**3GPP TSG-RAN WG2 Meeting #125 R2-240xxxx**

**Athens, Greece, Feb 26th - March 1st, 2024**

**Agenda item:** 7.2.3

**Source:** Intel Corporation

**Title:** [POST124][POS] [TS 38.355] Open Issue list

**Document for:**  Discussion and decision

# Introduction

This is to provide the open issue list based on issues received in [Post124][419][POS] TS 38.355 finalisation (Intel).

Rapporteur would like to use the email discussion to collect the RILs from companies on TS 38.355.

Note: We basically follow the ASN.1 review procedure as RRC, e.g. **class type**, etc. The main differences are that companies provide issues in this draft instead of inserting RILs in the specification directly (therefor no check in/out procedure). In addition, companies please use your company name as Company identifiers, e.g. Intel 001, etc.

Rapporteur provided the Rapporteur CR “Miscellaneous corrections to SLPP specification” (based on TS 38.355 v 18.0.0) in the draft folder to correct class 0 issues and also some issues listed in the clause 3. Companies please provide your comments/proposals based on this version.

The deadline for this email discussion is:

* **Feb 2nd 10.00 UTC as target deadline for adding identified issues into this email discussion report.**
* **Feb 09th 10.00 UTC as deadline for companies to provide comments on issue raised in the email discussion.**

#  Contact Information

Respondents to the email discussion are kindly asked to fill in the following table.

|  |  |
| --- | --- |
| Company | Contact: E-mail |
| Intel | Yi.guo@intel.com |
| Huawei, HiSilicon | yinghaoguo@huawei.com |
| OPPO | liuyangbj@oppo.com |
| Ericsson | Ritesh.shreevastav@ericsson.com |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

# Open issue list

**Companies are invited to provide comments/suggestions on the draft CR “Miscellaneous corrections to SLPP specification” (based on TS 38.355) in the following table.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Issue** | **Copied existing specification text.****Text should be unique, so that it can be easily found in the specification.****If needed, add also the new text.** | **Comment/description/****Correction/proposal** | **Class** | **Status** | **Comments** |
| Rapp001 | 6.5 SLPP PDU Common Contents | **Issue:** relative location/velocity are missing.Note 0: Issue was raised in previous meeting and concluded to be resolved in maintenance phase based on companies’ contribution.Note 1: Rapporteur did not provide proposal/correction on the issue since it was raised in previous email discussion. For new identified issues raised by companies, please provide proposal/correction together with the issue.  | 2 | ToDo |  |
| Rapp002 | 6 Protocol data units, formats and parameters (ASN.1) | **Issue:**So far, we did not identity the content for some IEs, e.g. commonIEsRequestCapabilities, CommonSL-PRS-MethodsIEsRequestLocationInformation. Further discuss whether these empty IEs should be deleted in maintenance phase.Note 0: Issue was raised by Huawei in previous email discussion and concluded to be resolved in maintenance phase based on companies’ contribution.Note 1: Rapporteur did not provide proposal/correction on the issue since it was raised in previous email discussion. For new identified issues raised by companies, please provide proposal/correction together with the issue. | 2 | ToDo |  |
| Rapp003 | 6.3.1 Common information elements | **Issue:**QC: It seems most elements in this section (apart from the GAD shape, *CommonIEsAbort, CommonIEsError*) are not really "common" (in the strict sense)?I think those should be in *SLPP-PDU-CommonSL-PRS-MethodsContents?*And the "true" common elements in *SLPP-PDU-CommonContents*?Similar to the *Multiplicity and type constraint definitions.* Those seems only applicable to *SLPP-PDU-CommonSL-PRS-MethodsContents.*Rapporteur comments in previous email discussion:*ARFCN-ValueNR used in ScheduledLocationTime which is in SLPP-PDU-CommonContents, and SL-RTD-Info which is used in multiple positioning methods.*LCS-GCS-Translation is used in multiple positioning methods.check whether all elements in this section are really "common" and whether any of them should be in SLPP-PDU-CommonSL-PRS-MethodsContents? And the "true" common elements in SLPP-PDU-CommonContents?Similar to the Multiplicity and type constraint definitions. Those seems only applicable to SLPP-PDU-CommonSL-PRS-MethodsContents.Note 0: Issue was raised by QC in previous email discussion and concluded to be resolved in maintenance phase based on companies’ contribution.Note 1: Rapporteur did not provide proposal/correction on the issue since it was raised in previous email discussion. For new identified issues raised by companies, please provide proposal/correction together with the issue. | 2 | ToDo |  |
| Rapp004 | 6.5 SLPP PDU Common Contents***locationInformationType***This IE indicates whether the server requires a location estimate or measurements. | **Issue:** Only server can trigger the location information transfer procedure?Is this only for the server? E.g., does "ranging" require a server? (seems to imply that any UE which supports e.g., SL-RTT and SL-AoA is a target/anchor/server simultaneously?)Note 0: Issue was raised by QC in previous email discussion and concluded to be resolved in maintenance phase based on companies’ contribution.Note 1: Rapporteur did not provide proposal/correction on the issue since it was raised in previous email discussion. For new identified issues raised by companies, please provide proposal/correction together with the issue. | 1 | ToDo |  |
| Rapp005 | 6.3.1 Common information elementsSL-RTD-Info | **Issue:** ZTE: R1’s parameter list is:

|  |  |  |  |
| --- | --- | --- | --- |
| sync-Info-for-SL-TDOA-TOA | New | Indicates synchronization information of anchor UEs between a UE and LMF or another UE.Synchronization information includes:• The synchronization source type (GNSS, gNB/eNB, and UE) of anchor UEs• The RTD between anchor UEs  | Sync source type: enumerated {GNSS, gNB/eNB, UE}- If the synchronization source of an anchor UE is gNB/eNB, the anchor UE can further provide cell identity informationFor RTD between anchor UEs:- subframeOffset with value range INTEGER (0..1966079)OR sl-OffsetDFN with value range INTEGER (1..1000)- rtdQuality: ref. NR-TimingQuality. |

