3GPP TSG-RAN WG3 Meeting #123**R3-240908**

Athens, Greece, February 26 – March 1, 2024

**Agenda item:** 23.3

**Source:** Qualcomm Incorporated

**Title:** (TP to BL CR for TS 38.455) Support of CPP

**Document for:**  Discussion and Decision

# 1. Introduction

The current NRPPa [1] Baseline CR for the NR Positioning Enhancements are not fully in agreement with the RAN1 parameter list [4] . This contribution proposes corrections accordingly.

# 2. Discussion







































## 2.1 UL CPP

For UL CPP additional carrier phase measurements are introduced which are reported together with the existing ("code") measurements [4]:

- ul-Rscp: UL RSCP measurement result reported together with gNB Rx-Tx time difference measurement

- In gNB Rx-Tx Time Difference

- ul-Rscp: UL RSCP measurement result reported together with UL- RTOA measurement

- In UL RTOA Measurement

- Agreement:  
Support enabling a TRP to report UL RSCP together with RTOA and/or gNB Rx-Tx time difference measurements to LMF

- LMF to request gNB to report UL RSCP measurement together with:  
gNB Rx-Tx time difference measurement  
UL RTOA measurement

However, in the current NRPPa [1], the UL RSCP is treated like a "standalone measurement" included as a CHOICE in the *TRP Measurement Result*.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 9.2.37 TRP Measurement Result  This information element contains the measurement result.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality | | **Measured Result Item** |  | *1 .. <maxnoPosMeas>* |  |  |  |  | | >CHOICE *Measured Results Value* | M |  |  |  |  |  | | >>UL Angle of Arrival | M |  | 9.2.38 |  | - |  | | >>UL SRS-RSRP | M |  | INTEGER (0..126) |  | - |  | | >>UL RTOA | M |  | 9.2.39 |  | - |  | | >>gNB Rx-Tx Time Difference | M |  | 9.2.40 |  | - |  | | >>Z-AoA | M |  | 9.2.67 |  | YES | reject | | >>Multiple UL-AoA | M |  | 9.2.71 |  | YES | reject | | >>UL SRS-RSRPP | M |  | 9.2.72 |  | YES | reject | | >>UL RSCP | M |  | 9.2.x3 |  | YES | reject | | >Time Stamp | M |  | 9.2.42 |  | - |  | | >Measurement Quality | O |  | 9.2.43 |  | - |  | | >Measurement Beam Information | O |  | 9.2.57 |  | - |  | | >SRS Resource type | O |  | 9.2.73 |  | YES | ignore | | >ARP ID | O |  | 9.2.75 |  | YES | ignore | | >LoS/NLoS Information | O |  | 9.2.77 |  | YES | ignore | | **>Aggregated Positioning SRS Resource ID List** |  | *0..1* |  | Indicates the used SRS for positioning resources across aggregated carriers. | YES | ignore | | **>>Aggregated Positioning SRS Resource ID Item** |  | 1..< *maxnoaggregatedPosSRS-Resources* > |  |  | - |  | | >>>Positioning SRS Resource ID | M |  | INTEGER (0..63) |  |  |  | |

It would be more natural to include the UL RSCP as additional measurement in the *UL RTOA* and *gNB Rx-Tx Time Difference* IEs, since the measurements must be made at the same time (i.e., one *Time Stamp* applicable to both, "code-" and carrier-phase measurements (e.g., like in GNSS)). However, if the current structure is preferred, the Semantics Description should clarify that a UL RSCP measurement can only be reported along with a UL RTOA or gNB-Rx-Tx Time Difference measurement and that the reported "code-" and carrier-phase measurements must have a common time stamp.

In the corresponding *TRP Measurement Type* in the MEASUREMENT REQUEST message, the request for UL-RSCP was added without change bars.

Corresponding corrective TPs are provided in Annex A of this contribution.

**Proposal 1:** Regarding sub-feature group "UL CPP" endorse the TPs in the Annex A of this contribution.

## 2.2 Simultaneous scheduling and their measurement of SRS for positioning from a target UE and PRU for UL CPP, UL-TDOA, multi-RTT

The LMF can request the serving gNB and neighbouring gNBs of a UE to measure the UL SRS resources from the UE within indicated time window(s) [4]:

- LMF to request the serving gNB and neighbouring gNBs of a UE to measure the UL SRS resources from the UE within indicated time window(s).

- Each time window is defined with the following parameters:

- The start of the time window, which is indicated by a combination of subframe number, slot offset and symbol index with respect to the SFN initialization time

- The duration of the time window, which is given by a number of consecutive slots/symbols

- Duration of time window can be: {1, 2, 4, 6, 8, 12, 16} slots

- Periodicity: Periodicity of the time window, which is defined similar to IE Measurement Periodicity in MEASUREMENT REQUEST in TS 38.455, can be optionally provided

- Number of the time windows can be: {1, 2, …, 16}

- For a time window, LMF can optionally request gNB to perform UL measurements for UL-TDOA and Multi-RTT on indicated UL SRS resources occurring within indicated time window(s) only.

NRPPa defines this currently as follows [1]:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 9.2.x2 Time Window Information Measurement List  This IE contains the time window(s) when UL SRS measurement is requested.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | | Time Window Information Measurement List |  | 1 |  |  | | **>Time Window Information Measurement Item** |  | *1..<maxnoofTimeWindowMeas>* |  |  | | >>CHOICE *Time Window Duration* | M |  |  | Duration of time window with start time given by the *System Frame Number* IE and *Slot Number* IE. | | *>>>Slots* |  |  |  |  | | >>>>Duration in Slots | M |  | ENUMERATED (1, 2, 4, 6, 8, 12, 16, …) |  | | >>Time Window Type | M |  | ENUMERATED (single, periodic, …) |  | | >>Time Window Periodicity | C-ifTimeWindowTypePeriodic |  | ENUMERATED (160, 320, 640, 1280, 2560, 5120, 10240, 20480, 40960, 61440, 81920, 368640, 737280, 1843200, …) | Unit: Milli-seconds |  |  |  | | --- | --- | | Condition | Explanation | | ifTimeWindowTypePeriodic | This IE shall be present if the *Time Window Type* IE is set to the value “periodic”. |  |  |  | | --- | --- | | Range bound | Explanation | | maxnoofTimeWindowMeas | Maximum no of Time Window for measurement. Value is 16. | |

Therefore, the start of the time window is missing (subframe number, slot offset and symbol index with respect to the SFN initialization time).

Also, the request to perform UL measurements for UL-TDOA and Multi-RTT on indicated UL SRS resources occurring within indicated time window(s) is missing.

Note, the CHOICE *Time Window Duration* would not be needed for the measurement time window. The CHOICE is only needed for the Requested SRS Transmission Characteristics [4]:

- timeWindowConfig-RequestedSrsTx:

- Duration of time window can be either:

{1, 2, 4, 8, 12} OFDM symbols,

OR

{1, 2, 4, 6, 8, 12, 16} slots

- timeWindowConfig-RequestedSrsMeasurement:

- Duration of time window can be:

{1, 2, 4, 6, 8, 12, 16} slots

Corresponding corrective TPs are provided in the Annex B of this contribution:

**Proposal 2:** Regarding sub-feature group "Simultaneous scheduling and their measurement of SRS for positioning from a target UE and PRU for UL CPP, UL-TDOA, multi-RTT" endorse the TPs in Annex B of this contribution.



# References

[1] R3-238100, "(BL CR to 38.455) Support of NR Positioning Enhancements".

[2] R3-238101, "(BL CR to TS 38.473) Support of NR Positioning Enhancements".

[3] R3-238097, "(BL CR to TS 38.305) Support of NR Positioning Enhancements".

[4] R1-2312697, "Consolidated Rel-18 higher layer parameters list", RAN1.

[5] 3GPP TS 38.331: "NR; Radio Resource Control (RRC) protocol specification".

[6] 3GPP TS 37.355: "LTE Positioning Protocol (LPP)".

[7] R2-2401252, "Remaining issues for pre-configured SRS", Qualcomm Incorporated.







































































































































# Annex A:

The proposed changes are on top of R3-238100 [1] using yellow highlight.

*Start of TP*

#### 9.1.4.1 MEASUREMENT REQUEST

This message is sent by the LMF to request the NG-RAN node to configure a positioning measurement.

Direction: LMF → NG-RAN node.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.2.3 |  | YES | reject |
| NRPPa Transaction ID | M |  | 9.2.4 |  | - |  |
| LMF Measurement ID | M |  | INTEGER (1..65536, …) |  | YES | reject |
| **TRP Measurement Request List** |  | *1* |  |  | YES | reject |
| **>TRP Measurement Request Item** |  | *1..<maxnoofMeasTRPs>* |  |  | EACH | reject |
| >>TRP ID | M |  | 9.2.24 |  | - |  |
| >>Search Window Information | O |  | 9.2.26 |  | - |  |
| >>Cell ID | O |  | NR CGI  9.2.9 | The Cell ID of the TRP identified by the *TRP ID* IE. | YES | ignore |
| >>AoA Search Window Information | O |  | UL-AoA Assistance Information 9.2.66 |  | YES | ignore |
| >>Number of TRP Rx TEGs | O |  | ENUMERATED (2, 3, 4, 6, 8, …) |  | YES | ignore |
| >>Number of TRP RxTx TEGs | O |  | ENUMERATED (2, 3, 4, 6, 8, …) |  | YES | ignore |
| Report Characteristics | M |  | ENUMERATED (OnDemand, Periodic, ...) |  | YES | reject |
| Measurement Periodicity | C-ifReportCharacteristicsPeriodic |  | ENUMERATED (120ms, 240ms, 480ms, 640ms, 1024ms, 2048ms, 5120ms, 10240ms, 1min, 6min, 12min, 30min, 60min,…, 20480ms, 40960ms, extended) | The codepoint 120ms, 240ms, 480ms, 1024ms, 2048ms, 1min, 6min, 12min, 30min, and 60min are not applicable | YES | reject |
| **TRP Measurement Quantities** |  | *1* |  |  | YES | reject |
| **>TRP Measurement Quantities Item** |  | *1 .. <maxnoPosMeas>* |  |  | EACH | reject |
| >>TRP Measurement Type | M |  | ENUMERATED (gNB-RxTxTimeDiff, UL-SRS-RSRP, UL-AoA, UL-RTOA,…, Multiple UL-AoA, UL SRS-RSRPP, UL-RSCP) | If UL-RSCP measurement is requested, gNB Rx-Tx Time Difference or UL-RTOA measurement must also be requested. | - |  |
| >>Timing Reporting Granularity Factor | O |  | INTEGER (0..5) | Value (0..5) corresponds to (k0..k5)  TS 38.133 [16].  This IE is ignored when the Timing Reporting Granularity Factor Extended IE is included. | - |  |
| >>Timing Reporting Granularity Factor Extended | O |  | INTEGER (-2..-1, …) | Value -1 corresponds to kminus1, value -2 corresponds to kminus2 and so on, see  TS 38.133 [16] |  |  | |
| SFN initialisation Time | O |  | Relative Time 1900  9.2.36 | If this IE is not present, the TRP may assume that the value is same as its own SFN initialisation time. | YES | ignore |
| SRS Configuration | O |  | 9.2.28 |  | YES | ignore |
| Measurement Beam Information Request | O |  | ENUMERATED (true,...) | This IE is ignored when the *Measurement Characteristics Request Indicator* IE is included. | YES | ignore |
| System Frame Number | O |  | INTEGER(0..1023) |  | YES | ignore |
| Slot Number | O |  | INTEGER(0..79) |  | YES | ignore |
| Measurement Periodicity Extended | C-ifMeasPerExt |  | ENUMERATED (160ms, 320ms, 1280ms, 2560ms, 61440ms, 81920ms, 368640ms, 737280ms, 1843200ms, …) |  | YES | reject |
| Response Time | O |  | 9.2.68 | This IE is ignored when the *Report Characteristics* IE is set to “periodic”. | YES | ignore |
| Measurement Characteristics Request Indicator | O |  | 9.2.81 |  | YES | ignore |
| Measurement Time Occasion | O |  | ENUMERATED (o1, o4, …) |  | YES | ignore |
| Measurement Amount | O |  | ENUMERATED (0, 1, 2, 4, 8, 16, 32, 64) | This IE is ignored if the *Report Characteristics* IE is set to ‘OnDemand’.  Value 0 represents an infinite number of periodic reporting. | YES | ignore |
| Time Window Information Measurement List | O |  | 9.2.x2 |  | YES | ignore |

|  |  |
| --- | --- |
| Condition | Explanation |
| ifReportCharacteristicsPeriodic | This IE shall be present if the *Report Characteristics* IE is set to the value "Periodic". |
| ifMeasPerExt | This IE shall be present if the *Measurement Periodicity* IE is set to the value "extended". |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoPosMeas | Maximum no. of measured quantities that can be configured and reported with one positioning measurement message. Value is 16384. |
| maxnoofMeasTRPs | Maximum no. of TRPs that can be included within one message. Value is 64. |

Editor's Note: This part above has no change bars in [1].

### 9.2.37 TRP Measurement Result

This information element contains the measurement result.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
| **Measured Result Item** |  | *1 .. <maxnoPosMeas>* |  |  |  |  |
| >CHOICE *Measured Results Value* | M |  |  |  |  |  |
| >>UL Angle of Arrival | M |  | 9.2.38 |  | - |  |
| >>UL SRS-RSRP | M |  | INTEGER (0..126) |  | - |  |
| >>UL RTOA | M |  | 9.2.39 |  | - |  |
| >>gNB Rx-Tx Time Difference | M |  | 9.2.40 |  | - |  |
| >>Z-AoA | M |  | 9.2.67 |  | YES | reject |
| >>Multiple UL-AoA | M |  | 9.2.71 |  | YES | reject |
| >>UL SRS-RSRPP | M |  | 9.2.72 |  | YES | reject |
| >>UL RSCP | M |  | 9.2.x3 | The UL-RSCP measurement is reported along with a UL RTOA or gNB Rx-Tx Time Difference measurement valid at the same time (i.e., same *Time Stamp* must apply). | YES | reject |
| >Time Stamp | M |  | 9.2.42 |  | - |  |
| >Measurement Quality | O |  | 9.2.43 |  | - |  |
| >Measurement Beam Information | O |  | 9.2.57 |  | - |  |
| >SRS Resource type | O |  | 9.2.73 |  | YES | ignore |
| >ARP ID | O |  | 9.2.75 |  | YES | ignore |
| >LoS/NLoS Information | O |  | 9.2.77 |  | YES | ignore |
| **>Aggregated Positioning SRS Resource ID List** |  | *0..1* |  | Indicates the used SRS for positioning resources across aggregated carriers. | YES | ignore |
| **>>Aggregated Positioning SRS Resource ID Item** |  | 1..< *maxnoaggregatedPosSRS-Resources* > |  |  | - |  |
| >>>Positioning SRS Resource ID | M |  | INTEGER (0..63) |  |  |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoPosMeas | Maximum no. of measured quantities that can be configured and reported with one positioning measurement message. Value is 16384. |
| maxnoaggregatedPosSRS-Resources | Maximum no of aggregated Positioning SRS resources per UL BWP. Value is 3. |

*End of TP*

# Annex B:

The proposed changes are on top of R3-238100 [1] using yellow highlight.

*Start of TP*

### 8.5.1 Measurement

#### 8.5.1.1 General

The Measurement procedure allows the LMF to request one or more TRPs in the NG-RAN node to perform and report positioning measurements. This procedure applies only if the NG-RAN node is a gNB.

#### 8.5.1.2 Successful Operation



Figure 8.5.1.2.1: Measurement procedure. Successful operation.

The LMF initiates the procedure by sending a MEASUREMENT REQUEST message to the NG-RAN node, indicating in the *TRP Measurement Request List* IE the TRP(s) from which measurements are requested. The NG-RAN node shall use the included information to configure positioning measurements by the indicated TRP(s). If at least one of the requested measurements has been successful for at least one of the TRPs, the NG-RAN node shall reply with a MEASUREMENT RESPONSE message including the *TRP Measurement Response List* IE.

If the *Report Characteristics* IE is set to "OnDemand", the NG-RAN node shall return the corresponding measurement results in the MEASUREMENT RESPONSE message, and the LMF shall consider that this reporting has been terminated by the NG-RAN node. If the *Report Characteristics* IE is set to "Periodic", the NG-RAN node shall initiate the corresponding measurements, and it shall reply with the MEASUREMENT RESPONSE message without including any measurement results in the message. The NG-RAN node shall then periodically initiate the Measurement Report procedure for the corresponding measurements, with the requested reporting periodicity.

If the *Measurement Beam Information Request* IE is included in the MEASUREMENT REQUEST message, the NG-RAN node shall include the *Measurement Beam Information* IE in the *TRP Measurement Result* IE of the MEASUREMENT RESPONSE message.

If the *Measurement Quality* IE is included in the *TRP Measurement Result* IE in the MEASUREMENT RESPONSE message, the LMF may take it into account as the TRP estimate of the measurement quality. If the *Measurement Quality* IE includes the *Zenith Quality* IE, the LMF may take it into account within the angle measurement quality.

If the *Timing Reporting Granularity Factor* IE is included in the *TRP Measurement Quantities* IE in the MEASUREMENT REQUEST message, the NG-RAN node may take it into account when configuring measurements including UL RTOA and gNB Rx-Tx Time Difference.

If the *System Frame Number* IE and/or the *Slot Number* IE are included in the MEASUREMENT REQUEST message, the NG-RAN node shall, if supported, consider that the respective information indicates the activation time of SRS transmission.

If the *Report Characteristics* IE is set to "OnDemand" and the *Response Time* IE is included in the MEASUREMENT REQUEST message, the NG-RAN node shall, if supported, return the corresponding measurement results in the MEASUREMENT RESPONSE message within the indicated time.

If the *Measurement Characteristics Request Indicator* IE is included in the MEASUREMENT REQUEST message, the NG-RAN node shall, if supported, take the requested measurement characteristics into account when configuring measurements, and include the requested information, if available, in the MEASUREMENT RESPONSE message.

If the *Number of TRP Rx TEGs* IE is included in the MEASUREMENT REQUEST message, the NG-RAN node shall, if supported, use it to measure the same SRS resource with different TRP Rx TEGs for the indicated TRP, and report the corresponding UL-RTOA and/or gNB Rx-Tx time difference measurements.

If the *Number of TRP RxTx TEGs* IE is included in the MEASUREMENT REQUEST message, the NG-RAN node shall, if supported, use it to measure the same SRS resource with different TRP RxTx TEGs with the same TRP Tx TEG for the indicated TRP, and report the corresponding gNB Rx-Tx time difference measurements.

If the *Measurement Time Occasion* IE is included in the MEASUREMENT REQUEST message, the NG-RAN node may take it into account as the number of SRS measurement time occasions for a measurement instance.

If the *Time Window Information Measurement List* IE is included in the MEASUREMENT REQUEST message, the NG-RAN node shall, if supported, measure the UL SRS resources from the UE within the indicated time window(s). If the *Indicated UL SRS Resources List* IE is included in the *Time Window Information Measurement List* IE, the NG-RAN node shall, if supported, measure the indicated UL SRS resources within the indicated time window.

**Interaction with the** **Measurement Report procedure:**

If the *Report Characteristics* IE is set to "Periodic" and the *Measurement Amount* IE is included in the MEASUREMENT REQUEST message, the NG-RAN node shall, if supported, take it into account for sending the MEASUREMENT REPORT message.

9.2.x2 Time Window Information Measurement List

This IE contains the time window(s) when UL SRS measurement is requested.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| Time Window Information Measurement List |  | 1 |  |  |
| **>Time Window Information Measurement Item** |  | *1..<maxnoofTimeWindowMeas>* |  |  |
| >>CHOICE *Time Window Duration* | M |  |  | Duration of time window with start time given by the *System Frame Number* IE and *Slot Number* IE. |
| *>>>Slots* |  |  |  |  |
| >>>>Duration in Slots | M |  | ENUMERATED (1, 2, 4, 6, 8, 12, 16, …) |  |
| >>Time Window Type | M |  | ENUMERATED (single, periodic, …) |  |
| >>Time Window Periodicity | C-ifTimeWindowTypePeriodic |  | ENUMERATED (160, 320, 640, 1280, 2560, 5120, 10240, 20480, 40960, 61440, 81920, 368640, 737280, 1843200, …) | Unit: Milli-seconds |
| **>>Time Window Start** |  | 1 |  |  |
| >>>SFN | M |  | INTEGER (0..1023) |  |
| >>>Slot Number | M |  | INTEGER (0..639) |  |
| >>>Symbol Number | M |  | INTEGER (0..13) |  |
| **>>Indicated UL SRS Resources List** |  | *0..<* *maxnoSRS-Resources >* |  |  |
| >>>Indicated UL SRS Resource |  |  | INTEGER (0..63) | SRS for Positioning Resource ID |

|  |  |
| --- | --- |
| Condition | Explanation |
| ifTimeWindowTypePeriodic | This IE shall be present if the *Time Window Type* IE is set to the value “periodic”. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofTimeWindowMeas | Maximum no of Time Window for measurement. Value is 16. |
| maxnoSRS-Resources | Maximum no of SRS resources. Value is 64. |

9.3.5 Information Element definitions

TimeWindowDurationMeasurement ::= CHOICE {

durationSlots ENUMERATED {n1, n2, n4, n6, n8, n12, n16, ...},

choice-extension ProtocolIE-Single-Container { { TimeWindowDurationMeasurement-ExtIEs} }

}

TimeWindowDurationMeasurement-ExtIEs NRPPA-PROTOCOL-IES ::= {

...

}

TimeWindowPeriodicityMeasurement ::= ENUMERATED {ms160, ms320, ms640, ms1280, ms2560, ms5120, ms10240,

ms20480, ms40960, ms61440, ms81920, ms368640, ms737280, ms1843200, ...}

TimeWindowInformation-Measurement-List ::= SEQUENCE (SIZE (1.. maxnoofTimeWindowMea)) OF TimeWindowInformation-Measurement-Item

TimeWindowInformation-Measurement-Item ::= SEQUENCE {

timeWindowDurationMeasurement TimeWindowDurationMeasurement,

timeWindowType ENUMERATED {single, periodic, ...},

timeWindowPeriodicityMeasurement TimeWindowPeriodicityMeasurement OPTIONAL,

timeWindowStartMeasurement TimeWindowStartMeasurement,

indicatedUL-SRS-ResourcesList IndicatedUL-SRS-ResourcesList OPTIONAL,

iE-Extension ProtocolExtensionContainer { { TimeWindowInformation-Measurement-Item-ExtIEs} } OPTIONAL,

...

}

TimeWindowInformation-Measurement-Item-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

...

}

TimeWindowStartMeasurement ::= SEQUENCE {

systemFrameNumber SystemFrameNumber,

slotNumber SlotNumber,

symbolIndex INTEGER (0..13),

iE-Extension ProtocolExtensionContainer { { TimeWindowStartMeasurement-ExtIEs} } OPTIONAL,

...

}

TimeWindowStartMeasurement-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

...

}

IndicatedUL-SRS-ResourcesList ::= SEQUENCE (SIZE (1..maxnoSRS-PosResources)) OF IndicatedUL-SRS-Resources

IndicatedUL-SRS-Resources ::= SEQUENCE {

indicated-ul-srs-PosResourceId SRSPosResourceID,

iE-Extensions ProtocolExtensionContainer { { IndicatedUL-SRS-Resources-ExtIEs} } OPTIONAL,

...

}

IndicatedUL-SRS-Resources-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

...

}

*End of TP*