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

Chicago, USA, 13-17 November 2023

**Agenda item: 7.2.1**

**Source: CATT**

**Title: [Post124][416][POS] Rel-18 positioning 37.355 CR (CATT)**

**WID/SID: NR\_pos\_enh-Core**

**Document for: Discussion and Agreement**

# 1 Introduction

This document is to kick off the following email discussion:

* [Post124][416][POS] Rel-18 positioning 37.355 CR (CATT)

Scope: Finalise and check the Rel-18 positioning 37.355 CR (including taking into account parameter list updates).

Intended outcome: Agreed CR

Deadline: Short (for RP)

In this email discussion, companies are invited to check the Rel-18 positioning 37.355 CR (including taking into account parameter list updates).

# 2 Contact Information

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

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| --- | --- |
| Company | Contact: Name (E-mail) |
| Huawei,HiSIlicon | yinghaoguo@huawei.com |
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# 3 Discussion

**Question 1**: Please provide comments below on the Rel-18 positioning 37.355 CR.

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| Company | Clause | Comments |
| Huawei, HiSilicon | Coversheet | On other specs, need to include all the specs that have R18 positioning changes |
| Huawei, HiSilicon | – CommonIEsRequestLocationInformation | -- ASN1STOP  Editor Notes:  FFS exact IE structure of the request for location+measurements in the agreement of RAN2#123bis.  There seems to be no need to define an IE for locationEstimateAndMeasurementsRequired. It is just a codepoint for LocationInformationType |
| Huawei, HiSilicon | – CommonIEsRequestLocationInformation | ***locationInformationType***  This IE indicates whether the server requires a location estimate or measurements. For '*locationEstimateRequired*', the target device shall return a location estimate if possible, or indicate a location error if not possible. For '*locationMeasurementsRequired*', the target device shall return measurements if possible, or indicate a location error if not possible. For '*locationEstimatePreferred*', the target device shall return a location estimate if possible, but may also or instead return measurements for any requested position methods for which a location estimate is not possible. For '*locationMeasurementsPreferred*', the target device shall return location measurements if possible, but may also or instead return a location estimate for any requested position methods for which return of location measurements is not possible. For '*locationEstimateAndMeasurementsRequired*', the PRU shall return both location estimate and measurements if possible, or indicate a location error if not possible.NOTE: If the PRU is requested to return both location estimate and measurements, the location information is determined independently of the reported measurements.  No need to explicitly mention about the “PRU” here. IT is just “target device” |
| Huawei, HiSilicon | – NR-AdditionalPathList | NR-AdditionalPath-r16 ::= SEQUENCE {  nr-RelativeTimeDifference-r16 CHOICE {  k0-r16 INTEGER(0..16351),  k1-r16 INTEGER(0..8176),  k2-r16 INTEGER(0..4088),  k3-r16 INTEGER(0..2044),  k4-r16 INTEGER(0..1022),  k5-r16 INTEGER(0..511),  ...,  kMinus1-r18 INTEGER(0..32701),  kMinus2-r18 INTEGER(0..65401) },  There is currently no RAN4 input on the R4 parameter list. So this should not be captured for now.  But it captured, the added part should be bounded by [[ ]] |
| Huawei, HiSilicon | – NR-DL-PRS-AssistanceData | NR-DL-PRS-AggregationElement-r18 ::= SEQUENCE {  nr-DL-PRS-FrequencyLayerIndex-r18 INTEGER (0..nrMaxFreqLayers-1-r16),  nr-DL-PRS-TRP-Index-r18 INTEGER (0..nrMaxTRPsPerFreq-1-r16),  nr-DL-PRS-ResourceSetIndex-r18 INTEGER (0..nrMaxSetsPerTrpPerFreqLayer-1-r16)  }  If the linked PRS are from the saem TRP, the TRP ID does not need to be included in each of the element., |
| Huawei, HiSilicon | – NR-On-Demand-DL-PRS-Configurations | [[  onDemandDL-PRS-AggregationList-r18 SEQUENCE (SIZE (1.. maxOD-DL-PRS-Configs-r17)) OF  OnDemandDL-PRS-AggregationInfo-r18 OPTIONAL  ]]  Need code is missing  Also, it should be enough just to provide the linkage in the on-demand PRS configuration. And the linkage information should be optional that it is present only when it is different from the AD. |
| Huawei, HiSilicon | – NR-On-Demand-DL-PRS-Information | -- Editor’s note: Possible enhancements are needed to support alignment of the PRS configuration to the fixed (e)DRX configuration.  Editor;s NOTE should be removed. No enhancement has been agreed as of now. |
| Huawei, HiSilicon | *NR-On-Demand-DL-PRS-Request* | [[  dl-PRS-AggregationID-PrefList-r18 SEQUENCE (SIZE (1.. maxOD-DL-PRS-Configs-r17)) OF  INTEGER (1.. maxOD-DL-PRS-Configs-r17)  OPTIONAL,  nr-OnDemandDL-PRS-AggregationReqList-r18 SEQUENCE (SIZE (1.. maxOD-DL-PRS-Configs-r17)) OF  NR-OnDemandDL-PRS-AggregationReqElement-r18  OPTIONAL  ]]  What are the differences between these two requests, are they needed at the same time?  The request only needs to be index for the list containing the linkage |
| Huawei, HiSilicon | – NR-PRU-DL-Info | NR-PRU-DL-Info-r18 ::= SEQUENCE {  nr-PRU-LocationInfo-r18 LocationCoordinates OPTIONAL, -- Need ON  nr-PRU-DL-TDOA-MeasInfo-r18 NR-DL-TDOA-SignalMeasurementInformation-r16  OPTIONAL, -- Need ON nr-PRU-DL-AoD-MeasInfo-r18 NR-DL-AoD-SignalMeasurementInformation-r16  OPTIONAL, -- Need ON  nr-PRU-RSCP-MeasInfo-r18 NR-PRU-RSCP-MeasurementInformation-r18  OPTIONAL, -- Need ON  ...  }  RSCP meas already included in the DL-TDOA measInfo and DL-AoDmeasInfo.  No need to include it separately |
| Huawei, HiSilicon |  | NR-DL-TDOA-RequestLocationInformation-r16 ::= SEQUENCE {  nr-DL-PRS-RstdMeasurementInfoRequest-r16 ENUMERATED { true } OPTIONAL,-- Need ON  nr-RequestedMeasurements-r16 BIT STRING { prsrsrpReq (0),  firstPathRsrpReq-r17 (1),  jointMeasurementsReq-r18 (2)  } (SIZE(1..8)),  nr-AssistanceAvailability-r16 BOOLEAN,  nr-DL-TDOA-ReportConfig-r16 NR-DL-TDOA-ReportConfig-r16 OPTIONAL, -- Need ON  additionalPaths-r16 ENUMERATED { requested } OPTIONAL, -- Need ON  ...,  [[  nr-UE-RxTEG-Request-r17 ENUMERATED { requested } OPTIONAL, -- Need ON  nr-los-nlos-IndicatorRequest-r17 SEQUENCE {  type-r17 LOS-NLOS-IndicatorType1-r17,  granularity-r17 LOS-NLOS-IndicatorGranularity1-r17,  ...  } OPTIONAL, -- Need ON  additionalPathsExt-r17 ENUMERATED { requested } OPTIONAL, -- Need ON  additionalPathsDL-PRS-RSRP-Request-r17 ENUMERATED { requested } OPTIONAL, -- Need ON  multiMeasInSameReport-r17 ENUMERATED { requested } OPTIONAL -- Need ON  ]],  [[  nr-DL-PRS-JointMeasurementRequested-r18 SEQUENCE (SIZE (2..3)) OF  INTEGER (0..nrMaxFreqLayers-1-r16) OPTIONAL, -- Need ON  nr-DL-PRS-RxHoppingRequest-r18 ENUMERATED { requested } OPTIONAL, -- Need ON  nr-DL-PRS-RxHoppingTotalBandwidth-r18 CHOICE {  fr1 ENUMERATED {mhz40, mhz50, mhz80, mhz100},  fr2 ENUMERATED {mhz100, mhz200, mhz400}  } OPTIONAL, -- Need ON  nr-DL-PRS-RSCPD-Request-r18 ENUMERATED { requested } OPTIONAL -- Need ON  ]]  is this needed if we have nr-DL-PRS-JointMeasurementRequested-r18? It seems that nr-RequestedMeasurements is applied for a specified measurement defined in 38.215  The same question also applies for nr-DL-PRS-RxHoppingRequest-r18 |
| Huawei, HiSilicon | – NR-Multi-RTT-SignalMeasurementInformation | nr-UE-RxTxTimeDiffBasedOnAggregatedResources-r18 ENUMERATED {true} OPTIONAL,  nr-AggregatedDL-PRS-ResourceSetID-List-r18 SEQUENCE (SIZE (2.. 3)) OF  NR-DL-PRS-ResourceSetID-r16 OPTIONAL,  These two fields also seem to be duplicated in functionality. The same issue also for |
| Huawei, HiSilicon | DL-TDOA and DL-AoD | The Ad in NR-PRU-DL-Info should also be able to be provided by dedicated signalling in addition to posSIB? |

# 4 Reference

[1] R2-2313117 Introduction of Expanded and improved NR positioning CATT CR Rel-18 37.355 17.6.0 0481 - B NR\_pos\_enh2

[2] R2-2313895 Reply LS on CPP (R1-2312393; contact: CATT) RAN1 LS in Rel-18 NR\_pos\_enh2 To:RAN2 Cc:RAN4, RAN3, SA2

[3] R2-2313896 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

[4] R2-2313897 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

[5] R1-2312661 LS on Rel-18 higher-layers parameter list RAN1, Ericsson To: RAN2, RAN3; Cc: RAN4

[6] R2-2313564 Report from session on positioning and sidelink relay Session chair (MediaTek)