Each anchor UE should be allowed to report synchronization type, not only reference anchor UE.Rapporteur comments in previous email discussion:Option 1: Current structure is, the RTD from all anchor UEs refers to the same source. Option 2: If my understanding is correct, your suggestion is that the RTD for each anchor UE can refer to different source, i.e. one by one mapping. Considering the information is provided by server, option 1 seems simpler to measured UE?Note 0: Issue was raised by ZTE in previous email discussion and concluded to be resolved in maintenance phase based on companies’ contribution.Note 1: Rapporteur did not provide proposal/correction on the issue since it was raised in previous email discussion. For new identified issues raised by companies, please provide proposal/correction together with the issue. | 2 | ToDo | [ZTE] We suggest to add ‘syncSourceType’ under the IE ‘RTD-InfoListPerTxUE’ to better reflect RAN1’s agreement, i.e., each anchor UE should report its syncSourceType |
| Rapp006 | All clauses in the specification | **Corrections:**Remove additional space, use correct format.See the draft CR “Miscellaneous corrections to SLPP specification” | 0 | PropAgree |  |
| Rapp007 | 4.1.4 SLPP Messages5.1.5 Reception of SLPP Request Capabilities5.2.5 Reception of SLPP Request Assistance Data5.3.5 Reception of Request Location Information5.4.3 SLPP Error Detection5.4.4 Reception of an SLPP Error Message5.5.2 Procedures related to Abort5.5.3 Reception of an SLPP Abort Message | **Correction:**Use field name in the procedure part.See the draft CR “Miscellaneous corrections to SLPP specification” | 0 | PropAgree | [vivo]: Some of the previous ‘IE XXX’ were replaced by ‘field xxx’ while some were not, e.g.,set the IE *SessionID* in the response message to the same value as the IE *SessionID* in the received message if received;If the intention is to align with RRC spec, then all the IE in the description procedure should be revised to field.[Rapp] Updated in v01 with Yi1-Intel |
| Rapp008 | 4.2 Common SLPP Session Procedure | **Correction:**Align the term “session ID” in the specification.See the draft CR “Miscellaneous corrections to SLPP specification” | 0 | PropAgree |  |
| Rapp009 | 6.1 General | **Correction:**Clarify that “In this release of the specification,” upon receiving a message with the field absent, the UE releases the current value.See the draft CR “Miscellaneous corrections to SLPP specification” | 0 | PropAgree |  |
| Rapp010 | 6.2.1 General message structure– SLPP-Message | **Correction:**There is no CP for SLPP.***sequenceNumber***This field may be included when an s*lpp-MessageBody* is included but shall be omitted otherwise. , see the draft CR “Miscellaneous corrections to SLPP specification” .See the draft CR “Miscellaneous corrections to SLPP specification” | 0 | PropAgree |  |
| Rapp011 | 6.3.1 Common information elements– CommonIEsAbort | **Correction:**Change “should be” to “is” to align the wording used in the specification.This IE defines the request to abort an ongoing procedure. The abort cause '*stopPeriodicReporting*' is used by an endpoint to stop any ongoing location reporting configured as *periodicalReporting* in the *CommonIEsRequestLocationInformation*. .See the draft CR “Miscellaneous corrections to SLPP specification” | 0 | PropAgree |  |
| Rapp012 | 6.3.1 Common information elements– CommonIEsError | **Correction:**Change “is” to “are”***errorCause***This IE defines the cause for an error. '*slppMessageHeaderError*' and '*slppMessageBodyError*' are used if a receiver is able to detect a coding error in the SLPP header (i.e., in the common fields) or SLPP message body respectively. '*incorrectDataValue*' is used if a receiver receives an incorrect data value.See the draft CR “Miscellaneous corrections to SLPP specification” | 0 | PropAgree |  |
| Rapp013 | 6.3.1 Common information elements– LCS-GCS-Translation | **Correction:**Remove unnecessary extension markLCS-GCS-Translation ::= SEQUENCE { alpha INTEGER (0..3599), beta INTEGER (0..3599), gamma INTEGER (0..3599)}.See the draft CR “Miscellaneous corrections to SLPP specification” | 2 | PropAgree |  |
| Rapp014 | 6.3.1 Common information elements– PositioningModes | **Correction:**Remove unnecessary extension markPositioningModes ::= SEQUENCE { posModes BIT STRING { ue-based (0), ue-assisted (1) } (SIZE (1..8))}.See the draft CR “Miscellaneous corrections to SLPP specification” | 2 | PropAgree |  |
| Rapp015 | 6.4 Multiplicity and type constraint values | **Correction:**Remove FFS since no comments on this.maxNrOfSLTxUEs INTEGER ::= 256 -- Max Tx UEs per Rx UE.See the draft CR “Miscellaneous corrections to SLPP specification” | 2 | PropAgree |  |
| Rapp016 | 6.5 SLPP PDU Common Contents– CommonIEsRequestLocationInformation | **Correction:**Remove unnecessary extension mark velocityRequest BOOLEAN} confidence INTEGER(0..100)} tenMilliSeconds ENUMERATED { true} OPTIONAL}.See the draft CR “Miscellaneous corrections to SLPP specification” | 2 | PropAgree |  |
| Rapp017 | 6.5 SLPP PDU Common Contents– CommonIEsProvideLocationInformation | **Correction:**Remove unnecessary extension mark ellipsoidArc EllipsoidArc} horizontalWithVerticalVelocityAndUncertainty HorizontalWithVerticalVelocityAndUncertainty} locationfailurecause LocationFailureCause}.See the draft CR “Miscellaneous corrections to SLPP specification” | 2 | PropAgree |  |
| Rapp018 | 6.6 SLPP PDU Common SL-PRS Methods Contents– CommonSL-PRS-MethodsIEsProvideAssistanceData | **Correction:**Remove unnecessary extension mark  arp-LocationInfoList SEQUENCE (SIZE (1..4)) OF ARP-LocationInfoElement}.See the draft CR “Miscellaneous corrections to SLPP specification” | 2 | PropAgree |  |
| Rapp019 | 6.6 SLPP PDU Common SL-PRS Methods Contents– Common-SL-PRS-MethodsIEsProvideLocationInformation | **Correction:**Remove unnecessary extension mark CommonSL-PRS-MethodsIEsProvideLocationInformation ::= SEQUENCE {}.See the draft CR “Miscellaneous corrections to SLPP specification” | 2 | PropAgree |  |
| Rapp020 | 6.9 SLPP PDU SL-TDOA Contents– SL-TDOA-ProvideAssistanceData | **Correction:**Add extension mark SL-TDOA-ProvideAssistanceData ::= SEQUENCE { sl-PositionCalculationAssistanceTDOA SL-PositionCalculationAssistanceTDOA OPTIONAL, ...}SL-PositionCalculationAssistanceTDOA ::= SEQUENCE { sl-RTD-Info SL-RTD-Info OPTIONAL, ...}.See the draft CR “Miscellaneous corrections to SLPP specification” | 2 | PropAgree |  |
| Rapp021 | 6.10 SLPP PDU SL-TOA Contents– SL-TOA-ProvideAssistanceData | **Correction:**Add extension mark SL-TOA-ProvideAssistanceData ::= SEQUENCE { sl-PositionCalculationAssistanceTOA SL-PositionCalculationAssistanceTOA OPTIONAL, ...}SL-PositionCalculationAssistanceTOA ::= SEQUENCE { sl-RTD-Info SL-RTD-Info OPTIONAL, ...}.See the draft CR “Miscellaneous corrections to SLPP specification” | 2 | PropAgree |  |
| H001 | 4.1.1 SLPP ConfigurationSLPP is used point-to-point between Endpoints, e.g. server and target in order to obtain absolute position, relative position, or ranging information of target UE using sidelink measurements obtained by one or more reference sources. Figure 4.1.1-1 shows the configuration as applied to the sidelink positioning (as defined in TS 38.305 [3] and TS 23.273 [5]).Figure 4.1.1-1: SLPP Configuration for sidelink positioning | According to the figure, SLPP can only be transferred between the server and the target/reference sources (anchor UE?). But it is also possible that SLPP messages are transferred between the target and anchor UEs. **Should revise the figure to support all scenarios.** | 1 | ToDo | [vivo]: Agree that figure needs to be refined1) The line for assistance data should be double headed arrow as Server and target/reference may exchange assistance data bidirectionally.2) Add ‘measurements and location’ between server and reference as they may also exchange measurements result. 3) the SL-PRS between target and reference should also be bidirectional.[Rapp] Agree with comments from vivo, and updated in v01 with Yi1-IntelTo Huawei So far, signalling on capability is not shown in the figure. Except capability, what SLPP signalling should be transferred between target and anchor UEs? |
| H002 | 4.1.2 SLPP Sessions and TransactionsAn SLPP session is used between UEs or a Location Server and a UE in order to obtain location related measurements based on NR PC5 radio signals, a location estimate or to transfer assistance data. A single SLPP session is used to support a single location request (e.g., for a single SL-MT-LR, or SL-MO-LR). Multiple SLPP sessions can be used between the same endpoints to support multiple different location requests (as required by TS 23.273 [5]). For UE-only Operation, the instigator of an SLPP session which is the Endpoint who receives the LCS request, initiates an SLPP session by sending an SLPP message containing an assigned session ID (session identifier) to the other endpoint (s). All constituent messages within a session shall contain the same session ID. For LMF involved Operation, the session ID is assigned by target UE and contained in the SLPP messages used for communication between UEs. The session ID may be included in the SLPP message for the communication between target UE and the LMF. | Better to be captured in the field description of session ID. Propose to remove the description here and move it to the description of session ID | 1 | PropReject | [Ericsson] We think for consistency this is fine. All session ID related are captured in section 4.1.2; so it makes sense to have it here.[Rapp] Agree with Ericsson, Keep it as it is.  |
| H003 | 4.3 SLPP Transport4.3.1 Transport Layer RequirementsSLPP requires reliable, in-sequence delivery of SLPP messages from the underlying transport layers. This clause describes the transport capabilities that are available within SLPP. A UE implementing SLPP shall support SLPP reliable transport (including all three of duplicate detection, acknowledgement, and retransmission). | Should also clarify on the cast type that only unicast is supported in this release. add clarification that in this release, only transport by unicast is supported as the WID indicates | 1 | PropReject | [Rapp] Based on current specification, broadcast/groupcast cannot be supported unless we change something, e.g. add castType, etc. Therefore, do not see the need to add this clarification.  |
| H004 | 4.3.3.1 GeneralEach SLPP message may carry an acknowledgement request and/or an acknowledgement indicator. A SLPP message including an acknowledgement request (i.e., that include the IE *ackRequested* set to TRUE) shall also include a sequence number. Upon reception of an SLPP message which includes the IE *ackRequested* set to TRUE, a receiver returns an SLPP message with an acknowledgement response (i.e., that includes the *ackIndicator* IE set to the same sequence number of the message being acknowledged). An acknowledgement response may contain no SLPP message body (in which case only the sequence number being acknowledged is significant); alternatively, the acknowledgement may be sent in an SLPP message along with an SLPP message body. An acknowledgement is returned for each received SLPP message that requested an acknowledgement including any duplicate(s). Once a sender receives an acknowledgement for an SLPP message, and provided any included sequence number is matching, it is permitted to send the next SLPP message. No message reordering is needed at the receiver since this stop-and-wait method of sending ensures that messages normally arrive in the correct order.When an SLPP message is transported via a NAS SL-MO-LR request, the message does not request an acknowledgement. | **We would like to understand what SLPP message are included in SL-MO-LR and what are their purposes, although we understand that according to the current CT4 stage3 spec, SLPP message indeed can be included in the SL-MO-LR message.** | 1 | ToDo | [Rapp] This is unrelated to SLPP itself. Would be good to have separate discussion on this.  |
