**3GPP TSG RAN WG1 Meeting #114bis R1-23xxxxx**

**Xiamen, China, October 9th – October 13th, 2023**

**Source: Rapporteur (Intel Corporation)**

**Title: Discussion on list of higher layer parameters on Rel-18 WI on expanded and improved NR positioning**

**Agenda item: 8.3**

**Document for: Discussion**

# Introduction

This document is to collect views on the list of higher layer parameters for Rel-18 positioning [1].

An initial list of higher layer parameters for this meeting is provided in [2] based on the decisions made until RAN1 #114 [3] and following the guidance in [4].

Please follow the naming convention in this example:

* *CommentsToHigherLayerParamsR18pos-v000.docx*
* *CommentsToHigherLayerParamsR18pos-v001-CompanyA.docx*
* *CommentsToHigherLayerParamsR18pos-v002-CompanyA-CompanyB.docx*
* *CommentsToHigherLayerParamsR18pos-v003-CompanyB-CompanyC.docx*

If needed, you may “lock” a spreadsheet file for 30 minutes by creating a checkout file, as in this example:

* Assume CompanyC wants to update *CommentsToHigherLayerParamsR18pos-v002-CompanyA-CompanyB.docx*.
* CompanyC uploads an empty file named *CommentsToHigherLayerParamsR18pos-v003-CompanyB-CompanyC.checkout*
* CompanyC checks that no one else has created a checkout file simultaneously, and if there is a collision, CompanyC tries to coordinate with the company who made the other checkout.
* CompanyC then has 30 minutes to upload *CommentsToHigherLayerParamsR18pos-v003-CompanyB-CompanyC.docx*
* If no update is uploaded in 30 minutes, other companies can ignore the checkout file.

Please note that there is NO need to send an info email to the reflector just to inform that you have uploaded a new version of this document. Companies are invited to enter the contact info in the table below.

# On list of higher layer parameters for SL Positioning

Please provide any feedback to the list of parameters for SL positioning below considering the version in [2].

|  |  |
| --- | --- |
| Company | Comments |
| vivo | Row 6: we would like to confirm why the maximum number of SL PRS resource ID is 11  Row 13: Sub-feature group should be changed to ‘SL-MeasQuantityResult’, since this parameter is a measurement which may be part of ‘SL-MeasQuantityResult’ instead of ‘SL PRS Power control’ parameters. The value should be aligned with ‘RSRP-Range’, that is, (0..127). Then, for the related RAN2 specification, we think TS38.331 should be changed to TS38.355 or FFS by RAN2.  SL-MeasQuantityResult-r16 ::= SEQUENCE {  sl-RSRP-r16 RSRP-Range OPTIONAL,  ...  }  Row 19: Considering the sub-feature group is ‘SL PRS configuration in a dedicated resource pool’, so the SCI format 2-D in description part should be precluded, and the parameter name should be changed to ‘sl-SCI-based-Dedicated-SL-PRS-Tx-Trigger’. Then, suggest modifying the description part as the following.  ~~If configured~~ Indicates SCI formats 1-B ~~and 2-D~~ containing a field ~~that if set does~~ to trigger the SL-PRS transmission of the receiving UE.    In addition, the parameter for shared resource pool should be added.  Row 21: the description about “Indicates maximum PSCCH allocation granualirty and distance of different PSCCH allocations in frequency direction..” Is unclear to us, we prefer to change as “the size of a subchannel in PRBs”  Row22: The wording in description part is ambiguity, since it should be maximum number of SL PRS reservations instead of maximum number of reserved resources. So, suggest modifying the description part as the following.  Indicates the maximum number of ~~reserved PSCCH/SL-PRS resources~~ SL PRS reservations that can be indicated by an SCI.  Row 23: The associated agreement should be the same as Row 22 rather than current version.  Row 30, 31, 32, 33, 34.43,45 47….: the red part in the description is unnecessary  Row 37: The following wording in descriptions part should be deleted. Since it is not always required for Rx-Tx time difference measurement, and it can be optionally indicated for DS-RTT.  ~~Multiple Rx-Tx measurements for the same SL PRS transmission (resp. reception) and different SL PRS receptions (resp. transmissions) for the same pair of UE(s)~~.  In addition, a separate IE related to the following WS should be added.   |  | | --- | | Working assumption  Support to indicate to UE(s) with higher layer signaling to report multiple Rx-Tx measurements for the same SL PRS transmission (resp. reception) and different SL PRS receptions (resp. transmissions) for the same pair of UE(s).   * FFS: whether the different SL PRS receptions correspond to the same or different SL PRS resources * Note: reporting a single Rx-Tx measurement is also supported |   Row 46: The sub-feature group may not be ‘NR SL positioning Measurement Report’, it can be FFS by RAN2 or changed to ‘NR SL positioning Assistance Information’.  Row 53: For the value range ‘Using RelativeLocation IE as in 37.355’, we think it is better changed to ‘FFS by RAN2’, since if ARP location information including relative ARP location, it may be different with RelativeLocation IE as in 37.355 for absolute ARP location.  Row 55: The value range should be association information between SL PRS and ARP, rather than ARP ID only. The detailed value range should be addressed in AI8.3.1.2 or by RAN2. So, it may be changed to ‘TBD’ or ‘FFS by RAN2’. |
| ZTE | Row 7: change the sub-feature group from “SL PRS configuration in a dedicated resource pool” to “SL PRS configuration in a shared resource pool”  Row 16: for the column of Description, instead of the start of sensing window, it should be the sensing window length.  Row 24: for the parameter name, what does SRC mean?  Row 42 and Row 44: just to clarify, one is Rx time stamp and the other is Tx time stamp? And they have the same elements. |
|  |  |
|  |  |

