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Title: (TP to BL CR for TS 38.455) Support of BW aggregation

Agenda Item: 23.3

Document for: Discussion and Decision

# TP for NRPPa BL CR

<<<<<<<<<<<<<<<<<<<< Begin 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

LPHAP Low Power High Accuracy Positioning

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

WAAS Wide Area Augmentation System

Z-AoA Zenith Angles of Arrival

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

# 7 Functions of NRPPa

The NRPPa protocol provides the following functions:

- E-CID Location Information Transfer. This function allows the NG-RAN node to exchange location information with LMF for the purpose of E-CID positioning and NR E-CID positioning.

- OTDOA Information Transfer. This function allows the NG-RAN node to exchange information with the LMF for the purpose of OTDOA positioning.

- Reporting of General Error Situations. This function allows reporting of general error situations, for which function specific error messages have not been defined.

- Assistance Information Transfer. This function allows the LMF to exchange information with the NG-RAN node for the purpose of assistance information broadcasting.

- Positioning Information Transfer. This function allows the NG-RAN node to exchange positioning information with the LMF for the purpose of positioning.

- Measurement Information Transfer. This function allows the LMF to exchange measurement information with the NG-RAN node for the purpose of positioning.

- TRP Information Transfer. This function allows an LMF to obtain TRP related information from an NG-RAN node.

- PRS Information Transfer. This function allows the LMF to exchange PRS related information with the NG-RAN node.

- Measurement Preconfiguration Information Transfer. This function allows the LMF to request the NG-RAN node to preconfigure and activate measurement gap and/or PRS processing window.

- LPHAP Information Transfer. This function allows the LMF to notify the NG-RAN of SRS related information for the purpose of LPHAP with validity area.

The mapping between the above functions and NRPPa EPs is shown in the table below.

Table 7-1: Mapping between NRPPa functions and NRPPa EPs

| Function | Elementary Procedure(s) |
| --- | --- |
| E-CID Location Information Transfer | a) E-CID Measurement Initiationb) E-CID Measurement Failure Indicationc) E-CID Measurement Reportd) E-CID Measurement Termination |
| OTDOA Information Transfer | OTDOA Information Exchange |
| Assistance Information Transfer | a) Assistance Information Controlb) Assistance Information Feedback |
| Reporting of General Error Situations | Error Indication |
| Positioning Information Transfer | a) Positioning Information Exchangeb) Positioning Information Updatec) Positioning Activationd) Positioning Deactivation |
| TRP Information Transfer | TRP Information Exchange |
| Measurement Information Transfer | a) Measurementb) Measurement Updatec) Measurement Reportd) Measurement Aborte) Measurement Failure Indication |
| PRS Information Transfer | PRS Configuration Exchange |
| Measurement Preconfiguration Information Transfer | Measurement PreconfigurationMeasurement Activation |
| LPHAP Information Transfer | SRS Information Reservation Notification |

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## 8.1 Elementary procedures

In the following tables, all EPs are divided into Class 1 and CSlass 2 EPs.

Table 8.1-1: Class 1 Elementary Procedures

| Elementary Procedure | Initiating Message | Successful Outcome | Unsuccessful Outcome |
| --- | --- | --- | --- |
| Response message | Response message |
| E-CID Measurement Initiation | E-CID MEASUREMENT INITIATION REQUEST | E-CID MEASUREMENT INITIATION RESPONSE | E-CID MEASUREMENT INITIATION FAILURE |
| OTDOA Information Exchange | OTDOA INFORMATION REQUEST | OTDOA INFORMATION RESPONSE | OTDOA INFORMATION FAILURE |
| Positioning Information Exchange | POSITIONING INFORMATION REQUEST | POSITIONING INFORMATION RESPONSE | POSITIONING INFORMATION FAILURE |
| TRP Information Exchange | TRP INFORMATION REQUEST | TRP INFORMATION RESPONSE | TRP INFORMATION FAILURE |
| Measurement | MEASUREMENT REQUEST | MEASUREMENT RESPONSE | MEASUREMENT FAILURE |
| Positioning Activation | POSITIONING ACTIVATION REQUEST | POSITIONING ACTIVATION RESPONSE | POSITIONING ACTIVATION FAILURE |
| PRS Configuration Exchange | PRS CONFIGURATION REQUEST | PRS CONFIGURATION RESPONSE | PRS CONFIGURATION FAILURE |
| Measurement Preconfiguration | MEASUREMENT PRECONFIGURATION REQUIRED  | MEASUREMENT PRECONFIGURATION CONFIRM | MEASUREMENT PRECONFIGURATION REFUSE |

