3GPP TSG RAN WG3 Meeting #129 R3-255823

Bengaluru, India, 25 - 29 August, 2025

**Agenda item: 20.2**

**Source: Ericsson, Xiaomi, CATT, CEWIT, Nokia, Samsung, Huawei, Qualcomm Inc., ZTE**

**Title: (TP to NRPPa BL CR): addition of UL SRS time domain channel measurement**

**Document for: Other**

# 1 Introduction

In TS 38.215 V19.0.0 [1], we can see that RAN1 has concluded on defining new measurements:

• UL SRS time domain channel timing (UL SRS-TDCT) – see section 5.2.9

• UL SRS time domain channel power (UL SRS-TDCP) – see section 5.2.10

This contribution provides a TP for BL CR TS 38.455 to align with RAN1 specification.

# 2 Reference

[1]3GPP TS 38.215, Physical layer measurements, Release 19

# 3 TP to NRPPa BL CR

**<Start of changes>**

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

ARP Antenna Reference Point

BDS BeiDou Navigation Satellite System

CG-SDT Configured Grant Small Data Transmission

CID Cell-ID (positioning method)

DL-PRS Downlink Positioning Reference Signal

E-CID Enhanced Cell-ID (positioning method)

EGNOS European Geostationary Navigation Overlay Service

GAGAN GPS Aided Geo Augmented Navigation

GLONASS GLObal'naya NAvigatsionnaya Sputnikovaya Sistema (Engl.: Global Navigation Satellite System

GNSS Global Navigation Satellite System

GPS Global Positioning System

LMF Location Management Function

LPP LTE Positioning Protocol

MSAS Multi-functional Satellite Augmentation System

NavIC NAVigation with Indian Constellation

NRPPa NR Positioning Protocol A

OTDOA Observed Time Difference of Arrival

posSIB Positioning SIB

PRS Positioning Reference Signal (for E-UTRA)

QZSS Quasi-Zenith Satellite System

RSRP Reference Signal Received Power

RSSI Received Signal Strength Indicator

RSTD Reference Signal Time Difference

SBAS Space Based Augmentation System

SRS Sounding Reference Signal

TEG Timing Error group

TRP Transmission-Reception Point

UE User Equipment

UL-AoA Uplink Angle of Arrival

UL-RSCP UL Reference Signal Carrier Phase

UL-RTOA Uplink Relative Time of Arrival

UL-SRS Uplink Sounding Reference Signal

UL SRS-RSRPP UL SRS reference signal received path power

UL SRS-TDCT UL SRS Time Domain Channel Timing

UL-SRS-TDCP UL SRS Time Domain Channel Power

WAAS Wide Area Augmentation System

Z-AoA Zenith Angles of Arrival

*Next change*

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>* |  |  | - |  |
| >>TRP ID | M |  | 9.2.24 |  | - |  |
| >>Search Window Information | O |  | 9.2.26 |  | - |  |
| >>Cell ID | O |  | NR CGI9.2.9 | 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>* |  |  | - |  |
| >>TRP Measurement Type | M |  | ENUMERATED (gNB-RxTxTimeDiff, UL-SRS-RSRP, UL-AoA, UL-RTOA,…, Multiple UL-AoA, UL SRS-RSRPP, UL-RSCP, UL SRS-TDCT) | The UL-RSCP measurement is applicable only when the UL-RTOA and/or gNB-RxTxTimeDiff measurement(s) is also 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 (-6..-1, …) | Value -6 corresponds to kminus6, value -5 corresponds to kminus5 and so on, seeTS 38.133 [16] | - |  |
| >>Channel Response Information | O |  | 9.2.Y | Applicable to UL SRS-TDCT only. |  |  |
| SFN initialisation Time | O |  | Relative Time 19009.2.36 | 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 |  | 9.2.91 |  | YES | ignore |

*Next change*

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* |  |  | 9.2.38 |  |  |  |
| *>>UL SRS-RSRP* |  |  | INTEGER (0..126) |  |  |  |
| *>>UL RTOA Measurement* |  |  | 9.2.39 |  |  |  |
| *>>gNB Rx-Tx Time Difference* |  |  | 9.2.40 |  |  |  |
| *>>Z-AoA* |  |  | 9.2.67 |  | YES | reject |
| *>>Multiple UL-AoA* |  |  | 9.2.71 |  | YES | reject |
| *>>UL SRS-RSRPP* |  |  | 9.2.72 |  | YES | reject |
| *>>UL RSCP* |  |  | 9.2.92 |  | YES | reject |
| *>>UL SRS-TDCT* |  |  | 9.2.X |  | 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 |
| >Mobile TRP Location Information | O |  | 9.2.88 |  | YES | ignore |
| >Measured Frequency Hops | O |  | ENUMERATED (singleHop, multiHop, …) |  | YES | ignore |
| **>Aggregated Positioning SRS Resource ID List**  |  | *0..1* |  | Indicates the used Positioning SRS resources across aggregated carriers. | YES | ignore |
| **>>Aggregated Positioning SRS Resource ID Item** |  | 2..< *maxnoaggregatedPosSRS-Resources* > |  |  | - |  |
| >>>Positioning SRS Resource ID | M |  | INTEGER (0..63) |  |  |  |
| >>>Point A | M |  | INTEGER (0..3279165) |  | YES | ignore |
| **>>>SCS Specific Carrier** |  | *1* |  |  | YES | ignore |
| >>>>Offset To Carrier | M |  | INTEGER (0..2199, …) |  |  |  |
| >>>>Subcarrier Spacing | M |  | ENUMERATED(kHz15, kHz30, kHz60, kHz120, …, kHz480, kHz960) |  |  |  |
| >>>>Carrier Bandwidth | M |  | INTERGER (1..275, …) |  |  |  |
| >>>PCI | O |  | INTEGER (0..1007) |  | YES | ignore |
| >Measurement Based On Aggregated Resources | O |  | ENUMERATED(true, …) |  | YES | ignore |
| >Inferred measurement | O |  | ENUMERATED(true, …) | This IE is only valid for UL-RTOA, gNB Rx-Tx Time Difference and (FFS) LoS/NLoS Information. | YES | ignore |

|  |  |
| --- | --- |
| **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. |

EN: FFS if LoS/NLoS Information can also be indicated as inferred.

*Next change*

9.2.81 Measurement Characteristics Request Indicator

This IE contains the measurement characteristic information requested by LMF.

| **IE/Group Name** | **Presence** | **Range** | **IE Type and Reference** | **Semantics Description** |
| --- | --- | --- | --- | --- |
| Measurement characteristic request indicator | M |  | BIT STRING (SIZE(16)) | Each position in the bitmap represents a requested measurement characteristic:first bit: Measurement Beam InformationSecond bit: Extended Additional Path List Third bit: UL SRS-RSRPP in Additional PathFourth Bit: Multiple UL AoA in Additional Path Fifth bit: LoS/NLoS Information Sixth bit: TRP Rx TEG association for UL-TDOASeventh bit: TRP RxTxTEG information for DL+UL positioning.Eighth bit: SRS Resource Type Ninth bit: Multiple Measurement InstancesTenth bit: Mobile TRP location informationEleventh bit: SRS bandwidth aggregation used for joint UL positioning measurement.Twelfth bit: Aggregated Positioning SRS resources IDs used for joint UL positioning measurement.Thirteen bit: UL SRS-TDCP in UL SRS-TDCT.Other bits reserved for future use. Value ‘1’ indicates ‘requested measurement characteristic’, Value ‘0’ indicates ‘not requested’. |

*Next change*

9.2.X UL SRS-TDCT

This information element contains the UL SRS time domain channel timing.

| **IE/Group Name** | **Presence** | **Range** | **IE Type and Reference** | **Semantics Description** |
| --- | --- | --- | --- | --- |
| **UL SRS-TDCT List** |  | *1* |  |  |
| **> UL SRS-TDCT Item** |  | *1..<maxnoofChannelRes>* |  |  |
| >>CHOICE *Timing Information* | M |  |  |  |
| *>>>k0* |  |  | INTEGER (0.. 1970049) | TS 38.133 [16] |
| *>>>k1* |  |  | INTEGER (0.. 985025) | TS 38.133 [16] |
| *>>>k2* |  |  | INTEGER (0.. 492513) | TS 38.133 [16] |
| *>>>k3* |  |  | INTEGER (0.. 246257) | TS 38.133 [16] |
| *>>>k4* |  |  | INTEGER (0.. 123129) | TS 38.133 [16] |
| *>>>k5* |  |  | INTEGER (0.. 61565) | TS 38.133 [16] |
| >>Power Information | O |  | UL SRS-TDCP Item9.2.Z |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofChannelRes | Maximum no of channel response. Value is 24 |

*Next change*

### 9.2.Z UL SRS-TDCP Item

This IE contains an item of the UL SRS time domain channel power for a given channel response.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| UL SRS-TDCP Item | M |  | INTEGER (0..126) | TS 38.133 [16] |

*Next change*

9.3.5 Information Element definitions

-- ASN1START

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- Information Element Definitions

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-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NRPPA-IEs {

itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)

ngran-access (22) modules (3) nrppa (4) version1 (1) nrppa-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

**//Omitted text unchanged//**

 id-SCS-SpecificCarrier,

 id-MeasBasedOnAggregatedResources,

 id-UEReportingInterval-milliseconds,

 id-LocalOrigin,

 id-DL-reference-signal-UERxTx-TD,

 id-SRSPosPeriodicConfigHyperSFNIndex,

 id-ChannelResponseInformation,

 id-UL-SRS-TDCT,

 id-Inferred-measurement

**//Omitted text unchanged//**

CGI-NR ::= SEQUENCE {

 pLMN-Identity PLMN-Identity,

 nRcellIdentifier NRCellIdentifier,

 iE-Extensions ProtocolExtensionContainer { {CGI-NR-ExtIEs} } OPTIONAL,

 ...

}

CGI-NR-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 ...

}

ChannelResponseInformation ::= SEQUENCE {

 channelResponseWindowSize ChannelResponseWindowSize,

 channelResponseNumber ChannelResponseNumber,

 iE-Extensions ProtocolExtensionContainer { { ChannelResponseInformation-ExtIEs} } OPTIONAL,

 ...

}

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

 ...

}

ChannelResponseWindowSize ::= ENUMERATED { 32, 64, 128, ... }

ChannelResponseNumber ::= ENUMERATED { 8, 16, 24, ... }

**//Omitted text unchanged//**

TRPMeasurementQuantities ::= SEQUENCE (SIZE (1..maxnoPosMeas)) OF TRPMeasurementQuantitiesList-Item

TRPMeasurementQuantitiesList-Item ::= SEQUENCE {

 tRPMeasurementQuantities-Item TRPMeasurementType,

 timingReportingGranularityFactor INTEGER (0..5) OPTIONAL,

 iE-Extensions ProtocolExtensionContainer {{ TRPMeasurementQuantitiesList-Item-ExtIEs}} OPTIONAL,

 ...

}

TRPMeasurementQuantitiesList-Item-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 {ID id-TimingReportingGranularityFactorExtended CRITICALITY ignore EXTENSION TimingReportingGranularityFactorExtended PRESENCE optional}|

 {ID id-ChannelResponseInformation CRITICALITY ignore EXTENSION ChannelResponseInformation PRESENCE optional}

,

 ...

}

TRPMeasurementType::= ENUMERATED {

 gNB-RxTxTimeDiff,

 uL-SRS-RSRP,

 uL-AoA,

 uL-RTOA,

 ...,

 multiple-UL-AoA,

 uL-SRS-RSRPP,

 ul-RSCP,

 ul-SRS-TDCT

}

TrpMeasurementResult ::= SEQUENCE (SIZE (1.. maxnoPosMeas)) OF TrpMeasurementResultItem

TrpMeasurementResultItem ::= SEQUENCE {

 measuredResultsValue TrpMeasuredResultsValue,

 timeStamp TimeStamp,

 measurementQuality TrpMeasurementQuality OPTIONAL,

 measurementBeamInfo MeasurementBeamInfo OPTIONAL,

 iE-Extensions ProtocolExtensionContainer {{TrpMeasurementResultItem-ExtIEs}} OPTIONAL,

 ...

}

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

 { ID id-SRSResourcetype CRITICALITY ignore EXTENSION SRSResourcetype PRESENCE optional}|

 { ID id-ARP-ID CRITICALITY ignore EXTENSION ARP-ID PRESENCE optional}|

 { ID id-LoS-NLoSInformation CRITICALITY ignore EXTENSION LoS-NLoSInformation PRESENCE optional }|

 { ID id-Mobile-TRP-LocationInformation CRITICALITY ignore EXTENSION Mobile-TRP-LocationInformation PRESENCE optional }|

 { ID id-MeasuredFrequencyHops CRITICALITY ignore EXTENSION MeasuredFrequencyHops PRESENCE optional }|

 { ID id-AggregatedPosSRSResourceID-List CRITICALITY ignore EXTENSION AggregatedPosSRSResourceID-List PRESENCE optional }|

 { ID id-MeasBasedOnAggregatedResources CRITICALITY ignore EXTENSION MeasBasedOnAggregatedResources PRESENCE optional }|

 { ID id-Inferred-measurement CRITICALITY ignore EXTENSION Inferred-measurement PRESENCE optional },

 ...

}

TrpMeasuredResultsValue ::= CHOICE {

 uL-AngleOfArrival UL-AoA,

 uL-SRS-RSRP UL-SRS-RSRP,

 uL-RTOA UL-RTOAMeasurement,

 gNB-RxTxTimeDiff GNB-RxTxTimeDiff,

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

}

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

 { ID id-ZoA CRITICALITY reject TYPE ZoA PRESENCE mandatory}|

 { ID id-MultipleULAoA CRITICALITY reject TYPE MultipleULAoA PRESENCE mandatory}|

 { ID id-UL-SRS-RSRPP CRITICALITY reject TYPE UL-SRS-RSRPP PRESENCE mandatory}|

 { ID id-UL-RSCPMeas CRITICALITY reject TYPE UL-RSCPMeas PRESENCE mandatory}|

 { ID id-UL-SRS-TDCT CRITICALITY reject TYPE UL-SRS-TDCT PRESENCE mandatory},

 ...

}

TrpMeasurementQuality ::= CHOICE {

 timingMeasQuality TrpMeasurementTimingQuality,

 angleMeasQuality TrpMeasurementAngleQuality,

 choice-Extension ProtocolIE-Single-Container {{ TrpMeasurementQuality-ExtIEs}}

}

**//Omitted text unchanged//**

-- S

SCS-480 ::= INTEGER(0..319)

SCS-960 ::= INTEGER(0..639)

SCS-SpecificCarrier ::= SEQUENCE {

 offsetToCarrier INTEGER (0..2199,...),

 subcarrierSpacing ENUMERATED {kHz15, kHz30, kHz60, kHz120,..., kHz480, kHz960},

 carrierBandwidth INTEGER (1..275,...),

iE-Extensions ProtocolExtensionContainer { { SCS-SpecificCarrier-ExtIEs } } OPTIONAL,

 ...

}

**//Omitted text unchanged//**

-- U

UARFCN ::= INTEGER (0..16383, ...)

UE-Measurement-ID ::= INTEGER (1..15, ..., 16..256)

UEReportingInformation::= SEQUENCE {

 reportingAmount ENUMERATED {ma0, ma1, ma2, ma4, ma8, ma16, ma32, ma64},

 reportingInterval ENUMERATED {none, one, two, four, eight, ten, sixteen, twenty, thirty-two, sixty-four, ...},

 iE-extensions ProtocolExtensionContainer { { UEReportingInformation-ExtIEs } } OPTIONAL,

 ...

}

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

 { ID id-UEReportingInterval-milliseconds CRITICALITY ignore EXTENSION UEReportingInterval-milliseconds PRESENCE optional },

 ...

}

UEReportingInterval-milliseconds ::= INTEGER (1..999)

UE-Rx-Tx-Time-Diff ::= INTEGER (0..61565)

UE-TEG-ReportingPeriodicity ::= ENUMERATED {

 ms160,

 ms320,

 ms1280,

 ms2560,

 ms61440,

 ms81920,

 ms368640,

 ms737280,

 ...

}

UETxTEGAssociationList ::= SEQUENCE (SIZE(1.. maxnoUETEGs)) OF UETxTEGAssociationItem

UETxTEGAssociationItem ::= SEQUENCE {

 uE-Tx-TEG-ID INTEGER (0..7),

 posSRSResourceID-List PosSRSResourceID-List,

 timeStamp TimeStamp,

 carrierFreq CarrierFreq OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { UETxTEGAssociationItem-ExtIEs } } OPTIONAL,

 ...

}

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

 { ID id-UETxTimingErrorMargin CRITICALITY ignore EXTENSION TimingErrorMargin PRESENCE optional },

 ...

}

SRSResourceID-Item ::= SEQUENCE {

 sRSResourceID SRSResourceID,

 iE-Extensions ProtocolExtensionContainer { { SRSResourceID-Item-ExtIEs} } OPTIONAL,

 ...

}

SRSResourceID-Item-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 ...

}

UE-TEG-Info-Request ::= ENUMERATED {onDemand, periodic, stop, ...}

UTRA-EcN0 ::= INTEGER (0..49, ...)

UTRA-RSCP ::= INTEGER (-5..91, ...)

UL-AoA ::= SEQUENCE {

 azimuthAoA INTEGER (0..3599),

 zenithAoA INTEGER (0..1799) OPTIONAL,

 lCS-to-GCS-Translation LCS-to-GCS-Translation OPTIONAL,

 iE-extensions ProtocolExtensionContainer { { UL-AoA-ExtIEs } } OPTIONAL,

 ...

}

UL-AoA-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 ...

}

UL-RTOAMeasurement ::= SEQUENCE {

 uLRTOAmeas ULRTOAMeas,

 additionalPathList AdditionalPathList OPTIONAL,

 iE-extensions ProtocolExtensionContainer { { UL-RTOAMeasurement-ExtIEs } } OPTIONAL, ...

}

UL-RTOAMeasurement-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 { ID id-ExtendedAdditionalPathList CRITICALITY ignore EXTENSION ExtendedAdditionalPathList PRESENCE optional}|

 { ID id-TRP-Rx-TEGInformation CRITICALITY ignore EXTENSION TRP-Rx-TEGInformation PRESENCE optional},

 ...

}

UL-RSCPMeas ::= SEQUENCE {

 uLRSCP INTEGER (0..3599),

 iE-extensions ProtocolExtensionContainer { { UL-RSCPMeas-ExtIEs } } OPTIONAL,

 ...

}

UL-RSCPMeas-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 ...

}

ULRTOAMeas::= CHOICE {

 k0 INTEGER (0.. 1970049),

 k1 INTEGER (0.. 985025),

 k2 INTEGER (0.. 492513),

 k3 INTEGER (0.. 246257),

 k4 INTEGER (0.. 123129),

 k5 INTEGER (0.. 61565),

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

}

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

 {ID id-ReportingGranularitykminus1 CRITICALITY ignore TYPE ReportingGranularitykminus1 PRESENCE mandatory}|

 {ID id-ReportingGranularitykminus2 CRITICALITY ignore TYPE ReportingGranularitykminus2 PRESENCE mandatory}|

 {ID id-ReportingGranularitykminus3 CRITICALITY ignore TYPE ReportingGranularitykminus3 PRESENCE mandatory}|

 {ID id-ReportingGranularitykminus4 CRITICALITY ignore TYPE ReportingGranularitykminus4 PRESENCE mandatory}|

 {ID id-ReportingGranularitykminus5 CRITICALITY ignore TYPE ReportingGranularitykminus5 PRESENCE mandatory}|

 {ID id-ReportingGranularitykminus6 CRITICALITY ignore TYPE ReportingGranularitykminus6 PRESENCE mandatory},

 ...

}

UL-SRS-RSRP ::= INTEGER (0..126)

UL-SRS-RSRPP ::= SEQUENCE {

 firstPathRSRPP INTEGER (0..126),

 iE-extensions ProtocolExtensionContainer { { UL-SRS-RSRPP-ExtIEs } } OPTIONAL,

 ...

}

UL-SRS-RSRPP-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 ...

}

UL-SRS-TDCT ::= SEQUENCE {

 uL-SRS-TDCT-List UL-SRS-TDCT-List,

 iE-Extensions ProtocolExtensionContainer { { UL-SRS-TDCT-ExtIEs } } OPTIONAL,

 ...

}

UL-SRS-TDCT-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 ...

}

UL-SRS-TDCT-List UL-SRS-TDCT

UL-SRS-TDCT

UL-SRS-TDCT-

TDCP-item

UL-SRS-TDCT-Item

UL-SRS-TDCT-

UL-SRS-TDCT-Information

UL-SRS-TDCT-Information

UL-SRS-TDCT-Informatio

UL-SRS-TDCP-item ::= INTEGER (0..126)

UplinkChannelBW-PerSCS-List ::= SEQUENCE (SIZE (1..maxnoSCSs)) OF SCS-SpecificCarrier

Uncertainty-range-AoA ::= INTEGER (0..3599)

Uncertainty-range-ZoA ::= INTEGER (0..1799)

*Next change*

### 9.3.7 Constant definitions

-- ASN1START

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- Constant definitions

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NRPPA-Constants {

itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)

ngran-access (22) modules (3) nrppa (4) version1 (1) nrppa-Constants (4) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

 ProcedureCode,

 ProtocolIE-ID

FROM NRPPA-CommonDataTypes;

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- Elementary Procedures

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

id-errorIndication ProcedureCode ::= 0

id-privateMessage ProcedureCode ::= 1

id-e-CIDMeasurementInitiation ProcedureCode ::= 2

id-e-CIDMeasurementFailureIndication ProcedureCode ::= 3

id-e-CIDMeasurementReport ProcedureCode ::= 4

id-e-CIDMeasurementTermination ProcedureCode ::= 5

id-oTDOAInformationExchange ProcedureCode ::= 6

id-assistanceInformationControl ProcedureCode ::= 7

id-assistanceInformationFeedback ProcedureCode ::= 8

id-positioningInformationExchange ProcedureCode ::= 9

id-positioningInformationUpdate ProcedureCode ::= 10

id-Measurement ProcedureCode ::= 11

id-MeasurementReport ProcedureCode ::= 12

id-MeasurementUpdate ProcedureCode ::= 13

id-MeasurementAbort ProcedureCode ::= 14

id-MeasurementFailureIndication ProcedureCode ::= 15

id-tRPInformationExchange ProcedureCode ::= 16

id-positioningActivation ProcedureCode ::= 17

id-positioningDeactivation ProcedureCode ::= 18

id-pRSConfigurationExchange ProcedureCode ::= 19

id-measurementPreconfiguration ProcedureCode ::= 20

id-measurementActivation ProcedureCode ::= 21

id-sRSInformationReservationNotification ProcedureCode ::= 22

id-positioningDataCollectionReport ProcedureCode ::= xx

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- Lists

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-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

maxNrOfErrors INTEGER ::= 256

maxCellinRANnode INTEGER ::= 3840

maxIndexesReport INTEGER ::= 64

maxNoMeas INTEGER ::= 64

maxCellReport INTEGER ::= 9

maxCellReportNR INTEGER ::= 9

maxnoOTDOAtypes INTEGER ::= 63

maxServCell INTEGER ::= 5

maxEUTRAMeas INTEGER ::= 8

maxGERANMeas INTEGER ::= 8

maxNRMeas INTEGER ::= 8

maxUTRANMeas INTEGER ::= 8

maxWLANchannels INTEGER ::= 16

maxnoFreqHoppingBandsMinusOne INTEGER ::= 7

maxNoPath INTEGER ::= 2

maxNrOfPosSImessage INTEGER ::= 32

maxnoAssistInfoFailureListItems INTEGER ::= 32

maxNrOfSegments INTEGER ::= 64

maxNrOfPosSIBs INTEGER ::= 32

maxNoOfMeasTRPs INTEGER ::= 64

maxnoTRPs INTEGER ::= 65535

maxnoTRPInfoTypes INTEGER ::= 64

maxnoofAngleInfo INTEGER ::= 65535

maxnolcs-gcs-translation INTEGER ::= 3

maxnoBcastCell INTEGER ::= 16384

maxnoSRSTriggerStates INTEGER ::= 3

maxnoSpatialRelations INTEGER ::= 64

maxnoPosMeas INTEGER ::= 16384

maxnoSRS-Carriers INTEGER ::= 32

maxnoSCSs INTEGER ::= 5

maxnoSRS-Resources INTEGER ::= 64

maxnoSRS-PosResources INTEGER ::= 64

maxnoSRS-ResourceSets INTEGER ::= 16

maxnoSRS-ResourcePerSet INTEGER ::= 16

maxnoSRS-PosResourceSets INTEGER ::= 16

maxnoSRS-PosResourcePerSet INTEGER ::= 16

maxPRS-ResourceSets INTEGER ::= 2

maxPRS-ResourcesPerSet INTEGER ::= 64

maxNoSSBs INTEGER ::= 255

maxnoofPRSresourceSet INTEGER ::= 8

maxnoofPRSresource INTEGER ::= 64

maxnoofULAoAs INTEGER ::= 8

maxNoPathExtended INTEGER ::= 8

maxnoARPs INTEGER ::= 16

maxnoUETEGs INTEGER ::= 256

maxnoTRPTEGs INTEGER ::= 8

maxFreqLayers INTEGER ::= 4

maxNumResourcesPerAngle INTEGER ::= 24

maxnoAzimuthAngles INTEGER ::= 3600

maxnoElevationAngles INTEGER ::= 1801

maxnoPRSTRPs INTEGER ::= 256

maxnoVACell INTEGER ::= 32

maxnoaggregatedPosSRS-Resources INTEGER ::= 3

maxnoaggregatedPosSRS-ResourceSets INTEGER ::= 3

maxnoAggPosPRSResourceSets INTEGER ::= 3

maxnoofTimeWindowSRS INTEGER ::= 16

maxnoofTimeWindowMeas INTEGER ::= 16

maxnoPreconfiguredSRS INTEGER ::= 16

maxnoofHopsMinusOne INTEGER ::= 5

maxnoAggCombinations INTEGER ::= 2

maxnoAggregatedPosSRSCombinations INTEGER ::= 32

maxnoofChannelRes INTEGER ::= 24

**//Omitted text unchanged//**

id-ReportingGranularitykminus1AdditionalPath ProtocolIE-ID ::= 147

id-ReportingGranularitykminus2AdditionalPath ProtocolIE-ID ::= 148

id-ReportingGranularitykminus3AdditionalPath ProtocolIE-ID ::= 149

id-ReportingGranularitykminus4AdditionalPath ProtocolIE-ID ::= 150

id-ReportingGranularitykminus5AdditionalPath ProtocolIE-ID ::= 151

id-ReportingGranularitykminus6AdditionalPath ProtocolIE-ID ::= 152

id-MeasuredResultsAssociatedInfoList ProtocolIE-ID ::= 153

id-PointA ProtocolIE-ID ::= 154

id-NR-PCI ProtocolIE-ID ::= 155

id-SCS-SpecificCarrier ProtocolIE-ID ::= 156

id-MeasBasedOnAggregatedResources ProtocolIE-ID ::= 157

id-UEReportingInterval-milliseconds ProtocolIE-ID ::= 158

id-Remote-UE-Indication-Request ProtocolIE-ID ::= 159

id-Remote-UE-Indication ProtocolIE-ID ::= 160

id-Remote-UE-Status ProtocolIE-ID ::= 161

id-LocalOrigin ProtocolIE-ID ::= 162

id-PreconfiguredSRSInformation ProtocolIE-ID ::= 163

id-DL-reference-signal-UERxTx-TD ProtocolIE-ID ::= 164

id-SRSPosPeriodicConfigHyperSFNIndex ProtocolIE-ID ::= 165

id-ValidityAreaSpecificSRSInformationExtended ProtocolIE-ID ::= 166

id-ChannelResponseInformation ProtocolIE-ID ::= XX1

id-UL-SRS-TDCT ProtocolIE-ID ::= XX2

id-PositioningDataInformation ProtocolIE-ID ::= XX3

id-PositioningDataUnavailable ProtocolIE-ID ::= XX4

id-PositioningDataCollectionNeeded ProtocolIE-ID ::= XX5

id-Inferred-measurement ProtocolIE-ID ::= XX6

**//End of change//**