| H005 | 5.3.5 Reception of Request Location InformationUpon receiving a *RequestLocationInformation* message, Endpoint A shall:1> if the requested information is compatible with Endpoint A’s capabilities and configuration:2> include the requested information in a *ProvideLocationInformation* message;2> set the IE *SessionID* in the response message to the same value as the IE *SessionID* in the received message if received;2> set the IE *SLPP-TransactionID* in the response to the same value as the IE *SLPP-TransactionID* in the received message;2> deliver the *ProvideLocationInformation* message to lower layers for transmission.1> otherwise:2> if one or more positioning methods are included that Endpoint A does not support:3> continue to process the message as if it contained only information for the supported positioning methods;3> handle the signaling content of the unsupported positioning methods by SLPP error detection as in 5.4.3. | merge the current 1> and 2> conditions into “else if xxxx” Change the 3> level to 2> level | 0 | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| H006 | 6 Protocol data units, formats and parameters (ASN.1)6.1 GeneralThe contents of each SLPP message is specified in clause 6.2 using ASN.1 to specify the message syntax and using tables when needed to provide further detailed information about the fields specified in the message syntax. The syntax of the information elements that are defined as stand-alone abstract types is further specified in a similar manner in clause 6.3. The ASN.1 in this clause uses the same format and coding conventions as described in Annex A of TS 38.331 [2]. Upon receiving a message with the field absent, the UE releases the current value. | This sentence should only be applicable for assistance data message. Should Clarify that it is only applicable for the fields within ProvideAsssistanceData SLPP message | 1 | PropAgree | [Rapp] updated in v01 with Yi1-Intel, moved the updated sentence under ProvideAssistanceData |
| H007 | – *PositioningModes*The IE *PositioningModes* is used to indicate several positioning modes using a bit map.-- ASN1START-- TAG-POSITIONINGMODES-STARTPositioningModes ::= SEQUENCE { posModes BIT STRING { ue-based (0), ue-assisted (1) } (SIZE (1..8)), ...} | Need to be aligned with the 38305 description to differentiate between different types of UE based: include SL-target UE-based and SL-server UE-based. See table 4.3.1-2. define 3 capabilities: SL-target UE-based, SL-server UE-based, ue-assisted |  | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| H008 | SL-RTD-Info ::= SEQUENCE { referenceRTD-Info ReferenceRTD-Info, rtd-InfoList RTD-InfoList} | **referecenRTD-Info can be optional** |  | ToDo | [Rapp] Suggest to discuss this together with Rapp005 based on companies’ contribution..Question to Huawei, if referecenRTD-Info is absent, what reference should be used?  |
| H009 | ReferenceRTD-Info ::= SEQUENCE { syncSourceType ENUMERATED { gnss, gNB-eNB, ue}, applicationLayerID OCTET STRING OPTIONAL, nrCell-Identify SEQUENCE { nr-PhysCellID NR-PhysCellID, nr-ARFCN ARFCN-ValueNR, nr-CellGlobalID NCGI OPTIONAL } OPTIONAL} | **Should clarify that the field is only present when the syncsourceType is set to gNB-eNB****Also, if the type can be eNB, then the lte-ARFCN and cell ID should be added??****Also, NCGI and PCI/ARFCN do not need to be present at the same time. So, all the three fields should be optional.** |  | ToDo | [Rapp] Agree, the field is only present when the syncsourceType is gNB-eNB.I am not quite sure whether eNB can be the reference type, that’s why I did not list LTE ARFCN and cell ID. Agree either NCGI or PCI/ARFCN should be present. |
| H010 | RTD-InfoListPerTxUE ::= SEQUENCE { applicationLayerID OCTET STRING, rtdBetweenAnchorUEs CHOICE { subframeOffset INTEGER (0..1966079), sl-OffsetDFN INTEGER (0..1000) }, rtd-Quality SL-TimingQuality} | Should clarify what the values indicate. Add field description. |  | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| H011 | CommonIEsRequestLocationInformation ::= SEQUENCE { locationInformationType LocationInformationType, periodicalReporting PeriodicalReportingCriteria OPTIONAL, additionalInformation AdditionalInformation OPTIONAL, qos QoS OPTIONAL, environment Environment OPTIONAL, scheduledLocationTime ScheduledLocationTime OPTIONAL, ... | In LPP, QoS can be transferred from LMF to the UE in RequestLocationRequest message. The legacy is reused for SLPP in the spec. But QoS for SLP also includes priority level and delay budget. 23.586: Ranging/SL Positioning QoS information contains attributes defined in clause 4.1b of TS 23.273 [8] with the following additions:- The accuracy attribute also includes - the relative horizontal accuracy, and the relative vertical accuracy for relative positioning;- the distance accuracy and direction accuracy for Ranging.- Range, which indicates the applicability of the QoS attributes in the Ranging/SL Positioning operation over PC5.- Priority level.- Delay Budget.Should consider how to deliver the priority level and delay budget to the UE, can take the QoS handling in SL communication/relay as a reference |  | ToDo | [Rapp] This is also related to delayBudet in RRC. Huawei is invited to provide TP on this. |
| H012  | ScheduledLocationTime ::= SEQUENCE { utc-Time UTCTime OPTIONAL, gnss-Time SEQUENCE { gnss-TOD-Msec INTEGER (0..3599999), gnss-TimeID GNSS-ID } OPTIONAL, nr-Time SEQUENCE { nr-PhysCellID NR-PhysCellID, nr-ARFCN ARFCN-ValueNR, nr-CellGlobalID NCGI OPTIONAL, nr-SFN INTEGER (0..1023), nr-Slot CHOICE { scs15 INTEGER (0..9), scs30 INTEGER (0..19), scs60 INTEGER (0..39), scs120 INTEGER (0..79) } OPTIONAL } OPTIONAL, relativeTime INTEGER (1..1024) OPTIONAL} | **Scheduled location time can also be based on DFN. Should add DFN time and sync source as one possible time indicating the scheduled location time** |  | PropReject | [Rapp] So far, only UTC, GNSS and NetworkTime defined in LPP. Would like to follow LPP since it was introduced in LPP first.  |
| H014 | Azimuth ::= SEQUENCE { azimuthResult INTEGER (0..89),  uncertainty INTEGER (0..127), confidence INTEGER (0..100) OPTIONAL} | according to clause 5.10 of TS 23.032-i10, a degree range of 0-90 should be not adequate. change the value range to 0-360. |  | ToDo | [Rapp] To Huawei, are you proposing to change azimuthResult INTEGER (0..359),? |
| H015 | SL-PRS-AssistanceData ::= SEQUENCE { applicationLayerID OCTET STRING, sl-PRS-SequenceID INTEGER(0..4095) OPTIONAL, -- SL PRS sequence generation, from server to Tx UE sl-POS-ARP-ID-Tx INTEGER (1..4) OPTIONAL, -- sl-pos-arpID-Tx sl-PRS-ResourceId INTEGER (0..16) OPTIONAL, -- sl-PRS-ResourceId tx-TimeStamp SL-TimeStamp OPTIONAL, -- Tx TimeStamp ... | Since each UE may have multiple ARP ID, the association information can be a list. Should change the association information to a list.AgreementFor location calculation, the ARP ID of SL PRS transmission can be informed to another UE or LMF by Tx UE informing the association between ARP ID and the already transmitted SL PRS resource(s) as assistance data.AgreementRegarding the association information report between ARP ID and the already transmited SL PRS resource(s):• The association information includes {ARP ID, Tx time stamp, SL PRS resource ID (optional)}. |  | ToDo | [Rapp] The UE may have multiple ARP ID and one set of SL-PRS configuration. But should not only one ARP-ID is used during the positioning session? Otherwise, the receiver has to monitor multiple ARP-IDs for the same transmitter.  |
| H016 | *– SL-AoA-ProvideCapabilities*The IE *SL-AOA-ProvideCapabilities* is used to indicate the support of SL-AOA and to provide SL-AOA positioning capabilities.-- ASN1START-- TAG-SL-AOA-PROVIDECAPABILITIES-STARTSL-AoA-ProvideCapabilities ::= SEQUENCE { applicationLayerID OCTET STRING, positioningModes PositioningModes, tenMsUnitResponseTime PositioningModes OPTIONAL, periodicalReporting PositioningModes OPTIONAL, ...} | Application ID at least should be optional when the transfer is between two UEs. Should find justification whether it is needed in the SLPP between UE and LMF. If it is not needed, the application ID here should be removed. |  | ToDO | [Ericsson] SA2 flow also captures that application layer ID is needed.Example: **NL10:** In addition to the relevant functions defined in TS 23.273 [8], in the case of Ranging/SL Positioning Service, it used by LMF to get the location of Located UE/Reference UE from GMLC **using the Application Layer ID.**[Rapp] Do not see the problem to keep the application ID between UEs.  |
| H017 | ***sl-PRS-ResourceId***This field specifies the PRS resourde ID used for SL positioning measurements. | Typo |  | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| H018 | SL-RTT-MeasElement ::= SEQUENCE { applicationLayerID OCTET STRING, los-NLOS-Indicator LOS-NLOS-Indicator OPTIONAL, -- sl-losNlosIndicator sl-POS-ARP-ID-Rx INTEGER (1..4) OPTIONAL, -- sl-pos-arpID-Rx sl-PRS-ResourceId INTEGER (0..16) OPTIONAL, -- sl-PRS-ResourceId sl-PRS-RxTxTimeDiffFirstPathResult CHOICE { k0 INTEGER (0..1970049), k1 INTEGER (0..985025), k2 INTEGER (0..492513), k3 INTEGER (0..246257), k4 INTEGER (0..123129), k5 INTEGER (0..61565) } OPTIONAL, -- sl-PRS-RxTxTimeDiff sl-PRS-RSRP-Result INTEGER (0..126) OPTIONAL, -- sl-PRS-RSRP sl-PRS-FirstPathRSRPP-Result INTEGER (0..126) OPTIONAL, -- sl-PRS-RSRPP sl-RTT-AdditionalPathList SL-RTT-AdditionalPathList OPTIONAL, sl-TimeStamp SL-TimeStamp OPTIONAL, -- sl-Timestamp sl-TimingQuality SL-TimingQuality OPTIONAL, -- sl-TimingQuality tx-TimeInfo SL-TimeStamp OPTIONAL, -- tx-Time-Info ...} | Field description is missing in this section. References should be added for measurement results, ie, mapping from the code points to meas results in RAN4 spec. |  | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| H019 | *– SL-TDOA-ProvideAssistanceData*-- ASN1START-- TAG-SL-TDOA-PROVIDEASSISTANCEDATA-STARTSL-TDOA-ProvideAssistanceData ::= SEQUENCE { sl-PositionCalculationAssistanceTDOA SL-PositionCalculationAssistanceTDOA OPTIONAL}SL-PositionCalculationAssistanceTDOA ::= SEQUENCE { sl-RTD-Info SL-RTD-Info OPTIONAL}-- TAG-SL-TDOA-PROVIDEASSISTANCEDATA-STOP-- ASN1STOP | Should also include absolute location?? |  | ToDo | [Rapp] absolute location is not mentioned in RAN1 parameter list. So far, only RTD was listed.  |
| ZTE001 | ***rtdBetweenAnchorUEs***This field specifies the RTD between anchor UEs: | Add field descriptions for *rtdBetweenAnchorUEs:****subframeOffset***This field specifies the subframe boundary offset at the UE antenna location between the reference UE and this UE in time units wps1 where wps2 Hz and wps3 (TS 38.211).The offset is counted from the beginning of a subframe #0 of the reference UE to the beginning of the closest subsequent subframe of this UE.Scale factor 1 Tc.***sl-OffsetDFN***Indicates the timing offset for the UE to determine DFN timing when GNSS is used for timing reference. Value 1 corresponds to 0.001 milliseconds, value 2 corresponds to 0.002 milliseconds, and so on. | 1 | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| ZTE002 | - ***responseTime***- ***time*** indicates the maximum response time as measured between receipt of the *RequestLocationInformation* and transmission of a *ProvideLocationInformation*. If the *unit* field is absent, this is given as an integer number of seconds between 1 and 128. If the *unit* field is present with enumerated value '*ten-seconds*', the maximum response time is given in units of 10-seconds, between 10 and 1280 seconds. If the *unit* field is present with enumerated value '*ten-milli-seconds*', the maximum response time is given in units of 10-milli-seconds, between 0.01 and 1.28 seconds. If the *periodicalReporting* IE is included in *CommonIEsRequestLocationInformation*, this field should not be included by the location server and shall be ignored by the UE (if included). | Issue 1: There is no *unit* field in the corresponding SLPP ASN.1. The yellow text should be changed to:If the '*ten-milli-seconds*' field is present, the maximum response time is given in units of 10-milli-seconds, between 0.01 and 1.28 seconds.Also, what is the default unit of response time when the '*ten-milli-seconds*' field is not present?Issue 2: location should be deleted | 1 | PropAgree with change | [Rapp] updated in v01 with Yi1-IntelPropose to delete the yellow sentence instead since the field description on “***tenMilliSeconds*** indicates the unit of the *time* field corresponds to a resolution of 0.01 seconds. If this field is absent, the unit/resolution is 1 second.” Is clear enough. When the 'ten-milli-seconds' field is not present, the unit/resolution is 1 second as mentioned in the field description of “***tenMilliSeconds***”. |
| ZTE003 | CommonSL-PRS-MethodsIEsProvideAssistanceData ::= SEQUENCE { sl-PRS-AssistanceDataInfo SEQUENCE (SIZE (1..maxNrOfSLTxUEs)) OF SL-PRS-AssistanceData OPTIONAL, sl-PositionCalculationAssistanceInfo SEQUENCE (SIZE (1..maxNrOfSLTxUEs)) OF SL-PositionCalculationAssistance OPTIONAL, ...} | We would like to revisit the necessity of previous agreement: ‘the provide assistance data message contains multiple SL-PRS configurations ’, since **the problem is that the agreement “forwarding functionality should not be specified in SLPP spec” and the agreement ‘providing multiple UE’s AD in the same message’ is contradictory.**During the Rel-18 discussion, the potential use cases of multiple Tx UE’s AD in a same SLPP message are listed below:* Server UE/LMF will gather anchor UE’s AD and sends to target UE.
* However 38.305 has the basic assumption that target UE and each of the anchor UE can have direct PC5 link. So each anchor UE can directly send the AD to target UE.
