**3GPP TSG RAN meeting #102**  **RP-23xxxx**

**Edinburgh, Scotland, December 11th – 15th, 2023**

## Status Report to TSG

**Agenda item:** 9.3.1.9

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WI / SI Name** | Work Item on expanded and improved NR positioning | | | |
| included in this status report | Study Item:  No | Core part:  Yes | Performance part:  Yes | Testing part:  No |
| **Acronym** | NR\_pos\_enh2 | | | |
| **Unique ID** | 981038 | | | |
| **TSG Tdoc of latest approved WI/SI description (if any)** | RP-232670 | | | |
| **Target Completion Date**  **(indicate if changed)** | Study Item:  N/A | Core part:  12/2023 | Performance part:  06/2024 | Testing part:  N/A |
| **Overall** **Completion level** | Study Item:  N/A | Core part:  Overall: = 99%  RAN1: 100%  RAN2: 100%  RAN3: 85%  RAN4: 100% | Performance Part:  0% | Testing part:  N/A |

Note: Overall completion level percentage numbers should use one of the colors below:

* xx%: Normal progress, no RAN plenary action needed
* xx%: Progress behind schedule, may need RAN plenary intervention. If so, SR should clearly define requested action
* xx%: Progress critically behind, RAN plenary shall intervene. SR should define requested action

**Source:**

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| --- | --- | --- |
| **Leading WG** | | RAN1 |
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## 1 Work plan related evaluation

|  |  |
| --- | --- |
| **Do you want to modify the time budget for this WI/SI compared to what was endorsed at the last RAN meeting?** | No |

*If you answered No: Then please remove the Excel file from the zip file of this status report.*

*If you answered Yes: Then please fill out the attached Excel template to request a modification of the time budgets for your WI /SI. The Excel table has to be filled out for all affected RAN WGs and up to the target date of the WI/SI. The basis are the endorsed time budgets of the last RAN meeting. Please highlight all changes of the values.  
 One time unit (TU) corresponds to ~ 2 hours in the meeting.  
 If this status report covers a WI with Core and Performance part, then please have one line for each in the attached Excel table.  
 Note: If no Excel table is attached, then this means no time budget change.*

**Additional explanations/motivations for the time budget changes in the attached Excel table:**

## 2. Detailed progress in RAN WGs since last TSG meeting (for all involved WGs)

NOTE: Agreements and Open issues impacted cross-TSG aspects shall be explicitly highlighted

## 2.1 RAN1

#### 2.1.1 Agreements

##### 2.1.1.1 Decisions during RAN1#114bis

##### 2.1.1.1.1 General aspects

**Higher layer parameters for Rel-18 Positioning**

The latest list of higher layer parameters for Rel-18 positioning at the end of RAN1 #114bis:

R1-2310592 FLS on list of RRC parameters on Rel-18 WI on expanded and improved NR positioning; Rapporteur (Intel Corporation)

**For response to RAN2 LS on Sidelink positioning MAC agreements in R1-2308834**

Agreement

Provide the response to Action2 as follows:

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| From RAN1 perspective,   * The triggered UE’s higher layer will provide the SL-PRS priority to lower layer as RAN1 agreed. From RAN1’s perspective, whether the triggered UE~~’s higher layers~~ obtains the priority from ~~another UE via~~ higher layer signaling or ~~only~~ determines the priority in ~~from~~ its own higher layers is up to RAN2 and either option is feasible based on the current RAN1 design. * Current RAN1 agreements do not support lower layer signaling, i.e. SCI, indicating SL-PRS priority for the triggered UE to transmit SL-PRS. RAN1 does not plan to pursue the discussion to support it in Rel-18. |

Agreement

The draft LS reply to RAN2 is endorsed in R1-2310401. Final LS in R1-2310402.

##### 2.1.1.1.2 SL positioning reference signal

**Conclusion**

For SL PRS in a shared resource pool, in addition to the already-agreed values of ‘M’ = {1, 2, 4}, no new values are supported, i.e., ‘M’ can be from {1, 2, 4}.

Agreement

Confirm the working assumption from RAN1 #114 that in a shared resource pool SL PRS can be mapped to contiguous symbols between PSSCH DMRS symbols*.*

Agreement

For a dedicated resource pool, where SL PRS bandwidth is same as resource pool bandwidth, the following interpretation applies: SL PRS bandwidth corresponds to all PRBs of the resource pool bandwidth.

Agreement

Endorse the TP below for Section 8.2.4 of TS 38.214 for the parameters for SL PRS transmission in a shared resource pool.

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| Reason for change | 1. For a shared resource pool, “[SL PRS frequency domain allocation]” is not separately (pre-)configured and thus should not be listed as a parameter. However, it is still essential, along with SL PRS resource ID, in identifying a SL PRS resource in a slot of a shared resource pool.  2. For a shared resource pool, the starting symbol for SL PRS in a slot is derived based on specified rules and not provided as part of (pre-)configuration. Thus, “[Starting symbol and the number of SL PRS symbols]” should be updated to only “[number of SL PRS symbols]” for shared resource pools. |
| Summary of change | Section 8.2.4 in TS 38.214:  1. Clarify that for a shared resource pool, a SL PRS resource is uniquely identified by the SL PRS resource ID and the frequency domain resource allocation information that is obtained via the associated SCI.  2. Correct that “starting symbol” of a SL PRS resource is not a parameter for shared resource pool. |
| Consequences if not approved | Incorrect description of SL PRS resource pool (pre-)configuration parameters and SL PRS resource determination for shared resource pool. |
| Text proposal | **------------------------------ TP#1: TS 38.214 -----------------------------------** 8.2.4 SL PRS transmission procedure The following parameters for SL PRS transmission are associated with each SL PRS resource:  - [*SL PRS resource ID*] indicates an identity of a SL PRS resource. The SL PRS resource is identified by the SL PRS resource ID that is unique within a slot of a dedicated SL PRS resource pool. For a shared resource pool, a SL PRS resource is uniquely identified by a combination of the SL PRS resource ID and a SL PRS frequency domain allocation within a slot indicated by “frequency resource assignment” field in the associated SCI.  - [*SL PRS comb offset and comb size*] indicates a comb offset and a comb size of the SL PRS resource  - [*Starting symbol and the number of SL PRS symbols*] indicates the starting symbol index and the number of symbols of the SL PRS resource within a slot in a dedicated resource pool. [*number of SL PRS symbols*] indicates the number of symbols of the SL PRS resource within a slot in a shared resource pool.  **< Unchanged text omitted >** |

Agreement

Endorse TP#4 in Section 6 of R1-2310333 for Section 8.4.1.6.3 of TS 38.211 to clarify the purpose of amplitude scaling factor for SL PRS.

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| --- | --- |
| Reason for change | To clarify that the purpose of applying the amplitude scaling factor for SL PRS is to conform to the transmit power level for the SL PRS transmission as described in TS 38.213 so that a UE can determine the appropriate amplitude scaling factor for SL PRS transmission. |
| Summary of change | Section 8.4.1.6.3 in TS 38.211:  Clarify that the purpose of applying the amplitude scaling factor for SL PRS is to conform to the transmit power level for the SL PRS transmission as described in TS 38.213. |
| Consequences if not approved | Incomplete specifications in terms of defining how a UE is to determine the amplitude scaling factor for SL PRS transmission. |
| Text proposal | **------------------------------ TP#4: TS 38.211 -----------------------------------** 8.4.1.6.3 Mapping to physical resources The sequence shall be multiplied with the amplitude scaling factor in order to conform to the transmit power specified in [5, TS 38.213] and mapped to resources elements according to  **< Unchanged text omitted >** |

Agreement

* The following working assumption is confirmed without the FFS bullet as below:
  + For SL PRS sequence generation, the parameter  is defined as below:
    -  is provided by higher layers to a Tx UE
      * Details on higher layers, including consideration of Tx UE’s own higher layer, are up to RAN2
      * The higher layer parameter is provided to an Rx UE via ~~LPP/~~SLPP.
      * ~~FFS: If (pre-)configured for a resource pool and use of SL PRS for sensing is supported,  is based on 12 LSB bits CRC of PSCCH associated with the SL PRS~~
  + Otherwise (i.e., if not provided by higher layers),  is based on 12 LSB bits CRC of PSCCH associated with the SL PRS

Agreement

In a shared resource pool, a UE shall not transmit SL PRS and SL CSI-RS in the same symbol.

Note: the transmitting UE achieves this by either

* Not triggering SL CSI-RS
* If SL CSI-RS is triggered, then the symbols of SL CSI-RS cannot be used for SL PRS (per the earlier working assumption)

Agreement

In a shared resource pool, transmission of SL PT-RS is cancelled in OFDM symbols with SL PRS.

Agreement

The maximum number of SL PRS resources that can be (pre)configured in a slot of a dedicated resource pool is 12.

The maximum number of SL PRS resources that can be (pre)configured in a slot of a shared resource pool is 17.

Agreement

Endorse the TP below for Section 8.2.1 of TS 38.211 to correct descriptions for the locations of guard symbols in shared and dedicated resource pools.

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| Reason for change | 1. In a slot of a shared resource pool, guard symbol may follow the last symbol of PSSCH, PSFCH or SL PRS. However, this is not captured accurately in current version of the specification text.  2. In a slot of a dedicated resource pool, guard symbol is the last symbol configured for sidelink. This is not reflected in the current version of the specification text. |
| Summary of change | Section 8.2.1 in TS 38.211:  1. Clarify that in a slot of a shared resource pool, guard symbol may follow the last symbol of PSSCH, PSFCH or SL PRS.  2. Clarify that in a dedicated SL PRS resource pool, the last symbol configured for sidelink serves as a guard symbol. |
| Consequences if not approved | Incorrect description of location(s) of guard symbols in shared and dedicated SL PRS resource pools. |
| Text proposal | **------------------------------ TP#2: TS 38.211 -----------------------------------** 8.2.1 General In a shared resource pool, the OFDM symbol immediately preceding the symbols which are configured for use by PSFCH if PSFCH is configured in this slot, and the last symbol configured for sidelink in a slot, serve as guard symbol(s). In a dedicated SL PRS resource pool, the last symbol configured for sidelink in a slot serves as a guard symbol.  Otherwise, the OFDM symbol immediately following the last symbol used for PSSCH, PSFCH, or S-SSB serves as a guard symbol.  **< Unchanged text omitted >** |

Agreement

The TP below for Section 8.2.4 of TS 38.214 is endorsed.

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| Reason for change | The following RAN1 agreements need to be captured in the RAN1 specifications.  Agreement (RAN1 #113)  Multiple (M,N) pairs within a slot in a dedicated resource pool is supported only when the different (M, N) pairs are always multiplexed via TDM to different sets of symbols in a slot. Only a single (M,N) value can be mapped within one TDM duration (i.e. one set of symbols).  Agreement (RAN1 #114)  For a dedicated resource pool, the maximum number of TDM groups for TDM-based multiplexing of SL PRS within a slot is 4.   * Maximum number 4 only applies to the case of comb-2 |
| Summary of change | Section 8.2.4 in TS 38.214:  Capture the (pre-)configuration of SL PRS resources in a dedicated resource pool for the case of TDM-based multiplexing as per the RAN1 agreements. |
| Consequences if not approved | Necessary details for (pre-)configuration of SL PRS resources in a dedicated resource pool with TDM-based multiplexing would not be reflected in the specifications. |
| Text proposal | **------------------------------ TP#3: TS 38.214 -----------------------------------** 8.2.4 SL PRS transmission procedure The following parameters for SL PRS transmission are associated with each SL PRS resource:  - [*SL PRS resource ID*] indicates an identity of a SL PRS resource. The SL PRS resource is identified by the SL PRS resource ID that is unique within a slot of a dedicated SL PRS resource pool. For a shared resource pool, a SL PRS resource is uniquely identified by a combination of the SL PRS resource ID and a SL PRS frequency domain allocation within a slot.  - [*SL PRS comb offset and comb size*] indicates a comb offset and a comb size of the SL PRS resource  - [*Starting symbol and the number of SL PRS symbols*] indicates the starting symbol index within a slot and the number of symbols of the SL PRS resource.  - [*SL PRS frequency domain allocation*] indicates the frequency location [and the number of resource blocks for SL PRS transmission in a shared resource pool.]  For a dedicated SL PRS resource pool, SL PRS resources for a same combination of number of SL PRS symbols and comb size can be mapped to a set of consecutive symbols in a slot. SL PRS resources for different combinations shall be mapped to non-overlapping sets of consecutive symbols in a slot. Up to four non-overlapping sets of consecutive symbols within a slot can be used to map SL PRS resources for same or different combinations, where the case of four non-overlapping sets of consecutive symbols only applies when for all the combinations.  Each SL PRS transmission is associated with an PSCCH transmission in the same slot.  In the case of dedicated pool for SL positioning, that PSCCH carries the SCI format 1-B associated with the SL PRS transmission.  The UE may report the association information of the already transmitted SL PRS resources with UE Tx ARP ID.  **< Unchanged text omitted >** |

Agreement

Confirm the following working assumption from RAN1 #114 with the following update:

* + For a shared resource pool,
    - Explicit (pre-)configuration of SL PRS resources in a slot, applicable for an indicated frequency domain allocation, includes:
      * SL PRS Resource ID, (M, N) pattern, comb offset.
    - For a given value of ‘M’, SL PRS resource is mapped to the last consecutive ‘M’ SL symbols in the slot that can be used for SL PRS, i.e., taking into consideration multiplexing with PSSCH DMRS, PT-RS, CSI-RS, PSFCH, gap symbols, AGC symbols, PSCCH in the slot

##### 2.1.1.1.3 Measurements and reporting for SL positioning

Agreement

Confirm the following working assumption with update:

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| 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 * Note: The indicated Rx-Tx time difference measurement is based on actual Tx time. |

Agreement

For SL RSTD measurement, reference UE information is the information needed to identify the reference UE

* Up to RAN2 to determine details

Agreement

Regarding 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)}.

Agreement

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 up to N different SL PRS receptions (resp. transmissions) for the same pair of UE(s).

* FFS: value range of N

Agreement

For the indicated number N of different SL PRS receptions (resp. transmissions) associated with the same SL PRS transmission (resp. reception), the value range of N is {2, 3, 4}.

Agreement

The TP in section 8.3 of R1-2310344 is endorsed for TS38.215 clause 5.1.37.

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| **Reason for Change** | The definition of SL PRS-RSRPP includes the case where receiver diversity is used, which is believed to be non-usable for RSRPP measurement. |
| **Summary of Change** | Delete the part where the RSRPP measurement including receiver diversity. |
| **Consequences if not approved** | Definition of SL PRS-RSRPP includes a non-usable case. |
| **TPs** | --------------------------- Start of Text Proposal for TS 38.215 ----------------  < Unchanged parts are omitted >  5.1.37 Sidelink PRS reference signal received path power (SL PRS-RSRPP)   |  |  | | --- | --- | | **Definition** | Sidelink PRS reference signal received path power (SL PRS-RSRPP) is defined as the power of the linear average of the channel response at the i-th path delay of the resource elements that carry SL PRS configured for the measurement, where SL PRS-RSRPP for the 1st path delay is the power contribution corresponding to the first detected path in time.  For frequency range 1, the reference point for the SL PRS-RSRPP shall be the antenna connector of the UE. For frequency range 2, SL PRS-RSRPP shall be measured based on the combined signal from antenna elements corresponding to a given receiver branch. | | **Applicable for** | RRC\_CONNECTED,  RRC\_IDLE |   < Unchanged parts are omitted >  --------------------------------------- End of Text Proposal -------------------- |

##### 2.1.1.1.4 Resource allocation for SL positioning reference signal

Agreement

In scheme 1, with regards to distinguishing between DCI format 3\_0 and 3\_2:

* New RNTIs, i.e., SL-PRS-RNTI & SL-PRS-CS-RNTI, are introduced.
* Support DCI size alignment between DCI format 3\_0, 3\_1 and 3\_2.

Agreement

Sidelink PRS Received Signal Strength Indicator (SL PRS-RSSI) is defined as the linear average of the total received power (in [W]) observed in:

* the SL-PRS resource and the associated PSCCH in OFDM symbols of slots configured for PSCCH and in OFDM symbols of slots configured for SL-PRS.
  + Introduce larger values for congestion control processing time capability than legacy SL

Agreement

The working assumption is confirmed with the following revision with regards to the number of padding bits:

* the padding bits, if any, are such that the size of the SCI format 2-D is the same as if the larger of SCI format 2-A or 2-B is embedded

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| Working assumption  The number of bits in the embedded SCI format field of SCI format 2-D is 2 bits   * If the “Embedded SCI format” field is set to 00, the SCI 2-A fields are included with necessary padding * If the “Embedded SCI format” field is set to 01, the SCI 2-B fields are included * If the “Embedded SCI format” field is set to 10, “size of SCI 2-B” number of reserved bits are included * If the “Embedded SCI format” field is set to 11, “size of SCI 2-B” number of reserved bits are included * Note: the size of SCI format 2-D is the same regardless of the value of the embedded SCI format field |

Agreement

In Scheme 2, with regards to the SCI-based triggering of SL-PRS, the following WA is confirmed:

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| Working assumption  In Scheme 2, with regards to the triggering of SL-PRS, for the SCI-based triggering, the SL-PRS request, in either SCI-1B or SCI-2D, is an explicit field   * If (pre-)configured per resource pool, then 1 bit is used, otherwise, it is 0 bits |

Agreement

* Regarding the following text in brackets in Section 8.4.4 of TS38.214:

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| [ If the *'[SL PRS request]'* field in the SCI associated with the received SL PRS is set to 1 then the UE shall report this request for SL PRS transmission to higher layers.] |

* Keep the text and remove the brackets with the change shown below:
  + '[SL PRS request]' field in the SCI associated with the received SL PRS is set to 1 then ~~the UE shall report~~ this request for SL PRS transmission is reported to higher layers.

**Conclusion**

In scheme 1, with regards to an explicit indication of SL-PRS specific information in DCI format 3\_0:

* Indication of SL-PRS specific information is not explicitly included in DCI

Agreement

With regards to the bitwidth of the field “Resource ID indication” when the value of the higher layer parameter *sl-MaxNumPerReserveSL-PRS* is configured to 3:

* Ceil(2\*log2(Number of SL-PRS resources in (pre-)configuration)) bits should be used

Further discuss at TP for the above at RAN1#114bis.

**Conclusion**

In a dedicated resource pool, with regards to the PSCCH, do not introduce additional values for the subchannel (pre-)configuration.

Agreement

The following TP is endorsed for clause 16.4A of TS 38.213:

* **Reason for change: to provide information regarding the starting PRB of PSCCH.**
* **Summary of change: include the information that the PSCCH starts from the lowest PRB of the sub-channel determined according to the index of the associated SL PRS resource**
* **The consequence if not approved is: the UE will not be able to determine which resource to use for PSCCH transmission**

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| ---------------------------- Start of Text Proposal for TS 38.213 -----------------------------  < Unchanged parts are omitted >  16.4A UE procedure for transmitting PSCCH in dedicated resource pool for SL PRS  For a resource pool dedicated for SL PRS transmissions, a UE can be provided a number of symbols in the resource pool, by *sl-TimeResourcePSCCH*, starting from a second symbol that is available for SL transmissions in a slot, and a number of PRBs in the resource pool, by *sl-FreqResourcePSCCH*, starting from the lowest PRB of the sub-channel determined according to the index of the associated SL PRS resource for a PSCCH transmission with a SCI format 1-B.  A UE that transmits a PSCCH with SCI format 1-B using SL PRS resource allocation scheme 2 [6, TS 38.214] sets  < Unchanged parts are omitted >  ---------------------------- End of Text Proposal for TS 38.213 ----------------------------- |

Agreement

Confirm the working assumption related to the TB size determination from RAN1 #114, and endorse the following TP:

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| ***Reason for change:*** | Corrections on TBS in a shared resource pool |
|  |  |
| ***Summary of change:*** | In clause 8.1.3.2 of TS 38.214, complement the value of under different conditions. |
|  |  |
| ***Consequences if not approved:*** | The TBS procedure in a shared resoruce pool is incomplete. |

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| ----------------------------------------- Start of text proposal to TS 38.214 v18.0.0-------------------------------------------  8.1.3.2 Transport block size determination  **<<< UNCHANGED PARTS OMITTED >>>**  The UE shall first determine the number of REs (*NRE*) within the slot.  - A UE first determines the number of REs allocated for PSSCH within a PRB () by , where  - is the number of subcarriers in a physical resource block,  - = *sl-LengthSymbols* -2, where *sl-LengthSymbols* is the number of sidelink symbols within the slot provided by higher layers,  - = 3 if '*PSFCH overhead indication'* field of SCI format 1-A indicates "1", and = 0 otherwise, if higher layer parameter *sl-PSFCH-Period* is 2 or 4. If higher layer parameter *sl-PSFCH-Period* is 0, . If higher layer parameter *sl-PSFCH-Period* is 1, .  - is the number of OFDM symbols used for SL PRS in the slot as indicated by the ‘*SL PRS resource ID*’ in SCI format 2-D if the 2nd-stage SCI is SCI format 2-D, and = 0 otherwise，  - is the overhead given by higher layer parameter *sl-X-Overhead*,  - is given by Table 8.1.3.2-1 according to higher layer parameter *sl-PSSCH-DMRS-TimePatternList.*  **<<< UNCHANGED PARTS OMITTED >>>**  ----------------------------------------- End of text proposal to TS 38.214 v18.0.0------------------------------------------- |

**Conclusion**

For a dedicated resource pool, no more discussion on potential restriction by SL PRS-CBR and priority for the following SL PRS transmission parameters:

* Maximum Number of SL PRS resources in a slot
* Maximum comb-size of a SL PRS resource in a slot
* Maximum Number of OFDM symbols of a SL PRS resource in a slot

Agreement

With regards to the dedicated resource pool for positioning, suggest to the editors to align the terminology used as:

* “Dedicated SL PRS resource pool” defined in 38.214 as shown below:
  + A sidelink resource pool which can be used for transmission of SL PRS and cannot be used for transmission of PSSCH will be referred to as dedicated SL PRS resource pool.

**Conclusion**

From RAN1 perspective, there is no need to introduce an association between a dedicated resource pool for positioning and a shared resource pool, or between a dedicated resource pool for positioning and a sidelink communication resource pool.

Agreement

* With regards to the SL PRS Channel Occupancy Ratio (SL PRS CR):
  + Sidelink PRS Channel Occupancy Ratio (SL PRS CR) evaluated at slot *n* is defined as the total number of SL PRS resources in the dedicated SL PRS resource pool used for its transmissions in slots [*n-a*, *n-1*] and granted in slots [*n*, *n+b*] divided by the total number of configured SL PRS resources in the transmission pool over [*n-a*, *n+b*].
* With regards to the SL PRS Channel Busy Ratio (SL PRS CBR):
  + SL PRS Channel Busy Ratio (SL PRS CBR) measured in slot n is defined as the number of SL PRS resources in the dedicated SL PRS resource pool whose SL PRS RSSI measured by the UE exceed a (pre-)configured threshold sensed over a SL PRS-CBR measurement window [n-a, n-1], wherein a is equal to 100 or 100·2µ slots, according to [sl-TimeWindowSizeCBR-positioning] divided by the total number of the configured sidelink PRS resources in the transmission pool over [n-a, n-1].

Working assumption

Endorse the following TP for clause 8.2.4.2 of TS 38.214:

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| ---------------------------- Start of Text Proposal for TS 38.214 -----------------------------  < Unchanged parts are omitted >  8.2.4.2 UE procedure for determining slots and SL PRS resource(s) associated with an SCI format 1-B in a dedicated resource pool  The set of slots and SL PRS resources for SL PRS transmission is determined by the PSCCH containing the associated SCI format 1-B, and fields '[*SL-PRS resource ID (s))*', '[*Time resource assignment]*' of the associated SCI format 1-B as described below.  The set of slots is determined as in clause 8.1.5, with the following modifications:  - "SCI format 1-A" is replaced by "SCI format 1-B",  - [ potential parameter name changes].  The first SL PRS resource is determined according to the sub-channel used for the PSCCH transmission containing the associated SCI format 1-B, where the index of the sub-channel in the resource pool is identical to the index of the SL PRS resource provided by [higher layer parameter].  The second SL-PRS and third SL PRS resource, if reserved by SCI format 1-B, are determined from " Resource ID indication" which is equal to a PRS Resource ID value (PRIV) where,  If [*sl-MaxNumPerReserve*] is 2 then    If [*sl-MaxNumPerReserve*]is3 then    where  - denotes the SL PRS resource ID for the second resource  - denotes the SL PRS resource ID for the third resource  - is the number of SL-PRS resources (pre-)configured in a slot of a resource pool.  ---------------------------- End of Text Proposal for TS 38.214 -----------------------------  < Unchanged parts are omitted > |

Agreement

For activation and deactivation of configured grant type 2 for SL PRS for DCI 3-2, use a dedicated field of size 1 bit.

Agreement

From RAN1 perspective, whether to support or not reporting of CBR measurements to LMF or another UE, is left up to other WGs.

Agreement

With regards to the shared resource pool for positioning, suggest to the editors to align the terminology used as:

* “shared SL PRS resource pool” defined in 38.214 as shown below:

A sidelink resource pool which can be used for transmission of both SL PRS and PSSCH will be referred to as shared SL PRS resource pool.

Agreement

Endorse the TP below for clause 8.5.2.3 of TS 38.214

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| ***Reason for change:*** | Corrections on description associated with SCI format 2-D in a shared resource pool for the CSI reference resource definition |
|  |  |
| ***Summary of change:*** | In clause 8.5.2.3 of TS 38.214, SCI format 2-D is captured. |
|  |  |
| ***Consequences if not approved:*** | The description associated with SCI format 2-D in CSI reference resource definition is missing |

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| --- |
| 8.5.2.3 CSI reference resource definition **<<< UNCHANGED PARTS OMITTED >>>**  If configured to report CQI index and RI index, in the CSI reference resource, the UE shall assume the following for the purpose of deriving the CQI index and RI index:  - The reference resource uses the CP length and subcarrier spacing configured for the SL BWP.  - Redundancy Version 0.  - PSCCH occupies 2 OFDM symbols.  - The number of PSSCH and DM-RS symbols is equal to *sl-LengthSymbols*‒2.  - Assume no REs allocated for sidelink CSI-RS.  - Assume no REs allocated SCI format 2-A, SCI format 2-B, ~~or~~ SCI format 2-C or SCI format 2-D.  **<<< UNCHANGED PARTS OMITTED >>>**  ----------------------------------------- End of text proposal to TS 38.214 v18.0.0------------------------------------------- |

Agreement

Step 5 for the resource selection procedure in Section 8.2.4.2 of 38.214 is modified as follows:

* In step 5, the second condition is modified as follows: for any periodicity value allowed by the higher layer parameter *sl-ResourceReservePeriodList* and any SL PRS resource ID in the set of SL PRS resource ID(s) provided by the higher layer, and a hypothetical SCI format 1-B received in slot with '*Resource reservation period*' field set to that periodicity value and indicating that SL-PRS resource ID, condition c in step 6 would be met.

Agreement

Confirm the following Working Assumption made in RAN1 #114bis:

|  |  |
| --- | --- |
| Working assumption  Endorse the following TP for clause 8.2.4.2 of TS 38.214:   |  | | --- | | ---------------------------- Start of Text Proposal for TS 38.214 -----------------------------  < Unchanged parts are omitted >  8.2.4.2 UE procedure for determining slots and SL PRS resource(s) associated with an SCI format 1-B in a dedicated resource pool  The set of slots and SL PRS resources for SL PRS transmission is determined by the PSCCH containing the associated SCI format 1-B, and fields '[*SL-PRS resource ID (s))*', '[*Time resource assignment]*' of the associated SCI format 1-B as described below.  The set of slots is determined as in clause 8.1.5, with the following modifications:  - "SCI format 1-A" is replaced by "SCI format 1-B",  - [ potential parameter name changes].  The first SL PRS resource is determined according to the sub-channel used for the PSCCH transmission containing the associated SCI format 1-B, where the index of the sub-channel in the resource pool is identical to the index of the SL PRS resource provided by [higher layer parameter].  The second SL-PRS and third SL PRS resource, if reserved by SCI format 1-B, are determined from " Resource ID indication" which is equal to a PRS Resource ID value (PRIV) where,  If [*sl-MaxNumPerReserve*] is 2 then    If [*sl-MaxNumPerReserve*]is3 then    where  - denotes the SL PRS resource ID for the second resource  - denotes the SL PRS resource ID for the third resource  - is the number of SL-PRS resources (pre-)configured in a slot of a resource pool.  ---------------------------- End of Text Proposal for TS 38.214 -----------------------------  < Unchanged parts are omitted > | |

##### 2.1.1.1.5 NR DL and UL carrier phase positioning

Agreement

A UE, which has the capability to support CPP in RRC\_INACTIVE/RRC\_IDLE state, should measure the DL PRS from the whole DL PFL, i.e., not limited to its initial DL BWP. The RF frequency associated with the DL RSCP/RSCPD when UE is in RRC\_INACTIVE/RRC\_IDLE state can be defined in the same way as a UE in RRC\_CONNECTED state.

Agreement

For the timestamp associated with a reported UL RSCP measurement, NR-TimeStamp, with the granularity of a slot, currently defined in TS 38.455, can be reused as the timestamp.

* The TRP may optionally provide an OFDM symbol index in the timestamp.
* Note: It is up to RAN2/RAN3 how to signal the timestamp

**Conclusion**

No further discussion in RAN1 regarding the definition of per path RSCPD in Rel-18.

* Note: This conclusion does not impact the existing definition of the RSCP.

**Conclusion**

From RAN1’s perspective, there will be no further discussion on the four options that were agreed to consider in the following agreement made in RAN1#112bis-e.

|  |
| --- |
| **Agreement**  To support NR carrier phase positioning, further consider the following options:   * Option 1: Support a UE/TRP to report the carrier phase measurements of more than one frequency within a PFL/carrier to LMF   + NOTE: the frequency can be the carrier frequency or the frequency of a subcarrier   + FFS: the details of reporting, e.g., the maximum number of reported frequencies within a PFL/ carrier * Option 2: Introduce and report a new type of UE/TRP measurement based on carrier phase differentials across multiple subcarriers within a PFL/carrier   + NOTE: carrier phase differentials across multiple subcarriers within a carrier can be related to time of arrival * Option 3: Support a UE/TRP to optionally report an estimated integer ambiguity and/or search range of the integer ambiguity to LMF * Option 4: Support LMF to provide the expected integer ambiguity range at least for UE-based NR CPP in the positioning assistance data. |

Agreement

Subject to UE’s capability, if a UE Rx-Tx time difference/DL RSTD measurement is obtained with Nsample (=2, 4) samples, as defined in TS 38.133, the UE Rx-Tx time difference/DL RSTD measurement can be associated with (i.e., reported together with) up to Nsample RSCP/RSCPD measurements.

* A single RSCP/RSCPD measurement is obtained within one sample
* Each RSCP/RSCPD measurement has its own timestamp.
* Note: It is up to RAN2 on how to define signalling support for the reporting of the timestamps of the RSCP/RSCPD measurements.

**Conclusion**

No further discussion in RAN1 regarding the support of standalone reporting of NR carrier phase measurements in Rel-18.

Agreement

Endorse the following TP regarding the reporting of the phase quality indication for the RSCP/RSCPD measurements in Clause 5.1.6.5 of TS 38.214.

|  |  |
| --- | --- |
| ***Reason for change:*** | The specification does not capture the following agreement made in RAN1#114 regarding to the report of the quality indication associated with DL RSCP/RSCPD measurement.  Agreement  Support UE/TRP to report the phase quality indication for the RSCP/RSCPD measurements. The phase quality indication includes the following fields:   * phase quality index * phase quality resolution |
| ***Summary of change:*** | Add the report of the quality indication associated with DL RSCP/RSCPD measurement according to the agreement made in RAN1#114. |
| ***Consequences if not approved:*** | Specification is not aligned with RAN1’s agreement and incomplete |

|  |
| --- |
| 5.1.6.5 PRS reception procedure ===================== Unchanged parts omitted ======================  The UE may be configured with [higher layer parameter] which contains DL carrier phase measurements performed by a positioning reference unit (PRU) [20, TS 38.305] along with the location information of the PRU.  The UE may be configured to report quality metrics [higher layer parameter] corresponding to the DL RSCP and RSCPD measurements which include the following fields [17, TS 37.355]:  *- [phase quality index]* which provides the uncertainty of the measurement  *- [phase quality resolution]* which specifies the resolution levels used in the [*phase quality index]* field.  ===================== Unchanged parts omitted ====================== |

Agreement

The timing windows, which were agreed to be introduced for simultaneous PRS measurements in Rel-18, are applicable for UE in RRC\_CONNECTED, RRC\_INACTIVE, and RRC\_IDLE states.

Note: no RAN1 specification impact.

Agreement

The timing windows, which were agreed to be introduced for simultaneous SRS for positioning transmission in Rel-18, are applicable for UE in RRC\_CONNECTED and RRC\_INACTIVE states.

Note: no RAN1 specification impact.

Agreement

Endorse the TP in Section 9.1 of R1-2310285 for Clause 5.1.6.5 of TS 38.214.

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| --- | --- |
| ***Reason for change:*** | The following agreement made in RAN1#114 meeting is not captured in the current TS 38.214.  Agreement  For UE-based carrier phase positioning, when LMF forwards the DL carrier phase measurement reported by a PRU to a target UE, the timestamp associated with the PRU carrier phase measurements should also be forwarded in positioning assistance data. |
| ***Summary of change:*** | Capture the above agreement in TS 38.214 |
| ***Consequences if not approved:*** | Specification TS 38.214 is incomplete |

|  |
| --- |
| 5.1.6.5 PRS reception procedure ===================== Unchanged parts omitted ======================  The UE may be ~~configured~~provided with [higher layer parameter] which contains DL carrier phase measurements performed by a positioning reference unit (PRU) [20, TS 38.305], the timestamps associated with the measurements, and ~~along with~~ the location information of the PRU.  ===================== Unchanged parts omitted ====================== |

Agreement

Adopt the following changes to the previous agreement made in RAN1#114:

|  |
| --- |
| 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}~~ * the number of the indicated DL PRS resource set(s) per TRP within a time window can be {1, 2}:   + DL PRS resource sets across all TRPs are in one DL PFL     - FFS: For PRS bandwidth aggregation, an indicated DL PRS resource set refers to a combination of linked PRS resource sets   + The number of the indicated DL PRS resource set(s) for all TRPs should be the same * Note: Different PRS resource sets and/or PFLs can be associated with different time windows * Note: the signaling design for the indication of the DL PRS resource sets in the time windows is up to RAN2/RAN3. |

Agreement

Only the carrier phase measurements (i.e., DL/UL RSCP, DL RSCPD) of the first path are supported in Rel-18.

Agreement

* The DL PRS resource used to obtain a DL RSCP measurement is either the same DL PRS resource used to obtain the associated UE Rx-Tx time difference measurement, or one of the DL PRS resources used to obtain the associated UE Rx-Tx time difference measurement.
  + Note: a DL RSCP measurement is obtained by measuring a single DL PRS resource from a TRP.

Agreement

Adopt the following changes to the previous agreement made in RAN1#114bis:

|  |
| --- |
| Agreement  The DL PRS resource used to obtain a DL RSCP measurement is either the same DL PRS resource used to obtain the associated UE Rx-Tx time difference measurement, or one of the DL PRS resources used to obtain the associated UE Rx-Tx time difference measurement.   * Note 1: a DL RSCP measurement is obtained by measuring a single DL PRS resource from a TRP. * Note 2: It has no RAN1 impact. It is up to RAN2 on how the DL PRS resource IDs of DL RSCP measurements are identified/reported. |

Agreement

The pair of the DL PRS resources used to obtain a DL RSCPD measurement are either the same as the pair of DL PRS resources used to obtain the associated DL RSTD measurement, or one of the pairs of DL PRS resources used to obtain the associated DL RSTD measurement.

* Note 1: It has no RAN1 impact. It is up to RAN2 on how the DL PRS resource IDs of DL RSCPD measurements are identified/reported.

Agreement

From RAN1’s perspective, the granularity with *ReportingGranularityfactor* *k={-1, -2}* for the reporting of DL/UL timing measurements is applicable to all positioning methods.

**Conclusion**

No further discussion in RAN1 on how to address the impact of the phase delays on Tx/Rx RF chains in Rel-18.

Note: The conclusion does not preclude further discussion of the phase delays in UE feature for NR CPP.

##### 2.1.1.1.6 LPHAP (Low Power High Accuracy Positioning)

Agreement

Endorse the following TP for TS 38.214 Clause 6.2.1.4.

* Reason for change: When UE cannot accurately measure the configured DL RS in *SRS-SpatialRelationInfoPos*, the UE sounding procedures in Rel-17 when *SRS-PosRRC-InactiveConfig-ValidityArea* is not provided, and in Rel-18 when *SRS-PosRRC-InactiveConfig-ValidityArea* is configured in RRC\_INACTIVE state is not the same.
* Summary of change: Distinguish different UE sounding procedures in Rel-17 when *SRS-PosRRC-InactiveConfig-ValidityArea* is not provided, and in Rel-18 when *SRS-PosRRC-InactiveConfig-ValidityArea* is configured in RRC\_INACTIVE state, when UE cannot accurately measure the configured DL RS in *SRS-SpatialRelationInfoPos*.
* Consequences if not approved: The UE behaviour in RRC\_INACTIVE states when the configured DL RS in *SRS-SpatialRelationInfoPos* cannot be accurately measured may be ambiguous.

|  |
| --- |
| <Unchanged parts are omitted>  If the UE in RRC\_INACTIVE mode is not provided [*SRS-PosRRC-InactiveConfig-ValidityArea*], and determines that the UE is not able to accurately measure the configured DL RS in *SRS-SpatialRelationInfoPos* for a SRS resource for positioning where the DL RS is semi-persistent or periodic, the UE stops transmission of the SRS resource for positioning.  <Unchanged parts are omitted> |

**Conclusion**

Muting option 1 is not applicable when the periodicity of DL PRS is larger than 10240 ms.

