3GPP TSG-RAN WG2 Meeting #121***R2-2301900***

Athens, GR, February 27 – March 3, 2023

**Agenda item:** 6.7.3

**Source:** Qualcomm Incorporated

**Title:** Summary of AI 6.7.3 - NR positioning enhancements, LPP corrections

**Document for:**  Discussion

# 1. Introduction

This document summarizes the following contributions submitted for Agenda Item 6.7.3 NR positioning enhancements, LPP corrections.

[1] R2-2300111, "Miscellaneous Corrections to LPP", Huawei, HiSilicon.

[2] R2-2301829, "Correction to UE capability for MG (de-)activation", Huawei, HiSilicon, Ericsson, Intel.

[3] R2-2300674, "Change request about UE capability for PRS measurement within a PPW", vivo.

[4] R2-2300934, "Correction on the scheduled location time", ZTE Corporation.

[5] R2-2301809, "Clarification of FR2-2 capability support of subcarrier spacing for the DL PRS resource ", Ericsson.

[6] R2-2300414, "Miscellaneous corrections for Positioning capabilities", Intel Corporation.

# 2. R2-2300111, "Miscellaneous Corrections to LPP", Huawei, HiSilicon.

R2-2300111 Miscellaneous Corrections to LPP Huawei, HiSilicon CR Rel-17 37.355 17.3.0 0404 - F NR\_pos\_enh-Core To:True Cc:False

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| --- | --- |
| ***Reason for change:*** | 1/ During RAN2#118e, the IE *supportOfDL-PRS-FirstPathRSRP-MeasFR1* and *supportOfDL-PRS-FirstPathRSRP-MeasFR2* were agreed to be deleted for both *NR-DL-TDOA-MeasurementCapability* and *NR-Multi-RTT-MeasurementCapability*.  However, in current spec, the corresponding field description is still kept for *NR-Multi-RTT-MeasurementCapability*, which shoulde be removed.  2/ additionalPathsDL-PRS-RSRP-Request for *NR-DL-TDOA-RequestLocationInformation* and *NR-Multi-RTT-RequestLocationInformation* is introduced in Rel-17, therefore this IE is used to request for *nr-DL-PRS-RSRPP* in *nr-additionalPathListExt* instead of *nr-AdditionalPathList.* |
|  |  |
| ***Summary of change:*** | 1/ delete the field description of *supportOfDL-PRS-FirstPathRSRP-MeasFR1* and *supportOfDL-PRS-FirstPathRSRP-MeasFR2* for *NR-Multi-RTT-MeasurementCapability*.  2/ change *nr-AdditionalPathList* to *nr-AdditionalPathListExt in* the field description of additionalPathsDL-PRS-RSRP-Request for *NR-DL-TDOA-RequestLocationInformation* and *NR-Multi-RTT-RequestLocationInformation*. |
|  |  |
| ***Consequences if not approved:*** | Redundant field descirption of *NR-Multi-RTT-MeasurementCapability.* |

Rapporteur's Comment:

Change #1:

The current field description for *supportOfDL-PRS-FirstPathRSRP-MeasFR1* and *supportOfDL-PRS-FirstPathRSRP-MeasFR2* has been forgotten to be deleted when the field *supportOfDL-PRS-FirstPathRSRP-r17* was introduced (and the split into FR1 and FR2 capability was removed). Therefore, Change #1 seems to be an essential correction.

Change #2:

The current field description for *additionalPathsDL-PRS-RSRP-Request* seems not fully correct.

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| --- |
| ***additionalPathsDL-PRS-RSRP-Request***  This field, if present, indicates that the target device is requested to provide the *nr-DL-PRS-RSRPP* for the additional paths in IE *NR-AdditionalPathList*. |

-- ASN1START

NR-AdditionalPathList-r16 ::= SEQUENCE (SIZE(1..2)) OF NR-AdditionalPath-r16

NR-AdditionalPathListExt-r17 ::= SEQUENCE (SIZE(1..8)) OF NR-AdditionalPath-r16

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),

...

},

nr-PathQuality-r16 NR-TimingQuality-r16 OPTIONAL,

...,

[[

nr-DL-PRS-RSRPP-r17 INTEGER (0..126) OPTIONAL

]]

}

-- ASN1STOP

The *NR-AdditionalPathList* and *NR-AdditionalPathListExt* can provide the same information. However, the *NR-AdditionalPathList* provides the information for up to 2 additional paths; the *NR‑AdditionalPathListExt* provides the information for up to 8 additional paths.

Therefore, the proposed change may not always be needed:

|  |
| --- |
| ***additionalPathsDL-PRS-RSRP-Request***  This field, if present, indicates that the target device is requested to provide the *nr-DL-PRS-RSRPP* for the additional paths in IE *nr-AdditionalPathListExt*. |

I.e., when there are only up to 2 additional paths detected/reported, the *NR-AdditionalPathList* could also be used.

**Proposal 1:** Regarding R2-2300111, "Miscellaneous Corrections to LPP", Huawei, HiSilicon:

- (Change #1) Delete the field description of *supportOfDL-PRS-FirstPathRSRP-MeasFR1* and *supportOfDL-PRS-FirstPathRSRP-MeasFR2* for *NR-Multi-RTT-MeasurementCapability*.

- (Change #2) Discuss and decide whether the IE *NR-AdditionalPathListExt-r17* shall always be used when *additionalPathsDL-PRS-RSRP-Request* is present, irrespective of the max. number of additional paths detected/reported.

# 3. R2-2301829, "Correction to UE capability for MG (de-)activation", Huawei, HiSilicon, Ericsson, Intel.

R2-2301829 Correction to UE capability for MG (de-)activation Huawei, HiSilicon, Ericsson, Intel CR Rel-17 37.355 17.3.0 0405 1 F NR\_pos\_enh-Core R2-2300112 To:True Cc:False

|  |  |  |
| --- | --- | --- |
| ***Reason for change:*** | For the current LPP spec, the following UE capability has been included for mg-activation for DL-TDOA, DL-AoD and multi-RTT   |  | | --- | | ***mg-ActivationRequest***  This field, if present, indicates that the target device supports low latency measurement gap activation request for DL-PRS measurements. The UE can include this field only if the UE supports *mg-ActivationRequestPRS-Meas* and *mg-ActivationCommPRS-Meas* defined in TS 38.331 [35]. |   From the description above, it reads that the capability is for indicating the UE’s support for UL MAC CE for MG activation/deactivation request. It has also been clarified that the UE should indicate the field only if the UE supports the RRC radio capability.  While according to the current description in 38.305, there are two modes of MG activation/deactivation, either by UL MAC CE or NRPPa message. Coupling the support of the posMG and UL MAC CE for MG activation/deactivation is uncessary since the MG can also be activated/deactivated by NRPPa message.  In addition, the support of UL MAC CE for MG activation/deactivation is the issue between UE and gNB and can be transpartent to LPP spec. |
|  |  |
| ***Summary of change:*** | 1/ Change the field name of *mg-ActivationRequest* to *posMeasGap-supported*  2/ Change the field description of the field, that it indicates the support of pre-configured MG for positioning |
|  |  |
| ***Consequences if not approved:*** | Wrong description on the capability indication, which couples the UL MAC CE with MG activation/deactivation. |

Rapporteur's Comment:

The current LPP text

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| --- |
| ***mg-ActivationRequest***  This field, if present, indicates that the target device supports low latency measurement gap activation request for DL-PRS measurements. The UE can include this field only if the UE supports *mg-ActivationRequestPRS-Meas* and *mg-ActivationCommPRS-Meas* defined in TS 38.331 [35]. |

seems in agreement with RAN1 feature list in R1-2212895 for FG 27-10a:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 27-10a | Low latency MG activation request for PRS measurements | support of low latency MG activation request for PRS measurements | 27-10, 27-11 | No | Need for location server to know if the feature is supported  Note: RAN1 understands that FG 27-10a is intended only for the LMF to know, and that the current prerequisite FGs of FG 27-10a are capabilities only for the gNB to know. It is up to RAN2 to decide whether such a FG dependency is meaningful from signaling description perspective, and whether and how it can be captured in RAN2 specifications. |

Also the pre-requites 27-10 and 27-11 seems correctly captured in LPP:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 27-10 | Support of UL MAC CE based MG activation request for PRS measurements | 1. Support of using UL MAC CE to request measurement gap activation/deactivation for PRS measurements: The information in the UL MAC CE for MG activation request by the UE can be one ID associated with the preconfiguration of the MG  2. Support of preconfiguration of MGs in RRC signaling for PRS measurements: Each MG in the preconfiguration is associated with an ID | 27-11 | Yes |  |
| 27-11 | Support of DL MAC CE based MG activation for PRS measurements | 1. Support of preconfiguration of MGs in RRC signaling for PRS measurements: Each MG in the preconfiguration is associated with an ID  2. Support of using DL MAC CE to activate/deactivate the MG for PRS measurements: The DL MAC CE for MG activation indicates the ID associated with the preconfigured MG |  | Yes |  |

According to Rapporteur's understanding, a location server needs to know whether the target device supports the "Low latency MG activation request". If the target device does not support the "MG activation request", an LMF may have to activate pre-configured MGs.

It would be desired for a location server to also know whether the target device supports pre-configured MGs, which the location server currently can only know after the NRPPa Measurement Preconfiguration procedure has been completed (NRPPa MEASUREMENT PRECONFIGURATION REFUSE message), which seems generally in contradiction with the desire for "low latency".

The CR in R2-2301829 proposes the following change:

|  |
| --- |
| ***posMeasGap-supported***  This field, if present, indicates that the target device supports low latency pre-configured positioning measurement gap for DL-PRS measurements. The UE can include this field only if the UE supports  *mg-ActivationCommPRS-Meas* defined in TS 38.331 [35]. |

I.e., change the "MG activation request" capability into a "MG pre-configuration" capability. It is then unclear how the location server should know whether the target device supports the "MG activation request".

According to the Consequence if not Approved:

"Wrong description on the capability indication, which couples the UL MAC CE with MG activation/deactivation."

Rapporteur can not see the wrong capability indication, assuming this is supposed to capture FG 27-10a.

**Proposal 2:** RAN2 to discuss and decide whether the CR in   
"R2-2301829, Correction to UE capability for MG (de-)activation, Huawei, HiSilicon, Ericsson, Intel"  
is an essential correction or not.

# 4. R2-2300674, "Change request about UE capability for PRS measurement within a PPW", vivo.

R2-2300674 Change request about UE capability for PRS measurement within a PPW vivo draftCR Rel-17 37.355 17.3.0 F NR\_pos\_enh-Core

|  |  |
| --- | --- |
| ***Reason for change:*** | According to RAN4 LS reply R2-2300042, RAN4 recommends that the feature 14-3 should be captured in LPP specification and the information on the support of this feature shall be provided to LMF.  That is, RAN2 needs to introduce the UE capability for support of Rx timing difference between the serving cell and non-serving cell for PRS measurement within a PPW in *NR-DL-PRS-ProcessingCapability* of TS 37.355. The capability type shall be per band. |
|  |  |
| ***Summary of change:*** | Introduce a new UE capability for support of Rx timing difference between the serving cell and non-serving cell for PRS measurement within a PPW in *NR-DL-PRS-ProcessingCapability*. |
| ***In*** |  |
| ***Consequences if not approved:*** | Incomplete UE capability for PRS measurement. |

Rapporteur's Comment:

According to the RAN4 reply LS in R2-2300042:

|  |  |
| --- | --- |
| RAN4 thanks RAN2 for the LS R4-2215309(R2-2209241) on capability for PRS measurement without MG. In RAN4#105 meeting, RAN4 discussed the LS and provided the following feedbacks:   |  | | --- | | Question: Whether the LMF also needs to know the UE capability on feature 14-3?  **RAN4 feedback: RAN4 recommends that the feature 14-3 should be captured in LPP specification and the information on the support of this feature shall be provided to LMF.** |   RAN4 kindly asks RAN2 to take the above information into account in the following work on NR positioning enhancements. |

Per RAN4 feature list in R4-2215143:

|  |  |  |  |
| --- | --- | --- | --- |
| 14-3 | PRS measurement without MG | Capability for the threshold used to be compared against with the Rx timing difference to determine whether the PRS from the non-serving cell satisfy the condition of PRS measurement outside MG. | The candidate threshold values: CP length, 1/4 symbol, 1/2 symbol, half of slot |

The CR proposes the following change:

-- ASN1START

NR-DL-PRS-ProcessingCapability-r16 ::= SEQUENCE {

prs-ProcessingCapabilityBandList-r16 SEQUENCE (SIZE (1..nrMaxBands-r16)) OF

PRS-ProcessingCapabilityPerBand-r16,

maxSupportedFreqLayers-r16 INTEGER (1..4),

simulLTE-NR-PRS-r16 ENUMERATED { supported } OPTIONAL,

...,

[[

dummy ENUMERATED { m1, m2, ... } OPTIONAL

]]

}

PRS-ProcessingCapabilityPerBand-r16 ::= SEQUENCE {

freqBandIndicatorNR-r16 FreqBandIndicatorNR-r16,

[parts omitted]

[[

supportedDL-PRS-ProcessingSamples-RRC-Inactive-r17 ENUMERATED { supported } OPTIONAL

]],

[[

supportedDL-PRS-ProcessingTimeDifferenceOutsideMGinPPW-v1740

ENUMERATED {cp, symbolDot25, symbolDot5, slotDot5} OPTIONAL

]]

}

|  |
| --- |
| ***supportedDL-PRS-ProcessingTimeDifferenceOutsideMGinPPW***  Indicates the UE capability for support of Rx timing difference between the serving cell and non-serving cell for PRS measurement within a PPW. Value *cp* indicates one CP length, value *symbolDot25* indicates 0.25 symbol length, value *symbolDot5* indicates 0.5 symbol length and value *slotDot5* indicates 0.5 slot length. |

The CR seems to capture the reply LS/FG 14-3 correctly.

However, 'Isolated Impact' statement is missing on the cover sheet, and correct 3GPP styles should be used (e.g., TAL instead of TAN). Also, the new field description should be added before Table NOTE 9 row.

**Proposal 3:** The CR in   
"R2-2300674, Change request about UE capability for PRS measurement within a PPW, vivo"  
is an essential correction.  
Update the CR cover sheet with Isolated Impact statement, insert the new field description before Table NOTE 9 row, and use the correct 3GPP styles.

# 5. R2-2300934, "Correction on the scheduled location time", ZTE Corporation.

R2-2300934 Correction on the scheduled location time ZTE Corporation CR Rel-17 37.355 17.3.0 0409 - F NR\_pos\_enh-Core To:True Cc:True

|  |  |  |  |
| --- | --- | --- | --- |
| ***Reason for change:*** | Change 1: The *ScheduledLocationTimeSupport* and *ScheduledLocationTimeSupportPerMode* IE are UE capabilities, they should indicate which time bases that the UE supports for the scheduled location time, not to indicate whether the UE supports the scheduled location time request, because the *scheduledLocationRequestSupported* IE in each *method*-*ProvideCapabilities* is already existed to indicate whether the UE supports the scheduled location time request:   |  | | --- | | ***scheduledLocationRequestSupported***  This field, if present, indicates that the target device supports scheduled location requests – i.e., supports the IE *ScheduledLocationTime* in IE *CommonIEsRequestLocationInformation* – and the time base(s) supported for the scheduled location time. |   Change 2: the *ScheduledLocationTime* in the *CommonIEsRequestLocationInformation* has a note saying that:   |  | | --- | | NOTE 1: A location estimate returned to an LCS Client, AF or UE for a scheduled location time can be treated by the LCS Client, AF or UE as an estimate of the location of the UE at the scheduled location time (see TS 23.273 [42]). |   That means if the UE is requested by a *ScheduledLocationTime* and UE reports a location estimate based on the request, network will assume the location measurements or location estimate is valid at the requested scheduled location time. However UE will also report a *locationTimestamp* in the *CommonIEsProvideLocationInformation,* indicating a UTC time when the location estimate is valid. If the requested scheduled location time and the UTC time that UE reports in the *locationTimestamp* are not same, network will have misunderstanding on which time the location measurements or location estimate should be assumed as valid. |
|  |  |
| ***Summary of change:*** | Change 1: change ‘scheduled location requests’ to ‘scheduled location time’ in *ScheduledLocationTimeSupport* and *ScheduledLocationTimeSupportPerMode* IE.  Change 2: add a field description in the *locationTimestamp* IE saying that ‘ If the target device is requested by ScheduledLocationTime in the CommonIEsRequestLocationInformation with the format of UTC time, the target device should set the UTC time of the locationTimestamp the same as that in the ScheduledLocationTime’. |
|  |  |
| ***Consequences if not approved:*** | If change 1 is not approved, wrong description of *ScheduledLocationTimeSupport* and *ScheduledLocationTimeSupportPerMode* IE will show in 37.355;  If change 2 is not approved, network will have misunderstanding on which time the location measurements or location estimate should be assumed as valid if the UE reports the UTC time differently with the requested scheduled location time. |

Rapporteur's Comment:

Change #1:

This looks like an editorial change:

|  |
| --- |
| *– ScheduledLocationTimeSupport* The IE *ScheduledLocationTimeSupport* is used by the target device to indicate the time bases supported for scheduled location time. |

The location request is a 'scheduled location request' and the IE *ScheduledLocationTimeSupport* indicates the time base(s) supported for the 'scheduled location request':

scheduledLocationRequestSupported-r17 ScheduledLocationTimeSupport-r17 OPTIONAL,

|  |
| --- |
| ***scheduledLocationRequestSupported***  This field, if present, indicates that the target device supports scheduled location requests – i.e., supports the IE *ScheduledLocationTime* in IE *CommonIEsRequestLocationInformation* – and the time base(s) supported for the scheduled location time. |

I.e., the current description seems not wrong.

Change #2:

This seems to introduce new requirements:

|  |
| --- |
| ***locationTimestamp***  This field provides the UTC time when the location estimate is valid and should take the form of *YYMMDDhhmmssZ*.If the target device is requested by *ScheduledLocationTime* in the *CommonIEsRequestLocationInformation* with the format of UTC time, the target device should set the UTC time of the *locationTimestamp* the same as that in the *ScheduledLocationTime*. |

The target device should not simply "set the UTC time of the *locationTimestamp* the same as that in the *ScheduledLocationTime*". The target device should obtain the location estimate valid (as far as possible) at the requested *ScheduledLocationTime*. But this seems already clear from the location request:

|  |
| --- |
| ***scheduledLocationTime***  This field indicates that the target device is requested to obtain location measurements or location estimate valid at the *scheduledLocationTime* *T* and comprises the following subfields:  - ***utcTime*** provides *T* in UTC in the form of YYMMDDhhmmssZ.  - ***gnssTime*** provides *T* in GNSS system time of the GNSS indicated by *gnss-TimeID*.  - ***gnss-TOD-msec*** specifies the GNSS TOD in 1-milli-second resolution rounded down to the nearest millisecond unit.  - ***networkTime*** provides *T* in E-UTRA or NR network time.  - ***lte-PhysCellId, lte-ArfcnEUTRA, lte-CellGlobalId*** identifies the reference cell (E-UTRA) that is used for the network time.  - ***lte-systemFrameNumber*** specifies the system frame number in E-UTRA.  - ***nr-PhysCellID***, ***nr-ARFCN*** , ***nr-CellGlobalID*** identifies the reference cell (NR) that is used for the network time.  - ***nr-SFN*** specifies the system frame number in NR.  - ***nr-Slot*** specifies the slot number in NR for the indicated subcarrier spacing (SCS). The total NR network time is given by *nr-SFN* + *nr-Slot*.  - ***relativeTime*** provides *T* in seconds from current time, where current time is defined as the time the *CommonIEsRequestLocationInformation* was received.  NOTE 1: A location estimate returned to an LCS Client, AF or UE for a scheduled location time can be treated by the LCS Client, AF or UE as an estimate of the location of the UE at the scheduled location time (see TS 23.273 [42]).  NOTE 2: If this field is present, at least one of *utcTime*, *gnssTime*, *networkTime,* or *relativeTime* shall be present. |

**Proposal 4:** RAN2 to discuss and decide whether the CR in   
 "R2-2300934, Correction on the scheduled location time, ZTE Corporation"  
is an essential corrections or not.

# 6. R2-2301809, "Clarification of FR2-2 capability support of subcarrier spacing for the DL PRS resource ", Ericsson.

R2-2301809 Clarification of FR2-2 capability support of subcarrier spacing for the DL PRS resource Ericsson CR Rel-17 37.355 17.3.0 0415 - F NR\_pos\_enh-Core To:True Cc:False

|  |  |
| --- | --- |
| ***Reason for change:*** | At the RAN1#110bis-e meeting, RAN1 had the discussion on whether SRS for positioning/DL-PRS with 480/960 kHz SCS can be supported in FR2-2 in R17 and made the following conclusion as captured in the reply LS to RAN2 (R1-2210528).  ***Conclusion:***  ***DL-PRS with 480/960 kHz SCS are not supported in FR2-2 in R17.***  ***From RAN1 perspective, companies have different views on whether SRS for positioning with 480/960 kHz SCS are supported in FR2-2 in R17, and RAN1 will not optimize the specifications for SRS for positioning with 480/960 kHz SCS in FR2-2 in R17.***  Therefore, the LPP capabilitiy dl-PRS-SubcarrierSpacingin TS 37.355 need to be corrected to reflect the above RAN1 agreement for DL PRS. |
|  |  |
| ***Summary of change:*** | A note is added to clarify that the FR2-2 SCS 480 kHz and 960 kHz are not supported for DL-PRS Resource. |
|  |  |
| ***Consequences if not approved:*** | It would be unclear with regards to the support of FR-2-2 SCS for positioning purpose. The specification will be incomplete. |

Rapporteur's Comment:

The IE *NR-DL-PRS-PositioningFrequencyLayer* includes the *dl-PRS-SubcarrierSpacing* for the PFL:

NR-DL-PRS-PositioningFrequencyLayer-r16 ::= SEQUENCE {

dl-PRS-SubcarrierSpacing-r16 ENUMERATED {kHz15, kHz30, kHz60, kHz120, ...},

dl-PRS-ResourceBandwidth-r16 INTEGER (1..63),

dl-PRS-StartPRB-r16 INTEGER (0..2176),

dl-PRS-PointA-r16 ARFCN-ValueNR-r15,

dl-PRS-CombSizeN-r16 ENUMERATED {n2, n4, n6, n12, ...},

dl-PRS-CyclicPrefix-r16 ENUMERATED {normal, extended, ...},

...

}

|  |
| --- |
| ***dl-PRS-SubcarrierSpacing***  This field specifies the subcarrier spacing of the DL-PRS Resource. 15, 30, 60 kHz for FR1; 60, 120 kHz for FR2. All DL-PRS Resources and DL-PRS Resource Sets in the same Positioning Frequency layer have the same value of *dl-PRS-SubcarrierSpacing*. |

Obviously, SCS of 480/960 kHz can not be signalled.

The CR in R2-2301809 proposes to add a Table NOTE as follows (note, per TR 21.801, Notes to tables may contain requirements; i.e., they are not informative):

|  |
| --- |
| ***dl-PRS-SubcarrierSpacing***  This field specifies the subcarrier spacing of the DL-PRS Resource. 15, 30, 60 kHz for FR1; 60, 120 kHz for FR2. All DL-PRS Resources and DL-PRS Resource Sets in the same Positioning Frequency layer have the same value of *dl-PRS-SubcarrierSpacing*.  NOTE: FR2-2 supports subcarrier spacings of 480 kHz, 960 kHz. However these subcarrier spacings are not supported for the DL-PRS Resource. |

According to the 'Consequences if Not Approved':

"It would be unclear with regards to the support of FR-2-2 SCS for positioning purpose. The specification will be incomplete."

Rapporteur can not see that the current specification is unclear or incomplete.

**Proposal 5:** RAN2 to discuss and decide whether the CR in   
 "R2-2301809, Clarification of FR2-2 capability support of subcarrier spacing for the DL PRS resource, Ericsson."  
is an essential corrections or not.

# 7. R2-2300414, "Miscellaneous corrections for Positioning capabilities", Intel Corporation

R2-2300414 Miscellaneous corrections for Positioning capabilities Intel Corporation CR Rel-17 37.355 17.3.0 0408 - F NR\_pos\_enh-Core

|  |  |
| --- | --- |
| ***Reason for change:*** | This CR is on Release-17 UE capabilities based on the RAN1 UE feature list (R1-2212895).  1 In RAN1 feature list, there are additional clarifications on *prs-ProcessingWindowType1A, prs-ProcessingWindowType1B* and *prs-ProcessingWindowType2* are missing in LPP;  *Note: When the UE determines higher priority for other DL signals/channels over the PRS measurement/processing, the UE is not expected to measure/process DL PRS which is applicable to all of the above capability options*  2 *supportOfDL-PRS-FirstPathRSRP-MeasFR1* and *supportOfDL-PRS-FirstPathRSRP-MeasFR1* have been changed to *supportOfDL-PRS-FirstPathRSRP-r17*. But there are still the descriptions on these two capabilities in the field description. |
|  |  |
| ***Summary of change:*** | 1 Add Note for on *prs-ProcessingWindowType1A, prs-ProcessingWindowType1B* and *prs-ProcessingWindowType2*  Note: When the UE determines higher priority for other DL signals/channels over the PRS measurement/processing, the UE is not expected to measure/process DL PRS  2 remove unused fields *supportOfDL-PRS-FirstPathRSRP-MeasFR1* and *supportOfDL-PRS-FirstPathRSRP-MeasFR1* |
|  |  |
| ***Consequences if not approved:*** | 1 the details of capabilities *prs-ProcessingWindowType1A, prs-ProcessingWindowType1B* and *prs-ProcessingWindowType2* are missing;  2 Useless fields *supportOfDL-PRS-FirstPathRSRP-MeasFR1* and *supportOfDL-PRS-FirstPathRSRP-MeasFR1* exist. |

Rapporteur's Comment:

Change #1:

FG 27-3-2 in R1-2212895 contains the following Note:

Note: When the UE determines higher priority for other DL signals/channels over the PRS measurement/processing, the UE is not expected to measure/process DL PRS which is applicable to all of the above capability options

which is currently missing in LPP.

Change #2:

Also corrected in R2-2300111 (see section 2).

Editorial:

- "PRS" should be "DL-PRS"

- "DL PRS should be "DL-PRS".

**Proposal 6:** The CR in   
"R2-2300414, Miscellaneous corrections for Positioning capabilities, Intel Corporation"  
is an essential correction.  
Change #2 is also proposed in R2-2300111. Dependent on the outcome of R2-2300111, Change #2 may be either merged into R2-2300111 or kept in this CR (and then removed from R2-2300111).  
Change "PRS" to "DL-PRS"; change "DL PRS to "DL-PRS".

# 8. Summary

**Proposal 1:** Regarding R2-2300111, "Miscellaneous Corrections to LPP", Huawei, HiSilicon:

- (Change #1) Delete the field description of *supportOfDL-PRS-FirstPathRSRP-MeasFR1* and *supportOfDL-PRS-FirstPathRSRP-MeasFR2* for *NR-Multi-RTT-MeasurementCapability*.

- (Change #2) Discuss and decide whether the IE *NR-AdditionalPathListExt-r17* shall always be used when *additionalPathsDL-PRS-RSRP-Request* is present, irrespective of the max. number of additional paths detected/reported.

**Proposal 2:** RAN2 to discuss and decide whether the CR in   
"R2-2301829, Correction to UE capability for MG (de-)activation, Huawei, HiSilicon, Ericsson, Intel"  
is an essential correction or not.

**Proposal 3:** The CR in   
"R2-2300674, Change request about UE capability for PRS measurement within a PPW, vivo"  
is an essential correction.  
Update the CR cover sheet with Isolated Impact statement, insert the new field description before Table NOTE 9 row, and use the correct 3GPP styles.

**Proposal 4:** RAN2 to discuss and decide whether the CR in   
 "R2-2300934, Correction on the scheduled location time, ZTE Corporation"  
is an essential corrections or not.

**Proposal 5:** RAN2 to discuss and decide whether the CR in   
 "R2-2301809, Clarification of FR2-2 capability support of subcarrier spacing for the DL PRS resource, Ericsson."  
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**Proposal 6:** The CR in   
"R2-2300414, Miscellaneous corrections for Positioning capabilities, Intel Corporation"  
is an essential correction.  
Change #2 is also proposed in R2-2300111. Dependent on the outcome of R2-2300111, Change #2 may be either merged into R2-2300111 or kept in this CR (and then removed from R2-2300111).  
Change "PRS" to "DL-PRS"; change "DL PRS to "DL-PRS".