**3GPP TSG-RAN WG2 #112-3 *Revision of R2-2102187***

**E-meeting, 25~29th Jan. 2021**

Agenda Item: 6.4.3

Source: OPPO

Title: Draft summary on discussion on spec structure for re-evaluation and pre-emption

Document for: Discussion, Decision

# Introduction

This document discusses in which section the text relevant to re-evaluation and pre-emption should be captured.

# Discussion

Current section 5.22.1.1 in MAC specification does following jobs:

1, treatment of mode 1 grant or

2, resource (re)selection of mode 2 for single MAC PDU transmission or

3, resource (re)selection of mode 2 for multiple MAC PDU transmission

And

4, Deliver the sidelink grant along with selected MCS and the associated HARQ information to sidelink HARQ entity.

While current section 5.22.1.2 in MAC specification does following jobs:

1, TX resource (re)selection check and

2, Resource reselection due to re-evaluation and pre-emption by physical layer including trigger description

The section 5.22.1.2 will be referred in section 5.22.1.1 to check whether UE need select resource from scratch and the relevant text is from top of the section till the 2nd level bullets as following:



Therefore 5.22.1.2 is not a proper section to capture the 2nd part text starting with newly added trigger which only impact part of the initially selected resource for both single MAC PDU and multiple MAC PDU operation due to re-evaluation and pre-emption.

During email discussion “[AT113-e][709][V2X/SL] Mode 2 resource (re)selection (OPPO)” involving companies believe this should be fixed.

Question1: Do you agree a separate section for the re-evaluation and pre-emption such as draft TP in section 4 is needed?

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| --- | --- | --- |
| Company | Position (yes or no) | Comments |
| LG | No | From rapporteur’s perspective, we prefer to keep it. But, we also think that we could alternatively relocate ‘resource reselection due to re-evaluation and pre-emption’ to 5.22.1.1.If we move the concerned part to 5.22.1.1, we could just add this operation under ‘*If the MAC entity has been configured with Sidelink resource allocation mode 2… the MAC entity shall for each Sidelink process:’*However, if we have a separate section, we also need to clarify that this operation is only for SL mode 2. Thus, we need to change to:*“If the MAC entity has been configured with Sidelink resource allocation mode 2 to transmit using pool(s) of resources in a carrier as indicated in TS 38.331 [5] or TS 36.331 [21] based on sensing or random selection, the MAC entity shall for each Sidelink process:”*For clarification: Will this sentence be added at the beginning of the new section, right?Plus maybe we can reflect mode 2 in the title of the new section e.g. “Re-evaluation and pre-emption of mode 2 operation” , would it be sufficient? |
| Ericsson | Yes |  |
| OPPO | Yes |  |
| Apple | Yes | In addition, We think the triggering conditions for pre-emption and re-evaluations are different from the triggers inherited from LTE-V2X. So, it is better to capture it separately.  |
| vivo | Yes with comments | It will be OK to us to relocate the part of (re-)selection due to re-evaluation/pre-emption to 5.22.1.1 to be in the same place as other resource (re)selection procedures. Otherwise we can also accept a separate section if it is majority’s view.  |
| HW | Yes |  |
| CATT | Yes |  |
| Qualcomm | Yes |  |

If question1 can be confirmed, then the sentence “The MAC entity shall for the sidelink process” should be changed to be “The MAC entity shall for each sidelink process” since it doesn’t refer to the beginning part of the section 5.22.1.2.

Question 2: Do agree to change the wording as indicated above if new section is introduced?