* Target UE gathers anchor UE’s AD and provides to the server UE/LMF.
* However based on 38.305, target UE should send supplementary RSPP Assistance Data transfer message to the server, in this supplementary RSPP Assistance Data transfer message, the target UE will assemble different anchor UE’s AD outside the SLPP message. That is to say, one SLPP message should only contain one UE’s information.
* However if we follow 38.355 that one SLPP message can contain multiple other UE’s information, the supplementary service message will be useless. In addition, RAN2 has already agreed that forwarding functionality should not be specified in SLPP spec. However, providing multiple Tx UE’s AD in same ProvideAssistanceData message is actually a SLPP-level forwarding behaviour.
 | 2 | PropReject | [Rapp] it can be used by server to provide assistance data from multiple anchor UEs to a target UE, and therefore unrelated to “forwarding functionality”. |
| ZTE004 | SL-AoA-ProvideCapabilities ::= SEQUENCE { applicationLayerID OCTET STRING, positioningModes PositioningModes, tenMsUnitResponseTime PositioningModes OPTIONAL, periodicalReporting PositioningModes OPTIONAL, ...} | Why *SL-AoA-ProvideCapabilities/ SL-RTT-ProvideCapabilities/SL-TDOA-ProvideCapabilities/ SL-TOA-ProvideCapabilities* contains UE ID? The capability transfer is a unicast SLPP message, there seems no need to carry the UE ID in it | 2 | ToDo | [Ericsson: ]But it is also possible that target UE collects the capabilities of anchor UEs and provides to LMF as per SA2 flow in that case the UE ID is needed. UE ID as such would be encapsulated in the capability message.[Rapp] partially overlapping with H016. Agree with Ericsson’s comments. |
| ZTE005 | SL-TOA-ProvideLocationInformation ::= SEQUENCE { sl-TOA-SignalMeasurementInformation SL-TOA-SignalMeasurementInformation OPTIONAL, ...}SL-TOA-SignalMeasurementInformation ::= SEQUENCE { sl-TOA-MeasList SEQUENCE (SIZE(1..maxNrOfSLTxUEs)) OF SL-TOA-MeasElement, ...} | SL-ToA is target UE sends SL-PRS and anchor UEs receive/measure. Also, each SL pos session only has one target UE (i.e., Tx UE). Why a single SL-ToA measurement of one session has multiple reports associated with multiple Tx UEs? | 2 | ToDo | [Rapp] Good point. It was copied from TS 38.455, there may be multiple RPs in the same node. Would like to hear companies’ view on this.  |
| A001 | *– GNSS-ID*The *GNSS-ID* is used to indicate a specific GNSS.-- ASN1START-- TAG-GNSS-ID-STARTGNSS-ID ::= ENUMERATED{ gps, sbas, qzss, galileo, glonass, bds, navic }-- TAG-GNSS-ID-STOP-- ASN1STOP | Suggest to add extension marker  | 2 | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| A002 | – *SL-RTD-Info*The IE *SL-RTD-Info* provides time synchronization information of anchor UEs between a UE and LMF or another UE. | “between a UE and LMF or another UE” is confusing, suggest removing | 1 | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| A003 | RTD-InfoListPerTxUE ::= SEQUENCE { applicationLayerID OCTET STRING, rtdBetweenAnchorUEs CHOICE { subframeOffset INTEGER (0..1966079), sl-OffsetDFN INTEGER (0..1000) }, rtd-Quality SL-TimingQuality} | rtd-Quality can be optional | 2 | ToDo | [Rapp] Based on LPP, it should be always present.  |
| A004 | SL-TimeStamp ::= SEQUENCE { dfn-Time SEQUENCE { syncSourceType ENUMERATED { gnss, ue} OPTIONAL, applicationLayerID OCTET STRING OPTIONAL, dfn INTEGER (0.. 1023), nr-Slot CHOICE { scs15 INTEGER (0..9), scs30 INTEGER (0..19), scs60 INTEGER (0..39), scs120 INTEGER (0..79) } } OPTIONAL, sfn-Time SEQUENCE { nr-PhysCellID NR-PhysCellID OPTIONAL, nr-ARFCN ARFCN-ValueNR OPTIONAL, nr-CellGlobalID NCGI OPTIONAL, nr-SFN INTEGER (0..1023), nr-Slot CHOICE { scs15 INTEGER (0..9), scs30 INTEGER (0..19), scs60 INTEGER (0..39), scs120 INTEGER (0..79) } } OPTIONAL} | Shouldn’t applicationLayerID be mandatory?Also would be good to add field description | 2 | PropReject | [Rapp] applicationLayerID is only needed if the syncSourceType is UE |
| A005 | *– RSPP-Metadata*The IE *RSPP-Metadata* includes the UE information included in Discovery Message for ranging and sidelink positioning. | Suggest adding reference to TS 23.304 for Discovery Message definition | 1 | PropAgree | [Rapp] updated in v01 with Yi1-IntelAdded asThis clause specifies information elements that are transferred in Discovery Message for ranging and sidelink positioning, as specified in TS 23.304 [14]. |
| A006 | *– CommonIEsProvideCapabilities*-- ASN1START-- TAG-COMMONIESPROVIDECAPABILITIES-STARTCommonIEsProvideCapabilities ::= SEQUENCE {}-- TAG-COMMONIESPROVIDECAPABILITIES-STOP-- ASN1STOP | Instead of including “applicationLayerID” in sl-AOA-ProvideCapabilities, sl-RTT-ProvideCapabilities, sl-TDOA-ProvideCapabilities, and sl-TOA-ProvideCapabilities wouldn’t it be better to include applicationLayerID in common?  | 2 | ToDo | [Rapp] Good point. Would like to hear other companies’view. Can be discussed together with H016, Z004. |
| OPPO001 | 4.1.2 SLPP Sessions and TransactionsAn SLPP session is used between UEs or a Location Server and a UE in order to obtain location related measurements based on NR PC5 radio signals, a location estimate or to transfer assistance data. A single SLPP session is used to support a single location request (e.g., for a single SL-MT-LR, or SL-MO-LR). Multiple SLPP sessions can be used between the same endpoints to support multiple different location requests (as required by TS 23.273 [5]). For UE-only Operation, the instigator of an SLPP session which is the Endpoint who receives the LCS request, initiates an SLPP session by sending an SLPP message containing an assigned session ID (session identifier) to the other endpoint (s). All constituent messages within a session shall contain the same session ID. For LMF involved Operation, the session ID is assigned by target UE and contained in the SLPP messages used for communication between UEs. The session ID may be included in the SLPP message for the communication between target UE and the LMF. | Sugget to delete the word ‘different’. Given ‘multiple’ is included in the description, there is no need to emphasize different location requests | 0 | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| OPPO002 | Within the same session, all constituent messages shall contain the same session ID and within each transaction, all constituent messages shall contain the same transaction identifier. The last message sent in each transaction shall have the IE *endTransaction* set to TRUE. Transactions that occur in parallel shall use different transaction IDs; transaction IDs for completed transactions may be reused at any time after the final message of the previous transaction with the same ID is known to have been received. | ‘identifier’ should be changed to ‘ID’ to align with the subsequent decprtions. | 0 | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| OPPO002 | 4.3.3.2 Procedure related to Acknowledgement1. Endpoint A sends an SLPP message *N* to Endpoint B which includes the IE *ackRequested* set to TRUE and a sequence number.2. If SLPP message is received and Endpoint B is able to decode the *ackRequested* value and the sequence number, Endpoint B shall return an acknowledgement for the message. The acknowledgement shall contain the IE *ackIndicator* set to *N*.3. When the acknowledgement for SLPP message is received and provided the included *ackIndicator* IE matches the sequence number sent in message *N*, Endpoint A sends the next SLPP message *N+1* to Endpoint B when this message is available. | The sequence number N should be explicitly expressed in the 1st step, as follows:‘…..includes the IE *ackRequested* set to TRUE and a sequence number *N*Also, the sequence number N+1 should be explicitly expressed in the 3rd step, as follows:*’…* Endpoint A sends the next SLPP message *N+1* with *sequenceNumber* set to *N+1* to Endpoint B when this message is available.’ | 0 | PropReject | [Rapp] Message N does not mean the sequence number is N.  |
| OPPO003 | – *SL-TimingQuality*The IE *SL-TimingQuality* defines the quality of a timing value (e.g., of a TOA measurement).-- ASN1START-- TAG-SL-TIMINGQUALITY-STARTSL-TimingQuality ::= SEQUENCE { timingQualityValue INTEGER (0..31), timingQualityResolution ENUMERATED {mdot1, m1, m10, m30}}-- TAG-SL-TIMINGQUALITY-STOP-- ASN1STOP***timingQualityValue***This field provides an estimate of uncertainty of the timing value for which the IE *SL-TimingQuality* is provided in units of metres. | the relationship between the integer value of the field and the estimate of uncertainty of the timing value should be clarified. The higher the integer value is, is the timing quality higher or is the estimate of uncertainty higher? | 1 | PropReject | [Rapp] As indicated in RAN1 parameter list, this field refers to Ref. NR-TimingQuality in 37.355. Therefore nothing new.  |
| OPPO004 | HorizontalAccuracy ::= SEQUENCE { accuracy INTEGER(0..255), confidence INTEGER(0..100)}VerticalAccuracy ::= SEQUENCE { accuracy INTEGER(0..255), confidence INTEGER(0..100)}RangeAccuracy ::= SEQUENCE { accuracy INTEGER(0..127), confidence INTEGER(0..100)}AzimuthAccuracy ::= SEQUENCE { accuracy INTEGER(0..127), confidence INTEGER(0..100)}ElevationAccuracy ::= SEQUENCE { accuracy INTEGER(0..127), confidence INTEGER(0..100)} | Field description of the accuracy and confidence is missing in the current CR. Better to capture them as follows:The '*accuracy*' corresponds to the encoded uncertainty as defined in TS 23.032 [7] and '*confidence*' corresponds to confidence as defined in TS 23.032 [7]. | 1 | PropReject | [Rapp] Already captured in the field description as***horizontalAccuracy*** indicates the maximum horizontal error in the location estimate at an indicated confidence level. The '*accuracy*' corresponds to the encoded uncertainty as defined in TS 23.032 [7] and '*confidence*' corresponds to confidence as defined in TS 23.032 [7]. |
| OPPO005 | ***locationInformationType***This IE indicates whether the server requires a location estimate or measurements. For '*locationEstimateRequired*' or '*rangeEstimateRequired*' , the UE shall return a location or range estimate if possible, or indicate a location error if not possible. For '*locationMeasurementsRequired*  '*rangeMeasurementsRequired*'', the UE shall return measurements if possible, or indicate a location error if not possible. For '*locationEstimatePreferred*' or '*rangeEstimatePreferred*', the UE shall return a location or range estimate if possible, but may also or instead return measurements for any requested position methods for which a location estimate is not possible. For '*locationMeasurementsPreferred or* '*rangeMeasurementsPreferred*'', the UE shall return location or range measurements if possible, but may also or instead return a location estimate for any requested position methods for which return of location measurements is not possible. | ‘or’ between '*locationMeasurementsRequired’ and* '*rangeMeasurementsRequired*'’ is missing. | 0 | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| OPPO006 | Elevation ::= SEQUENCE { elevationResult INTEGER (0..89),  uncertainty INTEGER (0..63), confidence INTEGER (0..100) OPTIONAL} | According to the TS 23.032, the elevation provides a direction to point B from point A in a vertical plane through the points A and B and as measured upwards or downwards from a horizontal plane through point A. In the current CR, downwards direction is missing, and therefore the range should be extended to INTEGER (-89,89) | 2 | ToDO | [Rapp] Based on the definition in LPP, should it be 0-180?e.g.  dl-PRS-Elevation-r16 INTEGER (0..180) OPTIONAL, -- Need ONFor a Global Coordinate System (GCS), the elevation angle is measured relative to zenith and positive to the horizontal direction (elevation 0 deg. points to zenith, 90 deg to the horizon).For a Local Coordinate System (LCS), the elevation angle is measured relative to the z-axis of the LCS (elevation 0 deg. points to the z-axis, 90 deg to the x-y plane).Scale factor 1 degree; range 0 to 180 degrees. |
| Q001 | CommonSL-PRS-MethodsIEsProvideAssistanceData ::= SEQUENCE { sl-PRS-AssistanceDataInfo SEQUENCE (SIZE (1..maxNrOfSLTxUEs)) OF SL-PRS-AssistanceData OPTIONAL, sl-PositionCalculationAssistanceInfo SEQUENCE (SIZE (1..maxNrOfSLTxUEs)) OF SL-PositionCalculationAssistance OPTIONAL, ...}SL-PRS-AssistanceData ::= SEQUENCE { applicationLayerID OCTET STRING, sl-PRS-SequenceID INTEGER(0..4095) OPTIONAL, -- SL PRS sequence generation, from server to Tx UE sl-POS-ARP-ID-Tx INTEGER (1..4) OPTIONAL, -- sl-pos-arpID-Tx sl-PRS-ResourceId INTEGER (0..16) OPTIONAL, -- sl-PRS-ResourceId tx-TimeStamp SL-TimeStamp OPTIONAL, -- Tx TimeStamp ...} | Unclear why the *sl-PRS-SequenceID* is provided "from server to Tx UE" for *maxNrOfSLTxUEs*. A UE may be a SL-PRS Tx UE, SL-PRS Rx UE, or both. Per RAN1 parameter list:

|  |
| --- |
| sl-PRS-SequenceID: This field specifies the sequence Id used to initialize cinit value used in pseudo random generator for generation of SL PRS sequence for transmission on a given SL PRS Resource.The field may be provided to a Tx UE by higher layers - details up to RAN2, including consideration of Tx UE’s own higher layer.The field is also provided to Rx UE via SLPP.Specification: FFS for RAN2 WG for Tx UEThe field is also provided to Rx UE via 38.355 |

So instead of maxNrOfSLTxUEs it should be maxNrOfSLRxUEs, or maybe just maxNrOfUEs? It seems the Tx sequence ID can be selected by a Tx UE's own higher layer, but each Rx UE needs to know what to measure, and therefore, the specific sequence ID used by each Tx UE to generate the SL-PRS needs to be known at each Rx UE. Similar for the *SL-PositionCalculationAssistance*: For RTT, the UEs are SL-PRS Tx and Rx UEs, so maybe just maxNrOfUEs seems appropriate here as well. Similar for SL-TOA: A Tx UE may need to know the locations of the Rx UEs (not maxNrOfSLTxUEs or SL-ARP-LocationInfoPerTxUE, etc.).  | 2 | PropAgree | [Rapp] Agree with the comments, i.e. change all “maxNrOfSLTxUEs” to “maxNrOfUEs” in the spec. maxNrOfUEs INTEGER ::= 256 -- Max number of Tx UEs or Rx UEs |
| Q002 | CommonSL-PRS-MethodsIEsRequestAssistanceData ::= SEQUENCE { applicationLayerID OCTET STRING, sl-PRS-AssistanceDataInfoRequest ENUMERATED { true} OPTIONAL, sl-PosCalcAssistanceRequest BIT STRING { anchorUE-LocationInfo (0), sl-ARP-LocationInfo (1) } (SIZE (1..8)) OPTIONAL, ...} | Not clear what *sl-PRS-AssistanceDataInfoRequest* is used for. The field description currently specifies:

|  |
| --- |
| ***sl-PRS-AssistanceDataInfoRequest***This field indicates the SL PRS Assistance Data requested. |

I think this should be: "This field, if present, indicates that the *sl-PRS-AssistanceDataInfo* in IE *CommonSL-PRS-MethodsIEsProvideAssistanceData* is requested" (?)However, if the above assumption is correct, shouldn't this also be a BIT STRING? I.e., not all parameters in *SL-PRS-AssistanceData* are always needed. E.g., in some cases, a Rx UE may only need to know the sequence ID of the Tx UE (to measure PRS). In some other cases (e.g., absolute location or ranging), a Rx UE may need to know the ARP ID of the TX UE, possibly with Tx TimeStamp, SL PRS resource index(es), etc.?Essentially, shouldn't there be just a request for each individual assistance data element (instead of splitting it into two "groups"?RAN1 parameter list:

|  |
| --- |
| sl-pos-arpID-Tx:ARP ID of SL PRS transmission can be informed to another UE or LMF by Tx UE informing the association between ARP ID and the already transmitted SL PRS resource(s) as assistance data. |

Therefore, there should be a possibility to request and provide just the ARP ID/Tx Resources.  | 2 | ToDo | [Rapp] Yes, the field description shall be updated to “This field, if present, indicates that the *sl-PRS-AssistanceDataInfo* in IE *CommonSL-PRS-MethodsIEsProvideAssistanceData* is requested”. Would suggest to further discuss whether we should introduce the finer granularity for assistanceDataInforRequest. |
| Q003 | SL-AoA-RequestLocationInformation ::= SEQUENCE { sl-ARP-InfoRequest ENUMERATED { true } OPTIONAL, sl-LOS-NLOS-IndicatorRequest ENUMERATED { true } OPTIONAL, sl-PRS-RSRP-Request ENUMERATED { true } OPTIONAL, sl-FirstPathRSRPP-Request ENUMERATED { true } OPTIONAL, sl-AdditionalPathsRequest ENUMERATED { true } OPTIONAL, ...}SL-AoA-MeasElement ::= SEQUENCE { applicationLayerID OCTET STRING, los-NLOS-Indicator LOS-NLOS-Indicator OPTIONAL, -- sl-losNlosIndicator sl-AngleQuality MeasurementAngleQuality OPTIONAL, -- sl-AngleQuality sl-AoA-AdditionalPathList SL-AoA-AdditionalPathList OPTIONAL, sl-AzimuthAoA-FirstPathResult INTEGER (0..3599) OPTIONAL, -- sl-PRS-AoA sl-AzimuthAoA-LCS-GCS-Translation LCS-GCS-Translation OPTIONAL, -- sl-LCS-to-GCS-translation sl-POS-ARP-ID-Rx INTEGER (1..4) OPTIONAL, -- sl-pos-arpID-Rx sl-PRS-ResourceId INTEGER (0..16) OPTIONAL, -- sl-PRS-ResourceId sl-PRS-RSRP-Result INTEGER (0..126) OPTIONAL, -- sl-PRS-RSRP sl-PRS-FirstPathRSRPP-Result INTEGER (0..126) OPTIONAL, -- sl-PRS-RSRPP sl-TimeStamp SL-TimeStamp OPTIONAL, -- sl-Timestamp sl-TimingQuality SL-TimingQuality OPTIONAL, -- sl-TimingQuality sl-ZenithAoA-FirstPathResult INTEGER (0..1799) OPTIONAL, -- sl-PRS-AoA sl-ZenithAoA-LCS-GCS-Translation LCS-GCS-Translation OPTIONAL, -- sl-LCS-to-GCS-translation ...} | A UE can request a couple of measurements from a peer UE (here SL-AoA as example, but similar to all other methods). Are all these measurements and attributes mandatory? I.e., there are no capabilities.For Uu positioning, we usually have the "core measurement" (e.g., RSTD) mandatory, and the "auxiliary measurements" like RSRP, multipath, etc. optional with a capability.The request also does not fully match the response. For example, the UE can report *sl-AzimuthAoA-LCS-GCS-Translation* or *sl-PRS-ResourceId* . But how does the UE decide whether to report these attributes or not? Shouldn't there be a request and capability for all these individual parameters? | 2 | ToDo | [Rapp] There are corresponding UE feature in RAN1 feature list, but with FFS. I assume all of them will be implemented in Feb or April. I think this can address the first comments. Regarding the question “Shouldn't there be a request for all these individual parameters”, I think we have introduce the separate parameters for each measurement in Request message, and capability will come later as mentioned above. The only discussion point should be “core measurement”. For this issue, I agree that we should have “core measurement mandatory per positioning method”, and rest of them should be optional for a particular positioning method.  |
| Q004 | SL-RTT-RequestLocationInformation ::= SEQUENCE { sl-ARP-InfoRequest ENUMERATED { true } OPTIONAL, sl-LOS-NLOS-IndicatorRequest ENUMERATED { true } OPTIONAL, sl-PRS-RSRP-Request ENUMERATED { true } OPTIONAL, sl-FirstPathRSRPP-Request ENUMERATED { true } OPTIONAL, sl-AdditionalPathsRequest ENUMERATED { true } OPTIONAL, sl-TimingQuality ENUMERATED { true } OPTIONAL, multipleSL-PRS-RxTxTimeDiffRequest SEQUENCE { diffSL-PRS-Receptions ENUMERATED { n2, n3, n4 } OPTIONAL, diffSL-PRS-Transmissions ENUMERATED { n2, n3, n4 } OPTIONAL } OPTIONAL, associatedSL-PRS-TxTimeStampRequest ENUMERATED { true } OPTIONAL, ...} | A UE can request from a peer UE *multipleSL-PRS-RxTxTimeDiffRequest*:RAN1:

|  |
| --- |
| request-multiple-SL-PRS-RxTxTimeDiff:Request to a UE to report multiple Rx-Tx measurements for the same SL PRS transmission (resp. reception) and up to N different SL PRS receptions (resp. transmissions) for the same pair of UE(s).Note: UE can be requested to either: - report multiple Rx-Tx measurements for the same SL PRS transmission and up to N different SL PRS receptions, or- report multiple Rx-Tx measurements for the same SL PRS reception and up to N different SL PRS transmissions, or Both |