Table 8.1-2: Class 2 Elementary Procedures

| Elementary Procedure | Initiating Message |
| --- | --- |
| E-CID Measurement Failure Indication | E-CID MEASUREMENT FAILURE INDICATION |
| E-CID Measurement Report | E-CID MEASUREMENT REPORT |
| E-CID Measurement Termination | E-CID MEASUREMENT TERMINATION COMMAND |
| Error Indication | ERROR INDICATION |
| Assistance Information Control | ASSISTANCE INFORMATION CONTROL |
| Assistance Information Feedback | ASSISTANCE INFORMATION FEEDBACK |
| Positioning Information Update | POSITIONING INFORMATION UPDATE |
| Measurement Report | MEASUREMENT REPORT |
| Measurement Update | MEASUREMENT UPDATE |
| Measurement Abort | MEASUREMENT ABORT |
| Measurement Failure Indication | MEASUREMENT FAILURE INDICATION |
| Positioning Deactivation | POSITIONING DEACTIVATION |
| Measurement Activation | MEASUREMENT ACTIVATION |
| SRS Information Reservation Notification | SRS INFORMATION RESERVATION NOTIFICATION  |

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9.1.1.14 TRP INFORMATION REQUEST

This message is sent by an LMF to request information for TRPs hosted by an NG-RAN node.

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 |  | - |  |
| **TRP List** |  | *0 ..1* |  |  | YES | ignore |
| **>TRP Item** |  | *1 .. <maxnoTRPs>* |  |  | EACH | ignore |
| >>TRP ID | M |  | 9.2.24 |  | - |  |
| >>PRS Bandwidth Aggregation Request Indication | O |  | ENUMERATED(true, …) |  | YES | ignore |
| **TRP Information Type List** |  | *1* |  |  |  |  |
| **>TRP Information Type Item** |  | *1 .. <maxnoTRPInfoTypes>* |  |  | EACH | reject |
| >>TRP Information Type Item | M |  | ENUMERATED (nr pci, ng-ran cgi, nr arfcn, prs config, ssb config, sfn init time, spatial direction info, geo-coordinates, …, trp type, on-demand prs, trp tx teg, beam antenna info, mobile trp location info, common ta)  |  |  |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoTRPs | Maximum no. of TRPs in a NG-RAN node. Value is 65535 |
| maxnoTRPInfoTypes | Maximum no of TRP information types that can be requested and reported with one message. Value is 64. |

<<<<<<<<<<<<<<<<<<<< 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>* |  |  | EACH | reject |
| >>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>* |  |  | EACH | reject |
| >>TRP Measurement Type | M |  | ENUMERATED (gNB-RxTxTimeDiff, UL-SRS-RSRP, UL-AoA, UL-RTOA,…, Multiple UL-AoA, UL SRS-RSRPP) |  | - |  |
| >>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 -1 corresponds to kminus1, value -2 corresponds to kminus2 and so on, seeTS 38.133 [16] |  |  |
| 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.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.  |

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

9.2.27 Requested SRS Transmission Characteristics

This IE contains the requested SRS configuration for the UE.

