**3GPP TSG-RAN WG2 Meeting #124** **R2-231**

**Chicago, USA, 13th – 17th Nov., 2023**

**Title: Email discussion on the running MAC CR**

**Source: Huawei, HiSilicon**

**Agenda item: 8.2.2**

**Document for: Discussion and Decision**

# Background

The following post meeting email discussion has been planned during RAN2#123bis:

**[Post123bis][409][POS] Rel-18 positioning MAC CRs (Huawei)**

Scope: Review the running CRs and develop open issue lists.

Intended outcome: Draft CRs and open issue list for next meeting

Deadline: Medium (2 weeks)

NOTE that we have the following guidelines from the chair on the running CR email discussions

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| Guidance for all post-meeting discussions on running CRs/open issues (also applicable to AI 7.9.1):   * Update the running CR with agreements from the meeting * Rapporteur to propose resolutions for straightforward open issues which can already be included in the running CR * Get input on stage-3 issues that require further input from companies to make a decision: * Focus on stage-3 issues which are better handled via offline, e.g. signaling details, parameter values/ranges, NOT functionality discussion * For these issues, the discussion rapporteur submits a report with proposals to the next meeting, and input via company Tdocs should be avoided * Identify the remaining open issues that need to be solved for WI completion in the next meeting * Company Tdocs for the next meeting should focus on these issues |

This contribution intends to collect the comments on the running MAC CR for the different features in R18 positioning