The request is implemented in *SL-RTT-RequestLocationInformation*. However, there seems no corresponding reporting structure for such a request?  | 2 | ToDo | [Rapp] Good question. Should we ask RAN1 on this? Since so far no any information in RAN1 parameter list.  |
| Q005 | -- ASN1START-- TAG-SL-TOA-REQUESTASSISTANCEDATA-STARTSL-TOA-RequestAssistanceData ::= SEQUENCE { sl-RTD-InfoRequest ENUMERATED { true} OPTIONAL, ...}-- TAG-SL-TOA-REQUESTASSISTANCEDATA-STOP-- ASN1STOP | A UE can request RTD info from another endpoint:

|  |
| --- |
| ***sl-RTD-InfoRequest***This field indicates the SL RTD information requested. |

The response would be a list of RTDs:SL-RTD-Info ::= SEQUENCE { referenceRTD-Info ReferenceRTD-Info, rtd-InfoList RTD-InfoList}RTD-InfoList ::= SEQUENCE (SIZE (1.. maxNrOfSLTxUEs)) OF RTD-InfoListPerTxUEHowever, the request is just a flag. How would the receiving endpoint know for which UEs the RTD is needed? I.e., RTD is at least between two UEs and these must be the Rx UEs participating in the "TOA session". In addition, for SL-TOA the loop should be for maxNrOfSLRxUEs of RTD-InfoListPerRxUE. I.e., the synchronization info of the receiving SL-PRS UEs is needed.Similar for SL-TDOA, where the maxNrOfSLTxUEs seems correct, but the issue of how the receiving endpoint would know for which UEs the RTD is requested is the same. |  | ToDo | [Rapp] Good question. I thought the request is used by receiver point to request the data from server instead of transmitter. That’s why the response could be a list, and the request only a flag. If we want to support the request between the transmitter and receiver, then I do agree that we need to indicate the list of UEs in the request. Let’s hear companies’ view.  |
| Q006 | SL-TOA-AdditionalPathList ::= SEQUENCE (SIZE(1..8)) OF SL-TOA-AdditionalPathSL-TOA-AdditionalPath ::= SEQUENCE { sl-RTOA-AdditionalPathResult CHOICE { k0 INTEGER (0..16351), k1 INTEGER (0..8176), k2 INTEGER (0..4088), k3 INTEGER (0..2044), k4 INTEGER (0..1022), k5 INTEGER (0..511) } OPTIONAL, -- additionalPath-SL-PRS-RTOA sl-PRS-AdditionalPathRSRPP-Result INTEGER (0..126) OPTIONAL, -- additionalPath-SL-PRS-RSRPP sl-PRS-ResourceId INTEGER (0..16) OPTIONAL, -- sl-PRS-ResourceId sl-POS-ARP-ID-Rx INTEGER (1..4) OPTIONAL, -- sl-pos-arpID-Rx sl-TimeStamp SL-TimeStamp OPTIONAL, -- sl-Timestamp sl-TimingQuality SL-TimingQuality OPTIONAL, -- sl-TimingQuality ...} | A UE can report additional paths measurements. However, the reporting structure is unclear/incorrect:This is essentially a "multi-path measurement". Therefore, each path is based in the "same Rx signal". How can for example each path be measured from a different Resource ID, ARP ID, time stamp and quality? This isn't in principle different to DL/UL-PRS measurements.Same for SL-TDOA, SL-RTT, SL-AoA. | 2 | ToDo | [Rapp] Good point. Would suggest to discuss the max multiple sets, i.e. how many different set of ResourceID,ARP ID, etc can be supported? 2 as PRS case? Or.. |
| Q007 | SLPP-PDU-SL-TOA-CONTENTS DEFINITIONS AUTOMATIC TAGS ::=BEGINIMPORTS LCS-GCS-Translation, LOS-NLOS-Indicator, PositioningModes, SL-RTD-Info, SL-TimeStamp, SL-TimingQuality, maxNrOfSLTxUEsFROM SLPP-PDU-Definitions; | LCS-GCS-Translation seems nowhere used for SL-TOA?Same for SL-TDOA and SL-RTT | 2 | PropAgree | [Rapp] It is only applied for SL-AoA. Has removed it from other positioning method.  |
| Q008 | SL-TimeStamp ::= SEQUENCE { dfn-Time SEQUENCE { syncSourceType ENUMERATED { gnss, ue} OPTIONAL, applicationLayerID OCTET STRING OPTIONAL, dfn INTEGER (0.. 1023), nr-Slot CHOICE { scs15 INTEGER (0..9), scs30 INTEGER (0..19), scs60 INTEGER (0..39), scs120 INTEGER (0..79) } } OPTIONAL, sfn-Time SEQUENCE { nr-PhysCellID NR-PhysCellID OPTIONAL, nr-ARFCN ARFCN-ValueNR OPTIONAL, nr-CellGlobalID NCGI OPTIONAL, nr-SFN INTEGER (0..1023), nr-Slot CHOICE { scs15 INTEGER (0..9), scs30 INTEGER (0..19), scs60 INTEGER (0..39), scs120 INTEGER (0..79) } } OPTIONAL} | Per RAN1 parameter list, the time stamp seems to be a CHOICE between dfn-Time and sfn-Time, not a SEQUENCE:

|  |
| --- |
| sl-Timestamp:A UE measurement can be associated with a time stamp. For SL RSTD, SL RTOA, SL PRS RSRP and SL Rx-Tx time difference measurement report, the time stamp can include the SFN (DFN), as well as the slot number for a subcarrier spacing.• SFN, slot number, and at least one of nr-PhysCellID, nr-ARFCN, nr-CellGlobalIDOR: • DFN and slot number, and optionally the synchronization reference source indication ‘GNSS or UE’ |

Also: This should be *SL-TimeStamp* field descriptions

|  |
| --- |
| *SL-TimingQuality* field descriptions |
| ***dfn-Time***This field provides the DFN based time stamp. |
| ***sfn-Time***This field provides the SFN based time stamp. If this field is present, at least one of *nr-PhysCellID*, *nr-ARFCN*, or *nr-CellGlobalID* shall be present. |

 | 2 | PropAgree | [Rapp] Oops, my mistake. Updated.  |
| Q009 | SL-AoA-MeasElement ::= SEQUENCE { applicationLayerID OCTET STRING, los-NLOS-Indicator LOS-NLOS-Indicator OPTIONAL, -- sl-losNlosIndicator sl-AngleQuality MeasurementAngleQuality OPTIONAL, -- sl-AngleQuality sl-AoA-AdditionalPathList SL-AoA-AdditionalPathList OPTIONAL, sl-AzimuthAoA-FirstPathResult INTEGER (0..3599) OPTIONAL, -- sl-PRS-AoA sl-AzimuthAoA-LCS-GCS-Translation LCS-GCS-Translation OPTIONAL, -- sl-LCS-to-GCS-translation sl-POS-ARP-ID-Rx INTEGER (1..4) OPTIONAL, -- sl-pos-arpID-Rx sl-PRS-ResourceId INTEGER (0..16) OPTIONAL, -- sl-PRS-ResourceId sl-PRS-RSRP-Result INTEGER (0..126) OPTIONAL, -- sl-PRS-RSRP sl-PRS-FirstPathRSRPP-Result INTEGER (0..126) OPTIONAL, -- sl-PRS-RSRPP sl-TimeStamp SL-TimeStamp OPTIONAL, -- sl-Timestamp sl-TimingQuality SL-TimingQuality OPTIONAL, -- sl-TimingQuality sl-ZenithAoA-FirstPathResult INTEGER (0..1799) OPTIONAL, -- sl-PRS-AoA sl-ZenithAoA-LCS-GCS-Translation LCS-GCS-Translation OPTIONAL, -- sl-LCS-to-GCS-translation ...} | What is meant by sl-TimingQuality for AoA?According to RAN1 parameter list:

|  |
| --- |
| sl-timingQuality: Indicates timing quality for measurement results reported. Applicable POS methods: SL-TDOA, SL-TOA, SL-RTT. |