| **IE/Group Name** | **Presence** | **Range** | **IE Type and Reference** | **Semantics Description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| Number Of Periodic Transmissions | C-ifResourceTypePeriodic |  | INTEGER (0..500,…) | The number of periodic SRS transmissions requested. The value of ‘0’ represents an infinite number of periodic SRS transmissions. | - |  |
| Resource Type | M |  | ENUMERATED (periodic, semi-persistent, aperiodic, …) |  | - |  |
| CHOICE *Bandwidth* | M |  |  |  | - |  |
| *>FR1* |  |  | ENUMERATED (5mHz, 10mHz, 20mHz, 40mHz, 50mHz, 80mHz, 100mHz, ... , 160mHz, 200mHz) |  |  |  |
| *>FR2* |  |  | ENUMERATED (50mHz, 100mHz, 200mHz, 400mHz,…, 600mHz, 800mHz) |  |  |  |
| **SRS Resource Set List** |  | *0.. 1* |  |  | - |  |
| **>SRS Resource Set Item** |  | *1..<* *maxnoSRS-ResourceSets>* |  |  | - |  |
| >>Number of SRS Resources Per Set | O |  | INTEGER (1..16,...) | The number of SRS Resources per resource set for SRS transmission.  | - |  |
| **>>Periodicity List** |  | *0.. 1* |  |  | - |  |
| **>>>Periodicity List Item** |  | *1..<maxnoSRS-ResourcePerSet>* |  |  | - |  |
| >>>>PeriodicitySRS | M |  | ENUMERATED (0.125, 0.25, 0.5, 0.625, 1, 1.25, 2, 2.5, 4, 5, 8, 10, 16, 20, 32, 40, 64, 80, 160, 320, 640, 1280, 2560, 5120, 10240, …) | Milli-seconds | - |  |
| >>Spatial Relation Information | O |  | 9.2.34 | This IE is ignored if the Spatial Relation Information per SRS Resource IE is present. | - |  |
| >>Pathloss Reference Information | O |  | 9.2.53 |  | - |  |
| >>Spatial Relation Information per SRS Resource | O |  | 9.2.60 |  | - |  |
| SSB Information | O |  | 9.2.54 |  | - |  |
| SRS Frequency | O |  | INTEGER(0..3279165) | NR ARFCN The carrier frequency of SRS transmission bandwidth. | YES | ignore |
| Bandwidth Aggregation Request Indication | O |  | ENUMERATED(true, …) |  | YES | ignore |
| Positioning Validity Area Cell List | O |  | 9.2.x4 |  | YES | ignore |
| CHOICE *Transmission Comb* | O |  |  |  | YES | ignore |
| *>Comb Two* |  |  |  |  |  |  |
| >>Comb Offset | M |  | INTEGER(0..1) |  | - |  |
| >>Cyclic Shift | M |  | INTEGER(0..7) |  | - |  |
| *>Comb Four* |  |  |  |  |  |  |
| >>Comb Offset | M |  | INTEGER(0..3) |  | - |  |
| >>Cyclic Shift | M |  | INTEGER(0..11) |  | - |  |
| *>Comb Eight* |  |  |  |  |  |  |
| >>Comb Offset | M |  | INTEGER(0..7) |  | - |  |
| >>Cyclic Shift | M |  | INTEGER(0..5) |  | - |  |
| Resource Mapping |  | *0..1* |  |  | YES | ignore |
| >Start Position | M |  | INTEGER(0..13) |  | - |  |
| >Number of Symbols | M |  | ENUMERATED(n1,n2,n4, n8, n12} |  | - |  |
| Frequency Domain Shift | O |  | INTEGER(0..268) |  | YES | ignore |
| C-SRS | O |  | INTEGER(0..63) |  | YES | ignore |
| CHOICE *Resource Type Positioning* | O |  |  |  | YES | ignore |
| *>periodic* |  |  |  |  |  |  |
| >>Periodicity | M |  | ENUMERATED(slot1, slot2, slot4, slot5, slot8, slot10, slot16, slot20, slot32, slot40, slot64, slot80, slot160, slot320, slot640, slot1280, slot2560, slot5120, slot10240, slot40960, slot81920,…, slot128, slot256, slot512, slot20480) |  | - |  |
| >>Offset | M |  | INTEGER(0..81919,…) |  | - |  |
| *>semi-persistent* |  |  |  |  |  |  |
| >>Periodicity | M |  | ENUMERATED(slot1, slot2, slot4, slot5, slot8, slot10, slot16, slot20, slot32, slot40, slot64, slot80, slot160, slot320, slot640, slot1280, slot2560, slot5120, slot10240, slot40960, slot81920,…, slot128, slot256, slot512, slot20480) |  | - |  |
| >>Offset | M |  | INTEGER(0..81919,…) |  | - |  |
| *>aperiodic* |  |  |  | Not applicable if the *Positioning Validity Area Cell List* IE is included |  |  |
| >>slot offset | M |  | INTEGER(0..32) |  | - |  |
| Sequence ID | O |  | INTEGER(0..65535) |  | YES | ignore |

|  |  |
| --- | --- |
| **Condition** | **Explanation** |
| ifResourceTypePeriodic | This IE shall be present if the *Resource Type* IE is set to the value "Periodic". |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoSRS-ResourceSets | Maximum no of requested SRS Resource Sets for SRS transmission. Value is 16. |
| maxnoSRS-ResourcePerSet  | Maximum no of SRS Resources per set. Value is 16. |