# 2 Discussion on MAC CR for SL positioning

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| Company+index  (e,g, HW000) | Excerpted spec with issues | Comments |
| SS01 | Editor's NOTE: FFS conditions for uplink transmission prioritizing over sidelink PRS transmission. | Could we clarify that "sidelink PRS transmission"?  [Rapp] OK, but this is only an editor’s NOTE |
| SS02 | - *sl-PRS-CS-RNTI*: SL-PRS-CS-RNTI for retransmission; | Do we have retransmission or SL-PRS-CS-RNTI for CG Type 1?  [Rapp] I can keep an editor’s NOTE here since it might still not be crystal clear in RAN1  Editor's NOTE: FFS whether sl-PRS-CS-RNTI is used for retransmission for CG type1/2 is pending for further discussion in RAN1. |
| SS03 | - *sl-PRS-CS-RNTI*: SL-PRS-CS-RNTI for activation, deactivation, and retransmission; | Do we have retransmission on dedicated RP?  Propose to change: SL-PRS-CS-RNTI for activation, deactivation (or release)  RAN1#113  Conclusion  Do not support ACK/NACK feedback for SL-PRS or lower-layer feedback-based retransmissions in Release 18.  RAN1#114  For configured grant type 2 resource allocation,  RRC is used for indicating at least the following:  Info 1: the periodicity  DCI is used for the activation/release of the configured grant resources  [Rapp] Same comment as above. But to be clear on this, activation/deactivation is not specified in this section. So the above proposal is wrong  [SS] But here, we need description of the parameter configured by RRC even the behaviour is not specified in this section.. As same as "sl-CS-RNTI: SLCS-RNTI for activation, deactivation, and retransmission;"  [Rapp] added |
| SS04 | The MAC entity may have a sidelink grant on the SL-PRS shared resource pool of an active BWP to determine a set of PSCCH durations(s) in which transmission of SCI occurs and a set of SL-PRS transmission occasion(s) and PSSCH duration(s) in which transmission of SL-PRS and SL-SCH associated with the SCI occur. | We may simplify sentences without mentioning shared or dedicated resource pool.  Sidelink grant is received dynamically on the PDCCH, configured semi-persistently by RRC or autonomously selected by the MAC entity. The MAC entity shall have a sidelink grant on an active SL BWP to determine a set of PSCCH duration(s) in which transmission of SCI occurs and a set of PSSCH duration(s) in which transmission of SL-SCH and/or SL-PRS associated with the SCI occurs or a set of PSCCH duration(s) in which transmission of SL-PRS associated with the SCI occurs.  [Rapp]  That was the change in the previous version. But I would prefer to keep the current style to keep it clearer |
| SS05 | If the MAC entity has been configured with Sidelink resource allocation mode 1 or if the MAC entity has been configured with resource allocation Scheme 1 and the PDCCH is received for resource allocation in SL-PRS shared resource pool as indicated in TS 38.331 [5], the MAC entity shall for each PDCCH occasion and for each grant received for this PDCCH occasion: | Need clarification: SL-PRS resource allocation  [Rapp] The wording defined for sidelink positioning has been Resource allocation Scheme 1/2 and it has been like this since the WID  "and the PDCCH is received for resource allocation in SL-PRS shared resource pool" is not needed because it is stated below. DCI scrambled with SL-RNTI and SLCS-RNTI (i.e., DCI format 3\_0) always indicates shared resource pool  [Rapp] This is to differentiate with the case in the next section for PDCCH received in dedicated resource pool. Receiving with SL-RNTI is after that the PDCCH is received for shared resource pool and what’s the problem with that?? |
| SS02 | If the MAC entity has been configured with Sidelink resource allocation mode 1 or if the MAC entity has been configured with resource allocation Scheme 1 and the PDCCH is received for resource allocation in SL-PRS shared resource pool as indicated in TS 38.331 [5], the MAC entity shall for each PDCCH occasion and for each grant received for this PDCCH occasion: | Need clarification: SL-PRS resource allocation  [Rapp] The wording defined for sidelink positioning has been Resource allocation Scheme 1/2 and it has been like this since the WID  "and the PDCCH is received for resource allocation in SL-PRS shared resource pool" is not needed because it is stated below. DCI scrambled with SL-RNTI and SLCS-RNTI (i.e., DCI format 3\_0) always indicates shared resource pool  [Rapp] This is to differentiate with the case in the next section for PDCCH received in dedicated resource pool. Receiving with SL-RNTI is after that the PDCCH is received for shared resource pool and what’s the problem with that?? |
|  | 3> initialise or re-initialise the configured sidelink grant to determine the set of PSCCH durations and the set of PSSCH durations for transmissions of multiple MAC PDUs according to clause 8.1.2 of TS 38.214 [7] and the set of SL-PRS transmission occasions for transmission of multiple SL-PRS according to clause of 8.2.4 of TS 38.214 [7], if available. | Not sure for this part. It is determined during LCP in shared RP.  [Rapp] I consider this issue as resolved by the NOTE added above. |
| Xiaomi01 | 3> if SL data is available in the logical channel for NR sidelink discovery:  4> if *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon* is configured according to TS 38.331 [5]:  5> select the *sl-DiscTxPoolSelected* configured in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon* for the transmission of NR sidelink discovery message.  4> else:  5> select any pool of resources among the configured pools of resources except for SL-PRS dedicated resource pool, if configured. | The resource pool selection for sidelink discovery case is not aligned with the agreement to leave to UE implementation to choose from resource pools can be used for SL-PRS transmission. In our understanding:  Discovery pool can also be used for SL-PRS transmission.  UE can by implementation to decide whether to choose discovery pool or SL-PRS dedicated pool  [Rapp] 1/ SL data is available in the logical channel means that the resource selection is triggered by data in logical channel. If you argue otherwise, I suggest you make some R16/17 change to clarify this in the legacy and then we can make the corresponding change in R18  2/ similar comment to 1/, the UE procedure for SL-PRS selection is specified in the branch “else if SL-PRS is pending for transmission” |
|  | 3> else if SL-PRS is pending for transmission:  4> select any resource pool among the resource pool(s) allowing for SL-PRS transmission. | Do we have agreement on " among the resource pool(s) allowing for SL-PRS transmission"? R16/17/18 resource pool will not indicate that the pool is allowed to transmit SL-PRS.  [Rapp] Please check the agreement listed in issue28 in the coversheet and please check them before making the comments. |
|  | 3> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is not configured by RRC: | We don't need to modify IUC part. SL-PRS Dedicated resource pool does not have IUC configuration. i.e., there is no case to receive preferred or non-preferred resource set if the selected resource pool is SL-PRS dedicated resource pool.  RAN1#113  Conclusion  For Rel-18 sidelink positioning:  For the dedicated resource pool, IUC signalling is not supported  Do not support that a UE can reserve a SL-PRS resource for the transmission of another UE  [Rapp] This is the case when IUC is not configured which is applicable for both dedicated and shared RP????  Sorry for pointing wrong place, I've been meaning to 3> below. As for the condition, IUC is configured but preferred resource set is not received from a UE. Do you think dedicated RP has selected in this case?  [Rapp] Yes, you’re right that we don’t need to consider the case of dedicated resource pool when |