##### 2.1.1.1.7 Bandwidth aggregation for positioning measurements

Agreement

Configuring up to two PFL combinations is supported (e.g. PFL1 aggregated with PFL2 and PFL3 aggregated with PFL4).

* Send an LS to RAN4 (CC to RAN2 and RAN3) to inform them with the above agreement and specify corre-sponding requirements.
* Note: more than one combinations are measured in TDMed manner

Agreement

The draft LS to RAN4 in R1-2310477 is endorsed. Final LS in R1-2310478.

Agreement

Endorse the TP in section 3.2 of R1-2309227 for TS 38.214 clause 6.2.1.4.

|  |  |
| --- | --- |
| |  | | --- | | <Unrelated part omitted>  The UE is expected to be configured with linkage information [linkage] on SRS resource sets for positioning across two or three CCs which are linked for bandwidth aggregation. For the linked SRS resource sets, the UE is expected to be configured with the same values of startPosition, nrofSymbols, periodicityAndOffset, slotOffset, alpha, p0, subcarrier spacing, CP, and comb size, and the UE is expected to maintain phase continuity for the SRS transmission. The UE may assume that SRS resources across the linked SRS resource sets which satisfy the above conditions are linked for bandwidth aggregation, otherwise, the UE does not assume that SRS resources of the linked SRS resource sets are linked for bandwidth aggregation. For the linked SRS resource sets for bandwidth aggregation across CCs, if an SRS configured by the higher layer parameter SRS-PosResource*,* along with the [switching period] when applicable*,* collides with other signals or channels on a symbol and is the SRS in that symbol that is dropped, SRS transmission of the linked SRS resource sets across all CCs is dropped on that symbol. If the UE receives a DCI 0\_1, 0\_2, 1\_1, or 1\_2 triggering an aperiodic SRS resource set for positioning linked for bandwidth aggregation in a CC, subject to UE capability, UE transmits SRS of the linked SRS resource sets across all CCs.  A UE in RRC\_INACTIVE mode is expected to be configured with [frequency information] on additional component carrier(s) with respective SRS configuration(s) for bandwidth aggregation.  When an SRS resource configured in a CC without PUSCH or PUCCH is linked for bandwidth aggregation with an SRS resource configured in an active UL BWP of another [UL data transmission] CC, there is a [guard period] during which the UE is not expected to transmit or receive other signals or channels.  <Unrelated part omitted> |  * Reason for change: It has been agreed to use Rel-17 single DCI scheduling positioning SRS resource sets across the linked carriers. But the agreement is not captured in the current RAN1 specification. * Summary of change: Capture the agreement that to use Rel-17 single DCI scheduling positioning SRS resource sets across the linked carriers in TS 38.214. Also, some typos are fixed. * Consequences if not approved: The agreement is not captured |

Agreement

Endorse TP 6.2-2 in section 6.2.2 of R1-2309227 for TS 38.214 clause 5.1.6.5.

|  |  |
| --- | --- |
| |  | | --- | | <Unrelated part omitted>  When the UE is expected to perform joint measurements for bandwidth aggregation across DL PRS positioning frequency layers, the UE expects to be configured with linkage information, via higher layer parameter [*linkage*], between DL PRS resource sets across DL PRS positioning frequency layers. For the linked DL PRS resource sets, the UE is expected to be configured with the same values of QCL, *dl-PRS-Periodicity-and-ResourceSetSlotOffset, dl-PRS-NumSymbols*,*dl-PRS-ResourceTimeGap, dl-PRS-ResourceSymbolOffset,* *dl-prs-MutingBitRepetitionFactor,* *dl-PRS-CyclicPrefix*, comb size, power per subcarrier, *NR-MutingPattern*, and *NR-DL-PRS-SFN0-Offset,* and the UE is expected to be configured with DL PRS resources that maintain uniformly spaced DL PRS RE pattern within a symbol across aggregated DL PRS positioning frequency layers. The UE may assume that DL PRS resources across the linked DL PRS resource sets which satisfy the above conditions are linked for bandwidth aggregation, and the UE assumes phase continuity on the DL PRS resources; otherwise, the UE does not assume that PRS resources from the linked DL PRS resource sets are linked for bandwidth aggregation.  The UE may be configured to measure and report, subject to UE capability, up to 4 joint DL RSTD measurement(s) per pair of *dl-PRS-ID,* from aggregated DL PRS resources across two or three DL PRS positioning frequency layers*.*  The UE may be configured to measure and report, subject to UE capability, up to 4 joint UE Rx-Tx time difference measurement(s) from aggregated DL PRS resources across two or three DL PRS positioning frequency layers.  The UE may be requested via higher layer parameter [*positioning frequency layer aggregation indication*] to perform the joint DL RSTD measurement(s) or the joint UE Rx-Tx time difference measurement(s) across two or three DL PRS positioning frequency layers.  The UE may report via higher layer parameter [*positioning frequency layer aggregation information*] which indicates if bandwidth aggregation is performed and which two or three DL PRS positioning frequency layers are used for the joint DL RSTD measurement(s) and the joint UE Rx-Tx time difference measurement(s). In a measurement report, the UE may report PRS resource set IDs across the two or three DL PRS positioning frequency layers used to perform the joint DL RSTD measurement or the joint UE Rx-Tx time difference measurement.  <Unrelated part omitted> |  * Reason for change: For PRS bandwidth aggregation, the maximum number of RSTD or UE Rx-Tx time difference measurements is the same as the legacy. * Summary of change: Make the maximum number of RSTD or UE Rx-Tx time difference measurements to 4 * Consequences if not approved: The value is still in bracket |

Agreement

Endorse TP 5.1-1 in section 5.1-1 of R1-2309227 for TS 38.214 clause 5.1.6.5.

|  |  |
| --- | --- |
| |  | | --- | | <Unrelated part omitted>  Within a positioning frequency layer, the DL PRS resources are sorted in the decreasing order of priority for measurement to be performed by the UE, with the reference indicated by nr-DL-PRS-ReferenceInfo being the highest priority for measurement, and the following priority is assumed:  - Up to 64 NR-SelectedDL-PRS-IndexPerTRP of the DL PRS positioning frequency layer are sorted according to priority if nr-SelectedDL-PRS-IndexListPerFreq is provided, or up to 64 NR-DL-PRS-AssistanceDataPerTRP of the frequency layer are sorted according to priority otherwise; except when the UE is requested to perform aggregated measurement(s), in which case  - A [dl-PRS-ID or nr-SelectedTRP-Index] associated with DL PRS bandwidth aggregation linkage has higher priority than a [dl-PRS-ID or nr-SelectedTRP-Index] not associated with DL PRS bandwidth aggregation linkage. If [multiple dl-PRS-ID(s) or nr-SelectedTRP-Index(s)] are associated with DL PRS bandwidth aggregation linkage, they are sorted according to priority  - Up to 2 DL-SelectedPRS-ResourceSetIndex per dl-PRS-ID of the DL PRS positioning frequency layer are sorted according to priority if dl-SelectedPRS-ResourceSetIndexList is provided, or up to 2 NR-DL-PRS-ResourceSet per dl-PRS-ID of the DL PRS positioning frequency layer are sorted according to priority otherwise.Except when the UE is requested to perform aggregated measurement(s), in which case  - A DL PRS resource set linked for DL PRS bandwidth aggregation has higher priority than a DL PRS resource set not linked for DL PRS bandwidth aggregation. If multiple DL PRS resource sets are linked for DL PRS bandwidth aggregation, then they are sorted according to priority.  <Unrelated part omitted> |  * Reason for change: The agreement is captured in TS 38.214, but most parts are still in bracket * Summary of change: Confirm the non-controversial description and delete some brackets * Consequences if not approved: The descriptions are still in brackets in the current TS 38.214 |

Agreement

For positioning SRS bandwidth aggregation, introduce a new RRC signaling to indicate whether to enable Rel-17 single DCI-triggering SRS resource sets across the linked carriers.

Agreement

Confirm the following WA:

|  |
| --- |
| **Working assumption**  For semi-persistent positioning SRS for bandwidth aggregation, a single MAC CE can activate or deactivate:   * SRS resource set(s) in one or two or three of three aggregated carriers * SRS resource set(s) in one or two of two aggregated carriers.   Note: the single spatial relation is indicated by the MAC CE for each of two or three aggregated SRS resources. |

Agreement

Endorse the TP in section 8.1.1 of R1-2309228 for TS 38.214 clause 5.1.6.5 and 6.1.2.4

|  |  |
| --- | --- |
| |  | | --- | | 5.1.6.5 PRS reception procedure <Unrelated part omitted>  When the UE is expected to perform joint measurements for bandwidth aggregation across DL PRS positioning frequency layers, the UE expects to be configured with linkage information, via higher layer parameter [*linkage*], between DL PRS resource sets across DL PRS positioning frequency layers. For the linked DL PRS resource sets, the UE is expected to be configured with the same values of QCL, *dl-PRS-Periodicity-and-ResourceSetSlotOffset, dl-PRS-NumSymbols*,*dl-PRS-ResourceTimeGap, dl-PRS-ResourceRepetitionFactor, dl-PRS-ResourceSymbolOffset,* *dl-prs-MutingBitRepetitionFactor,* *dl-PRS-CyclicPrefix*, comb size, power per subcarrier, *NR-MutingPattern*, and *NR-DL-PRS-SFN0-Offset,* and the UE is expected to be configured with DL PRS resources that maintain uniformly spaced DL PRS RE pattern within a symbol across aggregated DL PRS positioning frequency layers. The UE may assume that DL PRS resources across the linked DL PRS resource sets which satisfy the above conditions are linked for bandwidth aggregation, and the UE may assume phase continuity on the DL PRS resources on same symbol(s); otherwise, the UE does not assume that PRS resources from the linked DL PRS resource sets are linked for bandwidth aggregation.  The UE may be configured to measure and report, subject to UE capability, [up to XX] joint DL RSTD measurement(s) per pair of *dl-PRS-ID,* from aggregated DL PRS resources across two or three DL PRS positioning frequency layers*.*  The UE may be configured to measure and report, subject to UE capability, [up to YY] joint UE Rx-Tx time difference measurement(s) from aggregated DL PRS resources across two or three DL PRS positioning frequency layers.  The UE may be requested via higher layer parameter [*positioning frequency layer aggregation indication*] to perform the joint DL RSTD measurement(s) or the joint UE Rx-Tx time difference measurement(s) across two or three DL PRS positioning frequency layers.  The UE may report via higher layer parameter [*positioning frequency layer aggregation information*] which indicates if bandwidth aggregation is performed and which two or three DL PRS positioning frequency layers are used for the joint DL RSTD measurement(s) and the joint UE Rx-Tx time difference measurement(s). In a measurement report, the UE may report PRS resource set IDs across the two or three DL PRS positioning frequency layers used to perform the joint DL RSTD measurement or the joint UE Rx-Tx time difference measurement.  <Unrelated part omitted> 6.2.1.4 UE sounding procedure for positioning purposes <Unrelated part omitted>  The UE is expected to be configured with linkage information [*linkage*] on SRS resource sets for positioning across two or three CCs which are linked for bandwidth aggregation. For the linked SRS resource sets, the UE is expected to be configured with the same values of *startPosition, nrofSymbols,* *periodicityAndOffset, slotOffset, alpha, p0,* subcarrier spacing, CP, and comb size, and the UE is expected to maintain phase continuity for the SRS transmission. The UE may assume that SRS resources across the linked SRS resource sets which satisfy the above conditions are linked for bandwidth aggregation, otherwise, the UE does not assume that SRS resources of the linked SRS resource sets are linked for bandwidth aggregation. For the linked SRS resource sets for bandwidth aggregation across CCs, if an SRS configured by the higher layer parameter *SRS-PosResource,* along with the [switching period] when applicable*,* collides with other signals or channels on a symbol and ifthe SRS in that symbol is dropped, SRS transmission of the linked SRS resource sets across all CCs is dropped on that symbol.  <Unrelated part omitted> |  * Reason for Change: There are typos or a missed parameter for PRS/SRS aggregation part in TS 38.214. Also, the phase continuity should be for the same symbol(s). * Summary of Changes: Fix typos and add the missed parameter. Also, add text to clarify that only the DL PRS resources on the same symbol which are linked for bandwidth aggregation have phase continuity. * Consequence if not approved: there are typos or missed parameter. |

Agreement

With regards to the bandwidth aggregation measurement for positioning, suggest to the editor of TS38.214 to align the terminology between “joint measurement” and “aggregated measurement” by using only “aggregated measurement”.

Agreement

Endorse the TP in section 9.1.1 of R1-2309228 for TS 38.213 clause 7.3.1.

|  |  |
| --- | --- |
| |  | | --- | | <Unrelated part omitted>  If a UE transmits SRS on multiple SRS resources for positioning bandwidth aggregation according to XYZ [6, TS 38.214], the UE calculates based on the same and , respectively, and using a same value of , for each of the multiple SRS resources.  <Unrelated part omitted> |  * Reason for change: Based on the agreements for SRS bandwidth aggregation, the legacy SRS configuration structure is reused, i.e. per BWP per carrier. The new parameters of P0-r18 and alpha-r18 are not needed. * Summary of change: Delete the new parameters P0-r18 and alpha-r18 * Consequences if not approved: TS 38.213 is not correct |

Agreement

When the LMF requests aggregated measurements, the following existing requested fields can also be applicable:

* A request for reduced sample processing for aggregated measurement
  + Reuse the existing field: reducedDL-PRS-ProcessingSamples-r17
* A request for lower Rx beam sweeping factor for FR2 that is applicable for aggregated measurements
  + Reuse the existing field: lowerRxBeamSweepingFactor-FR2
* A request for the maximum number of aggregated UE-Rx-Tx / RSTD measurements for different DL-PRS Resources or DL-PRS Resource Sets per TRP
  + Reuse the existing field: maxDL-PRS-RSTD-MeasurementsPerTRPPair

##### 2.1.1.1.8 Positioning for RedCap UEs

Agreement

For SRS Tx hopping, the configuration parameters values are:

* For the hop bandwidth common to all hops
  + Configuration re-uses C\_SRS
  + The values of C\_SRS in legacy SRS for positioning such that the maximum bandwidth is: 104 PRBs, 48 PRBs, 132 PRBs, 64 PRBs, for 15,30,60,120 KHz respectively when B\_SRS equal 0.
* For the starting RB of the first hop in time domain:
  + Configuration re-uses the IE freqDomainShift
  + The range is {0,268} RBs
* For the single overlap common to all hops for the SRS resource
  + The value can be 0,1,2,4 RBs
  + Note: This is a new IE
* For the starting slot offset and starting symbol for the SRS resource with tx hopping (first hop in time)
  + The value range is {0,1,2…, nrof slot in periodicity} in slots for the slot offset
    - Note: this is for the periodic [and semi-persistent] SRS
  + Starting symbol: {0,1,2,…13} in symbol
  + Starting slot reuses the SRS-PeriodicityAndOffset IE
  + Starting symbol reuses the starting position *startPosition* in the IE resourceMapping
* The starting slot offset and symbol for each of the hops following the first hop in time,
  + FFS: The value range is {0,1,2…, nrof slot in periodicity} in slots for the slot offset
    - Note: this is for the periodic [and semi-persistent] SRS
  + Starting symbol: {0,1,2,…13} in symbol
  + this is a new IE
* The number of consecutive symbols in a hop common to all hops
  + Values are 1,2,4,8 and 12 symbols
  + Configuration re-uses the IE *nrofsymbols* in *resourcemapping*
* The number of hops
  + Values are 2,3,4,5,6
  + This is a new IE

Working assumption

For the SRS for positioning with Tx hopping wrapping pattern, the starting frequency for each symbol of the wrapped staircase pattern is configured by:

a new offset nFH is added to the the exisiting equation for the starting frequency , where

Where:

- is the frequency hop index of the initial hop.

- FFS whether this is signaled as a new parameter.

- is the SRS hop transmission counter in time domain

- is the configured number of hops

- is the configured hop bandwidth, in number of RBs

- is the configured common overlap between two hops, in number of RB(s).

In the definition of the starting PRB of the SRS , the starting PRB is configured as:

* In k0, nshift is replaced by *startingPRBfirsthop* - n0\*( –)\*

Agreement

The UTW configuration applies to all SRS for positioning with Tx hopping configurations in the serving cell.

Agreement

The agreement below is updated by removing the bracket on “or outside” and adding one note.

**Agreement**

For RedCap UEs positioning transmitting the UL SRS with frequency hopping, regarding the collisions between other UL and DL signals/channels and the UL SRS with frequency hopping, support both of the following options

* Option 1: UL time window where the UE is not expected to []transmit other signals/channels and is only expected to transmit FH SRS for positioning.
  + FFS details of an UL time window
  + Note: it implies that UE drops the transmission of other signals/channels and transmits SRS for positioning
* Option 2: new collision rules between the UL SRS with frequency hopping and other UL and DL signals/channels/. Option 2 can apply without ~~[~~or outside~~]~~ UL time window (i.e. option 1)
  + FFS: details on the collision rules

Note: it is understood that option 2 is a component of the feature for UL SRS Tx hopping (FG 41-5-2), and option 1 is a separate feature group.

Note: UE is not expected to be configured with a SRS for positioning hopping cycle partially overlapping with UTW.

Agreement

For DL PRS Rx hopping, support the LMF to include an explicit request for DL PRS Rx hopping measurements and reporting in the location request signaling.

The location information request can also optionally include the total bandwidth of all hops.

Agreement

With regards to the configuration of the UTW:

* the window parameters for periodicity and starting slot offset have the same candidate values as the periodicity and starting slot offset parameters for the SRS for positioning in the IE *PeriodicityAndOffset*
* the duration of the window in slot is {1,2,4,6} slots

**Agreement**

For the collision rules of the SRS with Tx hopping (option2)

* If the SRS symbol(s), including the retuning time to/from the active BWP, collides with PUSCH or PUCCH, when UE determines that SRS with Tx hopping is to be dropped, the colliding SRS symbol(s) are dropped.
  + FFS: timeline for determination of colliding channels/signals
  + FFS: collisions with MIMO SRS

Agreement

TP 2.2-1 in section 2.2.1 of R1-2310430 is endorsed for TS 38.214 clause 5.1.6.5.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | TP 2.2-1 |  | | Reason for change | In RAN1 previous meeting, the following agreement on PRS Rx hopping had been achieved.   |  | | --- | | Agreement  PRS Rx frequency hopping for RRC\_INACTIVE state and for RRC\_IDLE state is supported for a RedCap UE. |   In RRC\_INACTIVE state and RRC\_IDLE state, there is no gap configuration. For PRS Rx frequency hopping for RRC\_INACTIVE state and for RRC\_IDLE state, UE does not need to use measurement gap for PRS reception. | | Summary of change | Section 5.1.6.5 in 38.214: Clarify for PRS Rx frequency hopping in RRC\_INACTIVE state and RRC\_IDLE state, UE does not need to use measurement gap for PRS reception. | | Consequences if not approved | UE behavior on PRS Rx frequency hopping in RRC\_INACTIVE state and RRC\_IDLE state is not clear. | | Text proposal | TS 38.214  5.1.6.5 PRS reception procedure  \*\*\*\*\*\*\*\*\*\*\*\*\*\* Unchanged parts omitted\*\*\*\*\*\*\*\*\*\*\*\*\*\*  The reduced capability UE may be configured to measure and report, subject to UE capability, via [higher layer parameter] the DL RSTD, DL PRS-RSRP, DL PRS-RSRPP, or UE Rx-Tx time difference using receiver frequency hopping for a DL PRS resource, with bandwidth that may be greater than the maximum reduced capability UE bandwidth. The reduced capability UE performing receiver frequency hopping may be configured to report via [*higher layer parameter*] one measurement associated with one received frequency hop or one measurement based on multiple hops of the DL PRS. In RRC\_CONNECTED mode, the reduced capability UE is expected to use a single instance of a configured measurement gap to receive all hops of the DL PRS using receiver frequency hopping.  \*\*\*\*\*\*\*\*\*\*\*\*\*\* Unchanged parts omitted\*\*\*\*\*\*\*\*\*\*\*\*\*\* | |

Agreement

The working assumption is revised as follow:

Working assumption

For the SRS for positioning with Tx hopping wrapping pattern, the starting frequency for each symbol of the wrapped staircase pattern is configured by:

a new offset nFH is added to the the exisiting equation for the starting frequency , where

Where: (down-select at RAN1#115)

-alt1: is the frequency hop index of the initial hop (new configured parameter)

-alt2:

* + - * + Note: The reference point for starting PRB of the first hop and nshift is defined as lowest RB provided by the agreed configuration that may include SCS, CP size and bandwidth (position and size)

- is the starting PRB of the first hop

- In k0, nshift is replaced by

- is the SRS hop transmission counter in time domain

- is the configured number of hops

- is the configured hop bandwidth, in number of RBs

- is the configured common overlap between two hops, in number of RB(s).

Agreement

SRS for positioning with Tx hopping can be configured to be periodic, aperiodic or semi-persistent

* + The mechanism for aperiodic and semi-persistent SRS for positioning (DCI triggered and MAC-CE activation/deactivation, respectively) can be re-used
  + For aperiodic SRS,
    - The UE is configured with the slot offset for each hop, relative to the slot containing the DCI triggering the SRS for positioning with tx hopping
      * Note: all the hops are within 32 slots from the DCI triggering the SRS for positioning with tx hopping

##### 2.1.1.1.9 Approved LSs

R1-2310402 Reply LS on SL positioning MAC agreements RAN1, Huawei LS out Rel-18 FS\_eLCS\_Ph3/NR\_pos\_enh2 To: RAN2 cc: SA2

R1-2310478 LS on PRS bandwidth aggregation RAN1, ZTE LS out Rel-18 NR\_pos\_enh2-Core To: RAN4 cc: RAN2, RAN3

##### 2.1.1.2 Decisions during RAN1#115

##### 2.1.1.2.1 General aspects

**Higher layer parameters for Rel-18 Positioning**

The latest list of higher layer parameters for Rel-18 positioning at the end of RAN1 #115:

**Agreement**

* Updated Rel-18 Rel-18 higher layers parameter list in R1-2312536 is endorsed in R1-2312697.
* The LS to RAN2 on Rel-18 higher layer signaling is endorsed in R1-2310787.

**For response to RAN2 LS on on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning in R1-2310787**

Answer for Q2 and Q3

|  |
| --- |
| Q2) For RedCap UEs to support SRS for positioning frequency hopping by using a BWP configuration separate from the existing BWP configuration, is the separate BWP configuration inside each existing data BWP or outside any data BWP?  Q3) Please confirm if UE/gNB measurement reported with frequency hopping applies to RSTD, RSRP, RTOA, UE Rx-Tx time difference and gNB Rx-Tx time difference measurements for DL-TDOA, UL-TDOA and Multi-RTT positioning methods. |

* From RAN1 perspective, the separate BWP configuration is outside any data BWP configuration.
* Yes, RAN1 confirms RAN2 understanding. Also, the UE/gNB measurement reported with frequency hopping applies to RSRPP measurement.

Answer for Q1)

|  |
| --- |
| Q1) For DL PRS Rx frequency hopping, does LMF have to signal the hopping pattern configuration to the UE or not? What about the same for UL SRS Tx frequency hopping? |

LMF does not need to provide the UE with the hopping pattern configuration for DL PRS Rx frequency hopping or UL SRS Tx hopping.

* For DL PRS Rx frequency hopping, LMF sends an explicit request for DL PRS Rx hopping measurement and reporting, and optionally include the total bandwidth of all hops in the location request signaling based on the following agreement.

|  |
| --- |
| Agreement  For DL PRS Rx hopping, support the LMF to include an explicit request for DL PRS Rx hopping measurements and reporting in the location request signaling.  The location information request can also optionally include the total bandwidth of all hops. |

* For UL SRS frequency hopping, a serving gNB provides the UE with a SRS Tx frequency hopping pattern.

Answer for Q4 and Q5

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| --- |
| Q4) Has RAN1 discussed the interaction between carrier phase positioning and bandwidth aggregation for positioning? When bandwidth aggregation is used involving 2 or 3 positioning frequency layers (PFL), does the UE report the carrier phase measurement for each PFL or only one PFL?  Q5) Is the simultaneous measurement on same DL PRS by a target UE and a PRU applies only for carrier phase measurements (RSCP/RSCPD) or applies also to the legacy measurement along which the carrier phase measurements are reported? Please clarify if simultaneous measurement applies to all legacy measurements (e.g., timing, power measurements) or not. |

* No, the interaction of carrier phase positioning and bandwidth aggregation for positioning has not been discussed. The UE reports the carrier phase measurement for only one PFL.
* The simultaneous measurement on same DL PRS by a target UE and a PRU also applies to all legacy measurements.

Answer for Q6 and Q7

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| --- |
| Q6) For simultaneous measurement on same DL PRS by a target UE and a PRU, is multiple instances of time window configurations need to be signalled to the target UE and PRU or is the set of time window configuration parameters results in multiple time domain windows for the measurement? RAN2 would like additional clarification on need for multiple time windows.  Q7) For simultaneous transmission of UL SRS from a target UE and a PRU, is there a need for gNB to indicate the time window(s) directly to UE? |

* Each time window configuration optionally includes a periodicity, which results in multiple instances of the time window. Up to 2 different window configurations can be provided.
* For Q7, there is no such need.

Answer for Q9

|  |
| --- |
| Q9) Are carrier phase measurements reported by UE for additional paths also or only for the first path of the associated legacy timing measurement? |

* UE reports carrier phase measurements only for the first path.

Answer for Q11, Q12, and Q13

* UE Rx-Tx time difference measurement in RRC\_IDLE is not supported using bandwidth aggregation or without using bandwidth aggregation.
* The condition on “The same number of PRS resource sets and resources for a TRP” is not needed.
* The aggregated reference RSTD means a reference RSTD, where the reference RSTD is derived from aggregated DL PRS Resources. RAN1 have not discussed the aggregated reference RSTD reporting requirement, which is up to RAN4.

Agreement

|  |
| --- |
| Q8) For UE-based carrier phase positioning, RAN1 agreement says the LMF forwards the DL carrier phase measurement reported by a PRU, with additional information of the same PRU to a target UE in the positioning assistance data. Regarding the forwarded measurement, does the LMF forward only the carrier phase measurement or also the legacy measurement associated with the carrier phase measurement? Also, how often does the LMF have to forward the positioning assistance data containing PRU measurement (and additional information of the same PRU) to the target UE i.e., is this supposed to be a periodic provisioning of assistance data from LMF to target UE? Can the UE send a request to the LMF to initiate the periodic provisioning of assistance data? |

The LMF can forward the carrier phase measurements together with the legacy measurement associated with the carrier phase measurement.

* Note1: there is no consensus in RAN1 that the LMF can forward UE Rx-Tx time difference measurement.
* Note2: carrier phase measurements include both RSCP and RSCPD

Both one time (aperiodic) and periodic provision of PRU carrier phase measurements should be supported, which could be requested by the UE.

Proposed answer for Q10

|  |
| --- |
| Q10) For PRS bandwidth aggregation should the LMF indicate to the UE that one TRP can have multiple pairs of aggregated PFLs i.e., multiple combinations of linked PFLs e.g., 2+2 and other combinations? Also, can the same PFL(s) be configured in different combinations of linked PFLs? |

For the 1st question, Yes, up to two PFL combinations can be supported from the following agreement.

|  |
| --- |
| Agreement  Configuring up to two PFL combinations is supported (e.g. PFL1 aggregated with PFL2 and PFL3 aggregated with PFL4).   * Send an LS to RAN4 (CC to RAN2 and RAN3) to inform them with the above agreement and specify corre-sponding requirements. * Note: more than one combinations are measured in TDMed manner |

For the 2nd question,

* Yes, RAN1 understanding is that the same PFL can be configured in different combinations of the linked PFLs. For example, different PRS resource sets in the same PFL can be configured in different combinations of the linked PFLs.
  + Note: From RAN1 perspective, it is unnecessary to configure the same PRS resource set in different combinations of linked PFLs.

Agreement

The draft LS reply to RAN2 in R1-2312433 is endorsed with the following correction:

* To: RAN2
* Cc: RAN3, RAN4

Final LS is agreed in R1-2312434.

**UE features for Rel-18 Positioning**

R1-2312609 Session Notes of AI 8.16.3 Ad-Hoc Chair (AT&T)

Endorsed.

Agreement

Updated RAN1 UE feature lists in R1-2312569 and R1-2312572 for Rel-18 after RAN1#115 are endorsed.

Except for the following rows (not yet agreed):

* + 41-1-19b
  + 41-1-20
  + 41-1-21
  + 41-1-22
  + 41-2-12
  + 41-4-19

##### 2.1.1.2.2 SL positioning reference signal

Agreement

the TP below is endorsed for TS 38.214

|  |  |
| --- | --- |
| Reason for change | Correct the description for unique determination of a SL PRS resource in a slot of a shared SL PRS resource pool. |
| Summary of change | Section 8.2.4 in TS 38.214:  1. In clause 8.2.4 of TS 38.214, correct the description for unique determination of a SL PRS resource in a shared SL PRS resource pool.  2. Add reference to SCI format 1-A for indication of “frequency resource assignment” for a SL PRS resource in a slot of a shared SL PRS resource pool. |
| Consequences if not approved | Incorrect description for unique determination of a SL PRS resource in a slot of a shared SL PRS resource pool. |
| Text proposal | **------------------------------ TP#1: TS 38.214 -----------------------------------**  8.2.4 SL PRS transmission procedure  The following parameters for SL PRS transmission are associated with each SL PRS resource:  - [*SL PRS resource ID*] indicates an identity of a SL PRS resource. The SL PRS resource is identified by the SL PRS resource ID that is unique within a slot of a dedicated SL PRS resource pool. For a shared SL PRS resource pool, a SL PRS resource is uniquely identified by a combination of the SL PRS resource ID, a SL PRS frequency domain allocation within a slot indicated by “frequency resource assignment” field in the associated SCI format 1-A, and a starting symbol within the slot as determined by clause 8.2.4.1.1.  - [*SL PRS comb offset and comb size*] indicates a comb offset and a comb size of the SL PRS resource  - [*Starting symbol and the number of SL PRS symbols*] indicates the starting symbol index and the number of symbols of the SL PRS resource within a slot in a dedicated SL PRS resource pool. [*number of SL PRS symbols*] indicates the number of symbols of the SL PRS resource within a slot in a shared SL PRS resource pool.  **< Unchanged text omitted >** |

Agreement

Endorse TP#2 in Section 6 of R1-2312295 for Section 8.4.1.6.3 of TS 38.211 to add “common” to description of resource blocks for mapping of SL PRS and to correct terminology for dedicated and shared SL PRS re-source pools

Agreement

Endorse TP#3 in Section 6 of R1-2312295 for Section 16.2.3A of TS 38.213 to align terminology for shared SL PRS resource pool.

* Note: clause and TS in summary of change should be fixed by the editor

Agreement

Endorse TP#4 in Section 6 of R1-2312295 for Clause 8 and Subclause 8.2.4.1.2 of TS 38.214 to reflect that the bandwidth of SL PRS in a dedicated SL PRS resource pool is same as the resource pool bandwidth in number of RBs.

Agreement

Endorse TP#5 and TP#6 in Section 6 of R1-2312295 to correctly reflect the resource mapping and UE behavior for multiplexing between SL PRS and each of PSSCH and PSFCH in a slot of a shared SL PRS resource pool:

* TP#5 for subclauses 8.3.1.5 and 8.4.1.1.2 of TS 38.211
* TP#6 for subclause 8.2.4.1.1 of TS 38.214

##### 2.1.1.2.3 Measurements and reporting for SL positioning

Agreement

Regarding the time stamp information in measurement report, support the following:

* For the timestamp of SFN and slot number, at least one of nr-PhysCellID, nr-ARFCN, nr-CellGlobalID is included.
* For the timestamp of DFN and slot number, the synchronization reference source indication ‘GNSS or UE’ can be optionally included.

Note: The number of SL-PRS symbols is not signalled in the SL positioning measurement report.

Agreement

Define the maximum number of additional paths for SL-RSTD, SL-RTOA and SL Rx – Tx time difference to be equal to 8. The maximum number of additional paths for SL-AoA is equal to 2.

Agreement

Update previous agreement on synchronization information exchange with the following modification:

|  |
| --- |
| To mitigate the impact of synchronization errors between anchor UEs for SL-PRS based measurement, the exchanged synchronization information of anchor UEs between a UE and LMF or another UE includes the following:   * The synchronization source type (GNSS, gNB/eNB, and UE) of anchor UEs,   + ~~[If the synchronization source of an anchor UE is SyncRef UE, the anchor UE can optionally indicate the coverage status and synchronization connection status (whether the SyncRef UE is directly or indirectly synchronized to GNSS/gNB, or other SyncRef UE) of the SyncRef UE]~~   + If the synchronization source of an anchor UE is gNB/eNB, the anchor UE can further provide cell identity information * ~~[Synchronization quality/accuracy information]~~ * The RTD between anchor UEs |

Agreement

The TP below is endorsed for TS38.214 clause 8.4.4.

|  |  |
| --- | --- |
| Reason for change | In current spec, UE may provide the ARP location information in assistance data for the ARP ID reported in the measurement report. However, those two reporting should be decoupled, for example, a UE can provide ARP location information in assistance data but do not report any ARP ID in measurement report. |
| Summary of change | Section 8.4.4 in TS 38.214:  Decouple ARP ID report in measurement report and ARP location information provision in assistance data |
| Consequences if not approved | unnecessary association between the provision of ARP location information in assistance data and the reporting of ARP ID in measurement report. |
| Text proposal | **8.4.4 SL PRS reception procedure**  The UE may be configured, via [*higher layer parameter(s)*], to measure and report one or more of the SL RSTD, SL Rx-Tx time difference, SL RTOA, SL AoA, SL PRS-RSRP, and SL PRS-RSRPP measurements, for the first detected path and/or additional detected paths. The UE may report an ARP ID associated with the reported measurements. The UE may provide the ARP location information via [*higher layer parameter(s)*]. |

Agreement

The TP below is endorsed for TS38.214 clause 8.4.4.

|  |  |
| --- | --- |
| Reason for change | * + Based on current agreements, the exchanged synchronization information of anchor UEs between a UE and LMF or another UE includes: (1) synchronization source type; (2) RTD between anchor UEs. The description in 38.214 is redundant.   + Based on the description in TS38.214, it seems that UE may report synchronization source type and/or RTD via the same higher layer parameter, however, they should be associated with different higher layer parameters. |
| Summary of change | Section 8.4.4 in TS 38.214:   * + Change “The UE may report synchronization information synchronization source type and/or…” to “The UE may report synchronization source type and/or…”   + Add separate higher layer parameter for ‘synchronization source type’. |
| Consequences if not approved | * + Redundant specification.   + Incorrect higher layer parameter association for synchronization source type and RTD. |
| Text proposal | **< Unchanged text omitted >**  The UE may report synchronization source type via [*higher layer parameter(s)*] and/or relative time difference with the associated quality metric~~,~~ via [*higher layer parameter(s)*]. For the SL RSTD measurement, the UE may report a reference UE information.  **< Unchanged text omitted >** |

Agreement

The TP below is endorsed for TS38.214 clause 8.2.4.

|  |  |
| --- | --- |
| Reason for change | 1. In TS 38.214 section 8.2.4, the bracket around ‘SL PRSs of SL PRS resources’ should be addressed.  2. It has been agreed that SL PRS resource ID is ‘optional’ for the association information between the already transmitted SL PRSs of SL PRS resources and UE Tx ARP ID. But the agreement is not correctly captured in the current RAN1 specification. |
| Summary of change | Section 8.2.4 in TS 38.214:  1. Remove brackets around ‘SL PRSs of SL PRS resources’.  2.Capture ‘optional’ SL PRS resource ID included in the association information between the already transmitted SL PRS resource and UE Tx ARP ID. |
| Consequences if not approved | 1. Unclear specification for [SL PRSs of SL PRS resources] in TS38.214.  2. The agreement is not correctly captured for SL PRS resource ID. |
| Text proposal | **< Unchanged text omitted >**  The UE may report the association information between the already transmitted ~~[~~SL PRSs of SL PRS resources~~]~~ and UE Tx ARP ID. The association information includes ARP ID(s), SL PRS transmission timestamp(s) [*sl-prs-time-stamp*], and optional SL PRS resource ID(s).  **< Unchanged text omitted >** |

Agreement

The TP below is endorsed for TS38.214 clause 8.4.4.

|  |  |
| --- | --- |
| Reason for change | SL PRS-RSRP measurement is not defined for the first detected path and/or additional paths, which is not correctly captured by the specification. |
| Summary of change | Section 8.4.4 in TS 38.214:  Delete the association between the first detected path and/or additional detected paths and SL PRS-RSRP measurement. |
| Consequences if not approved | Incorrect description for the association between the first detected path and/or additional detected paths and SL PRS-RSRP measurement. |
| Text proposal | **< Unchanged text omitted >**  The UE may be configured, via [*higher layer parameter(s)*], to measure and report one or more of the SL RSTD, SL Rx-Tx time difference, SL RTOA, SL AoA, ~~SL PRS-RSRP, and~~ SL PRS-RSRPP ~~measurements~~, for the first detected path and/or additional detected paths and SL PRS-RSRP measurements. The UE may report an ARP ID associated with the reported measurements. The UE may provide the ARP location information of the ARP ID via [*higher layer parameter(s)*]  **< Unchanged text omitted >** |

Agreement

For SL RTT, support LMF/UE to request with higher layer signaling the measuring UE to report the associated SL-PRS transmission timestamp.

* Up to RAN4 to determine conditions (if any) for reporting of the associated SL-PRS transmission timestamp.

##### 2.1.1.2.4 Resource allocation for SL positioning reference signal

Agreement

For DCI format 3-2, the resource pool index “I” should be an index over

* the number of dedicated SL PRS resource pools (pre-)configured to the UE

**Conclusion:**

For sidelink resource allocation scheme 1 (i.e. mode 1 in the specs), dynamic grant, configured grant type 1, and configured grant type 2 are supported for both dedicated and shared SL PRS resource pools.

Agreement

Support the following TP for 38.214 clause 8.2.4.1:

|  |
| --- |
| *In sidelink resource allocation mode 1:*  *- For SL PRS transmission, ~~a UE may be configured with~~ dynamic grant, configured grant type 1, and ~~[/]or~~ configured grant type 2 are supported* |

Agreement

* Use SL PRS delay budget instead of packet delay budget in SL PRS resource selection in a dedicated SL PRS resource pool in sidelink resource allocation mode 2.
  + Agree the below text proposal on Clause 8.2.4.2 of TS 38.214.

|  |
| --- |
| **Text Proposal 1**for TS 38.214 clause 8.2.4.2  <omitted text>  The UE shall perform this procedure according to clause 8.1.4, with the following modifications:  - “packet delay budget” is replaced by “SL PRS delay budget”  <omitted text> |

**Conclusion**

For a dedicated resource pool, the periodicity of SL PRS cannot be restricted by congestion control.

Agreement

The TP below is endorsed

|  |  |
| --- | --- |
| *Reason for change:* | Correction on step 6 of SL-PRS resource allocation |
|  |  |
| *Summary of change:* | In clause 8.2.4.2, add modification on step 6 regarding the SL-PRS resource and slot determination based on 8.2.4.2A. |
|  |  |
| *Consequences if not approved:* | The determination of resources applied for SL-PRS resource exclusion is not clear. |

|  |
| --- |
| \*\*\* Unchanged parts are omitted \*\*\*  8.2.4.2 UE procedure for determining the subset of resources to be reported to higher layers in SL PRS resource selection in a dedicated SL PRS resource pool in sidelink resource allocation mode 2  In resource allocation mode 2 in a dedicated SL PRS resource pool, the higher layer can request the UE to determine a subset of resources from which the higher layer will select resources for SL PRS/PSCCH transmission. To trigger this procedure, in slot *n,* the higher layer provides the following parameters for this SL PRS/PSCCH transmission:  \*\*\* Unchanged parts are omitted \*\*\*  The UE shall perform this procedure according to clause 8.1.4, with the following modifications:  - Partial sensing is not applicable in a dedicated SL PRS resource pool;  - A candidate single-slot resource for transmission is defined as the SL PRS resource with index within the Set of SL-PRS resource ID(s) provided by the higher layer and in slot  - "SCI format 1-A” is replaced by “SCI format 1-B",  - In step 5, the second condition is modified as follows: for any periodicity value allowed by the higher layer parameter *reservationPeriodAllowed-Dedicated-SL-PRS-RP* and any SL PRS resource ID in the set of SL PRS resource ID(s) provided by the higher layer, and a hypothetical SCI format 1-B received in slot with '*Resource reservation period*' field set to that periodicity value and indicating that SL-PRS resource ID, condition c in step 6 would be met.  - In condition c of step 6 “determines according to clause 8.1.5 the set of resource blocks and slots” is replaced by “determines according to clause 8.2.4.2A the set of SL PRS resources and slots”.  \*\*\* Unchanged parts are omitted \*\*\* |

Agreement

With regards to the UE SL PRS preparation procedure time, the TP below is endorsed

* Note to the editor of TS 38.214: it is up to the editor whether to create a new section or add this text to an existing section as appropriate

|  |
| --- |
| In sidelink resource allocation mode 1 for a dedicated SL PRS resource pool, the UE shall perform this procedure according to clause 8.6 (excluding the case of PSSCH for retransmission of a transport block), with the following modifications:  - "PSSCH for a transport block" is replaced by "SL PRS"  - "PSSCH" is replaced by "SL PRS" |

Agreement

The TPs below related to the description of SCI format 2-D are endorsed

* In clause 8.1.3/8.2.1/8.3/8.5.1.2/8.5.2.2/8.5.2.3 of TS 38.214, SCI format 2-D is captured as shown below:

|  |
| --- |
| -------------------------- Start of text proposal to TS 38.214 v18.0.0 with draft CR R1-2310764-------------------------  8.1.3 Modulation order, target code rate, redundancy version and transport block size determination  The redundancy version is given by the "Redundancy version" field in SCI format 2-A, 2-B, ~~or~~ 2-C or 2-D.  **<<< UNCHANGED PARTS OMITTED >>>**  8.2.1 CSI-RS transmission procedure  A UE transmits sidelink CSI-RS within a unicast PSSCH transmission if the following conditions hold:  - CSI reporting is enabled by higher layer parameter *sl-CSI-Acquisition*; and  - the '*CSI request*' field in the corresponding SCI format 2-A, ~~or~~ 2-C or 2-D is set to 1.  **<<< UNCHANGED PARTS OMITTED >>>**  8.3 UE procedure for receiving the physical sidelink shared channel  For sidelink resource allocation mode 1, a UE upon detection of SCI format 1-A on PSCCH can decode PSSCH according to the detected SCI formats 2-A, 2-B, ~~and~~ 2-C and 2-D, and associated PSSCH resource configuration configured by higher layers. The UE is not required to decode more than one PSCCH at each PSCCH resource candidate.  For sidelink resource allocation mode 2, a UE upon detection of SCI format 1-A on PSCCH can decode PSSCH according to the detected SCI formats 2-A, 2-B, ~~and~~ 2-C and 2-D, and associated PSSCH resource configuration configured by higher layers. The UE is not required to decode more than one PSCCH at each PSCCH resource candidate.  A UE is required to decode neither the corresponding SCI formats 2-A, 2-B, ~~and~~ 2-C and 2-D nor the PSSCH associated with an SCI format 1-A if the SCI format 1-A indicates an MCS table that the UE does not support.  **<<< UNCHANGED PARTS OMITTED >>>**  8.5.1.2 Triggering of sidelink CSI reports  The CSI-triggering UE is not allowed to trigger another aperiodic CSI report for the same UE before the last slot of the expected reception or completion of the ongoing aperiodic CSI report associated with the SCI format 2-A ,~~or~~ 2-C or 2-D with the '*CSI request*' field set to 1, where the last slot of the expected reception of the ongoing aperiodic CSI report is given by [10, TS38.321].  An aperiodic CSI report is triggered by an SCI format 2-A, ~~or~~ 2-C or 2-D with the '*CSI request*' field set to 1.  **<<< UNCHANGED PARTS OMITTED >>>**  8.5.2.2 Reference signal (CSI-RS)  The UE can be configured with one CSI-RS pattern as indicated by the higher layer parameters *sl-CSI-RS-FreqAllocation, sl-CSI-RS-FirstSymbol* in *SL-CSI-RS-Config*.  Parameters for which the UE shall assume non-zero transmission power for CSI-RS are configured according to clause 8.2.1.  A UE is not expected to be configured such that a CSI-RS and the corresponding PSCCH can be mapped to the same resource element. A UE is not expected to receive sidelink CSI-RS and PSSCH DM-RS, nor CSI-RS and 2nd-stage SCI, on the same symbol.  Sidelink CSI-RS shall be transmitted according to [4, TS 38.211] in the resource blocks used for the PSSCH associated with the SCI format 2-A, ~~or~~ 2-C or 2-D triggering a report.  **<<< UNCHANGED PARTS OMITTED >>>**  -------------------------- End of text proposal to TS 38.214 v18.0.0 with draft CR R1-2310764------------------------- |

Agreement

The following TP for TS 38.214 Clause 8.1 is endorsed

|  |  |
| --- | --- |
| Reasons for change | The description of UE setting ‘Embedded SCI format’ field of SCI format 2-D is not correct. |
| Summary of change | Change the description of UE setting ‘Embedded SCI format’ field of SCI format 2-D. |
| Consequences if not approved | The specification is not aligned with the agreement. |
| Text proposal | The UE shall set the contents of the SCI format 2-D as follows:  - the UE shall set value of the *'[SL PRS resource ID]'* field as indicated by higher layers.  - the UE shall set value of the *'[SL PRS request]'* field as indicated by higher layers.  - the UE shall set value of the *'[Embedded SCI format]'* field as indicated by higher layers.  - if *'Embedded SCI format'* indicates that SCI format 2-A is embedded within this SCI format 2-D then the UE shall include in the *'[Embedded SCI format payload]'* field the fields of SCI format 2-A, set as specified above.  - if *'Embedded SCI format'* indicates that SCI format 2-B is embedded within this SCI format 2-D then the UE shall include in the *'[Embedded SCI format payload]'* field the fields of SCI format 2-B, set as specified above. |

**Conclusion**

With regards to the SL PRS (re)transmission(s):

* RAN1 assumes that higher layers may provide to PHY layer more than one SL-PRS resource(s), which are used for the (re-)transmission of multiple SL-PRS(s) on different slots to the same target UE(s)
  + It is up to RAN2 to specify a mechanism for selection of multiple resources for SL-PRS

**Conclusion**

“Maximum Number of SL PRS (re-)transmissions” parameter is applicable to SL-PRS resource (re)-selection.

Agreement

Modify the description of current specification associated with definition of SL PRS-CBR and adopt TP #4 for TS38.215.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TP #4   |  |  | | --- | --- | | ***Reason for change:*** | The current definition on SL PRS-CBR in clause 5.1.49 misses the RRC parameter name for the SL PRS RSSI measurement threshold which is [*sl-ThreshS-PRS-RSSI-CBR*]. | |  |  | | ***Summary of change:*** | Add the RRC parameter name for the SL PRS RSSI measurement threshold. | |  |  | | ***Consequences if not approved:*** | Unclear which RRC parameter is referred by the current specification. |   -------------------------- Start of text proposal to TS 38.215 v18.0.0 with draft CR R1-2310743-------------------------  **5.1.49 Sidelink PRS channel busy ratio (SL PRS-CBR)**   |  |  | | --- | --- | | **Definition** | SL PRS Channel Busy Ratio (SL PRS-CBR) measured in slot *n* is defined as the number of SL PRS resources in the dedicated SL PRS resource pool whose SL PRS RSSI measured by the UE exceed a (pre-)configured threshold provided by the higher layer parameter [*sl-ThreshS-PRS-RSSI-CBR*] sensed over a SL PRS-CBR measurement window [*n*-*a*, *n*-1], wherein *a* is equal to 100 or 100·2µ slots, according to higher layer parameter [sl-TimeWindowSize-PRS-CBR-positioning] divided by the total number of the configured SL PRS resources in the transmission pool over [*n*-*a*,*n*-1].  The calculation of SL PRS-CBR is limited within the slots for which the SL PRS-RSSI is measured. If the number of SL PRS-RSSI measurement slots within the SL PRS-CBR measurement window is below a (pre-)configured threshold, a (pre-)configured SL PRS-CBR value is used. | | **Applicable for** | RRC\_IDLE intra-frequency,  RRC\_IDLE inter-frequency,  RRC\_INACTIVE intra-frequency,  RRC\_INACTIVE inter-frequency,  RRC\_CONNECTED intra-frequency,  RRC\_CONNECTED inter-frequency |   NOTE 1: The slot index is based on physical slot index.  *--- unchanged text omitted ---*  -------------------------- End of text proposal to TS 38.215 v18.0.0 with draft CR R1-2310743------------------------- |

**Conclusion**

For a dedicated SL-PRS resource pool, for comparing priority between SL-PRS and UL, support two threshold parameters, similar to legacy, which are used for comparing SL-PRS priority versus the threshold,

* if the priority value of SL-PRS is lower than the threshold, SL-PRS has higher priority;
* otherwise, UL has higher priority.

Note: No RAN1 specification change is expected from the above.

Agreement

The TP below is endorsed for TS38.214

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | ***Reason for change:*** | Corrections on description associated with resource allocation in a dedicated SL PRS resource pool. | |  |  | | ***Summary of change:*** | In clause 8.2.4.1.1 and 8.2.4.2 of TS 38.214, minimum resource allocation unit of SL PRS is captured. | |  |  | | ***Consequences if not approved:*** | The description associated with resource allocation in a dedicated SL PRS resource pool is inaccurate. |   -------------------------- Start of text proposal to TS 38.214 v18.0.0 with draft CR R1-2310764-------------------------  **8.2.4.1.1 Resource allocation in time domain**  The UE shall transmit the SL PRS in the same slot as the associated PSCCH.  For a dedicated SL PRS resource pool, the minimum resource allocation unit in the time domain is a SL PRS resource in a slot.  The UE shall transmit the SL PRS in consecutive symbols within the slot.  A UE does not transmit multiple SL PRS resources in the same slot.  **<<< UNCHANGED PARTS OMITTED >>>**  **8.2.4.2 UE procedure for determining the subset of resources to be reported to higher layers in SL PRS resource selection in a dedicated resource pool in sidelink resource allocation mode 2**  **<<< UNCHANGED PARTS OMITTED >>>**  The UE shall perform this procedure according to clause 8.1.4, with the following modifications:  - Partial sensing is not applicable in a dedicated SL PRS resource pool;  - ‘Candidate single-slot resource’ is replaced by ’candidate SL PRS resource’.  - A candidate ~~single~~ SL PRS resource for transmission is defined as the SL PRS resource with index within the Set of SL-PRS resource ID(s) provided by the higher layer and in slot  - "SCI format 1-A” is replaced by “SCI format 1-B",  - In step 5, the second condition is modified as follows: for any periodicity value allowed by the higher layer parameter *reservationPeriodAllowed-Dedicated-SL-PRS-RP* and any SL PRS resource ID in the set of SL PRS resource ID(s) provided by the higher layer, and a hypothetical SCI format 1-B received in slot with '*Resource reservation period*' field set to that periodicity value and indicating that SL-PRS resource ID, condition c in step 6 would be met.  - In condition b of step 6, the RSRP measurement is the PSCCH-RSRP over the DM-RS resource elements of the PSSCH;  - In condition c of step 6 "determines according to clause 8.1.5 the set of resource blocks and slots" is replaced by "determines according to clause 8.2.4.2A the set of slots and SL PRS resources".  **<<< UNCHANGED PARTS OMITTED >>>**  -------------------------- End of text proposal to TS 38.214 v18.0.0 with draft CR R1-2310764------------------------- |

Agreement

Send an LS to RAN2 and RAN3 with the following:

* From RAN1 perspective, for scheme 1, it is important for the following request to be specified:
  + a gNB is able to receive a request from either LMF or UE for SL-PRS bandwidth
* Action to RAN2 and RAN3 to consider how to specify support for such request, if not already specified.

Agreement

The draft LS in R1-2312629 is endorsed, with clarification that it goes to RAN WG2 and RAN WG3. Final LS is agreed in R1-2312630.

Agreement

The total number of SL configured grants (including both Type1 and Type2) at a UE across all resource pools is not larger than 8.

Agreement

For support of IUC in shared SL PRS resource pool, value 1 of parameter *sl-TriggerConditionRequest* means the explicit request can be triggered only when UE-B has data ***or SL PRS*** to be transmitted to UE-A.

* Including this into the higher parameter list.

##### 2.1.1.2.5 NR DL and UL carrier phase positioning

Agreement

* Support the following for the values of the phase quality index and phase quality resolution for the RSCP quality indication:
  + phase quality index can be set as [0, …, 179]
  + phase quality resolution can be set as [0.1, 1} degree.
* Note 1: Reporting “phase quality index” = 179 and “phase quality resolution” = 1 degree implies the phase error may exceed 179 degrees.

Agreement

The TP below is endorsed for TS 38.214

|  |  |
| --- | --- |
| ***Reason for change:*** | The number of samples for carrier phase measurements and the timestamp of carrier phase measurements in the following agreement are not accurately captured in the specification:  Agreement  Subject to UE’s capability, if a UE Rx-Tx time difference/DL RSTD measurement is obtained with Nsample (=2, 4) samples, as defined in TS 38.133, the UE Rx-Tx time difference/DL RSTD measurement can be associated with (i.e., reported together with) up to Nsample RSCP/RSCPD measurements.   * A single RSCP/RSCPD measurement is obtained within one sample * Each RSCP/RSCPD measurement has its own timestamp. * Note: It is up to RAN2 on how to define signalling support for the reporting of the timestamps of the RSCP/RSCPD measurements. |
| ***Summary of change:*** | Change the description of Section 5.1.6.5.2 in TS 38.214 to accurately capture the agreement. |
| ***Consequences if not approved:*** | The specification is not aligned with the agreement. |

**5.1.6.5.2 PRS for carrier phase positioning**

<Unrelated part omitted>

The UE is expected to obtain each DL RSCP or DL RSCPD measurement with as defined in [11, TS 38.133]. If the UE reports a DL RSTD measurement with = 2 or 4 samples as defined in [11, TS 38.133], up to DL RSCPD measurements can be reported associated with the DL RSTD measurement. If the UE reports a UE Rx-Tx time difference measurement with = 2 or 4 samples as defined in [11, TS 38.133], up to DL RSCP measurements can be reported associated with the UE Rx-Tx time difference measurement. Each DL RSCP or DL RSCPD measurement has its own timestamp.

Agreement

Endorse TP#3 below for TS 38.214 Clauses 5.1.6.5

**TP#3*:***

|  |  |  |
| --- | --- | --- |
| ***Reason for change:*** | The following agreement made in RAN1#114bis is not fully or clearly captured in the specification, e.g., the number of windows, the number of the indicated DL PRS resource set(s) for all TRPs should be the same.  **Agreement (RAN1#114bis)**  Adopt the following changes to the previous agreement made in RAN1#114:   |  | | --- | | 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}~~ * the number of the indicated DL PRS resource set(s) per TRP within a time window can be {1, 2}:   + DL PRS resource sets across all TRPs are in one DL PFL     - FFS: For PRS bandwidth aggregation, an indicated DL PRS resource set refers to a combination of linked PRS resource sets   + The number of the indicated DL PRS resource set(s) for all TRPs should be the same * Note: Different PRS resource sets and/or PFLs can be associated with different time windows * Note: the signaling design for the indication of the DL PRS resource sets in the time windows is up to RAN2/RAN3. | |
| ***Summary of change:*** | Modify the text to fully capture the agreement. |
| ***Consequences if not approved:*** | Misalignment between the agreement and the specification. |

**5.1.6.5 PRS reception procedure**

===================== Unchanged parts omitted ======================

The UE, subject to UE capability, may be requested via [higher layer parameter] to perform positioning measurements on indicated DL PRS resource sets occurring within one or two time window(s) indicated by [*higher layer parameter*]. Within each window indicated by [higher layer parameter], the UE expects that the indicated DL PRS resource sets across all *dl-PRS-IDs* are from one DL PRS positioning frequency layer, and that the number of indicated DL PRS resource sets associated with each *dl-PRS-ID* are the same.

===================== Unchanged parts omitted ======================

**R1-2310789** Reply LS on R1-2308644 for CPP RAN2, CATT

RAN2 is requesting additional RAN1 input on CPP. RAN1 response needed. To be handled in agenda item 8.3.

Answer to Q1 as follows:

The associated resource ID and resource Set ID in the report of RSCP can be one of the resource ID(s) and resource Set ID(s) used to obtain the associated UE Rx-Tx time difference when UE report these measurements, as explained below.

Each DL RSCP measurement is obtained from a single DL PRS resource, and each DL RSCP measurement is associated with a single UE Rx-Tx time difference measurement.

The DL PRS resource used to obtain the DL RSCP is:

* the same as the DL PRS resource used to obtain the associated UE Rx-Tx time difference measurement, if the DL UE Rx-Tx time difference is obtained from a single DL PRS resource, or
* one of the DL PRS resources used to obtain the associated UE Rx-Tx time difference measurement, if the DL UE Rx-Tx time difference is obtained from multiple DL PRS resources.

The associated resource IDs and resource Set IDs in the report of RSCPD can be one of the resource IDs and resource Set IDs used to obtain the associated RSTD when UE report these measurements, as explained below.

Each DL RSCPD is obtained from a pair of DL PRS resources, and each DL RSCPD is associated with a single UE RSTD measurement.

The DL PRS resource pair used to obtain the DL RSCPD is:

* the same as the DL PRS resource pair used to obtain the associated UE RSTD measurement, if the DL RSTD is obtained from a pair of DL PRS resources, or
* one of the DL PRS resource pairs used to obtain the associated UE RSTD measurement, if the TOA for DL RSTD is obtained from multiple DL PRS resources ~~pairs, or from a pair of DL PRS resource sets~~.

Include the following agreements in RAN1#114bis as a reference:

|  |
| --- |
| Agreement (RAN1#114bis)  The pair of the DL PRS resources used to obtain a DL RSCPD measurement are either the same as the pair of DL PRS resources used to obtain the associated DL RSTD measurement, or one of the pairs of DL PRS resources used to obtain the associated DL RSTD measurement.   * Note 1: It has no RAN1 impact. It is up to RAN2 on how the DL PRS resource IDs of DL RSCPD measurements are identified/reported.   Agreement (RAN1#114bis)  The DL PRS resource used to obtain a DL RSCP measurement is either the same DL PRS resource used to obtain the associated UE Rx-Tx time difference measurement, or one of the DL PRS resources used to obtain the associated UE Rx-Tx time difference measurement.   * Note 1: a DL RSCP measurement is obtained by measuring a single DL PRS resource from a TRP. * Note 2: It has no RAN1 impact. It is up to RAN2 on how the DL PRS resource IDs of DL RSCP measurements are identified/reported. |

Answer to Q2:

LOS/NLOS indication associated with the resource of RSCP/RSCPD is not required. Rel-17 LOS/NLOS indication for UE RSTD/Rx-Tx time difference measurements applies for the RSCP/RSCPD measurement(s) in the same report.

Response to Q3 will be based on the following:

Additional DL/UL RSCP measurements and additional RSCPD measurements are supported.

* For each reported additional UE Rx-Tx time difference/RSTD measurement, support UE to report up to N\_sample associated DL RSCP/RSCPD measurements.
* For each reported additional UL RTOA/gNB Rx-Tx time difference measurement, support gNB to report up to N\_sample associated UL RSCP measurements.

Response to Q4 will be based on the following:

Each indicated DL-PRS resourceSet can be associated with one indicated time window, or two indicated time windows.

Agreement

Draft LS reply to RAN2 in R1-2312392 is endorsed without the note below:

* Note: N\_sample = 4 by default. N\_sample can be set to 1 or 2 (e.g., via higher layer parameter *reducedDL-PRS-ProcessingSamples* in TS 37.355)*.*

Final LS is agreed in R1-2312393.

Agreement

When an LMF requests a UE, which can be a target UE and a PRU, to perform measurements on indicated DL PRS resource set(s) occurring within an indicated time window.

* The UE may use the indicated DL PRS resource set(s) occurring outside the indicated time window for legacy measurements in addition to the indicated DL PRS resource set(s) occurring inside the indicated time window.
* Introduce an optional UE capability for supporting to perform legacy measurements inside the indicated time window only, and an associated configuration to enable legacy measurements inside the time window only.

##### 2.1.1.2.6 LPHAP (Low Power High Accuracy Positioning)

Agreement

The periodicity value of 20480ms is introduced for positioning SRS for RRC\_INACTIVE state.

**Conclusion**

The periodicity values larger than 10240ms are not introduced for DL PRS in Rel-18.

Agreement

Introduce a new RRC parameter to indicate hyper SFN information in which the positioning SRS is transmitted for the periodicity value of 20480ms.

* The value range is {0, 1} to indicate even or odd hyper SFN.
* The parameter is absent when the periodicity of positioning SRS is less than or equal to 10240ms.

Agreement

TP#1 in section 2.2 of R1-2312302 is endorsed for TS38.213 clause 4.2.

Agreement

TP#2 below is endorsed for TS38.213 clause 4.2.

TP#2:

|  |  |
| --- | --- |
| **Reasons for change** | The condition for maintaining the TA from the last serving cell is unclear – what condition “else” referring to is confusing. |
| **Summary of change** | Remove the confusing wording “else” and reorganize the structure. |
| **Consequences if not approved** | Current wording in the specification is misleading and may cause confusion in implementation. |
| **Text proposal** | 4.2 Transmission timing adjustments  < Unchanged parts are omitted >  If the received downlink timing changes and is not compensated or is only partly compensated by the uplink timing adjustment without timing advance command as described in [10, TS 38.133], the UE changes accordingly. If a UE operates with two TAGs on an active UL BWP of a serving cell, the UE expects that a difference between a first downlink timing associated with a first TAG and a second downlink timing associated with a second TAG is not larger than the CP length for the active UL BWP unless the UE indicates *larger-thanCP-capability*. If a UE indicates *XYZ\_capability*~~, is provided~~ *~~SRS-autonomousTAupdate~~* ~~[10, TS 38.133],~~ and transmits SRS based on a configuration by *SRS-PosResourceSet* in *SRS-PosRRC-InactiveConfig-ValidityArea* in RRC\_INACTIVE state,   * if the UE is provided *SRS-autonomousTAupdate*, the UE may autonomously update at cell reselection; * if the UE is not provided *SRS-autonomousTAupdate*, the UE maintains the of a last serving cell prior to the release of a dedicated RRC connection [11, TS 38.321].   < Unchanged parts are omitted > |

Agreement

From RAN1 perspective, for TA adjustment upon cell reselection within the validity area, UE is not expected to reduce the TA value to be a negative value. There is no RAN1 specification impact.

Agreement

For indication of the NCD-SSB as the pathloss reference RS for the positioning SRS resource set configured in the *RRCRelease* message, the fields *PhysCellId* and *ssb-IndexNcell* pertaining to the IE *SSB-InfoNCell* need to be updated to clarify NCD-SSB can be configured, from RAN1 perspective, for example,

|  |
| --- |
| ***physicalCellId***  This field specifies the physical cell ID of the neighbour cell or NCD-SSB of the serving cell for which SSB configuration is provided. |
| ***ssb-IndexNcell***  This field specifies the index of the SSB for a neighbour cell or of a NCD-SSB of the serving cell. See TS 38.213 [13]. If this field is absent, the UE determines the *ssb-IndexNcell* of the *physicalCellId*  based on its SSB measurement from the cell. |

##### 2.1.1.2.7 Bandwidth aggregation for positioning measurements

Agreement

The new *ReportingGranularityfactor* also supports k = {-3, -4, -5, -6} in addition to {-1, -2}

* These k values are applicable for timing measurements for all applicable positioning methods
  + Support for both DL and UL
  + Support for both FR1 and FR2
* Reply the RAN4 LS R1-2310797, and CC to RAN2 and RAN3.

Agreement

Draft LS reply to RAN4 in R1-2312394 is endorsed. Final LS in R1-2312395.

**Conclusion**

With regards to TEG reporting for PRS/SRS bandwidth aggregation, for Rx, a single Rx or RxTx TEG ID is reported for the aggregated measurement.

Agreement

When the LMF requests aggregated measurements, the following existing requested fields can also be applicable:

* A request for configuring the UE to measure the same aggregated DL-PRS Resources of a TRP with N different UE Rx TEGs
  + Reuse the existing IE: *measureSameDL-PRS-ResourceWithDifferentRxTEGs*
* A request for configuring the UE to measure the same aggregated DL-PRS Resources of a TRP with N different UE RxTx TEGs
  + Reuse the existing IE: *measureSameDL-PRS-ResourceWithDifferentRxTxTEGs*

Agreement

Endorse the TP 2.1-2 in section 2.1.2 of R1-2311464 for TS 38.212 clause 7.3.1.1.2.

Agreement

Endorse the TP 3.1-1 in section 3.1.1 of R1-2311464 for TS 38.214 clause 6.2.1.4.2.

Agreement

If the UE/gNB reports aggregated timing measurement, the single reported RSRP/RSRPP (if reported) is based on aggregated PRS/SRS resources across aggregated PFLs/carriers.

* Note1: it is up to RAN4 whether to define a corresponding requirement
* Note2: for UL, measured SRS signals refer to aggregated SRS resources. For DL, measured PRS signals refer to aggregated PRS resources.

Agreement

Endorse the TP 2.1-1 in section 2.1.1 of R1-2311465 for TS 38.214 clause 6.2.1.4.2

Agreement

Endorse the TP 4.1-1 in section 4.1.1 of R1-2311465 for TS 38.214 clause 5.1.6.5.3

Agreement

The TP below is endorsed for TS38.214

|  |  |
| --- | --- |
| TP 10.1-2 | |
| Reason for change | In the current RAN1 specification, it specifies that the UE may assume that the PRS/SRS resources across the linked PRS/SRS resource sets are linked for bandwidth aggregation. If the linked PRS/SRS resource sets satisfy the listed conditions, the UE should assume these resource sets are linked for the bandwidth aggregation. The current “may assume” is not a clear wording. |
| Summary of change | The UE should assume or should determine that DL PRS resources across the linked DL PRS resource sets which satisfy the above conditions are linked for bandwidth aggregation. |
| Consequences if not approved | The current “may assume” is not a clear wording. |
| Text proposal | **-------------------------------------- TS 38.214 -----------------------------------------------------**  < Unchanged text omitted >  **5.1.6.5.3 PRS bandwidth aggregation for positioning measurements**  When the UE is expected to perform aggregated measurements for bandwidth aggregation across DL PRS positioning frequency layers, the UE expects to be configured with linkage information, via higher layer parameter [*linkage*], between DL PRS resource sets across DL PRS positioning frequency layers. For the linked DL PRS resource sets, the UE is expected to be configured with the same values of QCL, *dl-PRS-Periodicity-and-ResourceSetSlotOffset, dl-PRS-NumSymbols*, *dl-PRS-ResourceTimeGap, dl-PRS-ResourceRepetitionFactor, dl-PRS-ResourceSymbolOffset,* *dl-prs-MutingBitRepetitionFactor,* *dl-PRS-CyclicPrefix*, comb size, power per subcarrier, *NR-MutingPattern*, and *NR-DL-PRS-SFN0-Offset,* and the UE is expected to be configured with DL PRS resources that maintain uniformly spaced DL PRS RE pattern within a symbol across aggregated DL PRS positioning frequency layers. The UE ~~may~~ assumes that DL PRS resources across the linked DL PRS resource sets which satisfy the above conditions are linked for bandwidth aggregation, and the UE may assume phase continuity on the DL PRS resources on same symbol(s); otherwise, the UE does not assume that PRS resources from the linked DL PRS resource sets are linked for bandwidth aggregation.  < Unchanged text omitted >  6.2.1.4.2 SRS bandwidth aggregation for positioning measurements  The UE is expected to be configured with linkage information [*linkage*] on SRS resource sets for positioning across two or three CCs which are linked for bandwidth aggregation. For the linked SRS resource sets, the UE is expected to be configured with the same values of *startPosition, nrofSymbols,* *periodicityAndOffset, slotOffset, alpha, p0,* subcarrier spacing, CP, and comb size, and the UE is expected to maintain phase continuity for the SRS transmission. The UE ~~may~~ assumes that SRS resources across the linked SRS resource sets which satisfy the above conditions are linked for bandwidth aggregation, otherwise, the UE does not assume that SRS resources of the linked SRS resource sets are linked for bandwidth aggregation. For the linked SRS resource sets for bandwidth aggregation across CCs, if an SRS configured by the higher layer parameter *SRS-PosResource,* along with the [switching period] when applicable*,* collides with other signals or channels on a symbol and if the SRS in that symbol is dropped, SRS transmission of the linked SRS resource sets across all CCs is dropped on that symbol.  < Unchanged text omitted > |

##### 2.1.1.2.8 Positioning for RedCap UEs

Agreement

Endorse the TP 2.4-1 in section 2.5.1 of R1-2312343

Agreement

Endorse the TP 2.6-1 in section 2.7.1 of R1-2312343

Agreement

For the values of the starting slot offset for each of the hops following the first hop in time:

* Alt1: the value range can be {0,1,2…, nrof slot in periodicity -1} in slots for the slot offset.
* The value range slot offset for each hop applies to both the periodic and semi-persistent SRS.
* The periodicity in PeriodicityandOffset configured for each hop for a SRS resource with Tx hopping must be the same.

Agreement

The configuration of SRS for positioning with Tx hopping including SCS, CP size and reference point for bandwidth determination is common to all configured SRS for positioning with Tx hopping resource(s).

* The configuration for positioning SRS with frequency hopping is outside any data BWP configuration.

Agreement

For measurements based on DL PRS with Rx frequency hopping or UL SRS with Tx hopping:

* UE/gNB can report either a single-hop or multi-hops measurement.
* Indication of which of a single-hop or multi-hops measurement is optionally reported.
  + Note: mapping of the indicator to performance requirement(s), or impact to performance requirement(s), is up to RAN4

Agreement

For SRS for positioning with Tx hopping n\_0 is the initial frequency hop index defined as n\_0=floor(n\_FirstHop^RB/(m\_hop^SRS-m\_overlap^hop))

* No new parameter is defined

Note: the corresponding working assumption from RAN1#114bis is confirmed with this agreement.

Agreement

For aperiodic positioning SRS with frequency hopping, switching time to/from active UL BWP is added in the minimal time interval between the last symbol of PDCCH triggering A-SRS and the first symbol of the triggered SRS in the first hop.

Agreement

For the determination of collision between PUSCH or PUCCH and the SRS with tx hopping:

* For a transmission of an SRS for positioning symbol with frequency hopping in a hop in symbol and a PUSCH or PUCCH transmissionstarting in symbol, where is the switching time to/from the active BWP, the UE shall apply the dropping rules taking into account:
  + DCI(s) for which the time interval between the last symbol of PDCCH and the SRS in symbol is at least ( + ) symbols
  + DCI(s) for which the time interval between the last symbol of PDCCH and the colliding PUSCH/PUCCH in symbol is at least N2 symbols
    - Note: as in legacy
  + For the calculation of N2, use the smallest SCS between the SCS configured for the SRS with tx hopping and the SCS of the PUSCH

Agreement

The previous agreement above is revised as below

For the determination of collision between PUSCH or PUCCH and the SRS with tx hopping:

* For a transmission of a hop for an SRS resource for positioning with frequency hopping starting in symbol and a PUSCH or PUCCH transmissionstarting in symbol, where is the switching time to/from the active BWP, the UE shall apply the dropping rules taking into account:
  + DCI(s) for which the time interval between the last symbol of PDCCH and the SRS in symbol is at least symbols and additional time duration
  + DCI(s) for which the time interval between the last symbol of PDCCH and the colliding PUSCH/PUCCH in symbol is at least N2 symbols
  + For the calculation of N2, use the smallest SCS between the SCS configured for the SRS with tx hopping, the SCS of the PUSCH, and the SCS of the PDCCH

Agreement

The UE is expected to switch back to the active BWP when the time between two consecutive hops exceeds twice the switching time to/from the BWP.

* Note: this is applicable when UTW is configured or not configured.

**Conclusion**

Comb offset hopping is not supported for positioning SRS with frequency hopping for RedCap UEs.

Agreement

Endorse the TP 2.9-1 in section 2.10.1 of R1-2312344, with deletion of “s” in this text: “in each hops”.

Agreement

Endorse the TP 2.10-1b in section 2.11.1 of R1-2312344

Agreement

Endorse the TP 2.12-1 in section 2.13.1 of R1-2312344

Agreement

Endorse the TP 2.17-1b in section 2.18.1 of R1-2312344

Agreement

TP 2.8-1b in section 2.9.1 of R1-2312652 is endorsed for Section 6.2.1.4.1 in TS 38.214.

Agreement

Update the earlier agreement as follows:

|  |
| --- |
| Agreement  For RedCap UEs positioning transmitting the UL SRS with frequency hopping, regarding the collisions between other UL and DL signals/channels and the UL SRS with frequency hopping, support both of the following options   * Option 1: UL time window where the UE is not expected to transmit other signals/channels and is only expected to transmit FH SRS for positioning.   + FFS details of an UL time window   + Note: it implies that UE drops the transmission of other signals/channels and transmits SRS for positioning * Option 2: new collision rules between the UL SRS with frequency hopping and other UL and DL signals/channels/. Option 2 can apply without or outside UL time window (i.e. option 1)   + FFS: details on the collision rules   Note: it is understood that option 2 is a component of the feature for UL SRS Tx hopping (FG 41-5-2), and option 1 is a separate feature group.  Note: UE is not expected to be configured with a SRS for positioning hopping cycle, including the switching time from/to active BWP required ahead of the first hop and after the last hop, partially overlapping with UTW. |

##### 2.1.1.2.9 Approved LSs

R1-2312434 Reply LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning RAN1, Nokia LS out Rel-18 NR\_pos\_enh2-Core To: RAN2 cc: RAN3, RAN4

R1-2312630 LS on the request for specific SL PRS resource characteristic(s)/SL-PRS resource configuration RAN1, Qualcomm Incorporated LS out Rel-18 NR\_pos\_enh2-Core To: RAN2, RAN3

R1-2312393 Reply LS on CPP RAN1, CATT LS out Rel-18 NR\_pos\_enh2-Core To: RAN2 cc: RAN4, RAN3, SA2

R1-2312395 Reply LS on SRS and PRS bandwidth aggregation for positioning RAN1, ZTE LS out Rel-18 NR\_pos\_enh2-Core To: RAN4 cc: RAN2, RAN3

#### 2.1.2 Remaining Open issues

None.

## 2.2 RAN2

#### 2.2.1 Agreements

##### 2.2.1.1 Decisions during RAN2#123bis

2.2.1.1.1 General aspects

Agreement:

Capture as a NOTE in the running LPP CR for bandwidth aggregation that the resources aggregated across PFLs should be from the same TRP. Wording of the NOTE to be resolved in CR email discussion.

Agreement:

Send an LS to RAN4, Cc: RAN1, offering the two alternatives of “SSB for the currently camped cell” and “same as stored RSRP”, and ask them for a preference, requesting a timely response.

Agreements:

TP from R2-2310854 can be migrated into the LPP running CR.

FFS exact IE structure of the request for location+measurements.

A Note for clarification can be added to address concern that the location is based on the measurement:

Note: For PRU, if PRU is requested to return both location estimate and measurements, the location information is determined independently of the reported measurements.

Agreements:

Introduce the UE capability on supporting positioning mode(i.e. UE based, UE assisted) per positioning method in SLPP.

Introduce the UE capability on supporting periodical reporting per positioning method in SLPP.

Introduce the UE capability on supporting lower value of response time (e.g. 10ms) per positioning method in SLPP.

Introduce a single UE capability on supporting RAT-dependent positioning integrity for DL-TDOA and DL-AoD respectively. Additional finer-grained capabilities are not excluded if a need is found.

Introduce the UE capability on UE supporting preconfigured SRS, in both RRC and LPP.

Don’t introduce the UE capability on supporting activation indication/request of the pre-configuration SRS preconfigured SRS, it can be a component for the capability on supporting pre-configured SRS.

Working assumption:

Don’t introduce the UE capability on supporting alignment of PRS to fixed (e)DRX.

2.2.1.1.2 SL positioning

Agreements:

The configuration of SL-PRS resource pool to the UE shall follow the same principle as SL communication, i.e. rely on NW/gNB for in coverage and pre-configuration for out of coverage case.

The SL-PRS sequence ID can be provided to the TX UE by the LMF/Server UE (via SLPP signalling). If the Tx UE does not receive a sequence ID via SLPP message from the server, the Tx UE is expected to select one by itself. FFS exact SLPP signalling.

For absolute sidelink positioning, the locations of the anchor UEs are provided to the entity that does the location calculation.

Agreements:

Support the following at least the following contents within the MAC CE for SL-PRS resource request: FFS whether both of them can be items with a list

 Destination ID (indicated by an index rather than the complete destination ID)

 Priority

When UL-SCH resource cannot accommodate SL-PRS resource request MAC CE plus its subheader, the UE should send SR to the gNB, either by SR-PUCCH or SR-PRACH.

SL-PRS resource request MAC CE is cancelled when the MAC CE is transmitted. FFS the other conditions to cancel the MAC CE.

SR triggered by the SL-PRS resource request MAC CE is cancelled when the MAC CE is transmitted. FFS the other conditions to cancel the SR.

Do not support activation/deactivation of the CG type2 by the UE sending a MAC CE.

CG confirmation MAC CE is needed when the DCI for CG type 2 activation/deactivation command is successfully received.

Decide on the issue of whether to reuse the legacy Sidelink Configured Grant Confirmation MAC CE when the CG configurations are provided by RAN1.

Confirm that dedicated/shared RP can be configured at the same time.

Leave the resource pool selection to UE implementation among resource pools allowing SL-PRS transmission when resource selection is triggered for SL-PRS transmission.

Legacy conditions for resource selection/reselection check can be reused when the shared pool is selected.

Legacy conditions for resource selection/reselection can be the baseline when the dedicated pool is selected.

The following two conditions are not applicable for the conditions for resource selection/reselection for dedicated resource pool.

 if PSCCH duration(s) and 2nd stage SCI on PSSCH for all transmissions of a MAC PDU of any selected sidelink grant(s) are not in SL DRX Active time as specified in clause 5.28.3 of the destination that has data to be sent.

 if the selected sidelink grant cannot accommodate a RLC SDU by using the maximum allowed MCS configured by RRC in sl-MaxMCS-PSSCH associated with the selected MCS table and the UE selects not to segment the RLC SDU

If the transmission with the selected grant cannot fulfill the remaining SL-PRS delay budget, resource selection/reselection is performed.

The following legacy parameters are selected/reselected when the TX resource (re-)selection is triggered in the shared resource pool.

(a) Resource reservation interval, when the transmission of periodic SL-PRS

(b) COUNTER value, when the transmission of periodic SL-PRS

(c) Number of HARQ retransmissions

(d) frequency resources within the range

The following parameters are selected/reselected when the TX resource (re-)selection is triggered in the dedicated resource pool. [15/15] FFS the number of retransmissions.

(a) resource reservation interval, when the transmission of periodic SL-PRS

(b) COUNTER value, when the transmission of periodic SL-PRS

When resource selection is triggered for the transmission of both data and SL-PRS on shared resource pool, the priority is determined by MAC as the higher priority of the two for the usage of both MAC and PHY. Send a reply LS to RAN1

The priority of the data should follow the priority of PRS when there is only SL-PRS pending for transmission on shared resource pool.

For a SL grant in dedicated resource pool, MAC layer selects the destination that has the highest priority of the SL PRS for transmission. FFS the other criteria for destination selection in shared resource pool

For a SL Grant in shared resource pool, MAC layer selects the destination with the highest priority of the SL-PRS and SL-SCH data. FFS the other criteria for destination selection in shared resource pool

When the destination of the shared resource pool is already selected when there are both SL-PRS and data pending for transmission, SL PRS is transmitted when there is remaining resources for SL-PRS after the SL-SCH with higher priority has already been allocated; if there is no higher priority data, SL-PRS can be transmitted.

If a SL PRS is transmitted in the SL grant in the shared pool, legacy LCP rules can be performed to construct MAC PDU associated with the SL grant after TBS is provided from PHY.

If the selected destination only has pending SL PRS, the MAC entity should generate MAC PDU containing only padding MAC subPDU for the transmission along with SL-PRS.

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.

Collision handling between SL/UU for SL-PRS is based on the L1 priority.

SL-PRS is prioritized over PUSCH/PUCCH when

 The value of the priority of PUSCH/PUCCH is higher than a threshold, as in legacy

 The value of the priority of SL-PRS is lower than a threshold

Send an LS to RAN1 about the agreement on collision handling.

Agreement:

When resource selection is triggered for SL-LCH data transmission, dedicated pool should not be selected.

Agreements:

Not support SLPP segmentation in Rel-18.

6 octets length session ID

Not to support initiator ID unless companies identify the use case for it.

FFS to introduce endSession Boolean value in the message header with/without the messageBody. When set to FALSE, endSession indicates an active SLPP session. When set to TRUE, endSession indicates the SLPP session has concluded. When set to TRUE, the message should always request an acknowledgement

Introduce an additional SLPP PDU (e.g., SLPP-PDU-Common-SL-PRS-Methods-Contents), which specifies common content for SL-PRS methods only. We still keep positioning specific PDU for future proof.

Working assumption: Add Range and Direction as one choice in the LocationCoordinates IE. We may revise it if RAN1 have different view.

Introduce the following SLPP position methods:

- SL-RTT,

- SL-AoA,

- SL-TDOA,

- SL-TOA.

The capability exchange can be performed between two peer UEs

Keep the EN - Editor’s note FFS if any UEs can request the capabilities from the peer UE., FFS on Endpoint A can also be the server UE

Same as proposal in 401, the provide assistance data message contains multiple SL-PRS configurations.

Reuse the Request/Provide Assistance Data messages for server to get the assistance data from Anchor UEs. FFS on how to capture.

The agreements for SLPP can be applied for LMF involved case unless the issue is identified. FFS on session ID handling since it is also related to forwarding case.

The server (LMF or UE) is expected to downselect based on which anchors are useful (considering anchor UE capabilities, geometry, QoS requirements, etc.), no stage 3 impact to our work. But related to SA2 work. Rely on companies’ internal coordination.

Not to discuss in RAN2 on Server UE Selection Indication procedure, rely on internal coordination with SA2 colleagues.

Not to introduce providing discovery information procedure.

2.2.1.1.3 RAT-dependent integrity

Agreement:

The identified signalling used for integrity information transmission can be reused for the beam related error source for DL-AOD positioning. Details can be discussed in CR drafting.

2.2.1.1.4 LPHAP (Low Power High Accuracy Positioning)

Agreements:

Introduce an autonomous TA adjustment enabler in the area-specific SRS configuration. If configured by the network, subject to UE capability, UE autonomously adjusts the stored RSRP when cell-reselection happens.

Maintain the WA that a new resume cause is introduced for SRS configuration request. Implement the running CR accordingly and finalise the decision at next meeting when all WIs conclude.

There is only one SRS configuration per validity area.

Rely on network explicit release as a baseline for release of the SRS configuration in Rel-18. FFS if any other solution is needed. This agreement does not revert the existing agreement about stopping the area-specific TA timer when the UE reselects out of the validity area.

2.2.1.1.5 RedCap positioning, Carrier Phase Positioning, and Bandwidth aggregation

Agreements:

For Multi-RTT positioning, if requested by LMF, the UE reports the RSCP measurement along with the UE Rx-Tx time difference measurement. Extend NR-Multi-RTT-SignalMeasurementInformation IE and add DL RSCP measurement as an optional measurement quantity to be reported along with nr-UE-RxTxTimeDiff measurement.

Extend NR-Multi-RTT-SignalMeasurementInformation IE to include a timestamp associated with the reported DL RSCP measurement and a quality indication for the reported RSCP measurement.

For DL-TDOA positioning, if requested by LMF, the UE reports RSCPD measurement along with the RSTD measurement. Extend NR-DL-TDOA-SignalMeasurementInformation IE and add DL RSCPD measurement as an optional measurement quantity to be reported along with nr-RSTD measurement.

Extend NR-DL-TDOA-SignalMeasurementInformation IE to include a timestamp associated with the reported DL RSCPD measurement and a quality indication for the reported RSCPD.

Update the field description for nr-los-nlos-Indicator in NR-DL-TDOA-SignalMeasurementInformation IE to clarify that the indication applies also to the RSCPD measurement associated with the RSTD measurement in the reported DL-TDOA measurement.

Update the field description for nr-los-nlos-Indicator in NR-Multi-RTT-SignalMeasurementInformation IE to clarify that the indication applies also to the RSCP measurement associated with the UE Rx-Tx time difference measurement in the reported Multi-RTT measurement.

For UE-assisted DL-TDOA positioning, to support Simultaneous measurement by target UE and PRU, extend the NR-DL-TDOA-RequestLocationInformation IE to be able to request RSCPD measurement.

For UE-assisted Multi-RTT positioning, to support Simultaneous measurement by target UE and PRU, extend the NR-Multi-RTT-RequestLocationInformation IE to be able to request RSCP measurement.

FFS impact of supporting simultaneous measurements for the legacy measurements that are already there in the RequestLocationInformation IEs. Capture in the reply LS on PRUs to RAN1 the question of what the impact for these measurements is.

Extend the NR-DL-TDOA-RequestLocationInformation IE and NR-Multi-RTT-RequestLocationInformation IE to include time window(s) configuration and DL PRS resource sets occurring within the indicated time window(s).

Each time window configuration in Request Location Information IE contains the following: Start of time window, Duration of time window, Periodicity of time window (Optional). The number of time windows is configurable and signalled as part of the time window configuration.

For UE-based DL-TDOA positioning, extend the NR-DL-TDOA-ProvideAssistanceData IE to include the following PRU related information: reference RSCPD measurement reported by PRU, timestamp associated with the reference RSCPD measurement, and PRU location information.

Enhance the PRS configuration assistance data provided in NR-DL-PRS-AssistanceData IE in the Provide Assistance Data message for DL-TDOA and multi-RTT positioning as follows:

- indicate the DL PRS resource sets IDs from two or three different PFLs that are linked for DL PRS BW aggregation that UE needs to use for the joint measurement (FFS if multiple combinations of linked PFLs can be indicated, e.g., 2+2 and others).

- extend the NR-DL-TDOA-ReportConfig IE and add a new timingReportingGranularityFactor-Ext-r18 field with values {-1, -2}. Other values FFS.

- introduce a new NR-Multi-RTT-ReportConfig-Ext-r18 IE add a new timingReportingGranularityFactor-Ext-r18 field with values {-1, -2}. Other values FFS.

Extend the NR-DL-TDOA-SignalMeasurementInformation IE and add a new field to indicate whether the reported RSTD/RSRP/RSRPP measurement is a joint measurement or not.

Extend the NR-Multi-RTT-SignalMeasurementInformation IE and add a new field to indicate whether the reported UE Rx-Tx time difference/RSRP/RSRPP measurement is a joint measurement or not.

LS to RAN1 to ask about the additional FFS points from tables 1/2/3 of R2-2310998. Also including FFS point on whether the PRU measurements in assistance data also include legacy measurements, and confirm whether one TRP can have multiple pairs of aggregated PFLs.

2.2.1.1.6 Approved LSs

[R2-2311386](file:///C:\\Users\\mtk16923\\Documents\\3GPP%20Meetings\\202310%20-%20RAN2_123bis,%20Xiamen\\Extracts\\R2-2311386%20LS%20to%20RAN1%20on%20extended%20PRS%20and%20SRS%20periodicity.docx" \o "C:Usersmtk16923Documents3GPP Meetings202310 - RAN2_123bis, XiamenExtractsR2-2311386 LS to RAN1 on extended PRS and SRS periodicity.docx) LS on extended PRS and SRS periodicity Huawei LS out Rel-18 NR\_pos\_enh2-Core To:RAN1 Cc:RAN3

* Approved

[R2-2311387](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311387%20LS%20to%20RAN1RAN4%20on%20TA%20validation%20for%20LPHAP.docx) LS on TA validation for LPHAP Huawei LS out Rel-18 NR\_pos\_enh2-Core To:RAN1,RAN4

* To be revised in accordance with the agreement under R2-2311388
* Approved with the changes above as R2-2311568

[R2-2311389](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311389_(Reply%20LS%20on%20SL-PRS%20Delay%20Budget).docx) Reply LS on the resource selection window for Scheme 2 in a dedicated resource pool for positioning Qualcomm Incorporated LS out Rel-18 NR\_pos\_enh2-Core To:RAN1,SA2

* Approved

[R2-2309597](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309597%20Reply%20LS%20to%20SA2%20on%20reporting%20positioning%20measurements%20taken%20in%20RRC_IDLE.docx) Reply LS to SA2 on reporting positioning measurements taken in RRC\_IDLE CATT LS out Rel-18 NR\_pos\_enh2, 5G\_eLCS\_Ph3 To:SA2

* Approved as R2-2311381

[R2-2311565](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311565%20Reply%20LS%20on%20R1-2308644%20for%20CPP.doc) Reply LS on R1-2308644 for CPP CATT LS out Rel-18 NR\_pos\_enh2 To:RAN1 Cc:RAN3, RAN4, SA2

* Approved

R2-2311599 Reply LS on Priority Handling for SL Positioning Intel LS out Rel-18 NR\_pos\_enh2 To:RAN1

* Approved

[R2-2311391](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311391.docx) LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning Nokia LS out Rel-18 NR\_pos\_enh2-Core To:RAN1

* Approved (email discussion [AT123bis][427])

##### 2.2.1.2 Decisions during RAN2#124

2.2.1.2.1 General aspects

Agreements:

Revisit the formula for determining CG occasion when the RRC configuration is fully determined

There can be zero or one SR configuration for SL-PRS resource request MAC CE

At most one PUCCH resource for SR is configured for SL-PRS resource request MAC CE.

Come back to this issue of determining the number of SL-PRS retransmission when the signaling details, i.e, the RRC configurations and L1 parameters are completed

At SCI reception, the source ID in SCI for SL-PRS dedicated resource pool when configured as 12 bit is the 12 LSB of the destination ID of the peer UE.

The number of bits for destination ID is 5 bits, the same as in legacy SL-BSR and the number of bits for priority is 3 bits.

eLCID is adopted for SL-PRS request MAC CE.

SL-PRS’s priority is on the same level as data from STCH and lower than SCI reporting MAC CE, Sidelink Inter-UE Coordination Request MAC CE and Sidelink Inter-UE Coordination Information MAC CE, Sidelink DRX Command MAC CE and data from SCCH.

Agreement:

If the CR to TS 37.340 is agreed, the rapporteurs will add the TS to the WID for RAN#102.

Agreements:

The carrier supporting ranging/sidelink positioning should be prioritized if the UE is configured by the upper layer to perform sidelink positioning.

For ranging/sidelink positioning, the UE may perform measurements on the non-serving frequencies that support ranging/sidelink positioning or the frequencies that may provide inter-carrier configurations for that frequencies for cell selection/reselection.

For ranging/sidelink positioning, the UE considers itself to be out of coverage if on a certain frequency, it cannot find any cell that satisfy the S criterion.

It needs to be captured in TS 37.340 that “Sidelink positioning cannot be configured in MR-DC in this release”.

Agreements:

SL-PRS-related capabilities are grouped according to the table in R2-2312762.

Positioning method specific capabilities are included in the positioning method specific capability IE.

RAN2 to agree that periodical reporting capability is indicated per positioning mode per positioning method.

10ms granularity response time is indicated per positioning mode per positioning method.

Agreements:

Agree the following proposals from R2-2312020 Report of [Post123bis][412][POS]

- 1 Close the open issue 19, remove the “Editor's note FFS With regards to duplicate detection: the applicability of the 10min inactivity rule. With regards to retransmission: the applicability of the timeout period of 250ms”.

- 2 Close open issue 26 and 30, Reuse the Request/Provide Assistance Data messages for server to get anchor UE’s location, and the ENs for issue 26 and 30 can be removed.

- 3 Close the open issue 25 for stage 3, and remove the corresponding ENs.

- 4 Close open issue 41, sequenceID is included in Provide Assistance Data message.

- 5 Request of sequenceID is included in CommonSL-PRS-MethodsIEsRequestAssistanceData, the value should be boolean and optional.

Check the changes on latest RAN1 parameters in R2-2312023, Draft TS 38.355 v1.3.0 via postmeeting email discussion.

Close the open issue 5 and 6 on Session handling for LMF involved case:

- session ID is OPTIONAL in the SLPP message for the communication between target UE and the LMF;

- Session ID is assigned by target UE and used for communications between UEs.

Close the open issue 9, endSessionFlag is not introduced in Rel-18

Close the open issue 24, 28, 31 on UE role. RAN2 will not capture the description of UE role for procedures.

Close the open issue 31 on Need code, delta signalling is not supported and Need code is not supported unless companies identify the real need.

Open issue 50 on relative location/velocity can be checked in maintenance phase.

Close the open issue 52, application layer ID is used in the SLPP specification.

Close the open issue 53 on QoS for AoA, capture the TP from R2-2312724 in SLPP specification.

Close the open issue 49, scheduled location between UE and the LMF is supported in the SLPP specification. E-CID like trigger event is not supported in the SLPP specification.

Proposal 2 from R2-2312127 is not pursued;

Update the TS 38.355 based on the proposal 3 from R2-2312127 on the periodical reporting;

Proposal 4 from R2-2312127 to change the max value for SL-RTT-AdditionalPathList and SL-TDOA-AdditionalPathList to 8 has been covered by latest RAN1 parameters “the maximum number of additional paths for SL-RSTD, SL-RTOA and SL Rx – Tx time difference to be equal to 8. The maximum number of additional paths for SL-AoA is equal to 2”, Will update the TS 38.355 accordingly;

Note: RAN1 has agreed

Define the maximum number of additional paths for SL-RSTD, SL-RTOA and SL Rx – Tx time difference to be equal to 8. The maximum number of additional paths for SL-AoA is equal to 2.

Update the TS 38.355 based on the proposal 10 from R2-2312807

- Clarify that RangeResult field under the LocationCoordinates IE of the CommonIEsProvideLocationInformation IE is in metric units of meters and update the value range to INTEGER (0..999).

- Clarify that the AzimuthResult and ElevationResult field under the LocationCoordinates IE of the CommonIEsProvideLocationInformation IE is in metric units of degrees and update the ElevationResult value rage to INTEGER (0..89).

Proposal 2 from R2-2313329 on the TP for section 4.2 of SLPP is not pursued;

Proposal 3 from R2-2312724 on the TP Reference direction can be discussed in maintenance phase;

RAN2 confirm that the support of SLPP is fully optional for the UE, i.e. there is no prerequisite for a SL positioning capable UE to support LPP. No specification impact;

RAN2 confirm that adopt the LPP approach (i.e. left to UE implementation) for SLPP on the support of multiple parallel SL positioning sessions. No specification impact.

RAN2 confirm that Separate LPP (for Uu positioning) and SLPP(for SL positioning) is used as the baseline for hybrid positioning..

Proposal 6 from R2-2313329 on sessionType is not pursued;

Proposal 7 from R2-2313329 on common time reference has been covered by RAN1 new parameters sl-Timestamp, tx-Time-Info. Will update the TS 38.355 accordingly.

Proposal 5 and 6 from R2-2312254 on SA2 issues are not pursued; Companies can discuss this in SA2 directly.

2.2.1.2.2 SL positioning

Agreement:

SLPP forwarding functionality is not specified in SLPP spec. RAN2 will provide support to other groups on this aspect as needed.

Agreements:

To distinguish the Reference UE/Anchor UE from Located UE, the UE announced as anchor UE in the RSPP metafield should also indicate the availability of known location (1-bit indication).

Multiple UE roles can be indicated in the RSPP metafield.

To be discussed offline whether this information is captured as an SLPP IE, a parameter list in SLPP spec, or a parameter list sent to SA2/CT1 in an LS.

Agreements:

Specify the RSPP metadata in SLPP specification as an SLPP IE/separate module (in a separate section and is not expected to be included in any SLPP message).

LS to SA2 on the agreements on the RSPP metadata.

No need to include the following parameters in RSPP metadata:

- metadata type (i.e., announced, required, satisfied);

- SLPP support;

- serving PLMN;

- positioning methods of anchor UE.

Agreements:

Uplink transmission can be considered as prioritized when uplink cannot be transmitted together with sidelink and none of the V2X sidelink communications or NR sidelink communications or sidelink PRS transmissions are prioritized.

The prioritization between SR triggered by UL-SCH and SL-PRS shall follow the same principle as that between UL-SCH and SL-SCH, i.e. based on configured UL/SL prioritization thresholds.

The prioritization between SR triggered by SL-SCH and SL-PRS shall be based on direct comparison between the SL priority for SL-PRS and the SL logical channel that triggered the SR.

Reuse the legacy threshold for SL communications for SL-PRS prioritization.

SL-PRS resource request MAC CE:

 May be cancelled when SL grant can accommodate all the pending SL-PRS transmission.

 Shall be cancelled when a MAC PDU is transmitted and this MAC PDU contains SL-PRS resource request MAC CE that indicates all the pending SL-PRS to be transmitted since the last event the MAC CE is triggered.

Triggered SR shall be cancelled

 when SL grant can accommodate all the pending SL-PRS transmission.

 when a MAC PDU is transmitted and this MAC PDU contains SL-PRS resource request MAC CE that indicates all the pending SL-PRS to be transmitted since the last event the MAC CE is triggered.

Reuse the legacy counter mechanism for SL-PRS transmission, i.e., the counter is maintained per SL process. This applies for both shared and dedicated pool.

SL-PRS resource request MAC CE includes at least a list of (destination, priority).

Implement support for retransmission on dedicated resource pool.

When there are both SL-PRS and SL-SCH data pending for transmission at resource selection, the resource selection should be within the smaller one of the SL-PRS delay budget of the pending SL-PRSs and PDB of the logical channels.

Agreements:

UE should perform connection setup/resume request with the following conditions:

(a) SL-PRS transmission is triggered; and

(b) the carrier for SL-PRS transmission is included in the frequency list in the system information; and

(c) the system information does not have resource pool configuration for Scheme2 selection.

Transmission of SidelinkUEInformationNR for SL-PRS is needed for the UE to let gNB know the UE’s interest in SL-PRS transmission or the UE’s no longer interested.

The UE uses UAI to request CG configuration when periodic SL-PRS transmissions are needed.

Conditions for UE to perform sidelink positioning, including SL-PRS transmission, are aligned with legacy sidelink communication conditions.

If the UE is in RRC\_CONNECTED, when the UE is configured with SL-PRS resource allocation scheme 1 or scheme 2 configurations, conditions for transmitting SL-PRS follow the corresponding legacy sidelink communication conditions.

For cell-reselection triggered for SL-PRS transmission, UE follows legacy behaviour for sidelink communication.

Agreements:

Introduce a new SIB for sidelink positioning parameters.

Introduce new preconfigurations for sidelink positioning.

Agreements:

Ask RAN1 for the maximum number of parallel processes that a Tx UE can use for dedicated SL-PRS transmission in dedicated/shared pool. Can be included in a general LS with questions to RAN1.

Ask RAN1 about retransmission of SL-PRS in shared pool when accompanying data have been acknowledged.

2.2.1.2.3 RAT-dependent integrity

Agreements:

Introduce error bounds for all levels at which location can be provided, as optional fields. Conditions for inclusion can be worked on in CR implementation.

No separate error bound is introduced for the reference point as distinct from the location bound; the error bound for the location includes any error bound associated with the reference point. Can be clarified in field description.

The Probability of Onset of TRP fault and Mean TRP fault duration work for all error sources, with ranges following A-GNSS parameters (0..255 and 1..3600 respectively). To be checked in CR review.

2.2.1.2.4 LPHAP (Low Power High Accuracy Positioning)

Agreements:

Do not restart the TAT when the UE autonomously adjusts the TA.

Can be discussed in CR implementation if there is a need to capture inter-layer interaction for autonomous TA adjustment.

Agreement:

For preconfigured SRS, the configuration is released only when the network releases it explicitly.

Agreement:

Implement the already agreed network explicit release in the running CR. Additional behaviour can be discussed in maintenance.

Agreement:

Rel-18 positioning WI is complete from RAN2 perspective.

Agreement:

Access category 8 is used for the RRC resume procedure for SRS configuration/activation request.

Agreements:

For SRS for positioning activation/request procedure(s), confirm the WA, i.e. when the UE reselects out of the positioning validity area during SRS transmission, the UE may send an RRC message to the network for SRS configuration request. The SRS configuration request is sent in the RRC message RRCResumeRequest via a new resume cause.

For preconfigured multiple SRS configurations, confirm the WA, i.e. UE sends a new ResumeCause of RRCResumeRequest message to indicate the change or activations of SRS configuration when different SRS configuration is selected due to change of validity area, or when a new SRS configuration is selected where none was previously in use.

The same new resume cause is used for both cases.

Agreement:

Confirm the WA not to introduce the UE capability on supporting alignment of PRS to fixed (e)DRX.

2.2.1.2.5 RedCap positioning, Carrier Phase Positioning, and Bandwidth aggregation

Agreements:

RAN2 will align with RAN1 guidance on the granularity of the time window.

RAN2 will align with RAN1 guidance on the inclusion of RSCP in the PRU info (also any legacy measurements).

Support changes of location in PRU Info using the Cond NotSameAsPrev for relative location in NR-TRP-LocationInfo when PRU location is signalled from the LMF in assistance data.

Agreements:

nrMaxNumPRS-BandWidthAggregation-r18 (Max number of linkage information) is 256. Equivalent number for SRS can be discussed in CR finalisation.

The available on-demand DL-PRS configurations supporting DL-PRS bandwidth aggregation are indicated via a group of 2 or 3 DL-PRS-Configuration-ID's in IE NR-On-Demand-DL-PRS-Configurations. Up to 8 such groups can be indicated in IE NR-On-Demand-DL-PRS-Configurations.

The IE NR-On-Demand-DL-PRS-Request can include a list of preferred aggregated DL-PRS configurations in the order of preference, where each aggregated DL-PRS configuration is addressed by its SEQUENCE-index in the IE NR-On-Demand-DL-PRS-Configurations.

The requested aggregated PFLs can be indicated by its SEQUENCE-index in the IE NR-On-Demand-DL-PRS-Information in IE NR-On-Demand-DL-PRS-Request. The UE can include a list of preferred aggregated DL-PRS configurations in the order of preference.

Agreement:

The question of whether to use a new MAC CE for semi-persistent SRS activation with bandwidth aggregation can be discussed in maintenance.

2.2.1.1.6 Approved LSs

[R2-2313796](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313796%20LS%20on%20introduction%20of%20RAT-Dependent%20integrity.docx) LS on introduction of RAT-Dependent integrity CATT LS out Rel-18 NR\_pos\_enh2 To:SA2 Cc:CT4, RAN1

* Approved (email discussion [AT124][404])

#### 2.2.2 Remaining Open issues

None.

## 2.3 RAN3

#### 2.3.1 Agreements

2.3.1.1 Decisions during RAN3#121bis

2.3.1.1.1 General aspect

Endorse the BL CRs as usual business.

2.3.1.1.2 SL positioning

On SL Positioning authorization:

RAN3 agreed to introduce a single authorization information IE for Ranging/SL positioning service, that is common for all the UE types. And send the LS to SA2. (final LS in R3-235933)

The following TPs are agreed:

* (TP for BL CR TS 38.413) clarification on Ranging and Sidelink Positioning Service Information in [R3-235792](file:///F:\会议文件\RAN3\2023年\RAN3_121bis厦门\Inbox\R3-235792.zip) Agreed
* (TP for BL CR TS 38.423) Clarification on Ranging and Sidelink Positioning Service Information in R3-235793 Agreed
* (TP for BL CR TS 38.473) Clarification on Ranging and Sidelink Positioning Service Information in R3-235794 Agreed

2.3.1.1.3 LPHAP

The following agreements are reached:

* The following WA is turned into an agreement:
* LMF provides the validity area as a list of cells, and SRS recommendation to the serving gNB. The serving gNB replies with a single SRS configuration (as in legacy positioning information exchange procedure).
* Agree to take SRS transmission characteristics with additional information as SRS recommendation, what additional information to be added and possible node behavior needs to be further discussed.
* The serving gNB may include a list of cells identifying a modification of the validity area in the response message to the LMF.
* Validity area for NRPPa is a list of cells, identified by NR CGIs.
* Define a new non-UE specific (class 2) procedure in NRPPa to reserve or cancel the reservation of area-specific SRS within VA, the details of what is included in this procedure needs to be further discussed (e.g.the area-specific SRS configuration and a list of cells).
* LMF should be involved for the new SRS allocation when UE moves out of the validity area. It’s up to LMF to allocate new area-specific SRS or legacy SRS for the UE.
* WA: The last serving gNB could notify LMF the UE moves out of the validity area by sending the Positioning Information Update message with a new NR CGI where the UE request for SRS configuration.

The following TPs are agreed:

* R3-235811 (TP to BL CR for TS 38.455) Support of cross-cell SRS configuration
* R3-235812 (TP to BL CR for TS 38.305) Support of cross-cell SRS configuration
* R3-235814 (TP to BL CR for TS 38.473) Support of LPHAP configuration over F1
* R3-235815 (TP to BL CR for TS 38.413) Support of cross-cell SRS configuration
* R3-235934 (TP to BL CR for TS 38.470) Support of cross-cell SRS configuration

2.3.1.1.4 LMF-based Integrity

No discussion in RAN3.

2.3.1.1.5 RedCap positioning, Carrier Phase Positioning, and Bandwidth aggregation

Some progress for UL CPP, corresponding TPs are agreed:

* R3-235813 (TP to BL CR for TS 38.455) Update of CPP parameters Agreed
* R3-235829 (TP to BL CR for TS 38.473) Update of CPP parameters Agreed

2.3.1.1.6 Approved LSs

R3-235933 Reply LS on Authorization and Provisioning for Ranging/SL positioning service, To: SA2; CC: RAN2, CT4

2.3.1.1 Decisions during RAN3#122

2.3.1.2.1 General aspect

Endorse the BL CRs, and noted the Work plan.

For LPHAP, on support of SRS Reservation Notification procedure, no consensus on whether to keep/remove the procedure from the NRPPa/F1AP BL CRs, based on the post-meeting email discussion, it’s concluded that the WI should be extended to the next quarter. The announcement of RAN3 Chair could be found below:

* The Rel-18 Positioning WI extends to next quarter, pls rapporteur provide SR report and WID extension to RAN#102.

2.3.1.2.2 SL positioning

Clarification on the relationship between SL Positioning and NR V2X/5G Prose Service:

Add semantics description for *Ranging and Sidelink Positioning Service Information* IE, indicating it’s only applied when the UE is authorized for NR V2X services and/or 5G ProSe services.

Corresponding TPs are agreed:

* R3-237387 (TP to TS 38.413) Clarification on Ranging and Sidelink Positioning Service Information Agreed
* R3-237536 (TP to TS 38.423) Clarification on Ranging and Sidelink Positioning Service Information Agreed
* R3-237639 (TP to TS 38.473) Clarification on Ranging and Sidelink Positioning Service Information Agreed

On SL-PRS resource allocation, LS to RAN2 is approved:

* R3-237860 LS on LMF involvement in SL-PRS resource allocation To: RAN2，CC: RAN1, SA2

2.3.1.2.3 LPHAP

Turn WA into an agreement:

＂The last serving gNB notifies LMF when the UE moves out of the validity area by sending the Positioning Information Update message with a new NR CGI where the UE request for SRS configuration.＂

There is no need for a new cause value or indicator for XnAP UE Context Retrieval Request message.

TPs are agreed:

* R3-237917(TP for BL CR to TS 38.305) on support of LPHAP Agreed
* R3-237918(TP for BL CR to TS 38.455) on support of LPHAP Agreed
* R3-237919(TP for BL CR to TS 38.473) on support of LPHAP Agreed

2.3.1.2.4 LMF-based Integrity

No further action in RAN3.

2.3.1.2.5 RedCap positioning, Carrier Phase Positioning, and Bandwidth aggregation

For BW aggregation and CPP, TPs are agreed:

* R3-237920 (TP for BL CR to TS 38.455) on support of BW aggregation and CPP Agreed
* R3-237921 (TP for BL CR to TS 38.473) on support of BW aggregation and CPP Agreed

2.3.1.2.6 Approved LSs

On SL-PRS resource allocation, LS to RAN2 is approved:

* R3-237860 LS on LMF involvement in SL-PRS resource allocation To: RAN2，CC: RAN1, SA2

2.3.2 Remaining Open issues

The following issues to be further discussed in the coming meeting.

For SL Positioning:

* If any RAN3 impact is identified by RAN2/RAN1 on SL-PRS resource allocation.

For LPHAP:

* Whether SRS Reservation procedure is required for NRPPa/F1AP, and corresponding details. (key issues)

For BW Aggregation:

* Whether to enhance Positioning Activation/Deactivation messages to activate/deactivate the aggregated carriers.
* Support of k values {-3, -4, -5, -6} in addition to {-1, -2}, pending to RAN1/RAN4 definition.

For RedCap Positioning:

* NRPPa and F1AP design on support of RedCap Positioning, taking RAN1/RAN2/RAN4 agreements into account.

Others:

* Any other RAN3 impact could be discussed, taking into account the RAN1/RAN2/RAN4 agreements or incoming LS.

## 2.4 RAN4

#### 2.4.1 Agreements

2.4.1.1 Decisions during RAN4#108bis

##### 2.4.1.1.1 General aspects

##### 2.4.1.1.2 RF

* Discussions focused on guard period for SRS BW aggregation for positioning:
  + The WF capturing agreements is approved in R4-2317626.
    - Further discuss the decision considering the following option,
      * Option 1: {n0us, n30us, n100us, n140us, n200us} as the UE capability.
      * Option 2: When UE fall back to the default BWP and this BWP is different with BWP where SRS resource configured in a CC without PUSCH/PUCCH for SRS aggregation , the below value is agreed: {n0us, n30us, n100us, n140us, n200us}; When UE acive BWP is the same with BWP where SRS resource configured in a CC without PUSCH/PUCCH for SRS aggregation , RAN4 Investigates if additional RF retuning time is needed.

##### 2.4.1.1.3 RRM

* The following agreements were made for RedCap positioning and PRS/SRS aggregation RRM requirements (R4- 2317386):
  + General aspects/scenarios for RedCap positioning
    - TEG for PRS measurements with FH
      * Rx, Tx and RxTx TEG for UE positioning measurements with FH are supported in RAN4 requirements. It is RAN4 understanding that the existing TEG capabilities are also applicable for RedCap.
  + PRS measurements for RedCap without FH
    - PRS measurement period requirements for 2Rx without FH
      * Rel-16/17 measurement period requirement for positioning measurements also apply to 2Rx RedCap UE for the case when the UE is not configured to perform FH to receive DL PRS resources for positioning measurements.
    - PRS measurement period requirements for 1Rx without FH
      * • Rel-16/17 measurement period requirement for positioning measurements apply to 1Rx RedCap UE for the case when the UE is not configured to perform FH to receive DL PRS resources for positioning measurements. In this case the default value of NRxBeam,i = 1 in the core requirement formula.
  + PRS measurements for RedCap with FH
    - Number of samples for defining PRS measurement requirements with FH
      * Reduced number of samples is supported for positioning measurements with FH. Nsample = [2].
    - PRS measurement period requirements with FH
      * Existing UE positioning measurement period can be reused as baseline for the corresponding UE positioning measurement period with FH. Some modification is expected to account for frequency hopping e.g. Lprs, measured PRS BW etc.
  + General aspects/scenarios for PRS/SRS BW aggregation
  + PRS measurement requirements for PRS/SRS bandwidth aggregation
    - Measurement period requirement for PRS/SRS bandwidth aggregation
      * RAN4 requirements does not need to include the number of groups of PFLs. The number of PFL groups can be larger than 1. This is based on the assistance data received from the LMF.
      * Tmargin is needed. The value is FFS.
    - Impact of PRS collision with other signals on PRS bandwidth aggregation requirement
      * When the PRS collision with other signals on PRS bandwidth aggregation requirement, the measurement period can be longer, and FFS whether RAN4 to define the UE behaviour in RAN4.
    - Impact of latency reduction on PRS/SRS bandwidth aggregation
      * Nsample = 2 and 4 are applicable to PRS/SRS bandwidth aggregation:
        + When UE is configured to perform latency reduced positioning measurement, then Nsample=2 in both Taggregate and Tnon-aggregate calculations.
        + When UE is not configured to perform latency reduced positioning measurement, then Nsample=4 in Taggregate and Tnon-aggregate calculations.
    - PRS measurement reporting delay requirements for PRS/SRS bandwidth aggregation
      * The framework of existing measurement reporting delay requirements of RSTD, UE Rx-TX time difference in Rel17 can be reused for these positioning measurements with aggregated bandwidth.
    - TEG for PRS/SRS bandwidth aggregation
      * RAN1 is still discussing whether to support TEG for PRS/SRS bandwidth aggregation. Wait for RAN1 progress.
  + PRS/SRS measurement report mapping for PRS/SRS bandwidth aggregation
    - Measurement report mappings
      * Companies to check all the mapping tables (in R4-2316462) offline.
      * Send LS to RAN2, RAN3 and CC: RAN1in R4-2317390.
* The following agreements were made for NR sidelink positioning and carrier phase positioning RRM requirements (R4- 2317380):
  + SL-PRS measurement period requirements
    - Measurement period requirements for SL-PRS based RSTD:
      * The measurement period requirements for SL-PRS based RSTD is defined as:
        + , where,

S = scaling factor \* Nsample. Scaling factor is FFS.

, where and are the start of the *s*-th and *(s+1)*-th slot where UE needs to measure SL-PRS, satisfying is > FFS.

is FFS.

* + - * For Nsample, further discuss the two options
        + Option 1: Define requirement for the sample number of 1 and FFS for 4.
        + Option 2: Define requirement for the sample numbers of 1 and 4.
    - Measurement period requirements for other SL-PRS based measurements
      * The measurement period requirement for SL-PRS based RSTD can be reused for other SL-PRS based measurement (i.e., SL-PRS based RTOA, RSRP and RSRPP).
      * For SL-PRS based AoA/ZoA, check and confirm whether the measurement period of SL-PRS based RSTD can be reused in the next meeting.
      * For definition #1 and [definition #2] for UE Rx-Tx time difference, reuse the measurement period of SL-PRS based RSTD.
        + Definition #1: use the Rel-16/17 definition for gNB Rx-Tx time difference/UE Rx-Tx time difference in Uu.
        + Definition #2: the actual SL-PRS transmission time is used for the definition of SL-PRS based Rx-Tx time difference measurement.
    - Requirements applicability regarding SL-DRX
      * FFS: The same SL-PRS based measurement period requirements apply for the case [with SL-DRX] and without SL DRX.
    - Impact of other channels/signals
      * FFS: SL PRS measurement requirements apply provided that reception/transmission of the slots containing SL PRS is not dropped due to other SL procedures (e.g., Selection/Reselection of V2X Synchronization Reference Source).
      * FFS: If the reception/transmission of the slots containing SL PRS is dropped, the measurement period can be extended.
        + Option 1: RAN4 does not specify how exactly the measurement period is extended.
        + Option 2: RAN4 will specify how exactly the measurement period is extended.
    - UE behavior and the impact on SL-PRS measurement requirements when synchronization reference source change occurs
      * UE behavior and the impact on SL-PRS measurement requirements when synchronization reference source change occurs at Rx side
        + For SL Rx-Tx measurement, UE shall restart the measurement after change and the previous measurement samples are dropped. The SL Rx-Tx measurement period requirement due to the change:

Apply the existing measurement period requirement, and starting point of the measurement period is after the change.

Option A: Limit the number of restarting, FFS the exact number.

Option B: FFS whether to limit the number of restarting.

* + - * + For SL RSRP and RSRPP measurements, UE shall continue the measurement after the change.
        + For SL RSTD and RTOA measurements, FFS UE shall continue the measurement after the change.
  + SL-PRS measurement reporting
    - Report mapping
      * Reuse the existing report mapping for SL positioning:
        + The report mapping for SL UE Rx-Tx is the same as for UE Rx-Tx.
        + The report mapping for SL RSTD is the same as for RSTD.
        + The report mapping for SL RTOA is the same as for UL-RTOA.
  + SL-PRS Accuracy requirements
    - PRS configuration in simulation assumption
      * Update the number of RBs for SL PRS with SCS = 15 kHz in the simulation assumptions as shown below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter** | **Value** | | |
| SCS, RB num | **SCS (kHz)** | **RB num** | **Sample rate (Tc)** |
| 15 | 48 | 128 |
| 96 | 64 |

* + - * Add Es/Iot = (0, -3, -3) dB to the SL PRS simulation assumptions.
  + CPP Measurement period requirements
    - PRS measurement period requirements for DL RSCP/DL RSCPD:
      * When LMF requests the UE to perform measurements on indicated DL PRS resource set(s) occurring within indicated time window(s) for a PFL, and UE supports FG 41-2-3, the Twindow needs to be considered in the measurement period:
        + For periodic time window,

Option A: adopt the following updates to the existing measurement period requirements for the PFL:

Tavailable is defined as LCM(Tprs, MGRP, Twindow), where Twindow is the maximum periodicity of the indicated time window(s)

When calculating Lprs and Tprs, only the PRS resources in the indicated resources sets and overlapped with both the MG and the indicated time window(s) are considered.

Option B: reuse the existing requirement under the condition that the configuration of MGRP and Twindow is aligned.

* + - * + For one-shot time window case, the measurement is within the indicated time window.
      * Otherwise, further check whether the legacy measurement period requirements apply.
    - PRS measurement period requirements for legacy measurements with time window(s) (without CPP)configured by LMF
      * It is RAN4 understanding that legacy UE positioning measurements performed within time window(s) without CPP configured by LMF is not within the scope of the Rel-18 WI.
  + CPP measurement reporting
    - Report mapping for UL RSCP
      * Send LS to inform RAN3 the report mapping for UL RSCP which is same as DL RSCP as agreed in previous meeting.
    - phase quality indication
      * Phase quality indication is not supposed to be decided by RAN4.
      * RAN4 understanding is that the phase quality indication should be decided by RAN1 and the corresponding signaling should be developed by RAN2 based on RAN1 input.
    - Solutions to reduce the impact of carrier frequency offset
      * RAN4 to study any possible impact of carrier frequency offset on CPP measurement requirements.
  + CPP Accuracy requirements
    - Channel model
      * Define accuracy requirements for DL RSCPD measurement based on the simulation results in AWGN and Two-Tap channel.
      * RAN4 not to consider NLOS fading channel for simulation and requirements for RSCPD.
    - Side condition
      * Reuse the Rel-17 RSTD side condition to DL RSCPD measurement requirements.
      * Reuse the Rel-17 UE Rx-Tx time difference side condition to DL RSCP measurement requirements.
* The following agreements were made for LPHAP RRM requirements (R4- 2317378):
  + eDRX in INACTIVE
    - TDRX in PRS requirements with RAN eDRX <= 10.24s
      * When CN eDRX <= 10.24 s, TDRX is defined as T in Rel-17 TS 38.304.
      * When CN eDRX > 10.24 s, TDRX is set to the maximum of the T inside and outside of the CN PTW, where T inside and outside of the CN PTW are defined in Rel-17 TS 38.304.
    - Tavailabe in PRS requirements with RAN eDRX > 10.24s
      * Based on agreement for Issue 1-1-4 in WF R4-2314462, there are two cases for PRS measurement with RAN eDRX > 10.24s
        + Case 1: eDRX cycle is smaller or equal to configured PRS measurement reporting periodicity. In this case, UE starts positioning measurement within PTW.
        + Case 2: eDRX cycle is longer than configured PRS measurement reporting periodicity. In this case, positioning measurement start is not limited to PTW.
    - RRM measurement requirements
      * Based on agreement for Issue 1-1-5 in WF R4-2314462, there are two cases for RRM measurement
        + Case 1: eDRX cycle is smaller or equal to configured PRS measurement reporting periodicity (if PRS measurement is configured) and configured SRS transmission periodicity (if SRS transmission for positioning is configured). In this case, RRM measurements for positioning needs are performed within PTW
        + Case 2: eDRX cycle is larger than configured PRS measurement reporting periodicity (if PRS measurement is configured) or configured SRS transmission periodicity (if SRS transmission for positioning is configured). In this case, RRM measurements for positioning needs are not limited to PTW
      * For Case 1, re-use the existing INACTIVE requirements for RAN eDRX <= 10.24s and the requirements newly defined in eRedCap WI for RAN eDRX > 10.24s.
      * For Case 2: introduce additional RRM requirements based on one of the three options:
        + Option 1: Tpos
        + Option 2: TDRX
        + Option 3: Tpos & TDRX
      * Definition of Tpos
        + DL only: PRS measurement reporting periodicity
        + UL only: SRS transmission periodicity
        + DL & UL: the minimum of PRS measurement reporting periodicity and SRS transmission periodicity
  + SRS positioning validity area
    - Start of PRS measurement with CN eDRX > 10.24s
      * Based on agreement for Issue 1-2-1 in WF R4-2314462, RAN4 agreed it is feasible for UE to autonomously adjust the TA when cell-reselection happens within the validity area. The question is how UE should autonomously adjust the TA and what are the related requirements.
      * If the DL timing difference is ≥ CP/4, UE autonomously adjusts the TA based on twice of the DL timing difference (to maintain approximately the same UL Rx timing immediately before and after each cell reselection).
      * If the DL timing difference is < CP/4, UE follows the DL timing of the new camping cell by performing gradual timing adjustment as defined in clause 7.1.2.1.
      * Send reply LS to RAN1 LS in R1-2306248 (LS on determination of UL timing to transmit SRS for positioning by UEs in RRC\_INACTIVE states).
  + Performance requirements for PRS measurement
    - Reporting mapping
      * No need to send LS to RAN2 and RAN3 regarding reporting mapping for LPHAP since the positioning measurements for the LPHAP are the same as in legacy.

2.3.1.1.4 Approved LSs

* LS-s out
  + Reply LS to RAN1 LS in R1-2306216/R4-2311031 (SRS and PRS bandwidth aggregation for positioning)
    - The LS is sent in R4-2317389.
    - K= -1 and -2 are feasible and beneficial from RAN4 perspective.
    - K=-3, -4, -5, -6 are also feasible for both UE and TRP.
      * Whether =-3, -4, -5, -6 are supported is up to RAN1 decision.
  + LS on report mapping for positioning measurements with PRS/SRS bandwidth aggregation
    - The LS is sent in R4-2317390.
    - RAN4 agrees on report mapping tables for DL-RSTD, UE Rx-Tx, gNB Rx-Tx, and UL-RTOA measurements for k = {-1, -2}.
  + LS on SL positioning and carrier phase positioning measurements
    - The LS is sent to RAN2 in R4-2317391.
    - The LS captures the agreements on SL measurement report mappings, CPP report mapping for UL RSCP, and phase quality indication for CPP measurements.
  + Reply LS on determination of UL timing to transmit SRS for positioning by UEs in RRC\_INACTIVE states
    - The LS is sent in R4-2317379.
    - If the DL timing difference is ≥ CP/4, UE autonomously adjusts the TA based on twice of the DL timing difference.
    - If the DL timing difference is < CP/4, UE follows the DL timing of the new camping cell by performing gradual timing adjustment as defined in clause 7.1.2.1 TS 38.133.

2.4.1.2 Decisions during RAN4#109

##### 2.4.1.2.1 General aspects

##### 2.4.1.2.2 RF

* Discussions focused on reply LS on guard period for SRS and PRS bandwidth aggregation for positioning enhancements.
  + The LS is sent in R4-2321741.
  + A WF is approved in R4-2321802.

##### 2.4.1.2.3 RRM

* An general agreement is reached that the RRM work of the WI can be closed for core part.
* The following agreements were made for RedCap positioning and PRS/SRS aggregation RRM requirements (R4- 2321543):
  + UE feature list
    - Feature on reduced number of samples for PRS measurement in RRC\_IDLE for RedCap
      * RAN1 FG 41-3-3 covers UE capability for positioning measurements in RRC\_IDLE state covers all Rel-17 features in RRC\_INACTIVE.
        + No RAN4 feature is needed for positioning measurements in RRC\_IDLE state
    - Features on PRS measurements with FH for RedCap (FG 37-1)
      * The feature 37-1 is RAN4 specific feature and should be supported with the following updates:
        + Need for the gNB to know if the feature is supported = NO.
        + Need for the LMF to know if the feature is supported = YES.
      * There are two capabilities with the same components:
        + 37-1 is for UE supporting this feature in RRC connected state.
        + 37-1A is for UE supporting this feature in RRC idle and RRC inactive.
    - Features on PRS measurements with PRS/SRS BW aggregation (FG 37-2)
      * The feature 37-2 is RAN4 specific feature and should be supported with the following updates:
        + Need for the gNB to know if the feature is supported = NO.
        + Need for the LMF to know if the feature is supported = YES.
        + Only component 1 (PRS BW aggregation) is needed.
      * There are two capabilities with the same components:
        + 37-2 is for UE supporting this feature in RRC connected state.
        + 37-2A is for UE supporting this feature in RRC idle and RRC inactive.
  + General aspects/scenarios for RedCap positioning
    - PRS measurements with FH without gaps
      * PRS measurements with FH without gaps is not supported and therefore no RAN4 requirements are needed.
    - Applicable RRC states for PRS measurements without FH
      * RAN4 is already defining requirements of RedCap positioning without FH in RRC\_IDLE and RRC\_INACTIVE. In RRC idle the requirements are for RSTD, PRS-RSRP, PRS-RSRPP.
    - Applicable RRC states for PRS measurements with FH
      * Uphold the previous agreement in WF in R4-2314353 at RAN4#108.
  + PRS measurements for RedCap without FH
    - CSSF for PRS measurement requirements in RRC connected state without FH
      * Update clause 9.1A.5.2 to update CSSF for PRS measurement requirements in RRC connected state without FH.
  + PRS measurements for RedCap with FH
    - Side conditions for PRS measurements with FH
      * The side conditions for positioning measurements without FH are reused for positioning measurements with FH.
    - Nsample for reduced number of samples in PRS measurement requirements with FH
      * When UE is configured to perform positioning measurements with FH then Nsample = 2 is considered in measurement period requirement for reduced number of sample case.
    - Measurement sample definition under FH
      * Measurement sample under FH is defined as a PRS measurement over multiple hops within a single measurement gap.
    - Number of Rx beam sweeps for defining PRS measurement requirements with FH
      * The Rx beam sweeping factor (NRxBeam) definition in Rel-17 is reused for PRS measurements with FH.
    - Number of hops within a single MG occasion
      * Number of hops within a single MG occasion is defined as a requirement.
    - Type of PRS measurement requirements with FH
      * RAN4 to define requirements for positioning measurement based on multiple hops.
    - Applicability conditions for PRS measurement requirements with FH
      * Requirements for PRS measurements with FH are applicable subject to explicit request by the LMF to perform measurements with FH.
  + General aspects/scenarios for PRS/SRS BW aggregation
    - Impact of aggregated bandwidth on PRS measurement period requirements
      * RAN4 to define measurement period requirements for PRS CA in BW agnostic manner.
    - Applicable condition in RRC inactive
      * There is no restriction that SRS on aggregated carriers used for BW aggregation are within the initial UL BWP.
  + PRS measurement requirements for PRS/SRS bandwidth aggregation
    - How to capture the condition of single RF chain (same antenna) in RAN4 specifications
      * For the transmitter side, both RF + antenna and baseband needs to be considered.
        + Capture this in the core part as condition for positioning requirement for PRS aggregation.
        + The condition applies for positioning requirement for SRS aggregation. FFS whether/how to capture it in the RAN4 spec in performance part.
      * For the receiver side, further discuss whether the condition of single Rx chain (RF + baseband) and antenna needs to be considered in the performance or core maintenance part.
      * RAN4 agreement related the assumptions for the single RF chain is captured in LS.
    - Measurement period requirement for PRS/SRS bandwidth aggregation
      * Tmeas,total = Tagg + Tmargin + Tnon-agg
      * between where Teffect,i is the Teffect from both aggregated PFLs and non-aggregated PFLs which are configured for positioning measurement.
    - Impact of PRS collision with other signals on PRS bandwidth aggregation requirement
      * Further discussion on this issue is not precluded and based on contribution driven in the maintenance part.
    - Impact of collision of other signals on SRS bandwidth aggregation requirement in RRC\_INACTIVE
      * RAN4 not to define requirements for collision between SRS CA (outside initial BWP) with other UL/DL channels in INACTIVE.
    - TEG for PRS/SRS bandwidth aggregation
      * TEG is considered in measurement period requirements for PRS CA.
* The following agreements were made for NR sidelink positioning and carrier phase positioning RRM requirements (R4- 2321524):
  + SL-PRS measurement period requirements
    - Measurement period requirements for SL-PRS based RSTD:
      * The measurement period requirements for SL-PRS based RSTD is defined as:
        + , where,
        + The definition of *S* is assuming the UE measures the SL-PRS for at least one UE.
        + , where and are the start of the *s*-th and *(s+1)*-th slot where UE needs to measure SL-PRS while satisfying the condition: satisfying ≥
        + , which includes both the duration () of SL-PRS resources of the last sample and minimum processing time.
        + The SL PRS measurement period for measurement on SL-PRS for multiple UEs is FFS.
    - Nsample in measurement period requirements for SL-PRS based RSTD
      * in measurement period requirements for SL-PRS based RSTD
        + = 1 for SL-PRS BW>48 PRBs,
        + = 4 for SL-PRS BW≥24 PRBs.
    - The definition one sample
      * 1 sample for 1 Tx SL UE is one SL PRS resource within one slot.
    - Measurement period requirements for other SL-PRS based measurements
      * The measurement period of SL-PRS based AoA/ZoA is the same as that of SL-RSTD.
      * The measurement period of SL Rx-Tx for definition # 2:
        + Same as that of SL RSTD if the UE transmits SL PRS before the reception of the SL PRS from the Tx UE.
        + Additional time uncertainty for waiting for actual transmission needs to be accounted in the measurement period if the UE transmits SL PRS after receiving SL PRS from the Tx UE.
        + Requirements in both cases above apply for maximum delay (Dmax) between the PRS transmission and the reception of the SL PRS from the Tx UE. Dmax is [160] ms.
    - UE behavior and the impact on SL-PRS measurement requirements when synchronization reference source change occurs at Rx side
      * When the synchronization reference source changes occurs during the measurement period at Rx side, i.e., at the UE which is performing the measurement,
        + for SL RSTD measurements,

[UE shall restart the measurement and measurement period can be longer. ]

* + - * + for SL RTOA measurements,

UE shall restart the measurement after change and the previous measurement samples are dropped.

* + - * + for SL PRS based Rx-Tx measurement,

FFS: The measurement delay when restarting:

T\_(SL Rx-Tx,restart)=(K+1)\*T\_(SL Rx-Tx,Total) , where K is the number of restarts.

Option 2A: No need to define a limit for K (like in LTE).

Option 2B: Maximum limit for K is defined, e.g., K≤Kmax, Kmax=TBD.

* + - Requirements applicability regarding SL-DRX
      * The SL-PRS based measurement period requirements apply without DRX as well as for any SL DRX configuration.
      * The UE is not required to monitor the SL control channel outside the SL-DRX active time.
    - Impact of the type of resource pool
      * No clarification in the spec is needed.
  + Other RRM requirements
    - Requirements for initiation/cease of SL PRS Tx
      * Deprioritize defining requirements for initiation/cease of SL-PRS transmission.
  + SL-PRS Accuracy requirements
    - Applicable PRS bandwidth for SL positioning requirements
      * RAN4 SL positioning requirements are not applicable for CBWs larger than 40 MHz, unless they are supported by TS 38.101-1.
  + CPP Measurement period requirements
    - PRS measurement period requirements for DL RSCP/DL RSCPD:
      * When LMF requests the UE to perform measurements on indicated DL PRS resource set(s) occurring within indicated time window(s) for a PFL, and UE supports FG 41-2-3, the Twindow needs to be considered in the measurement period:
        + For periodic time window,

Adopt the following updates to the existing measurement period requirements for the PFL

Tavailable is defined as LCM(Tprs, MGRP, Twindow), where Twindow is the maximum periodicity of the indicated time window(s)

When calculating Lprs and Tprs, only the PRS resources in the indicated resources sets and overlapped with both the MG and the indicated time window(s) are considered.

* + - * + For one-shot time window case,

L\_(available\_PRS,i) only counts PRS resource instances within the indicated time window(s).

the start of the measurement period is the start of the time window.

* + - CPP measurement in RRC\_IDLE state
      * RAN4 to define the CPP measurements requirements in RRC\_IDLE state.
    - The impact of carrier frequency offset
      * No consensus in RAN4 on whether or not to specify UE behavior or requirements related to measurement of carrier frequency offset in Rel-18 core part. RAN4 can close the WI core part without further agreement on this issue.
      * FFS whether and how to account for carrier frequency offset in the accuracy requirements in performance part.
    - Requirements applicability regarding MG reconfiguration
      * If during the measurement period, the MG pattern is reconfigured or time window for carrier phase measurement is reconfigured, the measurement period for RSCPD with RSTD and RSCP with UE Rx-Tx can be longer.
    - Impact of UE mobility
      * Uphold the previous agreement at RAN4#108.
  + CPP measurement reporting requirements
    - Reporting requirements for DL CPP measurement
      * Uphold the previous Reporting requirements for DL CPP measurement at RAN4#108.
  + Accuracy requirements for DL RSCPD
    - Side condition
      * Define DL RSCPD measurement accuracy requirements for side condition [-3, -6] dB if RSTD measurement is done with reduced number of samples.
      * FFS: Define DL RSCPD measurement accuracy requirements for side condition [-6, -13] dB if RSTD measurement is done over 4 samples.
    - Number of Samples
      * Define the DL RSCPD accuracy measurement requirements with single sample.
  + Accuracy requirements for DL RSCP
    - whether to define accuracy requirements for DL RSCP
      * Define relative accuracy requirements for DL RSCP measurement.
    - Side condition
      * Update the simulation assumption of DL RSCPD measurement to accommodate the simulation for relative accuracy of DL RSCP measurement.
        + In R4-2321459, to add SINR side condition (-3, -13, -13)dB for NSample = 1 and (0, -6, -6)dB for NSample = 1.
* The following agreements were made for LPHAP RRM requirements (R4- 2321525):
  + eDRX in INACTIVE
    - Start of PRS measurement
      * the PRS measurement reporting periodicity is the configured reportingInterval in RequestLocationInformation.
      * When periodic PRS measurement reporting is not configured then the start of the PRS measurement is not limited to the PTW.
    - RRM measurement requirements for Case 2
      * The measurement cycle for defining additional RRM requirements (i.e. cell reselection) for Case 2 with periodic PRS measurement reporting is defined as: Max(Tpos, TDRX).
      * RRM measurement requirements (i.e. cell reselection requirements) apply when the UE is configured with the SRS transmission for positioning in RRC\_INACTIVE.
    - Relation between measurement window and PTW
      * RAN4 not to define additional requirements on the PRS measurement window selection in relation to PTW.
      * Measurement window defined in rel. 17 RRC\_INACTIVE state and PPW defined in rel. 17 RRC\_CONNECTED state for gap-less measurement has no impact on each other.
  + SRS positioning validity area
    - One-shot autonomous TA adjustment
      * UL timing requirements for the subsequent SRS transmission after one-shot autonomous TA adjustment is ±Te.
    - Impact of SRS positioning validity area
      * RAN4 to update the applicability condition of UE Rx-Tx requirements considering SRS transmission in SRS positioning validity area.
        + The requirements apply provided that UE has valid SRS configuration in the current camping cell.
      * RAN4 to update the UE behaviour for UE Rx-Tx requirements considering SRS transmission in SRS positioning validity area.
        + If cell reselection occurs, and UE reselects to a cell out of the positioning validity area or if UE performs autonomous TA adjustment at reselection, then UE shall restart the measurement.
    - Current RSRP for TA validation (related to RAN2 LS R2-2311568)
      * Reference signal for the current RSRP is the SSB for the currently camped cell.
    - Requirements for TA validation
      * Define TA validation requirements for SRS transmission for positioning in RRC\_INACTIVE state for LPHAP with and without validity area configuration in TS 38.133.
      * Define TA validation requirements for SRS transmission for positioning in RRC\_INACTIVE state for RedCap with and without validity area configuration in TS 38.133.
      * The TA validation requirements for SRS transmission can be based on the existing TA validation requirements defined for CG-SDT in clause 5.5.3 for LPHAP and clause 5.2B.3 for RedCap by adapting the SRS specific aspects e.g. using *inactivePosSRS-RSRP-ChangeThreshold*, no subsequent SRS transmission per period and *SRS-PosRRC-InactiveValidityAreaConfig*.
      * Note: For CR drafting, avoid redundancy of requirements for LPHAP and RedCap since they are the same and instead use reference.
  + PRS measurement in IDLE
    - PRS measurement requirements
      * Tavailable = LCM (TPRS,i, TDRX), and TDRX is defined as T in Rel-17 TS 38.304.
    - RRM measurement requirements
      * RRM measurement requirements (i.e. cell reselection requirements) do not apply in RRC\_IDLE.

2.3.1.2.4 Approved LSs

* LS-s out
  + Reply LS on guard period for SRS and PRS bandwidth aggregation for positioning
    - The LS is sent in R4-2321741.
    - The following candidate values can be used for the guard period values
      * {0us, 30us, 100us, 140us, 200us}
    - The above values apply to both FR1 and FR2. The guard period capability is defined per band.
    - Please note that the above values are provided based on the assumption that single Tx chain is used to support SRS aggregation for positioning. During the discussion on this LS reply, additional concerns were raised and may be discussed further by RAN4. It’s foreseen currently that the guard period values replied in this LS will not be impacted by the following discussions on the issues in R4-2321802.
  + Response to reply LS on SRS/PRS bandwidth aggregation for positioning measurement
    - The LS is sent in R4- 2321545.
    - The LS captures the agreed measurement report mapping for RSTD measurements, UE Rx-Tx, UL RTOA and gNB Rx-Tx measurements with k = {-3, -4, -5, -6}.
  + Reply LS on measurement definitions for positioning with bandwidth aggregation
    - The LS is sent to RAN1 in R4-2321599.
    - RAN4 to take “single Rx chain” assumption for defining accuracy requirements for positioning measurements based on PRS/SRS bandwidth aggregation.
    - RAN4 to define the following side conditions for the UE RSTD and Rx-Tx measurement period (core) and accuracy (performance) requirements.
      * For PRS resources on multiple PFLs linked for aggregation, the UE RSTD/Rx-Tx (core) and accuracy (performance) requirements apply provided that the channel over which a symbol on one PFL for PRS transmission is conveyed can be inferred from the channel over which the same symbol of another PFL or the aggregated PFL is conveyed.
      * Note: this does not imply the radio propagation conditions are the same for aggregated PFLs.
    - RAN4 to define the following side conditions for the gNB Rx-Tx measurement accuracy (performance) requirements.
      * For positioning SRS resources on multiple carriers linked for aggregation, the gNB Rx-Tx measurement accuracy (performance) requirements apply provided that the channel over which a symbol on one carrier for SRS transmission is conveyed can be inferred from the channel over which the same symbol of another carrier or the aggregated carrier is conveyed.
      * Note: this does not imply the radio propagation conditions are the same for aggregated carriers.
  + Reply LS on TA validation for LPHAP
    - The LS is sent in R4-2321464.
    - RAN4 discussed the options for the reference signal for the current RSRP for TA validation within SRS positioning validity area, and agreed to adopt option 1, i.e. Reference signal for the current RSRP is the SSB for the currently camped cell.

#### 2.4.2 Remaining Open issues

None.

## 2.5 RAN5

#### 2.5.1 Agreements

#### 2.5.2 Remaining Open issues

#### 2.5.3 Remaining Open issues with cross-WG dependencies

## 2.6 RAN6

#### 2.6.1 Agreements

#### 2.6.2 Remaining Open issues

## 3. Detailed progress in SA/CT WGs since last TSG meeting (for all involved WGs)

NOTE: This section only needs to be filled in for WI/SIs where there is a corresponding relevant WI/SI in SA/CT.

## 3.1 SAx/CTs

#### 3.1.1 Agreements with cross-TSG impacts

#### 3.1.2 Remaining Open issues with cross-TSG impacts

NOTE: This section should also flag any critical dependencies that need TSG attention.

## 4. References

NOTE: This can be e.g. a list of all related Tdocs in the affected WGs since last TSG, references to LSs, produced TRs/TSs, the work/study item description or status reports of previous TSGs.

###### RAN1 #114bis

1. R1-2310542 Session notes for 8.3 (Maintenance on expanded and improved NR positioning) Ad-Hoc Chair (Huawei)
2. R1-2309194 Higher layer parameters for Rel-18 Expanded and Improved NR Positioning Rapporteur (Intel Corporation)
3. R1-2310592 FLS on list of RRC parameters on Rel-18 WI on expanded and improved NR positioning; Rapporteur (Intel Corporation)
4. R1-2308834 LS on SL positioning MAC agreements RAN2, Huawei
5. RAN2 requires RAN1 input on SL-PRS priority and SL-PRS details. Discussion on response LS to be handled in agenda item 8.3. To be moderated by Jinhuan (Huawei).
6. R1-2308972 Discussion on LS on SL positioning MAC agreements Spreadtrum Communications
7. R1-2309038 Draft LS reply on SL positioning MAC agreements vivo
8. R1-2309193 Draft Reply LS on SL positioning MAC agreements Intel Corporation
9. R1-2309217 Draft reply LS on SL positioning MAC agreements ZTE
10. R1-2309346 Draft reply LS on SL positioning MAC agreements Samsung
11. R1-2309418 Discussions on RAN2 LS on SL positioning MAC agreements xiaomi
12. R1-2309476 Discussion on SL positioning MAC agreements CATT
13. R1-2309477 Draft reply LS on SL positioning MAC agreements CATT
14. R1-2309594 Discussion on the LS from RAN2 on Sidelink positioning MAC agreements OPPO
15. R1-2309595 Draft reply LS to RAN2 on Sidelink positioning MAC agreements OPPO
16. R1-2309657 Discussion on RAN2 LS on SL-PRS priority CMCC
17. R1-2309742 Discussion on SL positioning MAC agreements Huawei, HiSilicon
18. R1-2309743 Draft Reply LS on SL positioning MAC agreements Huawei, HiSilicon
19. R1-2310115 Reply to LS on SL positioning MAC agreements Qualcomm Incorporated
20. R1-2310193 Discussion on LS to RAN1 on SL positioning MAC agreements Ericsson
21. R1-2310194 [DRAFT] reply LS on SL positioning MAC agreements Ericsson
22. R1-2310274 Draft Reply LS on SL positioning MAC agreements Nokia, Nokia Shanghai Bell
23. R1-2310275 Discussion of RAN2 LS on SL positioning MAC agreements Nokia, Nokia Shanghai Bell
24. R1-2310400 FLS#1 on reply LS on SL positioning MAC agreement Moderator (Huawei)
25. R1-2310536 FLS#2 on reply LS on SL positioning MAC agreement Moderator (Huawei)
26. R1-2310401 Draft Reply LS on SL positioning MAC agreements Moderator (Huawei)
27. R1-2310402 Reply LS on SL positioning MAC agreements RAN1, Huawei LS out Rel-18 FS\_eLCS\_Ph3/NR\_pos\_enh2 To: RAN2 cc: SA2
28. R1-2308843 Remaining issues for design of SL positioning reference signal SL PRS Nokia, Nokia Shanghai Bell
29. R1-2308874 Maintenance of SL-PRS Huawei, HiSilicon
30. R1-2308983 Remaining issues on SL positioning reference signal Spreadtrum Communications
31. R1-2309071 Remaining issues on SL positioning reference signal vivo
32. R1-2309195 Remaining issues on SL Positioning Reference Signals Intel Corporation
33. R1-2309219 Maintenance on SL positioning reference signal ZTE
34. R1-2309245 Remaining issues on SL positioning reference signal LG Electronics
35. R1-2309287 Remaining issues on SL positioning reference signal NEC
36. R1-2309372 Maintenance on SL Positioning Reference Signal Samsung
37. R1-2309455 Remaining details on SL positioning reference signal xiaomi
38. R1-2309523 Maintenance on SL positioning reference signal CATT, CICTCI
39. R1-2309539 Maintenance on sidelink positioning reference signal ASUSTeK
40. R1-2309591 Remaining issues on SL positioning reference signal OPPO
41. R1-2309668 Maintenance on SL positioning reference signal CMCC
42. R1-2309771 Discussions on SL positioning reference signal Ruijie Network Co. Ltd
43. R1-2309780 Discussion on SL positioning reference signal design TOYOTA InfoTechnology Center
44. R1-2309795 Remaining issues on SL-PRS design and power control for SL-PRS InterDigital, Inc.
45. R1-2309830 On SL positioning reference signal Apple
46. R1-2309881 Remaining issues on SL positioning reference signal Sharp
47. R1-2309903 Remaining issues on SL Positioning Reference Signal Design Sony
48. R1-2309945 SL PRS Design Maintenance Aspects Lenovo
49. R1-2310089 Maintenance for SL-PRS design MediaTek Korea Inc.
50. R1-2310138 Maintenance for SL PRS Signal Design Qualcomm Incorporated
51. R1-2310195 Remaining issues on SL positioning reference signal design Ericsson
52. R1-2310333 FL summary #1 on SL positioning reference signal Moderator (Intel Corporation)
53. R1-2310334 FL summary #2 on SL positioning reference signal Moderator (Intel Corporation)
54. R1-2310335 FL summary #3 on SL positioning reference signal Moderator (Intel Corporation)
55. R1-2308844 Remaining issues for measurements and reporting for SL positioning Nokia, Nokia Shanghai Bell
56. R1-2308875 Maintenance of SL measurements Huawei, HiSilicon
57. R1-2308984 Remaining issues on measurements and reporting for SL positioning Spreadtrum Communications
58. R1-2309072 Remaining issues on measurements and reporting for SL positioning vivo
59. R1-2309196 Remaining issues on SL Positioning Measurements and Reporting Intel Corporation
60. R1-2309220 Maintenance on SL positioning measurements and reporting ZTE
61. R1-2309246 Remaining issues on measurements and reporting for SL positioning LG Electronics
62. R1-2309293 Discussion on SL positioning measurements and reporting BUPT
63. R1-2309373 Maintenance on Measurements and Reporting for SL Positioning Samsung
64. R1-2309456 Remaining details on measurements and reporting for SL positioning xiaomi
65. R1-2309524 Maintenance on measurements and reporting for SL positioning CATT, CICTCI
66. R1-2309592 Remaining issues on measurements and reporting for SL positioning OPPO
67. R1-2309669 Maintenance on measurements and reporting for SL positioning CMCC
68. R1-2309796 Remaining issues on measurement and reporting for SL positioning InterDigital, Inc.
69. R1-2309831 On Measurements and reporting for SL positioning Apple
70. R1-2309904 Remaining Issues on SL positioning methods and measurements Sony
71. R1-2309946 Measurement and Reporting Maintenance Discussion Lenovo
72. R1-2310139 Maintenance for SL Positioning Measurements Qualcomm Incorporated
73. R1-2310196 Remaining issues on measurements and reporting for SL positioning Ericsson
74. R1-2310342 Summary #1 on Measurements and reporting for SL positioning Moderator (vivo)
75. R1-2310343 Summary #2 on Measurements and reporting for SL positioning Moderator (vivo)
76. R1-2310344 Summary #3 on Measurements and reporting for SL positioning Moderator (vivo)
77. R1-2308845 Remaining issues for resource allocation for SL positioning reference signal SL PRS Nokia, Nokia Shanghai Bell
78. R1-2308876 Maintenance of SL-PRS resource allocation Huawei, HiSilicon
79. R1-2308946 Discussion on resource allocation for SL PRS FUTUREWEI
80. R1-2308985 Remaining issues on resource allocation for SL positioning reference signal Spreadtrum Communications
81. R1-2309073 Remaining issues on resource allocation for SL positioning reference signal vivo
82. R1-2309197 Remaining issues on resource allocation for SL positioning Intel Corporation
83. R1-2309221 Maintenance on resource allocation for SL positioning reference signal ZTE
84. R1-2309247 Remaining issues on resource allocation for SL positioning reference signal LG Electronics
85. R1-2309288 Remaining issues on resource allocation for SL positioning reference signal NEC
86. R1-2309374 Maintenance on Resource Allocation for SL Positioning Reference Signal Samsung
87. R1-2309457 Remaining details on resource allocation for SL positioning reference signal xiaomi
88. R1-2309525 Maintenance on resource allocation for SL positioning reference signal CATT, CICTCI
89. R1-2309540 Remaining issues on Resource allocation for SL PRS ASUSTeK
90. R1-2309550 Remaining issues on resource allocation for SL PRS China Telecom
91. R1-2309593 Remaining issues on resource allocation for SL positioning reference signal OPPO
92. R1-2309670 Maintenance on resource allocation for SL positioning reference signal CMCC
93. R1-2309782 Discussion on SL positioning resource allocation TOYOTA InfoTechnology Center
94. R1-2309789 Remaining Issues on Resource Allocation for SL-PRS Panasonic
95. R1-2309797 Remaining issues of SL PRS resource allocation InterDigital, Inc.
96. R1-2309832 On Resource allocation for SL positioning reference signal Apple
97. R1-2309874 Remaining Issues on Resource Allocation for Sidelink Positioning Continental Automotive
98. R1-2309882 Remaining issues on resource allocation for SL positioning reference signal Sharp
99. R1-2309905 Remaining Issues on resource allocation for SL positioning Sony
100. R1-2309947 Remaining aspects for SL Positioning Resource Allocation Lenovo
101. R1-2310140 Maintenance for SL PRS Resource Allocation Qualcomm Incorporated
102. R1-2310197 Remaining issues on resource allocation for SL positioning reference signal Ericsson
103. R1-2310241 Discussions on resource allocation for sidelink positioning ITL
104. R1-2310396 Moderator Summary #0 on resource allocation for SL PRS Moderator (Qualcomm)
105. R1-2310414 Moderator Summary #1 on resource allocation for SL PRS Moderator (Qualcomm)
106. R1-2310483 Moderator Summary #2 on resource allocation for SL PRS Moderator (Qualcomm)
107. R1-2310601 Moderator Summary #3 on resource allocation for SL PRS Moderator (Qualcomm)
108. R1-2308877 Maintenance of CPP Huawei, HiSilicon
109. R1-2308955 Remaining issues on NR DL and UL carrier phase positioning Nokia, Nokia Shanghai Bell
110. R1-2308986 Remaining issues on NR DL and UL carrier phase positioning Spreadtrum Communications
111. R1-2309074 Remaining issues on carrier phase positioning vivo
112. R1-2309198 Remaining details on NR DL and UL Carrier Phase Positioning Intel Corporation
113. R1-2309222 Maintenance on carrier phase positioning ZTE
114. R1-2309326 Remaining issues on carrier phase positioning in NR LG Electronics
115. R1-2309375 Maintenance on NR DL and UL Carrier Phase Positioning Samsung
116. R1-2309458 Remaining issues on NR DL and UL carrier phase positioning xiaomi
117. R1-2309526 Maintenance on NR DL and UL carrier phase positioning CATT
118. R1-2309575 Remaining Issues of NR carrier phase positioning OPPO
119. R1-2309671 Maintenance on carrier phase positioning CMCC
120. R1-2309798 Remaining issues for positioning based on NR carrier phase measurement InterDigital, Inc.
121. R1-2309833 On NR DL and UL carrier phase positioning Apple
122. R1-2309938 Discussions on NR DL and UL carrier phase positioning Ruijie Network Co. Ltd
123. R1-2309948 DL/UL CPP Maintenance Discussion Lenovo
124. R1-2310033 Remaining issues on NR DL and UL carrier phase positioning NTT DOCOMO, INC.
125. R1-2310090 Maintenance for carrier phase positioning MediaTek Korea Inc.
126. R1-2310141 Maintenance for NR Carrier Phase Positioning Qualcomm Incorporated
127. R1-2310198 Remaining issues on NR DL and UL carrier phase positioning Ericsson
128. R1-2310284 FL Summary #1 for maintenance on NR DL and UL carrier phase positioning Moderator (CATT)
129. R1-2310285 FL Summary #2 for maintenance on NR DL and UL carrier phase positioning Moderator (CATT)
130. R1-2310286 FL Summary #3 for maintenance on NR DL and UL carrier phase positioning Moderator (CATT)
131. R1-2308878 Maintenance of LPHAP Huawei, HiSilicon
132. R1-2308956 Remaining issues on LPHAP Nokia, Nokia Shanghai Bell
133. R1-2309075 Remaining issues on low power high accuracy positioning vivo
134. R1-2309223 Maintenance on low power high accuracy positioning ZTE
135. R1-2309286 Remaining issues on Low Power High Accuracy Positioning NEC
136. R1-2309336 Discussion on Low Power High Accuracy Positioning Quectel
137. R1-2309376 Maintenance on Low Power High Accuracy Positioning Samsung
138. R1-2309527 Maintenance on low power high accuracy positioning CATT
139. R1-2309577 Remaining issue of low power high accuracy positioning OPPO
140. R1-2309672 Maintenance on low power high accuracy positioning CMCC
141. R1-2309799 Remaining issues on Low Power High Accuracy Positioning (LPHAP) techniques InterDigital, Inc.
142. R1-2309834 On Low Power High Accuracy Positioning Apple
143. R1-2309906 Remaining Issues on LPHAP Sony
144. R1-2310034 Remaining issues on low power high accuracy positioning NTT DOCOMO, INC.
145. R1-2310142 Maintanance on LPHAP Positioning Qualcomm Incorporated
146. R1-2310199 Remaining issues on Low Power High Accuracy Positioning Ericsson
147. R1-2310318 Summary #1 for low power high accuracy positioning Moderator (CMCC)
148. R1-2310319 Summary #2 for low power high accuracy positioning Moderator (CMCC)
149. R1-2308879 Maintenance of positioning with BW aggregation Huawei, HiSilicon, China Telecom, China Unicom
150. R1-2308957 Remaining issues on bandwidth aggregation for positioning measurements Nokia, Nokia Shanghai Bell
151. R1-2308987 Remaining issues on bandwidth aggregation for positioning measurements Spreadtrum Communications
152. R1-2309076 Remaining issues on bandwidth aggregation for positioning measurements vivo
153. R1-2309107 Discussions on Carrier Aggregation for NR Positioning BUPT
154. R1-2309199 Remaining issues on Bandwidth Aggregation for Positioning Intel Corporation
155. R1-2309224 Maintenance on BW aggregation for positioning ZTE
156. R1-2309327 Remaining issues on Bandwidth aggregation for positioning measurements LG Electronics
157. R1-2309377 Maintenance on Bandwidth Aggregation for Positioning Measurements Samsung
158. R1-2309459 Remaining issues on bandwidth aggregation for positioning measurement xiaomi
159. R1-2309528 Maintenance on bandwidth aggregation for positioning measurements CATT
160. R1-2309576 Remaining Issues of bandwidth aggregation for positioning measurement OPPO
161. R1-2309673 Maintenance on BW aggregation for positioning measurements CMCC
162. R1-2309800 Remaining issues on bandwidth aggregation for positioning measurements InterDigital, Inc.
163. R1-2309835 On Bandwidth aggregation for positioning measurements Apple
164. R1-2310035 Remaining issues on bandwidth aggregation for positioning measurements NTT DOCOMO, INC.
165. R1-2310143 Maintenance on Bandwidth aggregation for Positioning Qualcomm Incorporated
166. R1-2310200 Remaining issues on Bandwidth aggregation for positioning measurements Ericsson
167. R1-2310477 Draft LS on PRS bandwidth aggregation Moderator (ZTE)
168. R1-2310478 LS on PRS bandwidth aggregation RAN1, ZTE LS out Rel-18 NR\_pos\_enh2-Core To: RAN4 cc: RAN2, RAN3
169. R1-2309227 Summary #1 for BW aggregation positioning Moderator (ZTE)
170. R1-2309228 Summary #2 for BW aggregation positioning Moderator (ZTE)
171. R1-2309229 Summary #3 for BW aggregation positioning Moderator (ZTE)
172. R1-2308880 Maintenance of RedCap positioning Huawei, HiSilicon
173. R1-2308943 On remaining open issues in RedCap UE positioning FUTUREWEI
174. R1-2308958 Remaining issues on Positioning for RedCap UEs Nokia, Nokia Shanghai Bell
175. R1-2308988 Remaining issues on positioning for RedCap UEs Spreadtrum Communications
176. R1-2309077 Remaining issues on positioning for RedCap UEs vivo
177. R1-2309200 Remaining issues on Positioning for RedCap UEs Intel Corporation
178. R1-2309225 Maintenance on Positioning for RedCap UEs ZTE
179. R1-2309289 Remaining issues of positioning for RedCap UEs NEC
180. R1-2309328 Remaining issues on positioning support for RedCap UEs LG Electronics
181. R1-2309378 Maintenance on Positioning for RedCap UEs Samsung
182. R1-2309529 Maintenance on positioning for RedCap UEs CATT
183. R1-2309578 Remaining issue of positioning for RedCap UEs OPPO
184. R1-2309674 Maintenance on RedCap UE positioning CMCC
185. R1-2309801 Remaining issues on positioning for RedCap UEs InterDigital, Inc.
186. R1-2309836 On Positioning for RedCap UEs Apple
187. R1-2309907 Remaining Issues on Positioning for RedCap UEs Sony
188. R1-2310036 Remaining issues on positioning for RedCap UEs NTT DOCOMO, INC.
189. R1-2310091 Maintenance for positioning for RedCap UE MediaTek Korea Inc.
190. R1-2310144 Maintenance on Positioning for Reduced Capabilities UEs Qualcomm Incorporated
191. R1-2310201 Remaining issues on Positioning for RedCap UEs Ericsson
192. R1-2310429 Feature Lead summary #1 for Positioning for RedCap UEs Moderator (Ericsson)
193. R1-2310430 Feature Lead summary #2 for Positioning for RedCap UEs Moderator (Ericsson)
194. R1-2310431 Feature Lead summary #3 for Positioning for RedCap UEs Moderator (Ericsson)
195. R1-2310382 Session Notes of AI 8.16.3 Ad-Hoc Chair (NTT DOCOMO, INC.)
196. R1-2308848 On UE features for expanded and improved NR positioning Nokia, Nokia Shanghai Bell
197. R1-2308881 UE features for Rel-18 positioning Huawei, HiSilicon
198. R1-2309006 Discussion on UE features for expanded and improved NR positioning Spreadtrum Communications
199. R1-2309098 Discussion on Rel-18 positioning UE features vivo
200. R1-2309201 On UE features for expanded and improved NR positioning Intel Corporation
201. R1-2309226 Remaining issues on UE feature for Rel-18 NR positioning ZTE
202. R1-2309403 UE features for expanded and improved NR positioning Samsung
203. R1-2309446 Discussion on UE features for expanded and improved NR positioning xiaomi
204. R1-2309514 Further discussion on UE features for expanded and improved NR positioning CATT
205. R1-2309625 Discussion on UE features for expanded and improved NR positioning OPPO
206. R1-2309692 Discussion on UE features for expanded and improved NR positioning CMCC
207. R1-2309858 On UE features for expanded and improved NR positioning Apple
208. R1-2310057 Discussion on UE features for expanded and improved NR positioning NTT DOCOMO, INC.
209. R1-2310073 Summary of UE features for expanded and improved NR positioning Moderator (AT&T)
210. R1-2310170 UE features for NR Rel-18 Positioning Qualcomm Incorporated
211. R1-2310202 UE features for expanded and improved NR positioning Ericsson