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| --- | --- | --- |
| Company | Position (yes or no) | Comments |
| LG |  | If this change is applied to 5.22.1.2, it cannot work, because UE enters 5.22.1.2 only for a single process according to 5.22.1.1.*“If the MAC entity has been configured with Sidelink resource allocation mode 2 to transmit using pool(s) of resources in a carrier as indicated in TS 38.331 [5] or TS 36.331 [21] based on sensing or random selection, the MAC entity shall for each Sidelink process:**…**2> perform the TX resource (re-)selection check on the selected pool of resources as specified in clause 5.22.1.2;”*But, if we introduce a separate section, we agree that this operation should work for each Sidelink process. |
| Ericsson | No | Agree with LG’s comment |
| Apple | Yes | The new section has no direct relationship to 5.22.1.1 or 5.22.1.2. So this section needs to begin with the sentence “for each sidelink process”. |
| Vivo | Yes |  |
| HW | Yes |  |
| CATT | Yes |  |
| Qualcomm | See comment | We are generally fine with the change. However, we suggest simplifying the first two sentences as follows: A resource(s) of the selected sidelink grant for a current TB ~~MAC PDU to transmit from multiplexing and assembly entity~~ is re-evaluated by physical layer at T3 before the slot where the SCI indicating the resource(s) is signalled at first time as specified in section 8.1.4 of TS 38.214.A resource(s) of the selected sidelink grant which has been indicated by a prior SCI for a current TB ~~MAC PDU to transmit from multiplexing and assembly entity~~ could be checked for pre-emption by physical layer at T3 before the slot where the resource(s) is located as specified in section 8.1.4 of TS 38.214.[Rapporteur]: this suggestion is not align with online conclusion |

# Conclusion

# Draft TP

5.22.1.2x Re-evaluation and Pre-emptionIf the MAC entity has been configured with Sidelink resource allocation mode 2 to transmit using pool(s) of resources in a carrier as indicated in TS 38.331 [5] or TS 36.331 [21] based on sensing or random selection the MAC entity shall for ~~the~~ each Sidelink process:

1. A resource(s) of the selected sidelink grant for a MAC PDU to transmit from multiplexing and assembly entity is re-evaluated by physical layer at T3 before the slot where the SCI indicating the resource(s) is signalled at first time as specified in section 8.1.4 of TS 38.214 [7];
2. A resource(s) of the selected sidelink grant which has been indicated by a prior SCI for a MAC PDU to transmit from multiplexing and assembly entity could be checked for pre-emption by physical layer at T3 before the slot where the resource(s) is located as specified in section 8.1.4 of TS 38.214 [7];

1> if a resource(s) of the selected sidelink grant which has not been identified by a prior SCI is indicated for re-evaluation by the physical layer as specified in clause 8.1.4 of TS 38.214 [7]; or

1> if any resource(s) of the selected sidelink grant which has been indicated by a prior SCI is indicated for pre-emption by the physical layer as specified in clause 8.1.4 of TS 38.214 [7]

1>

2> remove the resource(s) from the selected sidelink grant associated to the Sidelink process;

2> randomly select the time and frequency resource from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7] for either the removed resource or the dropped resource, according to the amount of selected frequency resources, the selected number of HARQ retransmissions and the remaining PDB of either SL data available in the logical channel(s) by ensuring the minimum time gap between any two selected resources of the selected sidelink grant in case that PSFCH is configured for this pool of resources, and that a resource can be indicated by the time resource assignment of a SCI for a retransmission according to clause 8.3.1.1 of TS 38.212 [9];

NOTE 4: If retransmission resource(s) cannot be selected by ensuring that the resource(s) can be indicated by the time resource assignment of a prior SCI, how to select the time and frequency resources for one or more transmission opportunities from the available resources is left for UE implementation by ensuring the minimum time gap between any two selected ‎resources in case that PSFCH is configured for this pool of ‎resources.

2> replace the removed or dropped resource(s) by the selected resource(s) for the selected sidelink grant.

NOTE 5: It is left for UE implementation to reselect any pre-selected but not reserved resource(s) during reselection triggered by re-evaluation or pre-emption indicated by the physical layer.

NOTE X1: It is up to UE implementation to re-evaluate or pre-empt before ‘m-$ T\_{3}$’ or after ‘m-$ T\_{3}$’ but before ‘m’. For re-evaluation, m is the slot where the SCI indicating the resource(s) is signalled at first time as specified in section 8.1.4 of TS 38.214. For pre-emption, m is the slot where the resource(s) is located as specified in section 8.1.4 of TS 38.214.

NOTE X3: It is up to UE implementation whether to set the resource reservation interval in the re-selected resource to replace pre-empted resource.

NOTE X4: It is up to UE implementation whether to trigger resource reselection due to deprioritization as specified in clause 16.2.4 of TS 38.213 [6], clause 5.14.1.2.2 of TS 36.321 [22] and clause 5.22.1.3.1a.