|  | 3> use the selected sidelink grant to determine the set of PSCCH durations and the set of PSSCH durations and the set of SL-PRS transmission occasion(s), if available, according to TS 38.214 [7] if the selected resource pool is not SL-PRS dedicated resource pool and to determine the set of PSCCH durations and, SL-PRS transmission occasions for SL-PRS shared resource pool. | Is this procedure applied to both shared and dedicated RP? Then please separate them because shared RP doesn't have SL-PRS transmission occasions, and dedicated RP doesn't have PSSCH durations.  [Rapp]OK |
|  | 3> if the selected resource pool is not SL-PRS dedicated resource pool:  4> if the selected resource pool is SL-PRS shared resource pool and the MAC entity creates the selected grant for SL-PRS transmission:  5> apply the priority of SL-PRS to the highest priority of the logical channel(s) allowed on the carrier. | Don't need 4> and 5>. SL-PRS priority will be given by higher layer.  [Rapp] For shared RP, the priority is actually determined in the MAC layer because there are priority for both data and SL-PRS and the case when there is only SL-PRS and the case when there is only data. |
|  | The MAC entity shall for each PSSCH duration not on SL-PRS dedicated resource pool: | Is the condition required? PSSCH duration is not determined on dedicated RP.  [Rapp] I think the original text should be for each PSCCH since all the procedures here are for determining the fields within SCI. but this is legacy issue.  Pleas feel free to try to change it in the sl communication spec and we can revisit the issue after that |
|  | 2> else if the MAC entity has been configured with Sidelink resource allocation mode 2 or resource allocation Scheme 2 for SL-PRS transmission on SL-PRS shared resource pool: | It is only left condition by "1> The MAC entity shall for each PSSCH duration not on SL-PRS dedicated resource pool:" (even if the underlined text is deleted) and "2> if the MAC entity has been configured with Sidelink resource allocation mode 1 or resource allocation Scheme 1 for SL-PRS transmission:".  I think "else" is enough.  [Rapp] It is not wrong and make the spec easier to read. |
|  | 2> if one or multiple SL DRX is configured:  3> if the selected resource pool is not SL-PRS dedicated resource pool: | Dedicated RP case is needed, otherwise, MAC will not select resources in that case.  RAN2#123bis  DRX and dedicated resource pool for PRS transmission should not be applied together. This does not preclude the NW configuration for dedicated RP to be configured together with DRX.  [Rapp] This is procedural text not RRC configuration. This is aligned with the agreement that they are not applied together (in MAC procedural text) |
|  | 5> if the sidelink grant is associated with request from the higher layer for triggering the SL-PRS transmission of the peer UE identified by the Destination layer-2 ID: | Don't need " the sidelink grant is associated with SL-PRS shared resource pool and"  Since it is already filtered by:  "For each sidelink grant that is not for SL-PRS transmission on SL-PRS dedicated resource pool, the Sidelink HARQ Entity shall:"  [Rapp] OK |
|  | 2> if HARQ feedback has been enabled for the MAC PDU and SL-PRS, if avaliable, according to clause 5.22.1.4.2: | Is there HARQ feedback for SL-PRS?  [Rapp] There is an editor NOTE investigating whether the PFSCH transmission in shared pool is related to the PRS reception. We can revisit this issue later when it is resolved. |
|  | The MAC entity shall for each sidelink grant associated with SL-PRS shared resource pool:  1> if there is SL-PRS pending for transmission for the selected destination:  2> if all the SL-SCH data within logical channel with lower priority value than that of the SL-PRS can be allocated with resources:  3> determine that the pending SL-PRS can be transmitted in the sidelink grant.  2> derive the Transport Block Size for a new transmission for SL-SCH according to clause 8.1.3.2 in TS 38.214 [7]. | RAN2 didn't have agreement on "all the SL-SCH data". It would be SBj, need to discuss.  Also, SL-SCH data doesn't have priority value. Logical channel is configured with priority value.  [Rapp] Added within logical channel  LCP is after determination of wehtehr SL-PRS needs to be transmitted. There is no token bucket here |
| Xiaomi | The MAC entity shall for each sidelink grant associated with SL-PRS shared resource pool:  1> if there is SL-PRS pending for transmission for the selected destination:  2> if all the SL-SCH data within logical channel with lower priority value than that of the SL-PRS can be allocated with resources:  3> determine that the pending SL-PRS can be transmitted in the sidelink grant.  2> derive the Transport Block Size for a new transmission for SL-SCH according to clause 8.1.3.2 in TS 38.214 [7]. | The are two issues:  Should clarify with yellow part:“if all the SL-SCH data with lower priority value(if any)”  It is not clear how MAC can decide whether the resource can accommodate SL-SCH data with higher priority without first performing the bucket algorithm below.  The TBS size with/without SL-PRS is different, it is unclear how MAC and PHY to exchange the TBS size. For the case that only SL-SCH data is transmitted, MAC needs the TBS size including the symbols may be used for SL-PRS transmission. To determine whether SL-PRS can be tranmitted, MAC needs to know the TBS size not including symbols will be used for SL-PRS transmission.  [Rapp] The TBS is determined after it is determined SL-PRS needs to be transmitted. This is clear in the current CR.  This can be done by implementation. Not sure what the details to be specified. |
|  | The MAC entity shall, if resource allocation Scheme 1 for SL-PRS transmission is configured:  1> if aperiodic SL-PRS is triggered:  2> trigger the SL-PRS resource request.  1> else if periodic SL-PRS is triggered:  2> notify RRC to send SL-PRS resource request. | A UE doesn't have to trigger SL-PRS resource request every time when SL-PRS is triggered. SL-PRS resource request is expected to be designed as similar as SL-BSR. If SL-PRS is triggered, and SL grant can allocate it, then no need to trigger the SL-PRS resource request.  [Rapp] Yes it has to.. this is resource allocation mode 1 and the UE needs to request the resource to the network  On the efficiency issue for request, it can be considered by the cancellation condition  Don't need to distinguish aperiodic/periodic SL-PRS. SL-BSR can be triggered regardless periodicity of SL Data.  [Rapp] Pleas check the previous agreement  [SS] I'm not sure whether the intention of agreement is MAC notifies RRC to send a message.. I mean, UE sends assistance information, not SL-PRS resourese request.  RAN2#123  At least when periodic SL-PRS transmission is triggered for UE configured with Scheme 1 SL-PRS resource allocation, at least for the case when LMF is not involved in giving the grant, the UE sends an RRC message to the gNB for providing the assistance information for CG configuration.  [Rapp] UE sends rrc message for SL-PRS resource request |
| Sharp | The MAC entity shall, if resource allocation Scheme 1 for SL-PRS transmission is configured:  1> if aperiodic SL-PRS is triggered:  2> trigger the SL-PRS resource request.  1> else if periodic SL-PRS is triggered:  2> notify RRC to send SL-PRS resource request. | Can we just say “trigger the SL-PRS resource request”, i.e. remove the MAC CE? It is confusing here. The MAC CE is generate later when there is a UL grant. So here is the request which is triggered.  [Rapp] Yes good comment |
|  | 2> else if an SCI has been received on the PSCCH reception on SL-PRS dedicated resource pool for SL-PRS transmission: | SCI format 1-B is also described as 1st stage SCI according to 38.212. Could you improve procedural text considering latest version?  [Rapp] There are no two stages for dedicated pool and this is clear for MAC spec.  If 1-B is considered as 1st stage, where are the 2nd stage or 3nd stage. It only makes sense to define the 1st stage when there are multiple stages. But of course, this is RAN1’s business |