 | 2 | PropAgree | [Rapp] Oops, my mistake. Removed.  |
| Q010 | CommonIEsAbort ::= SEQUENCE { abortCause ENUMERATED { undefined, stopPeriodicReporting }}CommonIEsError ::= SEQUENCE { errorCause ENUMERATED { undefined, slppMessageHeaderError, slppMessageBodyError, incorrectDataValue }}SL-RTT-RequestCapabilities ::= SEQUENCE {}SL-RTT-RequestAssistanceData ::= SEQUENCE {}SL-RTT-ProvideAssistanceData ::= SEQUENCE {}and others | Ellipsis (extension marker) is missing.Not clear how these IEs can be forward compatible otherwise. | 2 | PropAgree | [Rapp] we can still extend it based on Error-IEs level, i.e. use nonCriticalExtension. But would be ok to add the extension mark in abortCause and errorCause. Error-IEs ::= SEQUENCE { commonIEsError CommonIEsError OPTIONAL, lateNonCriticalExtension OCTET STRING OPTIONAL, nonCriticalExtension SEQUENCE {} OPTIONAL} |
| Q011 | SL-AoA-RequestAssistanceData ::= SEQUENCE {}SL-AoA-AssistanceData ::= SEQUENCE { applicationLayerID OCTET STRING, expectedSL-AzimuthAoA-AndUncertainty INTEGER(0..3599), -- expected-SL-AoA-and-Uncertainty expectedSL-ZenithAoA-AndUncertainty INTEGER(0..1799), -- expected-SL-AoA-and-Uncertainty ...} | The *expectedSL-ZenithAoA* could be OPTIONAL, together with an explicit request. Or is it expected that 3D location is always available?Note, this seems also the understanding in RAN1 since the parameter list refers to 38.455, where the "Expected Zenith AoA" is also OPTIONAL.In any case, ellipsis in *SL-AoA-RequestAssistanceData* is missing. | 2 | PropAgree | [Rapp] updated in v01 with Yi1-IntelYes, the intention is to align with TS38.455. Updated. |
| Q012 | Range ::= SEQUENCE { rangeResult INTEGER (0..999),  uncertainty INTEGER (0..127), confidence INTEGER (0..100) OPTIONAL} | What are the units and scale factor for the range?  | 2 | ToDo | [Rapp] I could not find the value range in 23032-i10, or did I miss something? |
| V001 | 4.1.2 SLPP Sessions and TransactionsAn SLPP session is used between UEs or a Location Server and a UE in order to obtain location related measurements based on NR PC5 radio signals, a location estimate or to transfer assistance data. A single SLPP session is used to support a single location request (e.g., for a single SL-MT-LR, or SL-MO-LR). Multiple SLPP sessions can be used between the same endpoints to support multiple different location requests (as required by TS 23.273 [5]). For UE-only Operation, the instigator of an SLPP session which is the Endpoint who receives the LCS request, initiates an SLPP session by sending an SLPP message containing an assigned session ID (session identifier) to the other endpoint (s). All constituent messages within a session shall contain the same session ID. For LMF involved Operation, the session ID is assigned by target UE and contained in the SLPP messages used for communication between UEs. The session ID may be included in the SLPP message for the communication between a UE and the LMF. | The existing description is not clear. That is, only one SLPP session for each location service and the SLPP session ID is assigned by target UE for the communication between UEs. In this case, the SLPP session ID seems unnecessary between LMF and UE. The last sentence can be revised as:The session ID ~~may be included~~ is absent in the SLPP message for the communication between a UE and the LMF. | 1 | PropReject | [Rapp] It has been discussed in previous meeting, and concluded that it is optional present for the communication between a UE and the LMF. |
| V002 | 4.3.2 SLPP Duplicate DetectionA receiver shall record the most recent received sequence number for each pair of endpoints and each location session. If a message is received carrying the same sequence number as that last received for the same pair of endpoints and the associated location session, it shall be discarded. | Rephrase to avoid misleading.Each pair of endpoints ~~and~~ of each location session | 0 | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| V003 | SL-PRS-AssistanceData ::= SEQUENCE { applicationLayerID OCTET STRING, sl-PRS-SequenceID INTEGER(0..4095) OPTIONAL, -- SL PRS sequence generation, from server to Tx UE sl-POS-ARP-ID-Tx INTEGER (1..4) OPTIONAL, -- sl-pos-arpID-Tx sl-PRS-ResourceId INTEGER (0..16) OPTIONAL, -- sl-PRS-ResourceId tx-TimeStamp SL-TimeStamp OPTIONAL, -- Tx TimeStamp ...} | Clarification of the ID is needed as the provide AD message can also be utilized for providing sequence ID to the TX UE.If the application layer ID in the provide assistance data is the same with the UE that receives this message, the UE should treat the message as the triggering of SL-PRS transmission. Otherwise, i.e., the application layer ID is the different from the UE that receives this message, the UE should treat the message as assistance data for SL-PRS measurement | 1 | PropReject | [Rapp] The proposal is a new function instead of correction.  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| E001 | Few compilation issues because of spelling or caps or “–“ issue:*SLPP-PDU-SL-RTT-Contents* SLPP-PDU-SL-RTT-**CONTENTS** DEFINITIONS AUTOMATIC TAGS ::= CONTENTS should be contentsThis issue exist with other module definition too.* 1. SLPP-PDU-**Common-Contents** DEFINITIONS

There should be no “–“ between common and contents | We need to fix any compilation issues | 2 | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| E002 | rtdBetweenAnchorUEs CHOICE { subframeOffset INTEGER (0..1966079), sl-OffsetDFN INTEGER (0..1000) | We need to explain also these terms and the values in field description.Further DFN abbreviation is missing in section 3.2We can addDFN Direct Frame Number | 1 | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| E003 | AdditionalInformation ::= ENUMERATED { onlyReturnInformationRequested, mayReturnAdditionalInformation}GNSS-ID ::= ENUMERATED{ gps, sbas, qzss, galileo, glonass, bds, navic } abortCause ENUMERATED { undefined, stopPeriodicReporting } | We can have a check if it makes sense to add … marker at least to some of the enums:Example AdditionInformation in LPP has the extension marker. for GNSS-ID, since it is 7 fields; we could use one spare since it would anyway be 3 bits. | 1 | PropAgreeOn 2PropReject on 1 | [Rapp]Issue 1, yes, there were some extension marks in LPP, but never be used.For AdditionalInformation, we can extend it via the extension mark in Parent IE if needed.CommonIEsRequestLocationInformation ::= SEQUENCE { locationInformationType LocationInformationType, periodicalReporting PeriodicalReportingCriteria OPTIONAL, additionalInformation AdditionalInformation OPTIONAL, qos QoS OPTIONAL, environment Environment OPTIONAL, scheduledLocationTime ScheduledLocationTime OPTIONAL, ... issue 2 has been covered by A001 |
| E004 | 5.3 Reception of an SLPP Abort MessageUpon receiving an *Abort* message, Endpoint shall:1> abort any ongoing procedure associated with the field *sessionID* and the field *transactionID* indicated in the message. | The abort does not have to rely upon both session ID and transaction ID; only session ID should be adequate. All the transaction within that session ID (i.e in that ongoing procedure) will be released anyway.1> abort any ongoing procedure associated with the field *sessionID* indicated in the message. | 1 | ToDo | [Rapp] I think Abort only stop the procedure for the same transaction instead of the whole session? Would like to hear Other companies ‘s view. |
| E005 | In this release of the specification, upon receiving a message with the field absent, the UE releases the current value. | The addition in red as such does not make much sense. We can remove that. It is not important to stress that. | 0 | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| E006 |  } OPTIONAL, -- additionalPath-SL-PRS-RTOA sl-PRS-AdditionalPathRSRPP-Result INTEGER (0..126) OPTIONAL, -- additionalPath-SL-PRS-RSRPP sl-PRS-ResourceId INTEGER (0..16) OPTIONAL, -- sl-PRS-ResourceId sl-POS-ARP-ID-Rx INTEGER (1..4) OPTIONAL, -- sl-pos-arpID-Rx sl-TimeStamp SL-TimeStamp OPTIONAL, -- sl-Timestamp sl-TimingQuality SL-TimingQuality OPTIONAL, -- sl-TimingQuality ... | It is unclear as why these comments exist -- field nameGood to remove those | 0 | ToDo | [Rapp] It was used to indicate which RAN1 parameter the field is introduced for. Similar to the feature number for RAN1 feature. Would like to hear other companies’ view.  |
| E007 | *RSPP-Metadata*The IE *RSPP-Metadata* includes the UE information included in Discovery Message for ranging and sidelink positioning.-- ASN1START-- TAG-RSPP-METADATA-STARTRSPP-Metadata ::= SEQUENCE { ue-RoleList BIT STRING { anchorUE(0), serverUE(1), targetUE(2) } (SIZE (1..8)), knownLocationAvailable ENUMERATED {true} OPTIONAL}-- TAG-RSPP-METADATA-STOP-- ASN1STOP | We need to provide reference to CT4 and SA2 spec. Also we need to have abbreviation of RSPP.Also need to mention the terminology RSPP and SLPP are same. | 1 or 2 | PropAgree with comment | [Rapp] updated in v01 with Yi1-IntelIt is related to A005. It should be sufficient with the change “This clause specifies information elements that are transferred in Discovery Message for ranging and sidelink positioning, as specified in TS 23.304 [14].” |
| E008 | In section RSPP-Metadata“Server UE” should be renamed/termed to “SL Positioning server UE”bit 1 indicates whether the UE supports UE role as a Server UE or not; | We can align the terminology to SA2: “SL Positioning Server UE”bit 1 indicates whether the UE supports UE role as a SL Positioning Server UE or not; | 1 | PropAgree | [Rapp] updated in v01 with Yi1-Intel |
| E009 | Figure 4.1.1.1: It appears we copy the figure with relevant part from LPP spec. The only missing part is Reference source should say (e.g: anchor UE) | Reference source is unclear and can be mentioned in the figure below reference source (e.g: Anchor UE) | 1 | PropAgree | [Rapp] updated in v01 with Yi1-IntelChange it to Anchor UE (s) |
|  |  |  |  |  |  |

# Summary

Based on the input from companies, we have the following proposals: