3GPP TSG-RAN WG1 Meeting #103-e R1-20xxxxx

Online, October 26th – November 13th, 2020

Agenda Item: 7.2.4

Source: Moderator (Ericsson)

Title: Thread 9 on Maintenance for 5G V2X with NR sidelink – Mode 1

Document for: Discussion, Decision

# 1 List of issues for discussion

[103-e-NR-Rel-16-V2X-09]: Email discussion/approval of CRs for the agreements from previous meetings (Mode 1) by 10/30 – Ricardo (Ericsson)

Note also that we are tasked with:

1. For all Rel-16 “**editorial” CRs/updates**, we will use the editors’ alignment CRs as a start to collect and incorporate these updates. There will be dedicated editors’ alignment CR email threads.
   1. Please especially FLs help the editors collect any essential editorial-like CRs (per spec)

# Discussion

The FL has only identified two agreements that have not been implement in the RAN1 specification:

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| Agreements:   * Capture how to set the TDRA and FRDA fields in the specification based on the agreements regarding how to set the TDRA and FDRA fields in DCI/SCI:   + For the SCI transmitted in the first granted resource (for DG) or in the first resource in a period (for CG), the values of TDRA and FDRA are the ones provided in DCI.   + For the SCI transmitted in the second granted resource (for DG) or in the second resource in a period (for CG), the values of TDRA and FDRA indicate the second and third granted resources (for DG) or the second and third resources in a period (for CG). If the grant does not include a third resource, TDRA is set to zero and FDRA is set with the same as the corresponding value provided in DCI.   + For the SCI transmitted in the third granted resource (for DG) or in the third resource in a period (for CG), the values of TDRA is set to zero and FDRA is set with the same as the corresponding value provided in DCI. * Note: for mode-1, it is understood that up to 3 resources can be configured within a SL CG period to transmit a TB and DG resources are used for the same TB if further retransmissions are needed.   Agreements:  For Mode 1 when applicable:   * For the same TB, the minimum time between PSFCH reception and next scheduled PSCCH/PSSCH retransmission is Tprep +delta (ms)   + To conclude the value of delta>=0 during the e-Meeting   + A UE is not expected to be scheduled consecutive SL transmisions for the same TB such that the minimum time between PSFCH reception and next PSCCH/PSSCH retransmission can not be guaranteed * FFS the detailed conditions of the applicability |

Given that the details for the second agreement are under discussion in [103-e-NR-Rel-16-V2X-09], the FL proposes to work on the CR for the first one:

## CR01: how to set the TDRA and FRDA fields in the specification based on the agreements regarding how to set the TDRA and FDRA fields in DCI/SCI

Only one draft CR implementing the first agreement was submitted. The FL proposes to take it as the starting point for discussion:

**FL update 27/10/2020:**

* Nokia/NSB suggest to have a more concise CR. If it is agreeable to everyone, that would be better. Based on their wording, I have prepared a draft CR (Alt. 2 below).
* For the original draft CR (Alt. 1), I have introduce the corrections proposed in the comments.
* Please state whether you would be fine with a shorter CR (Alt. 2) or if it is necessary to have a very detailed one (Alt. 1). If you think both are OK, I suggest to got with the shorter one. It will be easier to maintain, as commented by Futurewei.