# On list of higher layer parameters for NR CPP

Please provide any feedback to the list of parameters for SL positioning below considering the version in [2].

|  |  |
| --- | --- |
| Company | Comments |
| vivo | Row 70: The following agreement should be added in ‘Comment’ column.   |  | | --- | | Agreement  When a LMF requests the serving gNB of a UE to configure the transmission of the UL positioning SRS resources from the UE within indicated time window(s),   * the duration of a time window can be configured by one of the following values:   + {1, 2, 4, 8, 12} OFDM symbols   + {1, 2, 4, 6, 8, 12, 16} slots   + FFS: additional values * the number of the time windows can be configured as:   + {1, 2, …, 16} |   Row 71: Similar to Row 70, the following agreement should be added in ‘Comment’ column.   |  | | --- | | Agreement  When a LMF requests the serving gNB and neighboring gNBs of a UE to measure the UL SRS resources from the UE within indicated time window(s):   * The duration of a time window can be configured as follows:   + {1, 2, 4, 6, 8, 12, 16} slots. * the number of the time windows can be:   + {1, 2, …, 16} |   ROW 72: Similar to Row 70, the following agreement should be added in ‘Comment’ column.   |  | | --- | | Agreement  When an LMF requests the UEs, including target UE and PRU(s), to perform measurements on indicated DL PRS resource set(s) occurring within indicated time window(s)   * The duration of a time window can be configured as follows:   + {1, 2, 4, 6, 8, 12, 16} slots. * the number of the time windows can be:   + {1, 2}   + FFS: {4, 8} | |
|  |  |
|  |  |
|  |  |

# On list of higher layer parameters for LPHAP

Please provide any feedback to the list of parameters for SL positioning below considering the version in [2].

|  |  |
| --- | --- |
| Company | Comments |
|  |  |
|  |  |
|  |  |
|  |  |

# On list of higher layer parameters for Bandwidth Aggregation

Please provide any feedback to the list of parameters for SL positioning below considering the version in [2].

|  |  |
| --- | --- |
| Company | Comments |
|  |  |
|  |  |
|  |  |
|  |  |

# On list of higher layer parameters for RedCap Positioning

Please provide any feedback to the list of parameters for SL positioning below considering the version in [2].

|  |  |
| --- | --- |
| Company | Comments |
| vivo | Row 99: There is no related agreement on ‘Request from LMF to UE to perform DL PRS measurements based on receiving multiple hops of DL PRS’. So waiting for agreement in RAN1#114bis is needed.  Row 100/106: Waiting for explicit agreement in RAN1#114bis is needed.  Row 101/102: The related RAN1 specification should also include TS38.211. The value range will be discussed in RAN1#114bis and can wait for further agreement.    Row 108: UL time window may be per BWP configured, which will be discussed in RAN1#114 and can wait for further agreement |
| ZTE | Row 99: no agreement  Row 104/15: there is no agreement supporting signaling between gNB and LMF for SRS hopping yet. |
|  |  |
|  |  |

# References

1. RP-232670, “Revised WID on Expanded and Improved NR Positioning,” Intel Corporation, CATT, MediaTek, September 2023.
2. R1-2309194, “Higher layer parameters for Rel-18 expanded and improved NR Positioning,” Rapporteur (Intel Corporation), RAN1 #114bis.
3. R1-2308484, “RAN1 agreements for Rel-18 WI on Expanded and Improved NR Positioning,” Rapporteur (Intel Corporation), RAN1 #114.
4. R1-2305769, “Recommendations for RAN1 RRC Parameter Preparation,” Moderator (Ericsson), RAN1 #113.