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

### 9.2.39 UL RTOA Measurement

This information element contains the uplink RTOA measurement.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| CHOICE *UL RTOA Measurement* | 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] |  |  |
| *>kminus1* |  |  | INTEGER (0..3940097) | TS 38.133 [16] | YES | ignore |
| *>kminus2* |  |  | INTEGER (0..7880193) | TS 38.133 [16] | YES | ignore |
| *>kminus3* |  |  | INTEGER (0.. 15760385) | TS 38.133 [16] | YES | ignore |
| *>kminus4* |  |  | INTEGER (0.. 31520769) | TS 38.133 [16] | YES | ignore |
| *>kminus5* |  |  | INTEGER (0.. 63041537) | TS 38.133 [16] | YES | ignore |
| *>kminus6* |  |  | INTEGER (0.. 126083073) | TS 38.133 [16] | YES | ignore |
| Additional Path List | O |  | 9.2.41 | This IE is ignored if the *Extended Additional Path List* IE is included | - |  |
| Extended Additional Path List | O |  | 9.2.74 |  | YES | ignore |
| TRP Rx TEG Information | O |  | 9.2.85 |  | YES | ignore |

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

### 9.2.40 gNB Rx-Tx Time Difference

This information element contains the gNB Rx-Tx Time Difference measurement.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
| CHOICE g*NB Rx-Tx Time Difference Measurement* | 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] |  |  |
| *>kminus1* |  |  | INTEGER (0..3940097) | TS 38.133 [16] | YES | ignore |
| *>kminus2* |  |  | INTEGER (0..7880193) | TS 38.133 [16] | YES | ignore |
| *>kminus3* |  |  | INTEGER (0.. 15760385) | TS 38.133 [16] | YES | ignore |
| *>kminus4* |  |  | INTEGER (0.. 31520769) | TS 38.133 [16] | YES | ignore |
| *>kminus5* |  |  | INTEGER (0.. 63041537) | TS 38.133 [16] | YES | ignore |
| *>kminus6* |  |  | INTEGER (0.. 126083073) | TS 38.133 [16] | YES | ignore |
| Additional Path List | O |  | 9.2.41 | This IE is ignored if the *Extended Additional Path List* IE is included | - |  |
| Extended Additional Path List | O |  | 9.2.74 |  | YES | ignore |
| TRP TEG Information | O |  | 9.2.80 |  | YES | ignore |

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

### 9.2.41 Additional Path List

This information element contains the additional path results of time measurement.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| **Additional Path Item** |  | *1..<maxnopath>* |  |  | - |  |
| >CHOICE *Relative Path Delay* | M |  |  |  | - |  |
| *>>k0* |  |  | INTEGER(0..16351) |  |  |  |
| *>>k1* |  |  | INTEGER(0..8176) |  |  |  |
| *>>k2* |  |  | INTEGER(0..4088) |  |  |  |
| *>>k3* |  |  | INTEGER(0..2044) |  |  |  |
| *>>k4* |  |  | INTEGER(0..1022) |  |  |  |
| *>>k5* |  |  | INTEGER(0..511) |  |  |  |
| *>>kminus1* |  |  | INTEGER(0..32701) |  | YES | ignore |
| *>>kminus2* |  |  | INTEGER(0..65401) |  | YES | ignore |
| *>>kminus3* |  |  | INTEGER(0..130801) |  | YES | ignore |
| *>>kminus4* |  |  | INTEGER(0..261601) |  | YES | ignore |
| *>>kminus5* |  |  | INTEGER(0..523201) |  | YES | ignore |
| *>>kminus6* |  |  | INTEGER(0..1046401) |  | YES | ignore |
| >Path Quality | O |  | Measurement Quality9.2.43 |  | - |  |
| >Multiple UL-AoA | O |  | 9.2.71 |  | YES | ignore |
| >Path Power | O |  | UL SRS-RSRPP9.2.72 |  | YES | ignore |

| Range bound | Explanation |
| --- | --- |
| maxnopath | Maximum no. of additional path measurement. Value is 2. |