# 3 Discussion on MAC CR for LPHAP

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| Company+index  (e,g, HW000) | Excerpted spec with issues | Comments |
| CATT | 1> when a Timing Advance Command is received in a Random Access Response message for a Serving Cell belonging to a TAG or in a MSGB for an SpCell: | The (re)start condition of srs-ValidityAreaTimeAlignmentTimer may also need to be added when Timing Advance Command is received in a Random Access Response message.  [Rapp] This issue has not been discussed specifically for RACH before. But OK to add it if companies are OK |
| CATT | 2> if the UE is configured with SRS with validity area and the upper layer indicates the MAC to update the stored RSRP:  3> store the RSRP of the downlink pathloss reference with the current RSRP value of the downlink pathloss reference of the camped cell as in TS 38.331 | The following agreement for TA in the parameter list R1-2310694 from RAN1 need to be reflected in MAC spec.   |  | | --- | | For the determination of UL timing to transmit SRS for positioning by UEs in RRC\_INACTIVE state within the SRS positioning validity area, support the following to determine a valid TA:  • The DL reference timing follows the DL timing of current camping cell.  • By default, UE maintains the TA from the last serving cell.  o UE can adjust its UL timing according to the change in DL reference timing.  • If configured by the network, subject to UE capability, UE autonomously adjusts the TA, when cell-reselection happens. |   [Rapp] as explained during last RAN2 meeting, TA update is not within the scope of RAN2 spec. |
| Xiaomi01 | 1> compared to the stored downlink pathloss reference RSRP value, the current RSRP value of the downlink pathloss reference has not increased/decreased by more than *inactivePosSRS-RSRP-ChangeThreshold*, if configured; and  1> *inactivePosSRS-TimeAlignmentTimer* is running or *srs-ValidityArea-TimerAlignmentTimer* is running when positioning validity area is configured. | The definition of the current RSRP may be different for Rel-18 SRS with validity area, this should be clarified.  [Rapp] Since we have sent out an LS to RAN4 and this is FFS. I have added an editor’s NOTE |

# 4 Discussion on MAC CR for REDCAP positioning

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| Company+index  (e,g, HW000) | Excerpted spec with issues | Comments |
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# 5 Discussion on MAC CR for CA positioning

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| Company+index  (e,g, HW000) | Excerpted spec with issues | Comments |
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# 6 Discussion on MAC CR for carrier phase positioning

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| Company+index  (e,g, HW000) | Excerpted spec with issues | Comments |
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# 7 Summary

*NADA*