assembly procedure to generate a Sidelink Configured Grant Confirmation MAC CE as defined in clause 6.1.3.34;

2> cancel the triggered configured sidelink grant confirmation.

For a configured grant Type 2, the MAC entity shall clear the corresponding configured sidelink grant immediately after first transmission of Configured Grant Confirmation triggered by the configured sidelink grant deactivation.

CHANGE END