### Alternative 1 (long version):

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| **<Unchanged parts omitted>** 16 UE procedures for sidelink A UE is provided by *locationAndBandwidth-SL* a BWP for SL transmissions (SL BWP) with numerology and resource grid determined as described in [4, TS38.211]. For a resource pool within the SL BWP, the UE is provided by *numSubchannel* a number of sub-channels where each sub-channel includes a number of contiguous RBs provided by *subchannelsize*. The first RB of the first sub-channel in the SL BWP is indicated by *startRB-Subchannel*. Available slots for a resource pool are provided by *timeresourcepool* and occur with a periodicity provided by '*periodResourcePool*'. For an available slot without S-SS/PSBCH blocks, SL transmissions can start from a first symbol indicated by *startSLsymbols* and be within a number of consecutive symbols indicated by *lengthSLsymbols*. For an available slot with S-SS/PSBCH blocks, the first symbol and the number of consecutive symbols is predetermined.  The UE expects to use a same numerology in the SL BWP and in an active UL BWP in a same carrier of a same cell. If the active UL BWP numerology is different than the SL BWP numerology, the SL BWP is deactivated.  A priority of a PSSCH according to NR radio access or according to E-UTRA radio access is indicated by a priority field in a respective scheduling SCI format. A priority of a PSSS/SSSS/PSBCH according to E-UTRA radio access is provided by *LTESidelinkSSBPriority*. A priority of an S-SS/PSBCH block is provided by *sl-SSB-PriorityNR-r16*. A priority of a PSFCH is same as the priority of a corresponding PSSCH.  A UE does not expect to be provided search space sets associated with CORESETs on more than one cell to monitor PDCCH for detection of DCI format 3\_0 or DCI format 3\_1.  **<Unchanged parts omitted>** 16.4 UE procedure for transmitting PSCCH A UE can be provided a number of symbols in a resource pool, by *timeResourcePSCCH*, starting from a second symbol that is available for SL transmissions in a slot, and a number of PRBs in the resource pool, by *frequencyResourcePSCCH*, for a PSCCH transmission with a SCI format 1-A.  A UE that transmits a PSCCH with SCI format 1-A using sidelink resource allocation mode 2 [6, TS 38.214] sets  **<Unchanged parts omitted>**  A UE that transmits a PSCCH with SCI format 1-A using sidelink resource allocation mode 1 [6, TS 38.214] sets  -     the values of the frequency resource assignment field and the time resource assignment field as follows:  -     for an SCI format 1-A transmitted in the first resource for PSCCH/PSSCH transmission provided by a dynamic grant or in the first resource for PSCCH/PSSCH transmission in a period provided by a SL configured grant type 2, the values of the frequency resource assignment field and the time resource assignment field in the SCI format 1-A are the same as the values of the frequency resource assignment field and the time resource assignment field respectively provided in the DCI format 3\_0 scheduling the PSCCH transmission for dynamic grant or activating the SL configured grant type 2.  -     for an SCI format 1-A transmitted in the first granted resource for PSCCH/PSSCH transmission in a period provided by a SL configured grant type 1, the values of the frequency resource assignment field and the time resource assignment field in the SCI format 1-A are the same as the values provided in *sl-FreqResourceCG-Type1* and *sl-TimeResourceCG-Type1*, respectively.  -     for an SCI format 1-A transmitted in the second resource for PSCCH/PSSCH transmission provided by a dynamic grant or in the second resource for PSCCH/PSSCH transmission in a period provided by a SL configured grant type 2, the values of the frequency resource assignment field and the time resource assignment field in the SCI format 1-A indicate the second and third resources provided by the dynamic grant or the second and third resources of the period for the SL configured grant type 2, as described in [6, TS 38.214]. If the dynamic grant does not provide a third resource for PSCCH/PSSCH transmission or if the SL configured grant type 2 does not provide a third resource for PSCCH/PSSCH transmission in a period, the value of the frequency resource assignment field is set using the value of obtained from the DCI format 3\_0 scheduling the PSCCH transmission for dynamic grant or activating the SL configured grant type 2, and the value of the time resource assignment field is set to zero, as described in [6, TS 38.214].  -     for an SCI format 1-A transmitted in the second resource for PSCCH/PSSCH transmission in a period provided by a SL configured grant type 1, the values of the frequency resource assignment field and the time resource assignment field in the SCI format 1-A indicate the second and third resources for PSCCH/PSSCH transmission in the period for the SL configured grant type 1, as described in [6, TS 38.214]. If the SL configured grant type 1 does not provide a third resource for PSCCH/PSSCH transmission in a period, the value of the frequency resource assignment field is set using the value of  obtained from *sl-FreqResourceCG-Type1*, and the value of the time resource assignment field is set to zero, as described in [6, TS 38.214].  -     for an SCI format 1-A transmitted in the third resource for PSCCH/PSSCH transmission provided by a dynamic grant or in the third resource for PSCCH/PSSCH transmission in a period for a SL configured grant type 2, the value of the frequency resource assignment field is set using the value of  obtained from the DCI format 3\_0 scheduling the PSCCH transmission for dynamic grant or activating the SL configured grant type 2, and the value of the time resource assignment field is set to zero, as described in [6, TS 38.214]  -     for an SCI format 1-A transmitted in the third resource for PSCCH/PSSCH transmission in a period for a SL configured grant type 1, the value of the frequency resource assignment field is set using the value of  obtained from *sl-FreqResourceCG-Type1*, and the value of the time resource assignment field is set to zero, as described in [6, TS 38.214].For decoding of a SCI format 1-A, a UE may assume that a number of bits provided by *sl*-*NumReservedBits*-*r16* can have any value.  **<Unchanged parts omitted>** |