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

### 9.2.61 Requested DL PRS Transmission Characteristics

This IE contains the requested PRS configuration for transmission by the LMF.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| **Requested DL-PRS Resource Set List** |  | *1* |  |  | - |  |
| **>Requested DL-PRS Resource Set Item** |  | *1..<maxnoofPRSresourceSet>* |  |  | - |  |
| >>PRS bandwidth | O |  | INTEGER(1..63) | 24,28,…,272 PRBs | - |  |
| >>Comb Size | O |  | ENUMERATED(2, 4, 6, 12, …)  |  | - |  |
| >>Resource Set Periodicity | O |  | ENUMERATED(4,5,8,10,16,20,32,40,64,80,160,320,640,1280,2560,5120,10240,20480,40960,81920,…,128, 256, 512) | Slots | - |  |
| >>Resource Repetition Factor | O |  | ENUMERATED(rf1,rf2,rf4,rf6,rf8,rf16,rf32,…)  |  | - |  |
| >>Resource Number of Symbols | O |  | ENUMERATED(n2,n4,n6,n12,…,n1) |  | - |  |
| >>Requested DL-PRS Resource List | O |  | 9.2.62 |  | - |  |
| >>Resource Set Start Time and Duration | O |  | Start Time and Duration9.2.63 | This IE is ignored if the *Start Time and Duration* IE is present | - |  |
| Number of Frequency Layers | O |  | INTEGER(1..4) |  | - |  |
| Start Time and Duration | O |  | 9.2.63 |  | - |  |
| PRS Bandwidth Aggregation Request Indication | O |  | ENUMERATED(true, …) |  | YES | ignore |

| Range bound | Explanation |
| --- | --- |
| maxnoofPRSresourceSet | Maximum no of PRS resources set. Value is 8. |

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

### 9.2.74 Extended Additional Path List

This IE contains the extended additional path results of time measurement.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| **Additional Path Item** |  | *1..<maxNoPathExtended>* |  |  | - |  |
| >CHOICE *Relative Path Delay* | M |  |  |  | - |  |
| *>>k0* |  |  | INTEGER(0..16351) |  |  |  |
| *>>k1* |  |  | INTEGER(0..8176) |  |  |  |
| *>>k2* |  |  | INTEGER(0..4088) |  |  |  |
| *>>k3* |  |  | INTEGER(0..2044) |  |  |  |
| *>>k4* |  |  | INTEGER(0..1022) |  |  |  |
| *>>k5* |  |  | INTEGER(0..511) |  |  |  |
| *>>kminus1* |  |  | INTEGER (0..32701) |  | YES | ignore |
| *>>kminus2* |  |  | INTEGER (0..65401) |  | YES | ignore |
| *>>kminus3* |  |  | INTEGER(0..130801) |  | YES | ignore |
| *>>kminus4* |  |  | INTEGER(0..261601) |  | YES | ignore |
| *>>kminus5* |  |  | INTEGER(0..523201) |  | YES | ignore |
| *>>kminus6* |  |  | INTEGER(0..1046401) |  | YES | ignore |
| >Path Quality | O |  | Measurement Quality9.2.43 |  | - |  |
| >Multiple UL-AoA | O |  | 9.2.71 |  | - |  |
| >Path Power | O |  | UL SRS-RSRPP9.2.72 |  | - |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxNoPathExtended | Maximum no. of additional path measurement. Value is 8. |

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

### 9.3.3 Elementary Procedure Definitions

-- ASN1START

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

--

-- Elementary Procedure definitions

--

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

NRPPA-PDU-Descriptions {

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

ngran-access (22) modules (3) nrppa (4) version1 (1) nrppa-PDU-Descriptions (0) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- IE parameter types from other modules.