###### RAN1 #115

1. R1-2312504 Session notes for 8.3 (Maintenance on expanded and improved NR positioning) Ad-Hoc Chair (Huawei)
2. R1-2311141 Higher layer parameters for Rel-18 Expanded and Improved NR Positioning Rapporteur (Intel Corporation)
3. R1-2312661 LS on Rel-18 higher-layers parameter list Moderator (Ericsson)
4. R1-2312697 Consolidated Rel-18 higher layers parameter list Moderator (Ericsson)
5. R1-2310785 LS on extended PRS and SRS periodicity RAN2, Huawei
6. R1-2312146 Discussion on PRS/SRS periodicity larger than 10.24s Huawei, HiSilicon
7. R1-2312182 Discussion on LS on extended PRS and SRS periodicity Ericsson
8. R1-2310786 Reply LS on the resource selection window for Scheme 2 in a dedicated resource pool for positioning RAN2, Qualcomm
9. R1-2310787 LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning RAN2, Nokia
10. R1-2310982 Draft Reply LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning Nokia, Nokia Shanghai Bell
11. R1-2311061 Draft reply LS on clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning vivo
12. R1-2311132 DRAFT Reply LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning Intel Corporation
13. R1-2311153 Discussion on LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning Spreadtrum Communications
14. R1-2311228 Discussion on request for clarifications on carrier phase positioning and bandwidth aggregation for positioning OPPO
15. R1-2311229 Discussion on request for clarifications on RedCap UE positioning OPPO
16. R1-2311285 Discussion on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning CATT
17. R1-2311286 Draft reply LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning CATT
18. R1-2311376 Draft reply LS for clarifications on RedCap positioning, carrier phase positioning and bandwidth aggregation for positioning xiaomi
19. R1-2311454 Draft reply LS on clarifications for RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning ZTE
20. R1-2311455 Discussion on issues of CPP and bandwidth aggregation positioning for RAN2 LS R1-2310787 ZTE
21. R1-2311471 Discussion on RAN2 LS for clarifications on positioning CMCC
22. R1-2311594 Discussion on LS reply for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning InterDigital, Inc.
23. R1-2311604 Discussion on reply LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning NTT DOCOMO, INC.
24. R1-2311808 Draft reply LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning Samsung
25. R1-2312130 Discussion on LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning LG Electronics
26. R1-2312183 Discussion on LS on request for clarifications on RedCap Ericsson
27. R1-2312230 Discussion on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning Huawei, HiSilicon
28. R1-2312380 Moderator Summary #1 on Reply LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning Moderator (Nokia)
29. R1-2312432 Moderator Summary #2 on Reply LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning Moderator (Nokia)
30. R1-2312433 Draft Reply LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning Nokia
31. R1-2312434 Reply LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning RAN1, Nokia LS out Rel-18 NR\_pos\_enh2-Core To: RAN2 cc: RAN3, RAN4
32. R1-2310789 Reply LS on R1-2308644 for CPP RAN2, CATT
33. R1-2311062 Draft reply LS on CPP related issues vivo
34. R1-2311130 Draft Reply LS on clarification on Carrier Phase Positioning Nokia, Nokia Shanghai Bell
35. R1-2311133 DRAFT Reply LS on RAN2 questions for CPP Intel Corporation
36. R1-2311154 Discussion on Reply LS on R1-2308644 for CPP Spreadtrum Communications
37. R1-2311287 Discussion on RAN2 LS on CPP CATT
38. R1-2311288 Draft reply LS on R2-2311565 for CPP CATT
39. R1-2311375 Draft reply LS for CPP xiaomi
40. R1-2311452 Draft reply LS for CPP ZTE
41. R1-2311453 Discussion on CPP issues for RAN2 reply LS R1-2310789 ZTE
42. R1-2311605 Discussion on reply LS on RAN2 questions about RSCP/RSCPD NTT DOCOMO, INC.
43. R1-2311809 Draft reply LS on CPP Samsung
44. R1-2312131 Discussion on Reply LS on R1-2308644 for CPP LG Electronics
45. R1-2312147 Discussion on RAN2 LS for CPP Huawei, HiSilicon
46. R1-2312184 Discussion on Reply LS for CPP Ericsson
47. R1-2312213 Discussion on RSCP/RSCPD quality Huawei, HiSilicon
48. R1-2312392 Draft reply LS on CPP CATT
49. R1-2312393 Reply LS on CPP RAN1, CATT LS out Rel-18 NR\_pos\_enh2-Core To: RAN2 cc: RAN4, RAN3, SA2
50. R1-2312629 Draft LS on the request for specific SL PRS resource characteristic(s)/SL-PRS resource configuration Qualcomm Incorporated
51. R1-2312630 LS on the request for specific SL PRS resource characteristic(s)/SL-PRS resource configuration RAN1, Qualcomm Incorporated LS out Rel-18 NR\_pos\_enh2-Core To: RAN2, RAN3
52. R1-2310790 LS on TA validation for LPHAP RAN2, Huawei
53. R1-2310796 Reply LS on determination of UL timing to transmit SRS for positioning by UEs in RRC\_INACTIVE states RAN4, CMCC
54. R1-2310797 Reply LS to RAN1 on SRS and PRS bandwidth aggregation for positioning RAN4, ZTE Corporation
55. R1-2312145 Discussion on additional k values for BW aggregation Huawei, HiSilicon
56. R1-2312394 Draft Reply LS on SRS and PRS bandwidth aggregation for positioning Moderator (ZTE)
57. R1-2312395 Reply LS on SRS and PRS bandwidth aggregation for positioning RAN1, ZTE LS out Rel-18 NR\_pos\_enh2-Core To: RAN4 cc: RAN2, RAN3
58. R1-2310798 LS on SL positioning and carrier phase positioning measurements RAN4, CATT
59. R1-2311003 Reply LS on Priority Handling for SL Positioning RAN2, Intel Corporation
60. R1-2312216 Discussion on SL positioning MAC agreements Huawei, HiSilicon
61. R1-2310815 Remaining issues for design of SL positioning reference signal SL PRS Nokia, Nokia Shanghai Bell
62. R1-2310836 Maintenance of SL-PRS Huawei, HiSilicon
63. R1-2311094 Remaining issues on SL positioning reference signal vivo
64. R1-2311163 Remaining issues on SL positioning reference signal Spreadtrum Communications
65. R1-2311240 Remaining issues on SL positioning reference signal OPPO
66. R1-2311339 Maintenance issues on SL positioning reference signal CATT, CICTCI
67. R1-2311402 Remaining details on SL positioning reference signal xiaomi
68. R1-2311430 Remaining issues on SL positioning reference signal NEC
69. R1-2311456 Maintenance on SL positioning reference signal ZTE
70. R1-2311559 Maintenance on sidelink positioning reference signal ASUSTeK
71. R1-2311595 Remaining issues on SL-PRS design and power control for SL-PRS InterDigital, Inc.
72. R1-2311682 Remaining Issues On SL positioning reference signal Apple
73. R1-2311747 Remaining issues on SL positioning reference signal Sharp
74. R1-2311841 Maintenance on SL Positioning Reference Signal Samsung
75. R1-2311932 Remaining issues on SL positioning reference signal Ruijie Network Co. Ltd
76. R1-2312033 Reference Signal Design for SL Positioning Qualcomm Incorporated
77. R1-2312092 Maintenance for SL-PRS design MediaTek Korea Inc.
78. R1-2312123 Remaining issues on SL positioning reference signal LG Electronics
79. R1-2312185 Remaining issues on SL positioning reference signal design Ericsson
80. R1-2312295 FL summary #1 on SL positioning reference signal Moderator (Intel Corporation)
81. R1-2312296 FL summary #2 on SL positioning reference signal Moderator (Intel Corporation)
82. R1-2312297 FL summary #3 on SL positioning reference signal Moderator (Intel Corporation)
83. R1-2310816 Remaining issues for measurements and reporting for SL positioning Nokia, Nokia Shanghai Bell
84. R1-2310837 Maintenance of SL measurements Huawei, HiSilicon
85. R1-2311095 Remaining issues on measurements and reporting for SL positioning vivo
86. R1-2311142 Remaining issues on SL Positioning Measurements and Reporting Intel Corporation
87. R1-2311164 Remaining issues on measurements and reporting for SL positioning Spreadtrum Communications
88. R1-2311241 Remaining issues on measurements and reporting for SL positioning OPPO
89. R1-2311340 Maintenance issues on measurements and reporting for SL positioning CATT, CICTCI
90. R1-2311457 Maintenance on SL positioning measurements and reporting ZTE
91. R1-2311481 Maintenance on measurements and reporting for SL positioning CMCC
92. R1-2311596 Remaining issues on measurement and reporting for SL positioning InterDigital, Inc.
93. R1-2
94. 311683 Remaining Issues On Measurements and reporting for SL positioning Apple
95. R1-2311842 Maintenance on Measurements and Reporting for SL Positioning Samsung
96. R1-2311949 SL Pos. Measurement and Reporting Maintenance Lenovo
97. R1-2312034 Measurements and Reporting for SL Positioning Qualcomm Incorporated
98. R1-2312124 Remaining issues on measurements and reporting for SL positioning LG Electronics
99. R1-2312186 Remaining issues on measurements and reporting for SL positioning Ericsson
100. R1-2312416 Summary #1 on Measurements and reporting for SL positioning Moderator (vivo)
101. R1-2312417 Summary #2 on Measurements and reporting for SL positioning Moderator (vivo)
102. R1-2312418 Summary #3 on Measurements and reporting for SL positioning Moderator (vivo)
103. R1-2310817 Remaining issues for resource allocation for SL positioning reference signal SL PRS Nokia, Nokia Shanghai Bell
104. R1-2310838 Maintenance of SL-PRS resource allocation Huawei, HiSilicon
105. R1-2311096 Remaining issues on resource allocation for SL positioning reference signal vivo
106. R1-2311143 Remaining issues on resource allocation for SL positioning Intel Corporation
107. R1-2312293 Remaining issues on resource allocation for SL positioning Intel Corporation
108. Revision of R1-2311143
109. R1-2311165 Remaining issues on resource allocation for SL positioning reference signal Spreadtrum Communications
110. R1-2311242 Remaining issues on resource allocation for SL positioning reference signal OPPO
111. R1-2311341 Maintenance issues on resource allocation for SL positioning reference signal CATT, CICTCI
112. R1-2311403 Remaining details on resource allocation for SL positioning reference signal xiaomi
113. R1-2311431 Remaining issues on resource allocation for SL positioning reference signal NEC
114. R1-2311458 Maintenance on resource allocation for SL positioning reference signal ZTE
115. R1-2311482 Maintenance on resource allocation for SL positioning reference signal CMCC
116. R1-2311544 Remaining issues on resource allocation for SL PRS China Telecom
117. R1-2311560 Maintenance on Resource allocation for SL PRS ASUSTeK
118. R1-2311597 Remaining issues on SL PRS resource allocation InterDigital, Inc.
119. R1-2311684 Remaining Issues On Resource allocation for SL positioning reference signal Apple
120. R1-2311748 Remaining issues on resource allocation for SL positioning reference signal Sharp
121. R1-2311843 Maintenance on Resource Allocation for SL Positioning Reference Signal Samsung
122. R1-2312035 Resource Allocation for SL-PRS Qualcomm Incorporated
123. R1-2312125 Remaining issues on resource allocation for SL positioning reference signal LG Electronics
124. R1-2312157 Remaining issues on resource allocation for SL positioning reference signal CEWiT
125. R1-2312187 Remaining issues on resource allocation for SL positioning reference signal Ericsson
126. R1-2312420 Moderator Summary #0 on resource allocation for SL PRS Moderator (Qualcomm)
127. R1-2312472 Moderator Summary #1 on resource allocation for SL PRS Moderator (Qualcomm)
128. R1-2310839 Maintenance of CPP Huawei, HiSilicon
129. R1-2310978 Remaining issues on NR DL and UL carrier phase positioning Nokia, Nokia Shanghai Bell
130. R1-2311097 Remaining issues on carrier phase positioning vivo
131. R1-2311144 Maintenance for DL and UL Carrier Phase Positioning Intel Corporation
132. R1-2311166 Remaining issues on NR DL and UL carrier phase positioning Spreadtrum Communications
133. R1-2311224 Remaining Issues of NR carrier phase positioning OPPO
134. R1-2311342 Maintenance issues on NR DL and UL carrier phase positioning CATT
135. R1-2311404 Remaining issues on NR DL and UL carrier phase positioning xiaomi
136. R1-2311459 Maintenance on carrier phase positioning ZTE
137. R1-2311598 Remaining issues for positioning based on NR carrier phase measurement InterDigital, Inc.
138. R1-2311622 Remaining issues on NR DL and UL carrier phase positioning NTT DOCOMO, INC.
139. R1-2311685 Remaining Issues On NR DL and UL carrier phase positioning Apple
140. R1-2311844 Maintenance on NR DL and UL Carrier Phase Positioning Samsung
141. R1-2311911 Remaining issues on carrier phase positioning in NR LG Electronics
142. R1-2311950 CPP Maintenance Discussion Lenovo
143. R1-2312036 NR Carrier Phase Positioning Qualcomm Incorporated
144. R1-2312119 Remaining issues on NR DL and UL carrier phase positioning Ruijie Network Co. Ltd
145. R1-2312188 Remaining issues on NR DL and UL carrier phase positioning Ericsson
146. R1-2312269 FL Summary #1 for maintenance on NR DL and UL carrier phase positioning Moderator (CATT)
147. R1-2312270 FL Summary #2 for maintenance on NR DL and UL carrier phase positioning Moderator (CATT)
148. R1-2312271 FL Summary #3 for maintenance on NR DL and UL carrier phase positioning Moderator (CATT)
149. R1-2310840 Maintenance of LPHAP Huawei, HiSilicon
150. R1-2310979 Remaining issues on LPHAP Nokia, Nokia Shanghai Bell (Late submission)
151. R1-2311098 Remaining issues on low power high accuracy positioning vivo
152. R1-2311226 Remaining issues of low power high accuracy positioning OPPO
153. R1-2311343 Maintenance issues on low power high accuracy positioning CATT
154. R1-2311419 Remaining issues on low power high accuracy positioning NEC
155. R1-2311460 Maintenance on low power high accuracy positioning ZTE
156. R1-2311483 Maintenance on low power high accuracy positioning CMCC
157. R1-2311599 Remaining issues on Low Power High Accuracy Positioning (LPHAP) InterDigital, Inc.
158. R1-2311623 Remaining issues on low power high accuracy positioning NTT DOCOMO, INC.
159. R1-2311845 Maintenance on Low Power High Accuracy Positioning Samsung
160. R1-2312037 Discussion on LPHAP Positioning Qualcomm Incorporated
161. R1-2312105 Remaining Issues on Low Power High Accuracy Positioning Quectel
162. R1-2312189 Remaining issues on Low Power High Accuracy Positioning Ericsson
163. R1-2312302 Summary #1 for low power high accuracy positioning Moderator (Huawei, CMCC)
164. R1-2312303 Summary #2 for low power high accuracy positioning Moderator (Huawei, CMCC)
165. R1-2310841 Maintenance of positioning with BW aggregation Huawei, HiSilicon, China Telecom, China Unicom
166. R1-2310980 Remaining issues on bandwidth aggregation for positioning measurements Nokia, Nokia Shanghai Bell (Late submission)
167. R1-2311099 Remaining issues on bandwidth aggregation for positioning measurements vivo
168. R1-2311145 Maintenance for Bandwidth Aggregation for Positioning Intel Corporation
169. R1-2311167 Remaining issues on bandwidth aggregation for positioning measurements Spreadtrum Communications
170. R1-2311225 Remaining Issues of bandwidth aggregation for positioning measurement OPPO
171. R1-2311344 Maintenance issues on bandwidth aggregation for positioning measurements CATT
172. R1-2311405 Remaining issues on bandwidth aggregation for positioning measurement xiaomi
173. R1-2311461 Maintenance on BW aggregation for positioning ZTE
174. R1-2311464 Summary #1 for BW aggregation positioning Moderator (ZTE)
175. R1-2311465 Summary #2 for BW aggregation positioning Moderator (ZTE)
176. R1-2311484 Maintenance on BW aggregation for positioning measurements CMCC
177. R1-2311600 Remaining issues on bandwidth aggregation for positioning measurements InterDigital, Inc.
178. R1-2311624 Remaining issues on bandwidth aggregation for positioning measurements NTT DOCOMO, INC.
179. R1-2311686 Remaining Issues On Bandwidth aggregation for positioning measurements Apple
180. R1-2311846 Maintenance on Bandwidth Aggregation for Positioning Measurements Samsung
181. R1-2311912 Remaining issues on Bandwidth aggregation for positioning measurements LG Electronics
182. R1-2312038 Discussion on Bandwidth aggregation for Positioning Qualcomm Incorporated
183. R1-2312093 Maintenance for bandwidth aggregation for positioning MediaTek Korea Inc.
184. R1-2312190 Remaining issues on bandwidth aggregation for positioning measurements Ericsson
185. R1-2311464 Summary #1 for BW aggregation positioning Moderator (ZTE)
186. R1-2311465 Summary #2 for BW aggregation positioning Moderator (ZTE)
187. R1-2310823 On remaining open issues and maintenance for RedCap UE Positioning FUTUREWEI
188. R1-2310842 Maintenance of RedCap positioning Huawei, HiSilicon
189. R1-2310981 Remaining issues on Positioning for RedCap UEs Nokia, Nokia Shanghai Bell (Late submission)
190. R1-2310989 Remaining issues of positioning for RedCap UEs New H3C Technologies Co., Ltd.
191. R1-2311100 Remaining issues on positioning for RedCap UEs vivo
192. R1-2311146 Remaining details of Positioning for RedCap Ues Intel Corporation
193. R1-2311168 Remaining issues on positioning for RedCap UEs Spreadtrum Communications
194. R1-2311227 Remaining issues of positioning for RedCap UEs OPPO
195. R1-2311345 Maintenance issues on positioning for RedCap UEs CATT
196. R1-2311418 Remaining issues on positioning for RedCap UEs NEC
197. R1-2311462 Maintenance on Positioning for RedCap UEs ZTE
198. R1-2311485 Maintenance on RedCap UE positioning CMCC
199. R1-2311601 Remaining issues on positioning for RedCap UEs InterDigital, Inc.
200. R1-2311625 Remaining issues on positioning for RedCap UEs NTT DOCOMO, INC.
201. R1-2311687 Remaining Issues On Positioning for RedCap UEs Apple
202. R1-2311847 Maintenance on Positioning for RedCap UEs Samsung
203. R1-2311913 Remaining issues on positioning support for RedCap UEs LG Electronics
204. R1-2312039 Maintenance for Positioning for Reduced Capabilities UEs Qualcomm Incorporated
205. R1-2312094 Maintenance for RedCap UE for positioning MediaTek Korea Inc.
206. R1-2312191 Remaining issues on positioning for RedCap UEs Ericsson
207. R1-2312342 Feature Lead summary #1 for Positioning for RedCap UEs Moderator (Ericsson)
208. R1-2312343 Feature Lead summary #2 for Positioning for RedCap UEs Moderator (Ericsson)
209. R1-2312344 Feature Lead summary #3 for Positioning for RedCap UEs Moderator (Ericsson)
210. R1-2312345 Feature Lead summary #4 for Positioning for RedCap UEs Moderator (Ericsson)
211. R1-2312652 Feature Lead summary #5 for Positioning for RedCap UEs Moderator (Ericsson)
212. R1-2312609 Session Notes of AI 8.16.3 Ad-Hoc Chair (AT&T)
213. R1-2310826 Sidelink positioning UE features FUTUREWEI
214. R1-2310843 UE features for Rel-18 positioning Huawei, HiSilicon
215. R1-2310891 On UE features for expanded and improved NR positioning Nokia, Nokia Shanghai Bell
216. R1-2311119 Discussion on Rel-18 positioning UE features vivo
217. R1-2311147 On UE features for expanded and improved NR positioning Intel Corporation
218. R1-2311185 Discussion on UE features for expanded and improved NR positioning Spreadtrum Communications
219. R1-2311277 Discussion on UE features for expanded and improved NR positioning OPPO
220. R1-2311330 Remaining issues on UE features for expanded and improved NR positioning CATT
221. R1-2311395 Discussion on UE features for expanded and improved NR positioning xiaomi
222. R1-2311463 UE features for Rel-18 NR positioning ZTE
223. R1-2311502 Discussion on UE features for expanded and improved NR positioning CMCC
224. R1-2311555 Discussion on UE features for Rel-18 NR positioning China Telecom
225. R1-2311644 Discussion on UE features for expanded and improved NR positioning NTT DOCOMO, INC.
226. R1-2311708 On UE features for expanded and improved NR positioning Apple
227. R1-2311869 UE features for expanded and improved NR positioning Samsung
228. R1-2312063 UE features for expanded and improved NR positioning Qualcomm Incorporated
229. R1-2312080 Summary of UE features for expanded and improved NR positioning Moderator (AT&T)
230. R1-2312192 UE features for expanded and improved NR positioning EricssonR1-2312572 Updated RAN1 UE features list for Rel-18 NR after RAN1#115 Moderators (AT&T, NTT DOCOMO, INC.)

###### RAN2 #123bis

1. [R2-2309406](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309406_C1-236562.docx) LS on LPP message and supplementary service event report over a user plane connection between UE and LMF (C1-236562; contact: Ericsson) CT1 LS in Rel-18 5G\_eLCS\_Ph3 To:SA2 Cc:SA3, RAN2, CT4
2. [R2-2309452](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309452_R4-2314357.docx) Reply LS on single measurement gap for DL PRS with Rx Hopping (R4-2314357; contact: Xiaomi) RAN4 LS in Rel-18 NR\_pos\_enh2-Core To:RAN1 Cc:RAN2
3. [R2-2309477](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309477_S2-2310025.docx) Reply LS on Reply LS on security aspects for Ranging/Sidelink Positioning (S2-2310025; contact: Xiaomi) SA2 LS in Rel-18 Ranging\_SL To:SA2 Cc:RAN2
4. [R2-2309409](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309409_R1-2308349.docx) Reply LS on LPHAP (R1-2308349; contact: Huawei) RAN1 LS in Rel-18 NR\_pos\_enh2-Core To:RAN2 Cc:RAN3, RAN4
5. [R2-2309419](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309419_R1-2308559.docx) LS on Priority Handling for SL Positioning (R1-2308559; contact: Intel) RAN1 LS in Rel-18 NR\_pos\_enh2 To:RAN2
6. [R2-2309423](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309423_R1-2308571.docx) LS on the longer PRS/SRS periodicity for LPHAP (R1-2308571; contact: Huawei) RAN1 LS in Rel-18 NR\_pos\_enh2-Core To:RAN2, RAN3
7. [R2-2311386](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311386%20LS%20to%20RAN1%20on%20extended%20PRS%20and%20SRS%20periodicity.docx) LS on extended PRS and SRS periodicity Huawei LS out Rel-18 NR\_pos\_enh2-Core To:RAN1 Cc:RAN3
8. [R2-2309453](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309453_R4-2314358.docx) LS on SL positioning and CPP measurements report mapping (R4-2314358; contact: CATT) RAN4 LS in Rel-18 NR\_pos\_enh2-Core To:RAN2, RAN3 Cc:RAN1
9. [R2-2309454](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309454_R4-2314360.docx) Reply LS on LPHAP (R4-2314360; contact: Huawei) RAN4 LS in Rel-18 NR\_pos\_enh2 To:RAN2 Cc:RAN1, RAN3
10. [R2-2309427](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309427_R1-2308644.docx) Reply LS on PRU Procedures (R1-2308644; contact: CATT) RAN1 LS in Rel-18 NR\_pos\_enh2-Core, 5G\_eLCS\_Ph3 To:SA2, RAN2, RAN3 Cc:RAN4
11. [R2-2309428](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309428_R1-2308646.doc) LS on TRP ID for positioning with bandwidth aggregation (R1-2308646; contact: ZTE) RAN1 LS in Rel-18 NR\_pos\_enh2 To:RAN2
12. [R2-2309429](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309429_R1-2308649.docx) LS on RSRP based TA validation for LPHAP (R1-2308649; contact: Huawei) RAN1 LS in Rel-18 NR\_pos\_enh2-Core To:RAN2
13. [R2-2311388](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311388%20Summary%20of%20%5bAT123bis%5d%5b424%5d%5bPOS%5d%20LS%20to%20RAN1%20and%20RAN4%20on%20TA%20validation%20for%20LPHAP.docx) Summary of [AT123bis][428][POS] LS to RAN1 and RAN4 on TA validation for LPHAP Huawei discussion Rel-18
14. [R2-2311387](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311387%20LS%20to%20RAN1RAN4%20on%20TA%20validation%20for%20LPHAP.docx) LS on TA validation for LPHAP Huawei LS out Rel-18 NR\_pos\_enh2-Core To:RAN1,RAN4