### Alternative 2 (short version):

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| **<Unchanged parts omitted>** 16 UE procedures for sidelink A UE is provided by *locationAndBandwidth-SL* a BWP for SL transmissions (SL BWP) with numerology and resource grid determined as described in [4, TS38.211]. For a resource pool within the SL BWP, the UE is provided by *numSubchannel* a number of sub-channels where each sub-channel includes a number of contiguous RBs provided by *subchannelsize*. The first RB of the first sub-channel in the SL BWP is indicated by *startRB-Subchannel*. Available slots for a resource pool are provided by *timeresourcepool* and occur with a periodicity provided by '*periodResourcePool*'. For an available slot without S-SS/PSBCH blocks, SL transmissions can start from a first symbol indicated by *startSLsymbols* and be within a number of consecutive symbols indicated by *lengthSLsymbols*. For an available slot with S-SS/PSBCH blocks, the first symbol and the number of consecutive symbols is predetermined.  The UE expects to use a same numerology in the SL BWP and in an active UL BWP in a same carrier of a same cell. If the active UL BWP numerology is different than the SL BWP numerology, the SL BWP is deactivated.  A priority of a PSSCH according to NR radio access or according to E-UTRA radio access is indicated by a priority field in a respective scheduling SCI format. A priority of a PSSS/SSSS/PSBCH according to E-UTRA radio access is provided by *LTESidelinkSSBPriority*. A priority of an S-SS/PSBCH block is provided by *sl-SSB-PriorityNR-r16*. A priority of a PSFCH is same as the priority of a corresponding PSSCH.  A UE does not expect to be provided search space sets associated with CORESETs on more than one cell to monitor PDCCH for detection of DCI format 3\_0 or DCI format 3\_1.  **<Unchanged parts omitted>** 16.4 UE procedure for transmitting PSCCH A UE can be provided a number of symbols in a resource pool, by *timeResourcePSCCH*, starting from a second symbol that is available for SL transmissions in a slot, and a number of PRBs in the resource pool, by *frequencyResourcePSCCH*, for a PSCCH transmission with a SCI format 1-A.  A UE that transmits a PSCCH with SCI format 1-A using sidelink resource allocation mode 2 [6, TS 38.214] sets  **<Unchanged parts omitted>**  A UE that transmits a PSCCH with SCI format 1-A using sidelink resource allocation mode 1 [6, TS 38.214] sets  -     the values of the frequency resource assignment field and the time resource assignment field for the -th resource for PSCCH/PSSCH transmission provided by a dynamic grant or by a SL configured grant, where and M is the total number of resources for PSCCH/PSSCH transmission provided by a dynamic grant or the number of resources for PSCCH/PSSCH transmission in a period provided by a SL configured grant type 1 or SL configured grant type 2, as follows:  -     the frequency resource assignment field and time resource assignment field indicate the -th to -th resources as described in [6, TS 38.214]. For decoding of a SCI format 1-A, a UE may assume that a number of bits provided by *sl*-*NumReservedBits*-*r16* can have any value.  **<Unchanged parts omitted>** |

Is the above text agreeable as a CR implementing the agreement from RAN1#102-e?:

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| **Company** | **View** |
| vivo | Several places are using ‘the values the values’, should be corrected as ‘the values ~~the values~~’  FL reply 27/10/2020:  Corrected. Thanks |
| NTT DOCOMO | In addition to vivo’s comment, for the third/fourth bullets (i.e. transmission on the second resource), SCI does not indicate the second resource itself but indicates only the third resource (TRIV = t1 in 8.1.5 of 38.214).  FL reply 27/10/2020:  I do not see any issue with the statement ”the values of the frequency resource assignment field and the time resource assignment field in the SCI format 1-A indicate the second and third resources provided by the dynamic grant or the second and third resources of the period for the SL configured grant type 2, as described in [6, TS 38.214]”. It just says that FRA and TRA indicate second and third resources. It does not say that each of the fields indicates both resources. How the indication is made is described in 38.214. |
| Sharp | Several “PSCCH/PSCCH transmission” need to be corrected as “PSCCH/PSSCH transmission”. For the 2nd sub-bullet, “the same as the values ~~of~~ provided in …”, here “of” is deleted. For the last sub-bullet, “a dynamic grant or” is redundant.  Regarding DCM’s comment, we don’t share the same view. In this case, if a third resource is provided, TRIV=t2-t1 and SCI always indicates the resource itself.  FL reply 27/10/2020:  Corrected. Thanks |
| ZTE | We share the same comment with Vivo and Sharp. In addition, we are wondering whether the hierarchy of the last “for an SCI format 1-A....” should be the same as above bullets, and from “For decoding....”, it should be a new paragraph and a new hierarchy.  FL reply 27/10/2020:  See my replies to them. Regarding your second comment, I took the text for Mode 2 as guidance. Let’s not deviate from it unless necessary. |
| CATT | We share the same comment/changes with vivo and Sharp.  It was agreed that SCI indicates the second and third transmissions when transmitting on the second resource.  FL reply 27/10/2020:  See my replies to them |
| Huawei, HiSilicon | We are ok with the CR in princinple except the typos pointed out by Vivo and Sharp. One for calrification, for the second and third resources indication in the SCI of second transmission, TRIV=t2-t1 in our understanding.  FL reply 27/10/2020:  See my replies to them |
| Ericsson | Agree |
| Apple | We support the CR, including the typos mentioned by vivo and Sharp.  FL reply 27/10/2020:  See my replies to them |
| Nokia, NSB | The text seems OK apart from the typos mentioned by others, but rather verbose and repetitive. I wonder if something like this could work:  Let M denote the number of resources for PSCCH/PSCCH transmission provided by a dynamic grant or the number of resources for PSCCH/PSCCH transmission in a period provided by a SL configured grant type 1 or SL configured grant type 2.  for resource m = 1..M  for an SCI format 1-A transmitted in the m-th resource, the frequency resource assignment field and time resource assignment field indicate the m-th to M-th resources  FL reply 27/10/2020:  I appreciate your suggestion. Given how difficult it was to reach the agreement, I am not sure this will work out, but let us give it a try. |
| Futurewei | We are okay with the CR with typos corrected. However, the suggestion provided by Nokia has some merits and would result in a more concise spec, as well as more maintainable (e.g., what if in a future release, there is a fourth, fifth transmission...)  FL reply 27/10/2020:  See my replies to them |
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## Editorial CRs

The following editorial corrections are proposed in different contributions:

TS 38.213:

1. [R1-2008388]: Alignment of naming for “*SL configured grant Type1/2*”.
2. ~~[R1-2008388]: In the first paragraph of section 16.5 of TS 38.213, we think “~~*~~… on the primary cell of the PUCCH group~~* ***~~of~~*** *~~the cell where…~~*~~” should be “~~*~~… on the primary cell of the PUCCH group~~* ***~~containing~~*** *~~the cell where…~~*~~”~~
3. [R1-2008388, R1-2008750]: In the text above Table 16.5-1, a minus sign is accidentally missing in “” where should be instead.

TS 38.214:

1. [R1-2008750]: Clause 8.1.2.1
   * The slot of the first sidelink transmission scheduled by the DCI is the first SL slot of the corresponding resource pool that starts not earlier than where is starting time of the downlink slot carrying the corresponding DCI, is the timing advance value and is the slot offset between the slot DCI and the first sidelink transmission scheduled by DCI, and is the SL slot duration.

FL comment: there were a few editorial TPs for HARQ\_ACK codebook construction. Given the volume of contributions addressing that Clause, it seems clear that we will need to discuss corrections to it in a future meeting. The FL’s suggestion is to defer editorial changes until then.

**FL update 27/10/2020:**

* TS 38.213-01, TS 38.213-03, and TS 38.214-01 seem agreeable.
* Many replies believe that that TS 38.213-02 is not necessary, so let us remove it.
* Vivo proposes to add ”is the timing advance value corresponding to the TAG of the serving cell on which the DCI is received” to TS 38.214-01. I would like to know whether the companies think this is acceptable.

Please share your views on the above issues. Besides that, please inform me of any other strictly editorial changes that could be included here.

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| **Company** | **View** |
| vivo | Agree  [vivo-2]  Regarding the in the formula, we think some further clarifications are needed.  There are up to two TAGs in Uu, which means there can be up to two maintained at the UE side. The difference between the two depends on depolyement. So it should be clarified which is used to derive the scheduled SL resources in the formula . Considering that the is introduced to compensate for the transportation delay of DCI, in the formula should refer to the of the cell on which SL DCI is received.   * + The slot of the first sidelink transmission scheduled by the DCI is the first SL slot of the corresponding resource pool that starts not earlier than where is starting time of the downlink slot carrying the corresponding DCI, is the timing advance value corresponding to the TAG of the serving cell on which the DCI is received the and is the slot offset between the slot DCI and the first sidelink transmission scheduled by DCI, and is the SL slot duration. |
| NTT DOCOMO | We are fine with postponing them while 213 – 02, 213 – 03, 214 – 01 seem to be quite easy to agree.  For 213 – 02, we are not sure it is necessary. |
| Sharp | Agree with changes listed by FL. In addition, we think some proposed changes to align RRC parameter names e.g. in TP#1 of [R1-2008388] can also be considered as strictly editorial.  FL reply 27/10/2020:  They are all part of the HARQ\_ACK codebook construction text right? I was proposing to leave it to next meeting. See my note above |
| ZTE | Agree with 213-01/03 214-01. For 213-02, it seems not necessary since we cannot find any ambiguity from previous wording. |
| CATT | Agree with the changes provided by FL. |
| Huawei, HiSilicon | Agree with the change of 213-01/03 and 214-01. For 213-02, the current wording is fine, the update seems unnecessary. |
| Ericsson | Agree |
| Apple | Agree with 213-01, 213-03 and 214-01. 213-02 seems not necessary. |
| Nokia, NSB | Agree except for 213-02 which seems unnecessary. |
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## Other comments

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| NTT DOCOMO | Section 2.3 of our contribution (R1-2008530) is also editorial issue in my understanding. At the RAN1#98bis, the following were agreed.   * PUCCH slot/resource is indicated by the same way as Uu. * PUCCH configuration is separately provided from Uu.   But they are not covered in the current spec. This is also clarified in the next meeting as the above ‘Editorial CRs’; is it correct understanding? If so, we are fine with that way.  FL reply 27/10/2020:  My impression is that they are a bit beyond what I would call editorial or simple clarifications. I had the impression that a bit of discussion would be necessary and that is why I decided not to include them here. |
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