**3GPP TSG RAN WG1 Meeting #103-E R1-** **200xxxx**

**e-Meeting, October 26th – November 13th, 2020**

**Source: Moderator (Intel Corporation)**

**Title: Discussion on [103-e-NR-Rel-16-V2X-10]**

**Agenda item: 7.2.4**

**Document for:** **Discussion and Decision**

Introduction

This contribution provides discussion on critical issues for the thread [103-e-NR-Rel-16-V2X-10].

[103-e-NR-Rel-16-V2X-10]: Email discussion/approval of CRs for the agreements from previous meetings (Mode 2) by 10/30 – Sergey (Intel)

Outcome TPs

According to the agreement in this thread, the following TPs are prepared:

**TP to TS 38.214, section 8.1.5**

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| 8.1.5 UE procedure for determining slots and resource blocks for PSSCH transmission associated with an SCI format 1-A<< unchanged parts omitted >>If TRIV indicates *N* < *sl-MaxNumPerReserve*, the starting sub-channel indexes corresponding to *sl-MaxNumPerReserve* minus N last resources are not used.The number of slots in one set of the time and frequency resources for transmission opportunities of PSSCH is given by where = 10\*SL\_RESOURCE\_RESELECTION\_COUNTER [10, TS 38.321] if configured else is set to 1.If a set of sub-channels in slot is determined as the time and frequency resource for PSSCH transmission corresponding to the selected sidelink grant (described in [10, TS 38.321]), the same set of sub-channels in slots are also determined for PSSCH transmissions corresponding to the same sidelink grant where *j=*1, 2,*…,* , , if provided, is converted from units of *ms* to units of logical slots, resulting in according to clause 8.1.7, and is determined by Clause 8. Here, is the resource reservation interval indicated by higher layers. |

**TP to TS 38.212, section 8.3.1.1**

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| 8.3.1.1 SCI format 1-ASCI format 1-A is used for the scheduling of PSSCH and 2nd-stage-SCI on PSSCH The following information is transmitted by means of the SCI format 1-A:- Priority – 3 bits as specified in clause 5.4.3.3 of [12, TS 23.287] and clause 5.22.1.3.1 of [8, TS 38.321].- Frequency resource assignment – bits when the value of the higher layer parameter *sl-MaxNumPerReserve* is configured to 2; otherwise bits when the value of the higher layer parameter *sl-MaxNumPerReserve* is configured to 3, as defined in clause 8.1.5 of [6, TS 38.214].- Time resource assignment – 5 bits when the value of the higher layer parameter *sl-MaxNumPerReserve* is configured to 2; otherwise 9 bits when the value of the higher layer parameter *sl-MaxNumPerReserve* is configured to 3, as defined in clause 8.1.5 of [6, TS 38.214].- Resource reservation period – bits as defined in clause 16.4 of [5, TS 38.213], where is the number of entries in the higher layer parameter *sl-ResourceReservePeriodList*, if higher layer parameter *sl-MultiReserveResource* is configured; 0 bit otherwise.<< unchanged parts omitted >> |

Outcome draft LS

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| **3GPP TSG RAN WG1 #103-e R1-200xxxx****e-Meeting, October 26th – November 13th, 2020****Title:** [Draft] LS on previous Mode-2 agreements to capture in MAC specification**Response to:** **Release:** Rel-16**Work Item:** 5G\_V2X\_NRSL-Core**Source:** Intel Corporation, [RAN WG1]**To:** RAN WG2**Cc:** **Contact Person:** Name: Sergey Panteleev**E-mail Address:** <sergey.panteleev@intel.com>**Send any reply LS to: 3GPP Liaisons Coordinator,** **mailto:3GPPLiaison@etsi.org** **Attachments:** none**1. Overall Description:**RAN1 have identified that the current MAC specification does not clearly capture the RAN1 agreements related to timing of re-evaluation and pre-emption checking based on the following parts highlighted by **bold**:**RAN1#100-e**Agreements:* **For re-evaluation of a pre-selected resource contained in a slot ‘k’ to be first time signaled in a slot ‘m’, where k ≥ m,**
	+ **Step 1 of the resource (re-)selection procedure is performed at least at the moment ‘m-T3’, and if the pre-selected resource is not in the identified candidate resource set, Step 2 is triggered for reselection of the resource**
		- **Re-evaluations before the moment ‘m-T3’ or after ‘m-T3’ but before ‘m’ are not precluded and are up to UE implementation**
			* FFS whether to mandate a UE to perform Step 1 checking every slot before ‘m-T3’
		- FFS whether evaluation of Step 2 has to ensure any introduced timing restrictions between pre-selected and re-selected resources when re-evaluation is triggered, and whether it is allowed to change the pre-selected but not reserved resources which are still in the candidate resource set in order to ensure the timing restrictions
* FFS whether for the case of enabled periodic reservation, already reserved resources in upcoming periods can be re-evaluated

**RAN1#101-e**Agreements:* **For a reserved resource to be signalled in slot ‘m’, the procedure to check whether it is re-selected due to pre-emption, the UE follows the same behavior in terms of the timing of checking as in that of the re-evaluation case.**
	+ Further discussion regarding any potential issue related to pre-emtption application timing

**Conclusion:****·       For re-evaluation of a pre-selected resource contained in a slot ‘k’ to be first time signaled in a slot ‘m’, where k ≥ m, a UE is not mandated to perform Step 1 checking every slot before ‘m-T3’**It is RAN1 understanding, that since MAC layer triggers re-evaluation and pre-emption checking at PHY layer, the MAC specification is expected to capture the timing when a UE performs re-evaluation and pre-emption by calling the procedure in 8.1.4 of TS 38.214.**2. Actions:**To RAN WG2**:** RAN1 kindly asks RAN2 to implement the above highlighted parts of previous RAN1 agreements in MAC specification.**3. Date of Next TSG-RAN WG1 Meetings:**TSG RAN WG1 Meeting #104-e 25 Jan – 2 Feb 2021 e-MeetingTSG RAN WG1 Meeting #104-bis-e 12 Apr – 20 Apr 2021 e-Meeting |

Inputs on potential TPs

Please indicate which agreements are not yet captured in specification, including editorial issues. So far, the following has been identified in contributions:

**Editorial #1**: Clarification that sets r’ and r’’ may not be provided simultaneously [ZTE, R1-2007923]

**Editorial #2**: should be replaced by in 38.213 section 16.4 (TDRA/FDRA setting in SCI 1-A) [ZTE, R1-2007923]

**Editorial #3**: TP to clarify that the configured sidelink grant in 8.1.5 of 38.214 refers to a selected sidelink grant defined in 38.321 (i.e. Mode-2 UE-autonomous scheduling) [vivo, R1-2008667]

**Editorial #4**: Correction for references/descriptions of SCI fields in section 8.3.1.1, TS 38.212 [Ericsson, R1-2008750, R1-2008752]

**Q1: which of the above editorial corrections should be agreed? If agreed, are any modifications needed for the TPs provided in the referred contributions?**

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| **Source** | **Comments** |
| Qualcomm | #1 is not needed, at least r’\_0 need to be presented all the time since it will be the next resource that a transmission will happen on.For #2, this is related to M-7 and we should wait for the conclusion of that issue. |
| ETRI | For #2, agree with Qualcomm. |
| vivo |  |
| Sharp | Agree with Qualcomm on #1 and #2. |
| ZTE | We accept all the above editorial changes.Consider to keep align with the conclusion of pp-7, it is also acceptable for us to postpone #2 and wait for the conclusion of pp-7. |
| OPPO | Agree with #1.For #2, agree with Qualcomm and wait for the outcome of M-7 discussion.OK with #3.For #4, we don’t agree with changing resource reservation interval, because the original wording “period” has been used throughout other specs including at least RAN1 and RAN2. Also it has been always used in past agreements and discussions in both RAN1 and RAN2. If changing now it may cause questions and confusion as to any difference between them. In terms of meaning of these two words, they are very similar. We don’t see the need to change the terminology/wording. |
| Samsung | Agree with #1.Agree with #2 but this issue can be handled in email thread#7.O.K with #3 and #4. |
| CATT | For issue #1, No need to further clarify. both the re-evaluation and pre-emption resource set are provided by higher layer, RAN1 only need to perform re-evaluation or pre-emption according to the provided resource set type. For issue #2, agree to wait for the conclusion of M-7.  |
| Huawei/HiSilicon | #1: The “if condition”, i.e., “if the higher layer requests the UE …”, means higher layer already requests to the UE to do re-evaluation or pre-emption check, so it is more accurate to use “the higher layer provides a set of resources” instead of “the higher layer may provide a set of resources”. Because “the higher layer may provide a set of resources” leads to an interpretation that it’s also possible the “if condition” is satisfied, and higher layer does not provide a set of resources.To clarify that sets r’ and r’’ may not be provided simultaneously, the following change is suggested:==- if the higher layer requests the UE to determine a subset of resources from which the higher layer will select resources for PSSCH/PSCCH transmission as part of re-evaluation or pre-emption procedure, the higher layer provides a set of resources which may be subject to re-evaluation ~~and~~or a set of resources which may be subject to pre-emption, respectively.- it is up to UE implementation to determine the subset of resources as requested by higher layers before or after the slot - , where is the slot with the smallest slot index among ~~and~~or , and is equal to , whereis defined in slots in Table 8.1.4-2 whereis the SCS configuration of the SL BWP.==#2: agree. #3: agree. But “sidelink grant” should be in black color.#4: we share similar view with OPPO that there is no need to change the terminology since “period” is already widely used in current specifications and previous agreements. There is no ambiguity. |
| Nokia, NSB | Agree with #3 |

**Editorial #1**: Clarification that sets r’ and r’’ may not be provided simultaneously [ZTE, R1-2007923]

* *Supported by 4 companies*
* *Not needed – 3 companies*
* *Seems no clear consensus to modify current wording*

**Editorial #2**: should be replaced by in 38.213 section 16.4 (TDRA/FDRA setting in SCI 1-A) [ZTE, R1-2007923]

* *Seems need to wait for discussion in #7, or directly fix it there*

**Editorial #3**: TP to clarify that the configured sidelink grant in 8.1.5 of 38.214 refers to a selected sidelink grant defined in 38.321 (i.e. Mode-2 UE-autonomous scheduling) [vivo, R1-2008667]

* *Supported by 4 companies*

**Editorial #4**: Correction for references/descriptions of SCI fields in section 8.3.1.1, TS 38.212 [Ericsson, R1-2008750, R1-2008752]

* *Seems OK except changing “period” to “interval”*

**Proposal 1**

* Prepare a TP on the following issues
	+ TP to clarify that the configured sidelink grant in 8.1.5 of 38.214 refers to a selected sidelink grant defined in 38.321 (i.e. Mode-2 UE-autonomous scheduling) [R1-2008667]
	+ Correction for references/descriptions of SCI fields in section 8.3.1.1, TS 38.212 [R1-2008750, R1-2008752], except changing “period” to “interval”

**Q2: Any other omissions/editorials?**

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| **Source** | **Comments** |
| ETRI | We have one more capturing issue regarding period equal to 0 [ETRI, [R1-2007986](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007986.zip)]. For FL, do you have a plan to deal with the issue even though it is related with MAC specification?**FL comment: It needs to be checked whether MAC specification is not going to capture period equal to 0 case** |
| vivo | The essential agreement about re-evaluation and pre-emption have not been captured in spec. we agree on some mandatory timing for re-evaluation and pre-emption, and also the mandatory resources for re-evaluation/pre-emption check. The intention is to gurantee system performance.Based on current 38.321 and 38.213, the trigger for re-evaluation/pre-emption is totally up to implementation, the resource set r’ and r’’ are decided by MAC via implementation as well. We suggests two alternatives to capture the agreement. First alternative is to send LS to RAN2 to trigger related spec. edition. Second alternative, we add restriction on r’ and r’’ to reflect the mandatory re-evaluation and pre-emption check.**FL comment: We can try to trigger an LS preparation for that** |
| Sharp | As discussed in [R1-2008389, Sharp], we think to further clarify actual resource number N=1 for non-monitored case is to align the agreement in RAN1#99 which is to reuse LTE sensing procedure step 5.**FL comment: I think this is a correction level and requires some technical discussions, thus better to comeback when other more urgent issues resolved** |
| NEC | As pointed out in our contribution R1-2008081, I would like to invite FL and companies to consider whether to apply Tproc,0 offset in step 6)-c) of 8.1.4 of 38.214 when calculating slots for exclusion.Initially, we thought it’s an optimization issue, but after checking previous agreements and LTE V2X design, we think it's actually a Rel.16 agreement wrongly captured in TS.In RAN1#99, in terms of SPS resources, we agreed to reuse LTE design:* + (working assumption) Procedure of mapping of periodic semi-persistent resources into the resource selection window is reused from LTE
		- By reusing TS 36.213, section 14.1.1.6, steps 5 and 6 of non-partial sensing, as applicable

And in LTE V2X, the related agreement is agreed in RAN1#87 as: [R1-1613655](file:///C%3A%5C%5CUsers%5C%5Cmerias%5C%5CAppData%5C%5CRoaming%5C%5CMicrosoft%5C%5CDocs%5C%5CR1-1613655.zip) WF on Support of Small Transmission Periods for V2V Communication Intel, Qualcomm Inc.Agreement:* Confirm that reselection UE scales the number of reservations of other UE within selection window by 1/i when 0<i<1 for the SCI received in the last i\*P\_step logical subframes **in the sensing window**. Here i denotes the resource reservation interval in the received SCI.

Hence, the design in LTE is to scale SPS reservation from SCI received **in the sensing window**, this agreement was captured in TS as endorsed in RP-170622 (TS 36.213-e20).When we develop NR spec, we should respect the LTE design if we already agreed to reuse LTE procedure but not only copy LTE spec wording. Back to this issue, as Tproc,0 offset doesn’t belong to sensing window in NR, in the step 6)-c) of 8.1.4 of 38.214 to scale SPS reservation, we should not use , but to use to correctly reuse LTE procedure as agreed. Thank you.**FL comment: this issue was listed as an open one, but was not selected for this meeting. I assume it can be discussed next meeting.** |

**Proposal 2**

* Send LS to RAN2 asking to capture previous RAN1 agreements on pre-emption and re-evaluation triggering timing in MAC specification

Annex - TPs presented in contributions for the identified issues

Editorial #1

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| 8.1.4 UE procedure for determining the subset of resources to be reported to higher layers in PSSCH resource selection in sidelink resource allocation mode 2**<Unchanged parts are omitted>**- if the higher layer requests the UE to determine a subset of resources from which the higher layer will select resources for PSSCH/PSCCH transmission as part of re-evaluation or pre-emption procedure, the higher layer may provide~~s~~ a set of resources which may be subject to re-evaluation and may provide another set of resources which may be subject to pre-emption.- it is up to UE implementation to determine the subset of resources as requested by higher layers before or after the slot - , where is the slot with the smallest slot index among and , if any provided, and is equal to , whereis defined in slots in Table 8.1.4-2 whereis the SCS configuration of the SL BWP.**<Unchanged parts are omitted>** |

Editorial #2

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| 16.4 UE procedure for transmitting PSCCH **<Unchanged parts are omitted>**- the values of the frequency resource assignment field and the time resource assignment field as described in [6, TS 38.214] to indicate resources from a set of resources selected by higher layers as described in [11, TS 38.321] with smallest slot indices for such that , where:- , where is a number of resources in the set with slot indices , , such that , and is provided by *sl-MaxNumPerReserve*- each resource, from the set of resources, corresponds to contiguous sub-channels and a slot in a set of slots , where is the number of sub-channels available for PSSCH/PSCCH transmission in a slot- is a set of slots in a sidelink resource pool [6, TS 38.214]- is an index of a slot where the PSCCH with SCI format 1-A is transmitted.**<Unchanged parts are omitted>** |

Editorial #3

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| If a set of sub-channels in slot is determined as the time and frequency resource for PSSCH transmission corresponding to the ~~configured~~ selected sidelink grant (described in [10, TS 38.321]), the same set of sub-channels in slots are also determined for PSSCH transmissions corresponding to the same sidelink grant where *j=*1, 2,*…,* , , if provided, is converted from units of *ms* to units of logical slots, resulting in according to clause 8.1.7, and is determined by Clause 8. Here, is the resource reservation interval indicated by higher layers. |

Editorial #4

**<Unchanged parts omitted>**

#### 8.3.1.1 SCI format 1-A

SCI format 1-A is used for the scheduling of PSSCH and 2nd-stage-SCI on PSSCH

The following information is transmitted by means of the SCI format 1-A:

- Priority – 3 bits as defined in clause 5.4.3.3 of [12, TS 23.287].

- Frequency resource assignment – bits when the value of the higher layer parameter *sl-MaxNumPerReserve* is configured to 2; otherwise bits when the value of the higher layer parameter *sl-MaxNumPerReserve* is configured to 3, as defined in clause 16.4 of [5, TS 38.213].

- Time resource assignment – 5 bits when the value of the higher layer parameter *sl-MaxNumPerReserve* is configured to 2; otherwise 9 bits when the value of the higher layer parameter *sl-MaxNumPerReserve* is configured to 3, as defined in clause 16.4 of [5, TS 38.213].

- Resource reservation interval – bits as defined in clause 16.4 of [5, TS 38.213], where is the number of entries in the higher layer parameter *sl-ResourceReservePeriodList*, if higher layer parameter *sl-MultiReserveResource* is configured; 0 bit otherwise.

**<Unchanged parts omitted>**

#### 8.4.1.1 SCI format 2-A

SCI format 2-A is used for the decoding of PSSCH, with HARQ operation when HARQ-ACK information includes ACK or NACK, or when there is no feedback of HARQ-ACK information.

The following information is transmitted by means of the SCI format 2-A:

- HARQ process number – bits as defined in clause 8.1 of [6, TS 38.214].

- New data indicator – 1 bit as defined in clause 8.1 of [6, TS 38.214]..

- Redundancy version – 2 bits as defined in clause 8.1 of [6, TS 38.214]..

- Source ID – 8 bits as defined in clause 8.1 of [6, TS 38.214].

- Destination ID – 16 bits as defined in clause 8.1 of [6, TS 38.214].

- HARQ feedback enabled/disabled indicator – 1 bit as defined in clause 8.1 of [6, TS 38.214]..

- Cast type indicator – 2 bits as defined in Table 8.4.1.1-1 and in clause 8.1 of [6, TS 38.214].

- CSI request – 1 bit as defined in clause 8.2.1 of [6, TS 38.214] and in clause 8.1 of [6, TS 38.214].

**<Unchanged parts omitted>**

References

**Contributions identified by FL to contain Mode-2 related issues:**

1. [R1-2007612](file:///C%3A%5C%5CUsers%5C%5Cwanshic%5C%5COneDrive%20-%20Qualcomm%5C%5CDocuments%5C%5CStandards%5C%5C3GPP%20Standards%5C%5CMeeting%20Documents%5C%5CTSGR1_103%5C%5CDocs%5C%5CR1-2007612.zip) Remaining details of sidelink resource allocation mode 2 Huawei, HiSilicon
2. [R1-2007774](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007774.zip) Discussion on essential corrections in resource allocation for Mode 2 LG Electronics
3. [R1-2007811](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007811.zip) Remaining issues on Mode 2 resource allocation in NR V2X CATT
4. [R1-2007923](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007923.zip) Remaining issues in mode 2 ZTE, Sanechips
5. [R1-2007935](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007935.zip) Corrections related to Mode-2 resource allocation Intel Corporation
6. [R1-2007986](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007986.zip) Remaining issues on resource allocation mode 2 for NR V2X ETRI
7. [R1-2008081](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008081.zip) Maintenance for mode 2 resource allocation NEC
8. [R1-2008096](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008096.zip) Remaining issues in NR sidelink mode 2 resource allocation Spreadtrum Communications
9. [R1-2008131](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008131.zip) Draft CR on Mode 2 for NR Sidelink Samsung
10. [R1-2008132](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008132.zip) Draft CR on Sidelink Physical Duration to Logical Slot Conversion Samsung
11. [R1-2008236](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008236.zip) Remaining open issues and corrections for mode 2 RA OPPO
12. [R1-2008389](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008389.zip) Remaining issues on resource allocation mode 2 for NR sidelink Sharp
13. [R1-2008431](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008431.zip) Remaining Issues of Mode 2 Resource Allocation Apple
14. [R1-2008531](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008531.zip) Maintenance for resource allocation mechanism mode 2 NTT DOCOMO, INC.
15. [R1-2008606](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008606.zip) Remaining Issues in Mode 2 Resource Allocation Qualcomm Incorporated
16. [R1-2008633](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008633.zip) Remaining issues for Mode 2 resource allocation in NR V2X ASUSTeK
17. [R1-2008667](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008667.zip) Remaining issues on mode 2 resource allocation mechanism vivo
18. [R1-2008750](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008750.zip) Discussion paper on the remaining issues in Rel. 16 for NR V2X Ericsson
19. [R1-2008752](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008752.zip) Draft\_CR\_TS38.212 Ericsson

**Other Rel.16 NR V2X contributions**

1. [R1-2007610](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007610.zip) Correction on sidelink PT-RS sequence generation Huawei, HiSilicon
2. [R1-2007611](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007611.zip) Remaining details of sidelink resource allocation mode 1 Huawei, HiSilicon
3. [R1-2007613](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007613.zip) Remaining details of physical layer procedures for sidelink Huawei, HiSilicon
4. [R1-2007772](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007772.zip) Discussion on essential corrections in physical layer structure LG Electronics
5. [R1-2007773](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007773.zip) Discussion on essential corrections in resource allocation for Mode 1 LG Electronics
6. [R1-2007775](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007775.zip) Discussion on essential corrections in sidelink synchronization mechanism LG Electronics
7. [R1-2007776](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007776.zip) Discussion on essential corrections in physical layer procedure LG Electronics
8. [R1-2007779](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007779.zip) A remaining issue on UE procedures for reporting HARQ-ACK on uplink Fujitsu
9. [R1-2007780](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007780.zip) A remaining issue on simultaneous transmissions of uplink and PUSCH carrying sidelink HARQ-ACK Fujitsu
10. [R1-2007809](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007809.zip) Remaining issues on physical layer structure for NR sidelink CATT
11. [R1-2007810](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007810.zip) Remaining issues on Mode 1 resource allocation in NR V2X CATT
12. [R1-2007812](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007812.zip) Remaining issues on sidelink synchronization mechanism in NR V2X CATT
13. [R1-2007813](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007813.zip) Remaining issues on physical layer procedures for NR V2X CATT
14. [R1-2007921](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007921.zip) Remaining issues of NR sidelink physical layer structure ZTE, Sanechips
15. [R1-2007922](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007922.zip) Remaining issues in Mode-1 ZTE, Sanechips
16. [R1-2007924](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007924.zip) Remaining issues of synchronization ZTE, Sanechips
17. [R1-2007925](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007925.zip) Remaining issues in PHY procedures for Rel-16 sidelink ZTE, Sanechips
18. [R1-2007934](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007934.zip) Remaining opens of sidelink physical structure for NR V2X design Intel Corporation
19. [R1-2007936](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007936.zip) Corrections related to Mode-1 resource allocation Intel Corporation
20. [R1-2007987](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2007987.zip) Physical layer procedures for sidelink ETRI
21. [R1-2008095](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008095.zip) Remaining issues in NR sidelink mode 1 resource allocation Spreadtrum Communications
22. [R1-2008097](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008097.zip) Remaining issues on sidelink physical layer procedure Spreadtrum Communications
23. [R1-2008129](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008129.zip) Text Proposals on Physical Layer Structures for NR Sidelink Samsung
24. [R1-2008130](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008130.zip) Draft CR on PUCCH Power Control for NR Sidelink Mode 1 Scheduling Samsung
25. [R1-2008133](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008133.zip) Draft CR on Physical Layer Procedures for NR Sidelink Samsung
26. [R1-2008230](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008230.zip) Draft TP on physical structure for NR sidelink OPPO
27. [R1-2008231](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008231.zip) Text proposal of mode 1 for NR sidelink OPPO
28. [R1-2008232](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008232.zip) Text proposal of physical layer procedure for NR sidelink OPPO
29. [R1-2008237](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008237.zip) Corrections for FDM-based semi-static power split for in-device coexistence OPPO
30. [R1-2008334](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008334.zip) Correction on sidelink timing definition Huawei, HiSilicon
31. [R1-2008381](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008381.zip) Remaining issue on physical layer structure and procedure for sidelink in NR V2X Panasonic Corporation
32. [R1-2008387](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008387.zip) Remaining issues on physical layer structure for NR sidelink Sharp
33. [R1-2008388](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008388.zip) Remaining issues on resource allocation mode 1 for NR sidelink Sharp
34. [R1-2008390](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008390.zip) Remaining issues on synchronization mechanism for NR sidelink Sharp
35. [R1-2008391](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008391.zip) Remaining issues on physical layer procedures for NR sidelink Sharp
36. [R1-2008428](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008428.zip) Remaining Issues of Physical Layer Procedures Apple
37. [R1-2008429](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008429.zip) Remaining Issue of Sidelink Physical Layer Structure Apple
38. [R1-2008430](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008430.zip) Remaining Issues of Mode 1 Resource Allocation Apple
39. [R1-2008496](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008496.zip) Maintenance for PSFCH and PSCCH symbol on NR sidelink ASUSTeK
40. [R1-2008497](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008497.zip) Remaining issues on sidelink power control ASUSTeK
41. [R1-2008498](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008498.zip) Miscellaneous issues of SL HARQ-ACK reporting on PUCCH ASUSTeK
42. [R1-2008529](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008529.zip) Maintenance for sidelink physical layer structure NTT DOCOMO, INC.
43. [R1-2008530](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008530.zip) Maintenance for resource allocation mechanism mode 1 NTT DOCOMO, INC.
44. [R1-2008532](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008532.zip) Maintenance for sidelink physical layer procedure NTT DOCOMO, INC.
45. [R1-2008533](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008533.zip) Maintenance for sidelink-related collision NTT DOCOMO, INC.
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47. [R1-2008605](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008605.zip) Remaining Issues in Mode 1 Resource Allocation Qualcomm Incorporated
48. [R1-2008665](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008665.zip) Remaining issues on physical layer structure for NR sidelink vivo
49. [R1-2008666](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008666.zip) Remaining issues on mode 1 resource allocation mechanism vivo
50. [R1-2008668](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008668.zip) Remaining issues on sidelink synchronization mechanism vivo
51. [R1-2008669](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_103%5CDocs%5CR1-2008669.zip) Remaining issues on physical layer procedure for NR sidelink vivo
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