1. [R2-2309637](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202310 - RAN2_123bis, Xiamen\\Extracts\\R2-2309637 Draft reply LS on LPHAP TA validation_v00.doc" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202310 - RAN2_123bis, Xiamen\Extracts\R2-2309637 Draft reply LS on LPHAP TA validation_v00.doc) Draft reply LS on LPHAP TA validation Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2 To:RAN1
2. [R2-2309430](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309430_R1-2308651.docx) LS on the resource selection window for Scheme 2 in a dedicated resource pool for positioning (R1-2308651; contact: Qualcomm) RAN1 LS in Rel-18 NR\_pos\_enh2 To:RAN2 Cc:SA2
3. [R2-2311389](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311389_(Reply%20LS%20on%20SL-PRS%20Delay%20Budget).docx) Reply LS on the resource selection window for Scheme 2 in a dedicated resource pool for positioning Qualcomm Incorporated LS out Rel-18 NR\_pos\_enh2-Core To:RAN1,SA2
4. [R2-2309474](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309474_S2-2309926.docx) Response LS to RAN WG2 on reporting positioning measurements taken in RRC\_IDLE (S2-2309926; contact: CATT) SA2 LS in Rel-18 NR\_pos\_enh2, 5G\_eLCS\_Ph3 To:RAN2 Cc:RAN1
5. [R2-2309597](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309597%20Reply%20LS%20to%20SA2%20on%20reporting%20positioning%20measurements%20taken%20in%20RRC_IDLE.docx) Reply LS to SA2 on reporting positioning measurements taken in RRC\_IDLE CATT LS out Rel-18 NR\_pos\_enh2, 5G\_eLCS\_Ph3 To:SA2
6. [R2-2309465](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309465_R4-2314483.docx) LS on PRS/RRM measurement when eDRX cycle > 10.24s (R4-2314483; contact: Ericsson) RAN4 LS in Rel-18 NR\_pos\_enh2-Core To:RAN2
7. [R2-2311265](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311265%20LS.docx) LS on PRS/RRM measurement when eDRX cycle > 10.24s Ericsson LS out Rel-18 NR\_pos\_enh2 To:RAN4
8. [R2-2309596](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309596%20Work%20Plan%20for%20Rel-18%20WI%20on%20Expanded%20and%20Improved%20NR%20Positioning.docx) Work Plan for Rel-18 WI on Expanded and Improved NR Positioning CATT, Intel Corporation, Ericsson Work Plan Rel-18
9. [R2-2309598](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309598%20%5bDraft%5dReply%20LS%20on%20Reply%20LS%20on%20PRU%20Procedures.doc) [Draft]Reply LS on Reply LS on PRU Procedures CATT LS out Rel-18 NR\_pos\_enh2 To:RAN1 Cc:RAN3, RAN4, SA2
10. [R2-2311376](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311376%20Report%20of%20%5bAT123bis%5d%5b402%5d%5bPOS%5d%20PRUs%20(CATT).docx) Report of [AT123bis][402][POS] PRUs (CATT) CATT discussion Rel-18
11. [R2-2311375](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311375%20Reply%20LS%20on%20R1-2308644%20for%20CPP.doc) Reply LS on R1-2308644 for CPP CATT LS out Rel-18 NR\_pos\_enh2 To:RAN1 Cc:RAN3, RAN4, SA2
12. [R2-2311565](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311565%20Reply%20LS%20on%20R1-2308644%20for%20CPP.doc) Reply LS on R1-2308644 for CPP CATT LS out Rel-18 NR\_pos\_enh2 To:RAN1 Cc:RAN3, RAN4, SA2
13. [R2-2309599](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309599%20Reply%20LS%20on%20TRP%20ID%20for%20positioning%20with%20bandwidth%20aggregation.doc) Reply LS on TRP ID for positioning with bandwidth aggregation CATT LS out Rel-18 NR\_pos\_enh2 To:RAN1
14. [R2-2309600](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309600%20LPP%20running%20CR%20for%20LPHAP.docx) LPP running CR for LPHAP CATT draftCR Rel-18 37.355 17.6.0 B NR\_pos\_enh2
15. [R2-2309601](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309601%20LPP%20running%20CR%20for%20Carrier%20Phase%20Positioning.docx) LPP running CR for Carrier Phase Positioning CATT draftCR Rel-18 37.355 17.6.0 B NR\_pos\_enh2
16. [R2-2309602](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309602%20LPP%20running%20CR%20for%20bandwidth%20aggregation.docx) LPP Running CR for bandwidth aggregation CATT draftCR Rel-18 37.355 17.6.0 B NR\_pos\_enh2
17. [R2-2309603](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309603%20LPP%20running%20CR%20for%20RAT-dependent%20integrity.docx) LPP running CR for RAT-dependent integrity CATT draftCR Rel-18 37.355 17.6.0 B NR\_pos\_enh2
18. [R2-2309604](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309604%20LPP%20running%20CR%20for%20Redcap%20Positioning.docx) LPP Running CR for Redcap positioning CATT draftCR Rel-18 37.355 17.6.0 B NR\_pos\_enh2
19. [R2-2309632](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309632%20Draft%20running%20MAC%20CR%20for%20LPHAP_final.docx) Running MAC CR for LPHAP Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2
20. [R2-2309633](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309633%20Draft%20running%20MAC%20CR%20for%20sidelink%20positioning_final.docx) Running MAC CR for Sidelink Positioning Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2
21. [R2-2309635](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309635%20Draft%20Running%20MAC%20CR%20for%20CA%20positioning_final.docx) Running MAC CR for CA positioniing Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2
22. [R2-2309636](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309636%20Draft%20Running%20MAC%20CR%20for%20REDCAP%20positioning_final.docx) Running MAC CR for REDCAP positioning Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2
23. [R2-2309667](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309667%20Running%2038300%20CR%20for%20sidelink%20positioning.docx) Running 38300 CR for sidelink positioning vivo discussion Rel-18 FS\_NR\_pos\_enh2
24. [R2-2310860](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310860%20SLRRC.docx) Rapporteur CR for Sidelink Positioning RRC Changes Ericsson discussion Rel-18
25. [R2-2310861](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310861%20CPP.docx) Rapporteur CR for CPP Positioning RRC Changes Ericsson draftCR Rel-18 38.331 17.6.0 B NR\_pos\_enh2
26. [R2-2310862](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310862%20recap.docx) Rapporteur CR for Redcap Positioning RRC Changes Ericsson draftCR Rel-18 38.331 17.6.0 B NR\_pos\_enh2
27. [R2-2310863](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310863%20BWA.docx) Rapporteur CR for bandwidth aggregation Ericsson draftCR Rel-18 38.331 17.6.0 B NR\_pos\_enh2
28. [R2-2310911](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310911_(Running%20Stage%202%20CR)_v02.docx) Running Stage 2 CR for 'Expanded and improved NR positioning' Qualcomm Incorporated draftCR Rel-18 38.305 17.6.0 B NR\_pos\_enh2
29. [R2-2310980](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310980%20Running%20CR%20for%20RRC.docx) Running CR for Positioning Ericsson draftCR Rel-18 38.331 17.6.0 B NR\_pos\_enh2
30. [R2-2311550](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311550%20Report%20of%20%5bAT123bis%5d%5b403%5d%5bPOS%5d%20Rel-18%20LPP%20CR(CATT).docx) [AT123bis][403][POS] LPP CRs (CATT) CATT discussion Rel-18
31. [R2-2311396](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311396%20LPP%20running%20CR%20for%20RAT-dependent%20integrity.docx) LPP running CR for RAT-dependent integrity CATT draftCR Rel-18 37.355 17.6.0 B NR\_pos\_enh2
32. [R2-2311397](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311397%20LPP%20running%20CR%20for%20Carrier%20Phase%20Positioning.docx) LPP running CR for Carrier Phase Positioning CATT draftCR Rel-18 37.355 17.6.0 B NR\_pos\_enh2
33. [R2-2311398](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311398%20LPP%20running%20CR%20for%20bandwidth%20aggregation.docx) LPP Running CR for bandwidth aggregation CATT draftCR Rel-18 37.355 17.6.0 B NR\_pos\_enh2
34. [R2-2311399](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311399%20LPP%20running%20CR%20for%20LPHAP%20and%20Redcap%20positioning.docx) LPP running CR for LPHAP and Redcap positioning CATT draftCR Rel-18 37.355 17.6.0 B NR\_pos\_enh2
35. [R2-2311551](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311551%20Draft%20running%20MAC%20CR%20for%20sidelink%20positioning.docx) Running MAC CR for Sidelink Positioning Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2
36. [R2-2311563](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311563%20Draft%20running%20MAC%20CR%20for%20LPHAP.docx) Running MAC CR for LPHAP Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2
37. [R2-2311564](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311564%20Summary%20of%20%5bAT123bis%5d%5b404%5d%5bPOS%5d%20Positioning%20MAC%20CRs%20(Huawei).docx) Summary of [AT123bis][404][POS] Positioning MAC CRs (Huawei) Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2
38. [R2-2311553](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311553.docx) [AT123][405][POS] Positioning RRC CRs (Ericsson) Ericsson discussion Rel-18
39. [R2-2311552](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311552%20Running%20RRC.docx) Running CR for Positioning Ericsson draftCR Rel-18 38.331 17.6.0 B NR\_pos\_enh2
40. [R2-2311567](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311567_(Pos%20Stage%202)_v09_Rap.docx) Summary of [AT123bis][406][POS] Positioning 38.305 CR (Qualcomm) Qualcomm Incorporated discussion Rel-18 FS\_NR\_pos\_enh2
41. [R2-2311554](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311554_(Running%20Stage%202%20CR)_v04.docx) Running Stage 2 CR for 'Expanded and improved NR positioning' Qualcomm Incorporated draftCR Rel-18 38.305 17.6.0 B NR\_pos\_enh2
42. [R2-2311555](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311555%20Running%2038300%20CR%20for%20sidelink%20positioning.docx) Running 38300 CR for sidelink positioning vivo discussion Rel-18 FS\_NR\_pos\_enh2
43. [R2-2310218](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310218%20SLPP%20considerations.docx) Further considerations on SLPP specification Intel Corporation discussion Rel-18 NR\_pos\_enh2
44. [R2-2310219](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310219%2038.355%20TP%20on%20SLPP%20sessino%20handling.docx) TS38.355 TP on SLPP session and session procedure Intel Corporation discussion Rel-18 NR\_pos\_enh2
45. [R2-2310220](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310220%2038.355%20TP%20on%20ASN1.docx) TS38.355 TP on ASN.1 part Intel Corporation discussion Rel-18 NR\_pos\_enh2
46. R2-2310221 TS38.355 TP on SLPP procedure Intel Corporation discussion Rel-18 NR\_pos\_enh2
47. [R2-2310222](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Docs\R2-2310222.zip) TS 38.355 v1.1.0 Intel Corporation draft TS Rel-18 38.355 1.1.0 NR\_pos\_enh2
48. [R2-2310444](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310444%20Discussion%20on%20R18%20positioning%20UE%20capabilities_V2.doc) Discussion on R18 positioning UE capabilities Beijing Xiaomi Mobile Software discussion Rel-18
49. [R2-2311390](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311390%20Summary%20of%20%5bAT123bis%5d%5b426%5d%5bPOS%5d%20Rel-18%20positioning%20capabilities%20(Xiaomi).doc) Summary of [AT123bis][426][POS] Rel-18 positioning capabilities (Xiaomi) Beijing Xiaomi Mobile Software discussion Rel-18
50. R2-2310864 Running RRC CR for Positioning Ericsson CR Rel-18 38.331 17.6.0 4355 - B NR\_pos\_enh2 Withdrawn
51. [R2-2310216](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310216.docx) Report of [Post123][401][POS] RAN2 impact from SL-PRS parameters (Intel) Intel Corporation discussion Rel-18 NR\_pos\_enh2
52. [R2-2309634](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309634%20Summary%20of%20%5bPost123%5d%5b403%5d%5bPOS%5d%20Sidelink%20positioning%20MAC%20issues%20(Huawei).docx) Summary of [Post123][403][POS] Sidelink positioning MAC issues (Huawei) Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2
53. [R2-2311383](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311383%20Summary%20of%20%5bAT123bis%5d%5b428%5d%5bPOS%5d%20Discussion%20of%20SL%20positioning%20MAC%20issues%20(Huawei).docx) Summary of [AT123bis][428][POS] Discussion of SL positioning MAC issues (Huawei) Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2
54. [R2-2309605](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309605%20SLPP%20and%20RRC%20Signaling%20Design%20for%20SL%20positioning.docx) SLPP and RRC Signaling Design for SL positioning CATT discussion Rel-18
55. [R2-2310014](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310014%20Discussion%20on%20sidelink%20positioning.docx) Discussion on sidelink positioning Spreadtrum Communications discussion Rel-18
56. [R2-2310194](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310194.docx) SLPP signalling and procedures MediaTek Inc. discussion Rel-18 NR\_pos\_enh2-Core
57. [R2-2310347](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310347-SL-POS-procedures-v1.docx) UE only SL positioning procedure Apple discussion Rel-18 NR\_pos\_enh2
58. [R2-2310691](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310691.docx) Discussion of SLPP / LPP signalling procedures Nokia Netherlands discussion Rel-18
59. [R2-2310912](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310912%20_(SLPP%20Details).docx) Further Considerations on SLPP Design Qualcomm Incorporated discussion
60. [R2-2311374](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311374_%5bAT123bis%5d%5b401%5d%5bPOS%5d%20Progressing%20TS%2038.355%20(Intel)-report-v01.docx) [AT123bis][401][POS] Progressing TS 38.355 (Intel) Intel Corporation discussion Rel-18 NR\_pos\_enh2
61. [R2-2309668](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309668%20Remaining%20issues%20on%20higher%20layer%20aspects%20for%20sidelink%20positioning.docx) Remaining issues on higher layer aspects for sidelink positioning vivo discussion Rel-18 FS\_NR\_pos\_enh2
62. [R2-2310217](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310217.docx) Further considerations on sidelink positioning Intel Corporation discussion Rel-18 NR\_pos\_enh2
63. [R2-2310430](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310430%20Remaining%20issues%20on%20lower%20layer%20aspects%20for%20R18%20sidelink%20positioning%20.docx) Remaining issues on lower layer aspects for R18 sidelink positioning LG Electronics Inc. discussion Rel-18
64. [R2-2309578](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309578_Sidelink_Fraunhofer.docx) UE Positioning using Sidelink Fraunhofer IIS, Fraunhofer HHI discussion
65. [R2-2309630](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309630%20Discussion%20on%20higher%20layer%20aspects%20for%20Sidelink%20Positioning_final.docx) Discussion on higher layer aspects for sidelink positioning Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2
66. [R2-2309631](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309631%20Discussion%20on%20lower%20layer%20aspects%20for%20sidelink%20positoining_final.docx) Discussion on lower layer aspects for SL positioning Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2
67. [R2-2309669](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309669%20Discussion%20on%20transmission%20and%20measurement%20of%20SL-PRS.docx) Discussion on transmission and measurement of SL-PRS vivo discussion Rel-18 FS\_NR\_pos\_enh2
68. [R2-2309741](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309741-Further%20Discussions%20on%20Sidelink%20Positioning%20and%20Ranging.docx) Further discussion on SL positioning and ranging CEWiT discussion
69. [R2-2309759](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309759%20Discussion%20on%20SL%20positioning.doc) Discussion on SL positioning Xiaomi discussion Rel-18
70. [R2-2310044](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310044%20Discussion%20on%20UE%20assistance%20information%20for%20SL-PRS.doc) Discussion on UE assistance information for SL-PRS Samsung Electronics Co., Ltd discussion Rel-18 NR\_pos\_enh2
71. [R2-2310076](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310076%20(7.2.2)%20open%20issue%20for%20SL%20POS%20.docx) Open issues regarding SLPP session Samsung Guangzhou Mobile R&D discussion
72. [R2-2310195](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310195.docx) SLPP information forwarding MediaTek Inc. discussion Rel-18 NR\_pos\_enh2-Core
73. [R2-2310217](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310217.docx) Further considerations on sidelink positioning Intel Corporation discussion Rel-18 NR\_pos\_enh2
74. [R2-2310275](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310275%20Considerations%20on%20Sidelink%20positioning.doc) Considerations on Sidelink positioning CMCC discussion Rel-18 NR\_pos\_enh2
75. [R2-2310379](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310379%20Further%20discussion%20on%20sidelink%20positioning.docx) Further discussion on sidelink positioning OPPO discussion Rel-18 NR\_pos\_enh2
76. [R2-2310429](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310429%20Remaining%20issues%20on%20higher%20layer%20aspects%20for%20R18%20sidelink%20positioning.docx) Remaining issues on higher layer aspects for R18 sidelink positioning LG Electronics Inc. discussion Rel-18
77. [R2-2310436](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Docs\R2-2310436.zip) Discussion on sidelink positioning InterDigital, Inc. discussion Rel-18 NR\_pos\_enh2-Core
78. [R2-2310541](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310541%20Discussion%20on%20lower-layer%20related%20sidelink%20positioning.docx) Discussion on lower-layer related sidelink positioning ZTE Corporation discussion Rel-18 NR\_pos\_enh2
79. [R2-2310543](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310543%20Discussion%20on%20sidelink%20positioning.docx) Discussion on sidelink positioning ZTE Corporation discussion Rel-18 NR\_pos\_enh2
80. [R2-2310680](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310680.docx) Discussion of resource allocation aspects Nokia Netherlands discussion Rel-18
81. [R2-2310759](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310759_SL_Pos_Res.docx) Considerations on multiplexing, congestion control and ARP Sony discussion Rel-18 FS\_NR\_pos\_enh2
82. [R2-2310789](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310789_SLPosDiscussion.docx) SL Positioning Discussion Lenovo discussion Rel-18
83. [R2-2310833](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310833%20Bosch_Discussion_on_sidelink_positioning.docx) Further discussion on sidelink positioning ROBERT BOSCH GmbH discussion Rel-18 Late
84. [R2-2310848](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310848.docx) Discussion of session management for SL positioning Nokia Netherlands discussion Rel-18
85. [R2-2310856](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310856%20SL.docx) Remaining issue for NW involved Sidelink positioning Ericsson discussion Rel-18
86. [R2-2311032](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311032_On%20sidelink%20positioning%20discovery%20and%20cap%20exchange.docx) On sidelink positioning discovery and capabilities exchange Philips International B.V. discussion NR\_pos\_enh2
87. [R2-2311035](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311035_On%20the%20stability%20of%20Anchor%20UE%20Location.doc) On the stability of Anchor UE location Philips International B.V. discussion NR\_pos\_enh2
88. [R2-2309924](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309924%20Discussion%20on%20RAT-dependent%20integrity.doc) Discussion on RAT-dependent integrity Lenovo discussion Rel-18
89. [R2-2310415](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310415%20Discussion%20on%20RAT-dependent%20positioning%20integrity.doc) Discussion on RAT-dependent positioning integrity Xiaomi discussion.
90. [R2-2310380](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310380%20Consideration%20on%20RAT-dependent%20positioning%20integrity.docx) Consideration on RAT-dependent positioning integrity OPPO discussion Rel-18 NR\_pos\_enh2
91. [R2-2310823](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310823%20R18%20NR%20POS%20A723%20RAT%20dependent%20integrity.doc) Discussion on RAT dependent integrity InterDigital Inc. discussion Rel-18
92. [R2-2310857](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310857%20Integrity.docx) Support for UE-based integrity Ericsson discussion Rel-18
93. [R2-2310914](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310914_(integrity).docx) Remaining Issues for Integrity of NR Positioning Technologies Qualcomm Incorporated discussion
94. [R2-2310996](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310996%20Positioning%20Integrity.docx) Signalling about beam related information for positioning integrity Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_pos\_enh2-Core
95. [R2-2309606](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309606%20Discussion%20on%20LPHAP.docx) Discussion on LPHAP CATT discussion Rel-18
96. [R2-2310381](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310381%20Discussion%20on%20the%20leftover%20issues%20of%20LPHAP%20enhancement.docx) Discussion on the leftover issues of LPHAP enhancement OPPO discussion Rel-18 NR\_pos\_enh2
97. [R2-2309579](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309579_LPHAP_Fraunhofer.docx) Reliable LPHAP position with extended DRX cycle Fraunhofer IIS, Fraunhofer HHI discussion
98. [R2-2309629](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309629%20Discussion%20on%20LPHAP_final.docx) Discussion on LPHAP Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2
99. [R2-2309670](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309670%20Remaining%20issues%20of%20LPHAP.doc) Remaining issues of LPHAP vivo discussion Rel-18 FS\_NR\_pos\_enh2
100. [R2-2309922](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309922_Discussion%20on%20alignment%20between%20(e)DRX%20and%20PRS.docx) Discussion on alignment between (e)DRX and PRS Samsung discussion Rel-18 NR\_pos\_enh2
101. [R2-2309923](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309923_Discussion%20on%20SRS%20configuration%20in%20RRC_INACTIVE.docx) Discussion on SRS configuration in RRC\_INACTIVE Samsung discussion Rel-18 NR\_pos\_enh2
102. [R2-2309925](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309925%20Discussion%20on%20low%20power%20high%20accuracy%20positioning.doc) Discussion on low power high accuracy positioning Lenovo discussion Rel-18
103. [R2-2310223](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310223%20LPHAP.docx) Further considerations on LPHAP Intel Corporation discussion Rel-18 NR\_pos\_enh2
104. [R2-2310276](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310276%20Further%20considerations on LPHAP.doc) Further considerations on LPHAP CMCC discussion Rel-18 NR\_pos\_enh2
105. [R2-2310416](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310416%20Discussion%20on%20LPHA%20positioning.doc) Discussion on LPHA positioning Xiaomi discussion
106. [R2-2310540](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310540%20Discussion%20on%20LPHAP.docx) Discussion on LPHAP ZTE Corporation discussion Rel-18 NR\_pos\_enh2
107. [R2-2310760](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310760_LPHAP.docx) Considerations on Low Power High Accuracy Positioning Sony discussion Rel-18 FS\_NR\_pos\_enh2
108. [R2-2310824](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310824%20R18%20NR%20POS%20A724%20LPHAP.doc) Discussion on LPHAP InterDigital Inc. discussion Rel-18
109. [R2-2310858](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310858%20LPHAP.docx) Remaining issue on Low Power High Accuracy Positioning Ericsson discussion Rel-18
110. [R2-2310915](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310915_(LPHAP).docx) Remaining issues for LPHAP Qualcomm Incorporated discussion
111. [R2-2310998](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310998%20%5bPost123%5d%5b402%5d%20RAN2%20impact%20of%20RAN1-led%20positioning%20objectives_v13_Rapp.docx) [Post123][402][POS] RAN2 impact of RAN1-led positioning objectives (Nokia) Nokia, Nokia Shanghai Bell report Rel-18 NR\_pos\_enh2-Core
112. [R2-2311391](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2311391.docx) LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning Nokia LS out Rel-18 NR\_pos\_enh2-Core To:RAN1
113. [R2-2309926](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309926%20Discussion%20on%20RedCap,%20carrier%20phase%20positioning%20and%20PRS,SRS%20bandwidth%20aggregation.doc) Discussion on RedCap positioning, carrier phase positioning and PRS/SRS bandwidth aggregation Lenovo discussion Rel-18
114. [R2-2309607](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309607%20Discussion%20on%20bandwidth%20aggregation%20for%20positioning.docx) Discussion on bandwidth aggregation for positioning CATT discussion Rel-18
115. [R2-2309608](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309608%20LPP%20and%20RRC%20impacts%20to%20enable%20Carrier%20Phase%20Positioning.docx) LPP and RRC impacts to enable Carrier Phase Positioning CATT discussion Rel-18
116. [R2-2309671](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309671%20RAN2-related%20issues%20about%20bandwidth%20aggregation.docx) RAN2-related issues about bandwidth aggregation vivo discussion Rel-18 FS\_NR\_pos\_enh2
117. [R2-2309893](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2309893%20Discussion%20on%20RAN1%20led%20positioning%20topics.docx) Discussion on RAN1 led positioning topics Huawei, HiSilicon discussion
118. [R2-2310346](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310346-on-demand-prs-aggregation-v0.docx) On PRS bandwidth aggregation Apple discussion Rel-18 NR\_pos\_enh2
119. [R2-2310417](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310417%20Discussion%20on%20carrier%20phase%20positioning%20and%20bandwidth%20aggregation%20for%20positioning.doc) Discussion on carrier phase positioning and bandwidth aggregation for positioning Xiaomi discussion
120. [R2-2310542](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310542%20Discussion%20on%20BW%20aggregation%20and%20RedCap%20positioning.docx) Discussion on BW aggregation and RedCap positioning ZTE Corporation discussion Rel-18 NR\_pos\_enh2
121. [R2-2310761](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310761_RedCap.docx) Discussion on Frequency hopping for Positioning for RedCap Ues Sony discussion Rel-18 FS\_NR\_pos\_enh2
122. [R2-2310825](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310825%20R18%20NR%20POS%20A725%20Others.doc) Discussion on positioning for RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning InterDigital Inc. discussion Rel-18
123. [R2-2310859](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310859%20RAN1LedTopic.docx) Discussion based upon RAN1 agreements on CPP, RedCap, Bandwidth aggregation Ericsson discussion Rel-18
124. [R2-2310916](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202310%20-%20RAN2_123bis,%20Xiamen\Extracts\R2-2310916_(PRS%20Aggregation).docx) Configuration Enhancements for DL-PRS Aggregation Qualcomm Incorporated discussion

###### RAN2 #124

1. [R2-2311707](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2311707_R1-2310478.doc) LS on PRS bandwidth aggregation (R1-2310478; contact: ZTE) RAN1 LS in Rel-18 NR\_pos\_enh2 To:RAN4 Cc:RAN2, RAN3
2. [R2-2311734](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Docs\R2-2311734.zip) Reply LS on Authorization and Provisioning for Ranging/SL positioning service (R3-235933; contact: Xiaomi) RAN3 LS in Rel-18 Ranging\_SL, NR\_pos\_enh2 To:SA2 Cc:RAN2, CT4
3. [R2-2311744](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2311744_R4-2317389.docx) Reply LS to RAN1 on SRS and PRS bandwidth aggregation for positioning (R4-2317389; contact: ZTE) RAN4 LS in Rel-18 NR\_pos\_enh2 To:RAN1 Cc:RAN2, RAN3
4. [R2-2311745](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2311745_R4-2317390.docx) LS on report mapping for positioning measurements with PRS\_SRS bandwidth aggregation (R4-2317390; contact: Ericsson) RAN4 LS in Rel-18 NR\_pos\_enh2-Core To:RAN2, RAN3 Cc:RAN1
5. [R2-2311746](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2311746_R4-2317391.docx) LS on SL positioning and carrier phase positioning measurements (R4-2317391; contact: CATT) RAN4 LS in Rel-18 NR\_pos\_enh2 To:RAN1, RAN2, RAN3
6. [R2-2311704](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2311704_R1-2310402.docx) Reply LS on SL positioning MAC agreements (R1-2310402; contact: Huawei) RAN1 LS in Rel-18 FS\_eLCS\_Ph3, NR\_pos\_enh2 To:RAN2 Cc:SA2
7. [R2-2312265](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312265%20Draft%20reply%20LS%20on%20L1%20priority.doc) Draft reply LS on L1 priority Huawei, HiSilicon LS out Rel-18 NR\_pos\_enh2 To:RAN1
8. [R2-2311765](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2311765_S2-2311896.docx) Reply LS to Reply LS to SA2 on assistance information provided to UE (S2-2311896; contact: Xiaomi) SA2 LS in Rel-18 Ranging\_SL To:RAN2, CT1, CT4
9. [R2-2313597](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Docs\R2-2313597.zip) Reply LS on security aspects for Ranging/Sidelink Positioning (S3-235078; contact: Xiaomi) SA3 LSin Rel-18 Ranging\_SL To:SA2, RAN2
10. R2-2313794 (LS from [401]) Xiaomi LS out Rel-18 NR\_pos\_enh2 To:SA3
11. [R2-2313111](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313111%20Open%20issue%20list%20for%20Rel-18%20positioning%20WI.docx) Open issues list on Rel-18 positioning WI CATT,Intel Corporation, Ericsson, Huawei, Qualcomm Incorporated, xiaomi, discussion Rel-18 NR\_pos\_enh2
12. [R2-2311860](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2311860%20Introduction%20of%20sidelink%20positioning%20in%2038300.docx) Introduction of sidelink positioning in 38300 vivo CR Rel-18 38.300 17.6.0 0722 - B FS\_NR\_pos\_enh2 Revised
13. [R2-2313543](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313543%20Introduction%20of%20sidelink%20positioning%20in%2038300.docx) Introduction of sidelink positioning in 38300 vivo CR Rel-18 38.300 17.6.0 0722 1 B FS\_NR\_pos\_enh2 R2-2311860
14. [R2-2312787](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312787_(Summary%20of%20%5bPost123bis%5d%5b411%5d%5bPOS%5d).docx) Summary of [Post123bis][411][POS] Rel-18 positioning 38.305 CR (Qualcomm) Qualcomm Incorporated discussion
15. [R2-2312786](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312786_(Stage%202%20CR%20NR_pos_enh2)_v06.docx) Introduction of 'Expanded and improved NR positioning' Qualcomm Incorporated (Rapporteur) CR Rel-18 38.305 17.6.0 0150 - B NR\_pos\_enh2
16. [R2-2312259](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312259%20Summary%20of%20email%20discussion%20%5bPost123bis%5d%5b409%5d%5bPOS%5d%20Rel-18%20positioning%20MAC%20CRs%20(Huawei).DOCX) Summary of email discussion [Post123bis][409][POS] Rel-18 positioning MAC CRs (Huawei) Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2
17. [R2-2312258](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312258%20Summary%20of%20discussion%20on%20proposed%20WF%20for%20R18%20MAC%20spec%20drafting.docx) Summary of discussion on proposed WF for R18 MAC spec drafting Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2
18. [R2-2312260](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312260%20Draft%20running%20MAC%20CR%20for%20CA%20positioning.docx) Draft running MAC CR for CA positioning Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2
19. [R2-2312261](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312261%20Draft%20running%20MAC%20CR%20for%20carrier%20phase%20positioning.docx) Draft running MAC CR for carrier phase positioning Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2
20. [R2-2312262](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312262%20Draft%20running%20MAC%20CR%20for%20LPHAP.docx) Draft running MAC CR for LPHAP Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2
21. [R2-2312263](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312263%20Draft%20running%20MAC%20CR%20for%20REDCAP%20positioning.docx) Draft running MAC CR for REDCAP positioning Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2
22. [R2-2312264](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312264%20Draft%20running%20MAC%20CR%20for%20sidelink%20positioning.docx) Draft running MAC CR for sidelink positioning Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2
23. [R2-2312257](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312257%20Summary%20of%20open%20issue%20list%20for%20MAC%20issues%20for%20R18%20positioning.docx) Summary of open issue list for MAC issues for R18 positioning Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2
24. [R2-2312256](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312256%20Introduction%20of%20R18%20positioning%20to%20MAC%20spec.docx) Introduction of R18 positioning to MAC spec Huawei, HiSilicon CR Rel-18 38.321 17.6.0 1700 - B NR\_pos\_enh2
25. [R2-2313031](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313031%20RRCSummaryReport.docx) [Post123bis][410][POS] Rel-18 positioning RRC CR (Ericsson) Ericsson report Rel-18
26. [R2-2312998](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312998%20RedCap.docx) RRC Positioning RedCap Changes Ericsson draftCR Rel-18 38.331 17.6.0 B NR\_pos\_enh2
27. [R2-2312999](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312999%20SL.docx) RRC Positioning Sidelink Changes Ericsson draftCR Rel-18 38.331 17.6.0 B NR\_pos\_enh2
28. [R2-2313000](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313000%20BWA.docx) RRC Positioning Bandwidth Aggregation Changes Ericsson draftCR Rel-18 38.331 17.6.0 B NR\_pos\_enh2
29. [R2-2313446](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313446%20CPP.docx) Rapporteur CR for CPP Positioning RRC Changes Ericsson draftCR Rel-18 38.331 17.6.0 B NR\_pos\_enh2
30. [R2-2312941](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312941%20MainLPHAP.docx) Introduction of NR Positioning Ericsson CR Rel-18 38.331 17.6.0 4454 - B NR\_pos\_enh2
31. [R2-2313112](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313112%20Report%20of%20%5bPost123bis%5d%5b408%5d%5bPOS%5d%20Rel-18%20LPP%20running%20CRs%20(CATT).docx) Report of [Post123bis][408][POS] Rel-18 LPP running CRs (CATT) CATT discussion Rel-18 NR\_pos\_enh2
32. [R2-2313113](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313113%20Introduction%20of%20RAT-dependent%20integrity.docx) Introduction of RAT-dependent integrity CATT draftCR Rel-18 37.355 17.6.0 NR\_pos\_enh2
33. [R2-2313114](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313114%20Introduction%20of%20bandwidth%20aggregation.docx) Introduction of bandwidth aggregation CATT draftCR Rel-18 37.355 17.6.0 NR\_pos\_enh2
34. [R2-2313115](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313115%20Introduction%20of%20Carrier%20Phase%20positioning.docx) Introduction of Carrier Phase Positioning CATT draftCR Rel-18 37.355 17.6.0 NR\_pos\_enh2
35. [R2-2313116](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313116%20Introduction%20of%20LPHAP%20and%20Redcap%20positioning.docx) Introduction of LPHAP and Redcap positioning CATT draftCR Rel-18 37.355 17.6.0 NR\_pos\_enh2
36. [R2-2313117](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313117%20Introduction%20of%20Expanded%20and%20improved%20NR%20positioning.docx) Introduction of Expanded and improved NR positioning CATT CR Rel-18 37.355 17.6.0 0481 - B NR\_pos\_enh2
37. [R2-2312267](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312267%20Introduction%20of%20R18%20positioning%20to%20IDLE%20mode%20procedure.docx) Introduction of R18 positioning to RRC\_IDLE mode procedure Huawei, HiSilicon CR Rel-18 38.304 17.6.0 0358 - B NR\_pos\_enh2
38. [R2-2312268](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312268%20Introduction%20of%20R18%20positioning%20to%20MR-DC.docx) Introduction of R18 positioning to MR-DC Huawei, HiSilicon CR Rel-18 37.340 17.6.0 0371 - B NR\_pos\_enh2
39. [R2-2313812](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313812%20Rel-18%20SL%20positioning%20CRs%20to%2038.304%20and%2037.340%20(Huawei)_v10_Rapp.docx) Summary of [AT124][402][POS] Rel-18 SL positioning CRs to 38.304 and 37.340 (Huawei) Huawei, HiSilicon discussion NR\_pos\_enh2
40. [R2-2312762](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312762%20Open%20issue%20list%20for%20Rel-18%20positioning%20capability.doc) Open issue list for Rel-18 positioning capability Xiaomi discussion
41. NR\_pos\_enh2
42. [R2-2312761](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312761%20Report%20of%20%5bPost123bis%5d%5b407%5d%5bPOS%5d%20Rel-18%20positioning%20capabilities.docx) Report of [Post123bis][407][POS] Rel-18 positioning capabilities Xiaomi discussion
43. [R2-2312726](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312726%20306%20Running%20CR%20for%20SL%20positioning.doc) Running CR 38.306-SL positioning Xiaomi draftCR Rel-18 38.306 17.6.0 B
44. [R2-2312727](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312727%20TP%20for%20SLPP%20and%20RRC%20capability%20signalling%20for%20SL%20positioning.doc) TP for SLPP and RRC capability signalling for SL positioning Xiaomi discussion Rel-18
45. [R2-2312752](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312752%20Running%20CR%2038.306%20for%20R18%20Uu%20positioning.docx) Running CR 38.306 for R18 Uu positioning Xiaomi draftCR Rel-18 38.306 17.6.0 NR\_pos\_enh2
46. [R2-2312755](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312755%20TP%20for%20LPP%20capability%20signalling%20for%20Bandwidth%20Aggregation.doc) TP for LPP capability signalling for Bandwidth Aggregation Xiaomi discussion
47. [R2-2312756](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312756%20TP%20for%20LPP%20capability%20signalling%20for%20CPP.doc) TP for LPP capability signalling for CPP Xiaomi discussion
48. [R2-2312757](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312757%20TP%20for%20LPP%20capability%20signalling%20for%20LPHAP.doc) TP for LPP capability signalling for LPHAP Xiaomi discussion
49. [R2-2312758](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312758%20TP%20for%20LPP%20capability%20signalling%20for%20RAT-dependent%20positioning%20integrity.doc) TP for LPP capability signalling for RAT-dependent positioning integrity Xiaomi discussion
50. [R2-2312759](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312759%20TP%20for%20LPP%20capability%20signalling%20for%20RedCap.doc) TP for LPP capability signalling for RedCap Xiaomi discussion
51. [R2-2312760](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312760%20TP%20for%20RRC%20capability%20signalling%20for%20Uu%20positioning.doc) TP for RRC capability signalling for Uu positioning Xiaomi discussion
52. [R2-2312020](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312020_%5bPost123bis%5d%5b412%5d%5bPOS%5d%20TS%2038.355%20(Intel)_v15_Summary%20Final.docx) Report of [Post123bis][412][POS] TS 38.355 (Intel) Intel Corporation discussion Rel-18 NR\_pos\_enh2
53. [R2-2312021](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Docs\R2-2312021.zip) TS 38.355 v1.2.0 Intel Corporation draft TS Rel-18 38.355 1.2.0 NR\_pos\_enh2
54. [R2-2312022](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312022%20%20SLPP%20related%20open%20issues.docx) Further Considerations on SLPP related open issues Intel Corporation discussion Rel-18 NR\_pos\_enh2
55. [R2-2312023](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312023%20Draft%2038.355-130-rm.docx) Draft TS 38.355 v1.3.0 Intel Corporation discussion Rel-18 NR\_pos\_enh2
56. [R2-2312028](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312028%20Capture%20SLPP%20related%20RAN1%20parameters.docx) Capture SLPP related RAN1 parameters Intel Corporation discussion Rel-18 NR\_pos\_enh2
57. [R2-2313795](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313795_%5bAT124%5d%5b403%5d%5bPOS%5d%20Progress%20TS%2038.355%20(Intel)%20v01.docx) [AT124][403][POS] Progress TS 38.355 (Intel) Intel Corporation discussion Rel-18 NR\_pos\_enh2
58. [R2-2313118](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313118%20Draft%20LS%20to%20SA2%20on%20introduction%20of%20RAT-Dependent%20integrity.docx) Draft LS to SA2 on introduction of RAT-Dependent integrity CATT LS out Rel-18 NR\_pos\_enh2 To:SA2
59. [R2-2313796](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313796%20LS%20on%20introduction%20of%20RAT-Dependent%20integrity.docx) LS on introduction of RAT-Dependent integrity CATT LS out Rel-18 NR\_pos\_enh2 To:SA2 Cc:CT4, RAN1
60. [R2-2313895](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313895_R1-2312393.docx)       Reply LS on CPP (R1-2312393; contact: CATT) RAN1 LS in Rel-18 NR\_pos\_enh2 To:RAN2 Cc:RAN4, RAN3, SA2
61. [R2-2313896](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313896_R1-2312395.doc)       Reply LS on SRS and PRS bandwidth aggregation for positioning (R1-2312395; contact: ZTE) RAN1 LS in Rel-18 NR\_pos\_enh2 To:RAN4 Cc:RAN2, RAN3

1. [R2-2313897](file:///C:\\Users\\mtk16923\\Documents\\3GPP%20Meetings\\202311%20-%20RAN2_124,%20Chicago\\Extracts\\R2-2313897_R1-2312434.docx" \o "C:Usersmtk16923Documents3GPP Meetings202311 - RAN2_124, ChicagoExtractsR2-2313897_R1-2312434.docx)       Reply LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning (R1- 2312434; contact: Nokia) RAN1 LS in Rel-18 NR\_pos\_enh2 To:RAN2 Cc:RAN3, RAN4
2. [R2-2312019](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312019.docx) Report of [Post123bis][404][POS] SLPP forwarding (Intel) Intel Corporation discussion Rel-18 NR\_pos\_enh2
3. [R2-2311863](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2311863%20Report%20of%20%5bPost123bis%5d%5b405%5d%5bPOS%5d%20Sidelink%20positioning%20discovery%20metafield%20(vivo).docx) Report of [Post123bis][405][POS] Sidelink positioning discovery metafield (vivo) vivo report Rel-18 FS\_NR\_pos\_enh2
4. [R2-2313792](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313792%20Report%20of%20%5bAT124%5d%5b405%5d%5bPOS%5d%20Format%20of%20metafield%20(vivo)_v1.docx) Report of [AT124][405][POS] Format of SL positioning discovery metafield (vivo) vivo discussion Rel-18 NR\_pos\_enh2
5. [R2-2313599](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313599%20Offline%20discussion%20for%20the%20MAC%20layer%20for%20Sidelink%20positioning.docx) Offline discussion on the MAC layer for Sidelink positioning Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2
6. [R2-2312255](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312255%20Remaining%20issues%20in%20the%20lower%20layer%20for%20Sidelink%20positioning.docx) Remaining issue for the lower layer for sidelink positioning Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2
7. [R2-2312441](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312441%20Discussion%20on%20remaining%20issues%20for%20lower-layer%20related%20sidelink%20positioning.docx) Discussion on remaining issues for lower-layer related sidelink positioning ZTE Corporation discussion Rel-18 NR\_pos\_enh2
8. [R2-2311861](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2311861%20Remaining%20issues%20on%20higher%20layer%20aspects%20for%20sidelink%20positioning.docx) Remaining issues on higher layer aspects for sidelink positioning vivo discussion Rel-18 FS\_NR\_pos\_enh2
9. [R2-2311862](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2311862%20Discussion%20on%20remaining%20issues%20of%20SL-PRS%20transmission.docx) Discussion on remaining issues of SL-PRS transmission vivo discussion Rel-18 FS\_NR\_pos\_enh2
10. [R2-2311929](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2311929_Sidelink_Fraunhofer.docx) UE Positioning using Sidelink Fraunhofer IIS, Fraunhofer HHI discussion
11. [R2-2312024](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312024.docx) MAC related open issues on SL positioning Intel Corporation discussion Rel-18 NR\_pos\_enh2
12. [R2-2312127](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312127%20SLPP%20and%20SLpos%20caps.doc) Further discussion on SLPP and SL positioning capabilities Lenovo discussion Rel-18 NR\_pos\_enh2
13. [R2-2312254](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312254%20Discussion%20on%20higher%20layer%20aspects%20for%20Sidelink%20Positioning.docx) Discussion on higher layer aspects for sidelink positioning Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2
14. [R2-2312266](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312266%20Control%20plane%20open%20issues%20for%20R18%20sidelink%20poisitioning.docx) Control plane open issue for R18 SL positioning Huawei, HiSilicon, Ericsson discussion Rel-18 NR\_pos\_enh2
15. [R2-2312310](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312310-SL-POS-capabilities-v0.docx) SL Positioning Capabilities Apple discussion Rel-18 NR\_pos\_enh2
16. [R2-2312311](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312311-LS-discovery-v0.docx) [DRAFT] Reply LS on Sidelink positioning procedure Apple LS out Rel-18 NR\_pos\_enh2 To:SA2, CT1 Cc:RAN1, SA3
17. [R2-2312370](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312370%20Remaining%20issues%20on%20R18%20sidelink%20positioning.docx) Remaining issues on R18 sidelink positioning LG Electronics Inc. discussion Rel-18
18. [R2-2312442](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312442%20Discussion%20on%20remaining%20issues%20for%20higher-layer%20related%20sidelink%20positioning.docx) Discussion on remaining issues for higher-layer related sidelink positioning ZTE Corporation discussion Rel-18 NR\_pos\_enh2
19. [R2-2312554](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Docs\R2-2312554.zip) Further discussion on sidelink positioning SLPP left issue OPPO discussion Rel-18 NR\_pos\_enh2
20. [R2-2313572](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313572%20Further%20discussion%20on%20sidelink%20positioning%20SLPP%20left%20issue.docx) Further discussion on sidelink positioning SLPP left issue OPPO discussion Rel-18 NR\_pos\_enh2
21. [R2-2312555](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312555%20Discussion%20on%20sidelink%20positioning%20leftover%20MAC%20issue.docx) Discussion on sidelink positioning leftover MAC issue OPPO discussion Rel-18 NR\_pos\_enh2
22. [R2-2312566](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312566%20Discussion%20on%20remaining%20issues%20for%20SL%20positioning.docx) Discussion on remaining issues for SL positioning Spreadtrum Communications discussion Rel-18
23. [R2-2312724](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312724%20Discussion%20on%20SL%20positioning%20open%20issues.doc) Discussion on SL positioning open issues Xiaomi discussion Rel-18
24. [R2-2312807](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312807_SLPosDiscussion.docx) Remaining issues on SL Positioning Lenovo discussion Rel-18
25. [R2-2312836](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312836_SL_Pos_Res_Final.docx) Considerations on multiplexing, congestion control and ARP Sony discussion Rel-18 FS\_NR\_pos\_enh2
26. [R2-2312934](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312934%20(R18%20NR%20POS%20A722%20SL%20POS).docx) Discussion on sidelink positioning InterDigital, Inc. discussion Rel-18 NR\_pos\_enh2
27. [R2-2312937](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312937%20SL.docx) Remaining issue for NW involved Sidelink positioning Ericsson discussion Rel-18
28. [R2-2313059](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313059%20-%20Handling%20of%20Sequence%20ID.docx) Handling of SequenceID in SLPP Philips International B.V. discussion NR\_pos\_enh2
29. [R2-2313270](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313270%20Discussion%20on%20MAC%20open%20issues.doc) Discussion on MAC open issues Samsung discussion NR\_pos\_enh2-Core
30. [R2-2313329](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313329_(SLPP).docx) Further Considerations on SLPP Design Qualcomm Incorporated discussion
31. [R2-2313340](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313340%20open%20issue%20for%20SLPP%20design_v3.docx) Discussion on the selected remaining issues on SLPP design Samsung R&D Institute UK discussion
32. [R2-2313356](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313356-Further%20Discussions%20on%20Sidelink%20Positioning%20and%20Ranging.docx) Further discussion on SL positioning and ranging CEWiT discussion
33. [R2-2313484](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313484.docx) Discussion of MAC and resource allocation aspects Nokia Netherlands discussion Rel-18
34. [R2-2313503](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313503.docx) Discussion of SLPP signalling procedures Nokia Netherlands discussion Rel-18
35. [R2-2313539](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313539%20Providing%20Anchor%20UE%20location%20uncertainty.docx) Providing Anchor Location Uncertainty Philips International B.V. discussion NR\_pos\_enh2
36. [R2-2313480](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313480.docx) Discussion of SLPP forwarding aspects Nokia Netherlands discussion Rel-18
37. [R2-2313119](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313119%20Remaining%20Issues%20for%20RAT-dependent%20integrity.docx) Remaining Issues for RAT-dependent integrity CATT discussion Rel-18 NR\_pos\_enh2
38. [R2-2312938](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312938%20Integrity.docx) Open issues for RAT-dependent integrity Ericsson discussion Rel-18
39. [R2-2313249](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313249_Remaining%20issues%20on%20LPHAP.docx) Remaining issues on LPHAP Samsung discussion Rel-18 NR\_pos\_enh2
40. [R2-2313319](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313319%20LPHAP%20SRS%20Config%20Release.docx) LPHAP issue of area-specific SRS configuration release Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_pos\_enh2-Core
41. [R2-2313806](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313806%20%5bAT124%5d%5b414%5d%5bPOS%5d%20LPHAP_v01_Rapp.docx) Report for [AT124][414][POS] Release of SRS configuration when TAT is not running (Nokia) Nokia discussion Rel-18 NR\_pos\_enh2
42. [R2-2311864](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2311864%20Discussion%20on%20remaining%20issues%20of%20LPHAP.doc) Discussion on remaining issues of LPHAP vivo discussion Rel-18 FS\_NR\_pos\_enh2
43. [R2-2312025](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312025%20LPHAP.docx) Further considerations on LPHAP Intel Corporation discussion Rel-18 NR\_pos\_enh2
44. [R2-2312440](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312440%20Discussion%20on%20remaining%20issues%20for%20LPHAP.docx) Discussion on remaining issues for LPHAP ZTE Corporation discussion Rel-18 NR\_pos\_enh2
45. [R2-2311930](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2311930_LPHAP_Fraunhofer.docx) Reliable LPHAP position with extended DRX cycle Fraunhofer IIS, Fraunhofer HHI discussion R2-2309579
46. [R2-2312253](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312253%20Discussion%20on%20LPHAP.docx) Discussion on LPHAP Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2
47. [R2-2312401](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312401%20R18%20NR%20POS%20A724%20LPHAP.doc) Discussion on LPHAP InterDigital Inc. discussion Rel-18
48. [R2-2312465](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312465%20Discussion%20on%20low%20power%20high%20accuracy%20positioning.doc) Discussion on low power high accuracy positioning Lenovo discussion Rel-18
49. [R2-2312556](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312556%20Discussion%20on%20the%20leftover%20issues%20of%20LPHAP%20enhancement.docx) Discussion on the leftover issues of LPHAP enhancement OPPO discussion Rel-18 NR\_pos\_enh2
50. [R2-2312753](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312753%20Discussion%20on%20LPHA%20positioning.doc) Discussion on LPHA positioning Xiaomi discussion
51. [R2-2312803](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312803_(LPHAP).docx) Remaining issues for LPHAP Qualcomm Incorporated discussion
52. [R2-2312837](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312837_LPHAP_Final.docx) Remaining considerations on Low Power High Accuracy Positioning Sony discussion Rel-18 FS\_NR\_pos\_enh2
53. [R2-2312939](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312939%20LPHAP.docx) Remaining issue on Low Power High Accuracy Positioning Ericsson discussion Rel-18
54. [R2-2313120](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313120%20Discussion%20on%20leftover%20issues%20of%20LPHAP.docx) Discussion on leftover issues of LPHAP CATT discussion Rel-18 NR\_pos\_enh2
55. [R2-2313123](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313123%20Discussion%20on%20leftover%20issues%20of%20Carrier%20Phase%20Positioning.docx) Discussion on leftover issues of Carrier Phase Positioning CATT discussion Rel-18 NR\_pos\_enh2
56. [R2-2312804](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312804_(PRS%20Aggregation).docx) Remaining Issues for DL-PRS Aggregation Qualcomm Incorporated discussion
57. [R2-2312838](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312838_RedCap_Final.docx) Discussion on Frequency hopping for Positioning for RedCap Ues Sony discussion Rel-18 FS\_NR\_pos\_enh2
58. [R2-2312082](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312082%20Discussion%20on%20RAN1%20led%20positioning%20topics.docx) Discussion on RAN1 led positioning topics Huawei, HiSilicon discussion
59. [R2-2312402](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312402%20R18%20NR%20POS%20A725_NRCP.doc) Discussion on positioning for NR Carrier Phase positioning InterDigital Inc. discussion Rel-18
60. [R2-2312403](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312403%20R18%20NR%20POS%20A725_RedCap.doc) Discussion on positioning for RedCap UE positionin InterDigital Inc. discussion Rel-18
61. [R2-2312443](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312443%20Discussion%20on%20remaining%20issues%20for%20BW%20aggregation%20and%20RedCap%20positioning.docx) Discussion on remaining issues for BW aggregation and RedCap positioning ZTE Corporation discussion Rel-18 NR\_pos\_enh2
62. [R2-2312466](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312466%20Discussion%20on%20RedCap,%20carrier%20phase%20positioning%20and%20PRS,SRS%20bandwidth%20aggregation.docx) Discussion on RedCap positioning, carrier phase positioning and PRS/SRS bandwidth aggregation Lenovo discussion Rel-18
63. [R2-2312754](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312754%20Discussion%20on%20carrier%20phase%20positioning%20and%20bandwidth%20aggregation%20for%20positioning.doc) Discussion on carrier phase positioning and bandwidth aggregation for positioning Xiaomi discussion
64. [R2-2312805](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312805_(PRU).docx) Remaining Issues on PRU Operation Qualcomm Incorporated discussion
65. [R2-2312940](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2312940%20RAN1LedTopic.docx) Discussion based upon RAN1 agreements on CPP, RedCap, Bandwidth aggregation Ericsson discussion Rel-18
66. [R2-2313121](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313121%20Draft%20LS%20to%20RAN1%20on%20positioning%20issues%20needing%20further%20input.docx) Draft LS to RAN1 on positioning issues needing further input CATT LS out Rel-18 NR\_pos\_enh2 To:RAN1 Cc:RAN3, RAN4
67. [R2-2313122](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313122%20Discussion%20on%20leftover%20issues%20of%20%20bandwidth%20aggregation.docx) Discussion on leftover issues of bandwidth aggregation CATT discussion Rel-18 NR\_pos\_enh2
68. [R2-2313223](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313223%20CPP%20in%2038.305.docx) Capturing carrier phase positioning in TS 38.305 Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_pos\_enh2-Core
69. [R2-2313250](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202311%20-%20RAN2_124,%20Chicago\Extracts\R2-2313250_Remaining%20issues%20on%20BW%20aggregation.docx) Remaining issues on BW aggregation Samsung discussion Rel-18 NR\_pos\_enh2

###### RAN3 #121bis

1. R3-235006 Reply LS on LPHAP RAN1(Huawei)
2. R3-235007 LS on the longer PRS/SRS periodicity for LPHAP RAN1(Huawei)
3. R3-235009 Reply LS on PRU Procedures RAN1(CATT)
4. R3-235017 LS on SL positioning and CPP measurements report mapping RAN4(CATT)
5. R3-235018 Reply LS on LPHAP RAN4(Huawei)
6. R3-235044 (BL CR to 38.413) Support of NR Positioning Enhancements ZTE, CATT, Huawei, Nokia, Nokia Shanghai Bell, Ericsson
7. R3-235046 Support of NR Positioning Enhancements Huawei, CATT, ZTE, Nokia, Nokia Shanghai Bell, Ericsson
8. R3-235098 Support of NR Positioning Enhancements Ericsson, CATT, Huawei, ZTE, Nokia, Nokia Shanghai Bell
9. R3-235122 (BL CR to 38.455) Support of NR Positioning Enhancements CATT
10. R3-235217 (TP to BL CR for TS 38.455, 38.305) on support of LPHAP CATT
11. R3-235218 (TP to BL CR for TS 38.455) On the details of Carrier Phase Positioning CATT
12. R3-235434 [Draft LS out] Discussion on SL positioning authorization ZTE, CATT, CMCC
13. R3-235477 Further discussion on sidelink positioning and others Samsung
14. R3-235478 Further discussion on LPHAP Samsung
15. R3-235500 (TP BL 38.xxx) Discussion on LPHAP Huawei
16. R3-235501 (TP BL 38.xxx) Discussion on CPP and Bandwdith Aggregation Huawei
17. R3-235546 Further details of SRS resource coordination within a validity area Nokia, Nokia Shanghai Bell
18. R3-235548 (TP for TS 38.455 BL CR) Resolution of open issues for UL CPP Nokia, Nokia Shanghai Bell
19. R3-235557 Enhancements for LPHAP Qualcomm Incorporated
20. R3-235584 Way forward on LPHAP Ericsson
21. R3-235585 Discussion on CPP aspects and other topics Ericsson
22. R3-235626 [TP for 38.455 & 38.473 BLCR] Discussion on other positioning impacts ZTE
23. R3-235627 (TP to 38.455&38.473) Discussion on LPHAP impacts ZTE
24. R3-235635 (TP to BL CRs for TS 38.413 and TS 38.423) Discussion on Sidelink Positioning Xiaomi, Ericsson, Huawei
25. R3-235636 draft LS on Authorization Information for Ranging and SL positioning service Xiaomi, Ericsson, Huawei
26. R3-235637 (TP to BL CR for TS 38.455) support of LPHAP Xiaomi
27. R3-235638 (TP to BL CR for TS 38.455) Discussion on CPP and SRS aggregation Xiaomi
28. R3-235788 (BL CR to 38.413) Support of NR Positioning Enhancements (ZTE, CATT, Huawei, Nokia, Nokia Shanghai Bell, Ericsson)
29. R3-235789 (BL CR to 38.413) Support of NR Positioning Enhancements (Huawei, CATT, ZTE, Nokia, Nokia Shanghai Bell, Ericsson)
30. R3-235790 (BL CR to 38.413) Support of NR Positioning Enhancements (Ericsson, CATT, Huawei, ZTE, Nokia, Nokia Shanghai Bell)
31. R3-235792 (TP for BL CR TS 38.413) clarification on Ranging and Sidelink Positioning Service Information （Xiaomi, Ericsson, Huawei, ZTE, Samsung, CATT）
32. R3-235933 Reply LS on Authorization and Provisioning for Ranging/SL positioning service （Xiaomi）
33. R3-235793 (TP for BL CR TS 38.423) Clarification on Ranging and Sidelink Positioning Service Information
34. R3-235794 (TP for BL CR TS 38.473) Clarification on Ranging and Sidelink Positioning Service Information
35. R3-235811 (TP to BL CR for TS 38.455) Support of cross-cell SRS configuration （Huawei, CATT, Ericsson, Nokia, Nokia Shanghai Bell, ZTE, Samsung, Xiaomi）
36. R3-235812 (TP to BL CR for TS 38.305) Support of cross-cell SRS configuration （CATT, Huawei, Ericsson, Nokia, Nokia Shanghai Bell, Xiaomi, ZTE Samsung）
37. R3-235813 (TP to BL CR for TS 38.455) Update of CPP parameters （Nokia, Nokia Shanghai Bell, CATT, Ericsson, Huawei, Samsung, Xiaomi, ZTE）
38. R3-235814 (TP to BL CR for TS 38.473) Support of LPHAP configuration over F1 （Ericsson, Huawei, CATT, Xiaomi, ZTE）
39. R3-235815 (TP to BL CR for TS 38.413) Support of cross-cell SRS configuration Huawei, CATT, Ericsson, Nokia, Nokia Shanghai Bell, ZTE, Samsung, Xiaomi）
40. R3-235816 (TP to BL CR for TS 38.470) Support of cross-cell SRS configuration（Huawei, CATT, Ericsson, Nokia, Nokia Shanghai Bell, ZTE, Samsung, Xiaomi）
41. R3-235830 SoD for remaining issues of Positioning （moderator-CATT）
42. R3-235934 (TP to BL CR for TS 38.470) Support of cross-cell SRS configuration （Huawei, CATT, Ericsson, Nokia, Nokia Shanghai Bell, ZTE, Samsung, Xiaomi）
43. R3-235829 (TP to BL CR for TS 38.473) Update of CPP parameters

###### RAN3 #122

1. R3-237082 (BL CR to TS 38.305) Support of NR Positioning Enhancements Nokia, Nokia Shanghai Bell, CATT, Huawei, Ericsson, Xiaomi, ZTE, Samsung
2. R3-237083 (BL CR to 38.413) Support of NR Positioning Enhancements ZTE, CATT, Huawei, Nokia, Nokia Shanghai Bell, Ericsson
3. R3-237084 (BL CR to 38.423) Support of NR Positioning Enhancements Huawei, CATT, ZTE, Nokia, Nokia Shanghai Bell, Ericsson
4. R3-237085 (BL CR to 38.455) Support of NR Positioning Enhancements CATT, Huawei, Ericsson, Nokia, Nokia Shanghai Bell, ZTE, Xiaomi, Samsung
5. R3-237086 (BL CR to TS 38.470) Support of NR Positioning Enhancements Samsung, Huawei, CATT, Ericsson, Nokia, Nokia Shanghai Bell, ZTE, Xiaomi
6. R3-237087 (BL CR to TS 38.473) Support of NR Positioning Enhancements Ericsson, CATT, Huawei, ZTE, Nokia, Nokia Shanghai Bell
7. R3-237136 LS on PRS bandwidth aggregation RAN1(ZTE)
8. R3-237141 LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning RAN2(Nokia)
9. R3-237144 Reply LS on R1-2308644 for CPP RAN2(CATT)
10. R3-237148 Reply LS to RAN1 on SRS and PRS bandwidth aggregation for positioning RAN4(ZTE)
11. R3-237149 LS on report mapping for positioning measurements with PRS\_SRS bandwidth aggregation RAN4(Ericsson)
12. R3-237150 LS on SL positioning and carrier phase positioning measurements RAN4(CATT)
13. R3-237302 Work Plan for Rel-18 WI on Expanded and Improved NR Positioning CATT
14. R3-237303 (TP for BL CR to TS 38.455, 38.423, 38.305) on support of LPHAP CATT
15. R3-237304 (TP for BL CR to TS 38.455) More details on support of BW aggregation CATT
16. R3-237366 (TP BL 38.xxx) Remaining Issues on LPHAP Huawei
17. R3-237367 (TP BL 38.xxx) Discussion on CPP, Bandwidth Aggregation and Redcap Postioning Huawei
18. R3-237387 (TP to TS 38.413) Clarification on Ranging and Sidelink Positioning Service Information Xiaomi, Ericsson, Samsung
19. R3-237388 (draft LS to RAN2) Support of SL positioning Xiaomi
20. R3-237389 (TP for TS 38.455) Support of LPHAP Xiaomi
21. R3-237399 (TP for TS 38.455 BL CR) Further details for LPHAP Nokia, Nokia Shanghai Bell
22. R3-237400 (TP for TS 38.455 BL CR) Resolution of open issues for accuracy enhancements Nokia, Nokia Shanghai Bell
23. R3-237536 (TP to TS 38.423) Clarification on Ranging and Sidelink Positioning Service Information Ericsson, Xiaomi, Samsung
24. R3-237537 Discussion on SL positioning in network coverage mode and NRPPa impacts + LS to RAN2 Ericsson
25. R3-237538 Discussion on SRS BW aggregation and RedCap positioning Ericsson
26. R3-237639 (TP to TS 38.473) Clarification on Ranging and Sidelink Positioning Service Information Samsung, Xiaomi, Ericsson
27. R3-237640 Remaining issues on positioning others Samsung
28. R3-237696 Further discussion on LPHAP impacts ZTE
29. R3-237698 (TP for 38.455 & 38.473 BLCR) Discussion on PRS&SRS Band Aggregation ZTE
30. R3-237823 SoD on Positioning R18 (CATT) Discussion Rev in R3-237916
31. R3-237830 Reply LS on CPP (RAN1(CATT))
32. R3-237831Reply LS on SRS and PRS bandwidth aggregation for positioning (RAN1(ZTE))
33. R3-237832 Reply LS on request for clarifications on RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning (RAN1(Nok))
34. R3-237916 SoD on Positioning R18 (CATT) Discussion
35. R3-237917(TP for BL CR to TS 38.305) on support of LPHAP
36. R3-237918(TP for BL CR to TS 38.455) on support of LPHAP
37. R3-237919(TP for BL CR to TS 38.473) on support of LPHAP
38. R3-237920 (TP for BL CR to TS 38.455) on support of BW aggregation and CPP
39. R3-237921 (TP for BL CR to TS 38.473) on support of BW aggregation and CPP

###### RAN4 #108bis

1. R4-2315090 Discussion on RRM core requirement for SL positioning enhancement LG Electronics Inc.
2. R4-2315091 Discussion on RRM core requirement for PRS/SRS bandwidth aggregation positioning LG Electronics Inc.
3. R4-2315092 Discussion on RRM core requirement for carrier phase positioning LG Electronics Inc.
4. R4-2315100 Discussion on RRM requirements of RedCap UE positioning CATT
5. R4-2315101 Simulation results for RedCap UE PRS measurements with FH CATT
6. R4-2315102 Discussion on RRM requirements of PRS SRS bandwidth aggregation CATT
7. R4-2315133 Discussion on RRM requirements of sidelink positioning CATT
8. R4-2315134 Discussion on RRM requirements of LPHAP CATT
9. R4-2315135 Discussion on RRM requirements of carrier phase positioning CATT
10. R4-2315286 Discussion on Positioning for RedCap UEs MediaTek inc.
11. R4-2315332 Discussion on sidelink positioning CMCC
12. R4-2315333 Discussion on LPHA positioning CMCC
13. R4-2315334 Discussion on Redcap positioning CMCC
14. R4-2315335 Discussion on PRS/SRS bandwidth aggregation CMCC
15. R4-2315397 Discussion on Sidelink Positioning Xiaomi
16. R4-2315398 Discussion on Positioning for RedCap UEs Xiaomi
17. R4-2315399 Discussion on Bandwidth Aggregation for Positioning Xiaomi
18. R4-2315400 Discussion on Carrier Phase Positioning Xiaomi
19. R4-2315719 On the guard period for SRS BW aggregation for positioning Qualcomm Incorporated
20. R4-2315720 On requirements for SL positioning Qualcomm Incorporated
21. R4-2315721 Simulation results for Sidelink positioning Qualcomm Incorporated
22. R4-2315722 On requirements for LPHAP Qualcomm Incorporated
23. R4-2315723 On requirements for RedCap positioning Qualcomm Incorporated
24. R4-2315724 On requirements for PRS/SRS BW aggregation Qualcomm Incorporated
25. R4-2315725 On requirements for carrier phase positioning Qualcomm Incorporated
26. R4-2315729 Discussion on RRM requirements for sidelink positioning vivo
27. R4-2315730 Updated Link-level simulation results for SL-PRS measurement vivo
28. R4-2315755 RRM aspects in the study on LPHAP use case ZTE Corporation
29. R4-2315759 LS on SRS and PRS bandwidth aggregation for positioning ZTE Corporation
30. R4-2315762 Simulation results for Redcap positioning with FH ZTE Corporation
31. R4-2315795 Discussion on RedCap UE positioning Intel Corporation
32. R4-2315898 On SL positioning Ericsson
33. R4-2316047 reply LS measurement definitions for positioning with bandwidth aggregation Huawei, HiSilicon
34. R4-2316048 Discussion on RRM requirements for SL positioning Huawei, HiSilicon
35. R4-2316049 Discussion on RRM requirements for LPHAP Huawei, HiSilicon
36. R4-2316050 Discussion on RedCap positioning Huawei, HiSilicon
37. R4-2316051 Simulation results for PRS measurement with FH Huawei, HiSilicon
38. R4-2316052 Discussion on PRS/SRS Bandwidth Aggregation Huawei, HiSilicon
39. R4-2316053 Discussion on RRM requirements for CPP Huawei, HiSilicon
40. R4-2316171 Discussion on SL positioning OPPO
41. R4-2316172 Discussion on LPHAP use case OPPO
42. R4-2316173 Discussion on RedCap positioning OPPO
43. R4-2316174 Discussion on PRS/SRS bandwidth aggregation OPPO
44. R4-2316175 Discussion on carrier phase positioning OPPO
45. R4-2316283 Response to LS on SRS and PRS bandwidth aggregation for positioning on guard Ericsson
46. R4-2316457 Response to RAN1 LS on measurement definitions for positioning with bandwidth aggregation Ericsson
47. R4-2316458 On issues related to LPHAP Ericsson
48. R4-2316459 On issuues related to RedCap positioning Ericsson
49. R4-2316460 Simulation results for RedCap positioning with FH Ericsson
50. R4-2316461 Summary of simulation results for RedCap positioning with FH Ericsson
51. R4-2316462 On requirements for bandwidth aggregation for positioning measurements Ericsson
52. R4-2316463 On carrier phase positioning requirements Ericsson
53. R4-2316721 RRM Core Requirements for SL positioning Nokia, Nokia Shanghai Bell
54. R4-2316722 RRM Core Requirements for LPHAP Nokia, Nokia Shanghai Bell
55. R4-2316723 RRM Core Requirements for RedCap Positioning Nokia, Nokia Shanghai Bell
56. R4-2316724 Initial Simulation Results for RedCap Positioning with Frequency Hopping Nokia, Nokia Shanghai Bell
57. R4-2316751 General aspects for RRM core requirements Nokia, Nokia Shanghai Bell
58. R4-2316752 Draft CR 38.133 Transmission and reception configurations for PRS/SRS BW aggregation Nokia, Nokia Shanghai Bell
59. R4-2316753 RRM requirements for PRS/SRS Bandwidth Aggregation in NR Positioning Nokia, Nokia Shanghai Bell
60. R4-2316754 RRM requirements for NR Carrier Phase Positioning Nokia, Nokia Shanghai Bell
61. R4-2316755 Simulation results for DL RSCPD Nokia, Nokia Shanghai Bell
62. R4-2316786 Work Split on RRM Core Requirements for Positioning Enhancement Ericsson
63. R4-2316787 Draft Big CR Skeleton for RRM Core Requirements for Positioning Enhancement Ericsson
64. R4-2316796 Carrier Frequency Offset Correction for CPP Lenovo
65. R4-2317207 Topic summary for [108-bis][215] NR\_pos\_enh2\_part1 Moderator (Ericsson)
66. R4-2317208 Topic summary for [108-bis][216] NR\_pos\_enh2\_part2 Moderator (CATT)
67. R4-2317209 Topic summary for [108-bis][217] NR\_pos\_enh2\_part3 Moderator (Huawei)
68. R4-2317259 Topic summary for [108-bis][136] NR\_pos\_enh2\_UERF Moderator (CATT)
69. R4-2317279 Ad-hoc minutes for NR\_pos\_enh2 WI Ericsson
70. R4-2317377 Ad-hoc minutes #2 for NR\_pos\_enh2 WI Ericsson
71. R4-2317378 WF on R18 NR positioning – LPHAP Huawei, HiSilicon
72. R4-2317379 Reply LS on determination of UL timing to transmit SRS for positioning by UEs in RRC\_INACTIVE states CMCC
73. R4-2317380 WF on R18 NR positioning - SL positioning and Carrier Phase Positioning CATT
74. R4-2317381 Updated simulation assumptions for sidelink positioning CATT
75. R4-2317382 Summary of the simulation results for sidelink positioning measurement CATT
76. R4-2317386 WF on [215] NR\_pos\_enh2\_part1 Ericsson
77. R4-2317388 Work Split on RRM Core Requirements for Positioning Enhancement Ericsson
78. R4-2317389 Reply LS to RAN1 LS in R1-2306216/R4-2311031 (SRS and PRS bandwidth aggregation for positioning) ZTE Corporation
79. R4-2317390 LS on report mapping for positioning measurements with PRS/SRS bandwidth aggregation Ericsson
80. R4-2317391 LS on SL positioning and carrier phase positioning measurements CATT
81. R4-2317626 WF on guard period for SRS BW aggregation for positioning CATT

###### RAN4 #109

1. R4-2318143 Topic summary for [109][137] NR\_pos\_enh2\_UERF Moderator (CATT)
2. R4-2318175 Topic summary for [109][219] NR\_pos\_enh2\_part1 Moderator (Ericsson)
3. R4-2318176 Topic summary for [109][220] NR\_pos\_enh2\_part2 Moderator (CATT)
4. R4-2318177 Topic summary for [109][221] NR\_pos\_enh2\_part3 Moderator (Huawei)
5. R4-2318276 Draft CR #9 on PRS based UE Rx-Tx and RSRPP measurement requirements for LPHAP in RRC\_INACTIVE state CATT
6. R4-2318277 Draft CR #5 on PRS-RSRP(P) measurement requirements for RedCap positioning in RRC\_IDLE state CATT
7. R4-2318278 Discussion on RRM requirements of RedCap UE positioning CATT
8. R4-2318279 Discussion on RRM requirements of PRS SRS bandwidth aggregation CATT
9. R4-2318280 Simulation results for sidelink positioning CATT
10. R4-2318315 Reply LS on guard period for SRS and PRS bandwidth aggregation for positioning CATT
11. R4-2318336 Discussion on RRM requirements of sidelink positioning CATT
12. R4-2318337 Draft CR #27: on SL Rx-Tx time difference and SL RSRPP measurement requirements CATT
13. R4-2318338 Discussion on RRM requirements of LPHAP CATT
14. R4-2318339 Discussion on RRM requirements of carrier phase positioning CATT
15. R4-2318856 Discussion on Sidelink Positioning Xiaomi
16. R4-2318857 Discussion on Positioning for RedCap UEs Xiaomi
17. R4-2318858 Discussion on Positioning in LPHAP case 6 Xiaomi
18. R4-2318859 Discussion on Bandwidth Aggregation for Positioning Xiaomi
19. R4-2318860 Draft CR # 4: PRS measurement requirements for RedCap in RRC idle state (Introduction and RSTD measurement requirements) Xiaomi
20. R4-2318861 Draft CR # 13:PRS measurement requirements for RedCap positioning in RRC INACTIVE state (Introduction) Xiaomi
21. R4-2318862 Draft CR # 16:PRS measurement requirements for RedCap positioning in RRC INACTIVE state (UE Rx-Tx time difference measurement requirements) Xiaomi
22. R4-2318899 Correction of Carrier Phase Measurement Errors Due to Carrier Frequency Offsets Lenovo
23. R4-2319071 Discussion on RRM requirements for sidelink positioning vivo
24. R4-2319072 Updated Link-level simulation results for SL-PRS measurement vivo
25. R4-2319073 Draft CR #28 TS 38.133 SL-AoA and SL-RTOA measurement requirements vivo
26. R4-2319074 Discussion on reply LS on TA validation for LPHAP vivo
27. R4-2319094 Discussion on sidelink positioning CMCC
28. R4-2319095 Discussion on LPHA positioning CMCC
29. R4-2319096 Discussion on PRS/SRS bandwidth aggregation CMCC
30. R4-2319097 Discussion on RRM performance requirements for positioning CMCC
31. R4-2319098 Draft CR #8 on RSTD and PRS-RSRP measurement requirements for LPHAP in RRC inactive state CMCC
32. R4-2319262 Updated simulation assumption for CPP measurements CATT
33. R4-2319306 Draft CR # 17 UE transmit timing for positioning measurements LG Electronics Inc.
34. R4-2319307 Discussion on RRM core requirement for PRS/SRS bandwidth aggregation positioning LG Electronics Inc.
35. R4-2319480 Discussion on SL positioning OPPO
36. R4-2319481 Discussion on LPHAP use case OPPO
37. R4-2319482 Draft CR #3 PRS-RSRP and PRS-RSRPP measurement requirement in RRC IDLE state OPPO
38. R4-2319483 Discussion on RedCap positioning OPPO
39. R4-2319484 Discussion on PRS/SRS bandwidth aggregation OPPO
40. R4-2319485 Discussion on carrier phase positioning OPPO
41. R4-2319499 Draft CR #8 on RSTD and PRS-RSRP measurement requirements for LPHAP in RRC inactive state CMCC
42. R4-2319809 Views on the guard period for SRS BW aggregation for positioning Intel Corporation
43. R4-2319942 Feature list proposals for positioning enhancements Intel Corporation
44. R4-2319990 On measurement definitions for positioning with bandwidth aggregation Huawei, HiSilicon
45. R4-2319991 Discussion on RRM requirements for SL positioning Huawei, HiSilicon
46. R4-2319992 Updated simulation results for SL positioning Huawei, HiSilicon
47. R4-2319993 Discussion on RRM requirements for LPHAP Huawei, HiSilicon
48. R4-2319994 DraftCR #7: Cell reselection measurement for positioning Huawei, HiSilicon
49. R4-2319995 DraftCR #14: Cell reselection measurement for positioning for RedCap UE Huawei, HiSilicon
50. R4-2319996 Discussion on RedCap positioning Huawei, HiSilicon
51. R4-2319997 Simulation results for PRS measurement with FH Huawei, HiSilicon
52. R4-2319998 DraftCR #22: Requirements for RedCap Rx-Tx and PRS-RSRPP measurement in CONNECTED Huawei, HiSilicon
53. R4-2319999 Discussion on PRS/SRS Bandwidth Aggregation Huawei, HiSilicon
54. R4-2320000 DraftCR #10: Requirements for PRS BW aggregation in INACTIVE Huawei, HiSilicon
55. R4-2320001 Discussion on RRM requirements for CPP Huawei, HiSilicon
56. R4-2320002 Discussion on performance requirements for Rel-18 positioning Huawei, HiSilicon
57. R4-2320358 Draft CR # 6: General aspects - introduction (inclulding general aspects of PRS measurement with bandwidth aggregation and CPP) Ericsson
58. R4-2320359 Draft CR # 15 PRS measurement requirements for RedCap positioning in RRC INACTIVE state (RSTD and PRS-RSRP measurement requirements) Ericsson
59. R4-2320360 Draft CR # 19 PRS measurement requirements with bandwidth aggregation in RRC CONNECTED state (RSTD and UE Rx-Tx measurement requirements) Ericsson
60. R4-2320361 Draft CR # 23 Requirements for DL RSCPD reported with RSTD in RRC CONNECTED state Ericsson
61. R4-2320362 Draft CR to 38.133 to implement measurement gap patterns for RedCap positioning Ericsson
62. R4-2320363 Draft CR to 38.133 to implement report mapping for positioning measurements with PRS/SRS bandwidth aggregation Ericsson
63. R4-2320366 Discussion on RAN1 LS on PRS bandwidth aggregation Ericsson
64. R4-2320368 Response to RAN2 LS on TA validation Ericsson
65. R4-2320369 On LPHAP requirements Ericsson
66. R4-2320370 On issues related to RedCap positioning Ericsson
67. R4-2320371 Additional simulation results for RedCap positioning with FH Ericsson
68. R4-2320372 Summary of simulation results for RedCap positioning with FH Ericsson
69. R4-2320373 On PRS/SRS aggregation requirements for positioning Ericsson
70. R4-2320374 On carrier phase positioning requirements Ericsson
71. R4-2320375 On RRM performance requirements Ericsson
72. R4-2320458 On SL positioning Ericsson
73. R4-2320459 Draft CR #25 38133 Introduction to SL positioning measurement requirements Ericsson
74. R4-2320460 Draft CR #26 38133 SL RSTD and SL PRS-RSRP measurement requirements Ericsson
75. R4-2320541 Response to LS on SRS and PRS bandwidth aggregation for positioning on guard symbol Ericsson
76. R4-2320572 Draft CR # 18 General aspects: Introduction (include aslo general aspects of CPP) ZTE Corporation
77. R4-2320573 Draft CR # 20 General aspects: Introduction (PRS measurement requirements for RedCap in RRC\_CONNECTED state) ZTE Corporation
78. R4-2320698 Draft CR # 7A: TA validation requirements for positioning for LPHAP in RRC inactive state Ericsson
79. R4-2320699 Draft CR # 14A: TA validation requirements for RedCap positioning in RRC inactive state Ericsson
80. R4-2320700 Updated work Split on RRM Core Requirements for Positioning Ericsson
81. R4-2320701 Updated Big Draft CR on Skeleton for RRM Core Requirements for Positioning Ericsson
82. R4-2320702 Big CR on RRM Core Requirements for Positioning Enhancement in Rel-18 Ericsson
83. R4-2320808 General aspects for RRM core requirements Nokia, Nokia Shanghai Bell
84. R4-2320809 RRM Core Requirements for SL positioning Nokia, Nokia Shanghai Bell
85. R4-2320810 RRM requirements for PRS/SRS Bandwidth Aggregation in NR Positioning Nokia, Nokia Shanghai Bell
86. R4-2320811 Draft CR 38.133 Transmission and reception configurations for PRS/SRS BW aggregation Nokia, Nokia Shanghai Bell
87. R4-2320812 RRM requirements for NR Carrier Phase Positioning Nokia, Nokia Shanghai Bell
88. R4-2320813 Simulation results for DL RSCPD Nokia, Nokia Shanghai Bell
89. R4-2320814 Draft CR 38.133 #11: Measurement requirements for RSCPD reported with RSTD in RRC\_INACTIVE Nokia, Nokia Shanghai Bell
90. R4-2320815 Draft CR 38.133 #12: Measurement requirements for DL RSCP reported with UE Rx-Tx time difference in RRC\_INACTIVE Nokia, Nokia Shanghai Bell
91. R4-2320816 Draft CR 38.133 #24: Measurement requirements for DL RSCP reported with UE Rx-Tx time difference in RRC\_CONNECTED Nokia, Nokia Shanghai Bell
92. R4-2320853 Simulation Results for Sidelink Positioning Nokia, Nokia Shanghai Bell
93. R4-2320854 RRM Core Requirements for LPHAP Nokia, Nokia Shanghai Bell
94. R4-2320855 RRM Core Requirements for RedCap Positioning Nokia, Nokia Shanghai Bell
95. R4-2320856 Simulation Results for RedCap Positioning with Frequency Hopping Nokia, Nokia Shanghai Bell
96. R4-2320857 RRM Performance Requirements for Positioning Nokia, Nokia Shanghai Bell
97. R4-2320910 On the guard period for SRS BW aggregation for positioning Qualcomm Incorporated
98. R4-2320911 On requirements for SL positioning Qualcomm Incorporated
99. R4-2320912 On requirements for LPHAP Qualcomm Incorporated
100. R4-2320913 On requirements for RedCap positioning Qualcomm Incorporated
101. R4-2320914 On requirements for PRS/SRS BW aggregation Qualcomm Incorporated
102. R4-2320915 On requirements for carrier phase positioning Qualcomm Incorporated
103. R4-2320916 DraftCR #2 General aspects and PRS-RTSD measurement requirements in RRC\_IDLE Qualcomm Incorporated
104. R4-2321011 Draft CR #21 on Rel-18 RSTD and PRS-RSRP Measurement Requirements for RedCap in RRC Connected State MediaTek inc.

10.01.2022 minor adaptations for RAN #95e

04.10.2021 minor adaptations for RAN #94e

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09.11.2020 minor adaptations for RAN #90e

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v04.71 10.02.2016 minor adaptations for RAN #71

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v03.62 11.11.2013 section 1.2.3 adapted for RAN #62

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