--

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

IMPORTS

 Criticality,

 ProcedureCode,

 NRPPATransactionID

FROM NRPPA-CommonDataTypes

 ErrorIndication,

 PrivateMessage,

 E-CIDMeasurementInitiationRequest,

 E-CIDMeasurementInitiationResponse,

 E-CIDMeasurementInitiationFailure,

 E-CIDMeasurementFailureIndication,

 E-CIDMeasurementReport,

 E-CIDMeasurementTerminationCommand,

 OTDOAInformationRequest,

 OTDOAInformationResponse,

 OTDOAInformationFailure,

 AssistanceInformationControl,

 AssistanceInformationFeedback,

 PositioningInformationRequest,

 PositioningInformationResponse,

 PositioningInformationFailure,

 PositioningInformationUpdate,

 MeasurementRequest,

 MeasurementResponse,

 MeasurementFailure,

 MeasurementReport,

 MeasurementUpdate,

 MeasurementAbort,

 MeasurementFailureIndication,

 TRPInformationRequest,

 TRPInformationResponse,

 TRPInformationFailure,

 PositioningActivationRequest,

 PositioningActivationResponse,

 PositioningActivationFailure,

 PositioningDeactivation,

 PRSConfigurationRequest,

 PRSConfigurationResponse,

 PRSConfigurationFailure,

 MeasurementPreconfigurationRequired,

 MeasurementPreconfigurationConfirm,

 MeasurementPreconfigurationRefuse,

 MeasurementActivation,

 SRSInformationReservationNotification

FROM NRPPA-PDU-Contents

 id-errorIndication,

 id-privateMessage,

 id-e-CIDMeasurementInitiation,

 id-e-CIDMeasurementFailureIndication,

 id-e-CIDMeasurementReport,

 id-e-CIDMeasurementTermination,

 id-oTDOAInformationExchange,

 id-assistanceInformationControl,

 id-assistanceInformationFeedback,

 id-positioningInformationExchange,

 id-positioningInformationUpdate,

 id-Measurement,

 id-MeasurementReport,

 id-MeasurementUpdate,

 id-MeasurementAbort,

 id-MeasurementFailureIndication,

 id-tRPInformationExchange,

 id-positioningActivation,

 id-positioningDeactivation,

 id-pRSConfigurationExchange,

 id-measurementPreconfiguration,

 id-measurementActivation,

 id-sRSInformationReservationNotification

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

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

--

-- Interface Elementary Procedure List

--

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

NRPPA-ELEMENTARY-PROCEDURES NRPPA-ELEMENTARY-PROCEDURE ::= {

 NRPPA-ELEMENTARY-PROCEDURES-CLASS-1 |

 NRPPA-ELEMENTARY-PROCEDURES-CLASS-2 ,

 ...

}

NRPPA-ELEMENTARY-PROCEDURES-CLASS-1 NRPPA-ELEMENTARY-PROCEDURE ::= {

 e-CIDMeasurementInitiation |

 oTDOAInformationExchange |

 positioningInformationExchange |

 measurement |

 tRPInformationExchange |

 positioningActivation |

 pRSConfigurationExchange |

 measurementPreconfiguration,

 ...

}

NRPPA-ELEMENTARY-PROCEDURES-CLASS-2 NRPPA-ELEMENTARY-PROCEDURE ::= {

 e-CIDMeasurementFailureIndication |

 e-CIDMeasurementReport |

 e-CIDMeasurementTermination |

 errorIndication |

 privateMessage |

 assistanceInformationControl |

 assistanceInformationFeedback |

 positioningInformationUpdate |

 measurementReport |

 measurementUpdate |

 measurementAbort |

 measurementFailureIndication |

 positioningDeactivation |

 measurementActivation |

 sRSInformationReservationNotification,

 ...

}

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

--

-- Interface Elementary Procedures

--

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

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

sRSInformationReservationNotification NRPPA-ELEMENTARY-PROCEDURE ::= {

 INITIATING MESSAGE SRSInformationReservationNotification

 PROCEDURE CODE id-sRSInformationReservationNotification

 CRITICALITY reject

}

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

### 9.3.4 PDU Definitions

-- ASN1START

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

--

-- PDU definitions for NRPPa

--

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

NRPPA-PDU-Contents {

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

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

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- IE parameter types from other modules

--

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

IMPORTS

 Cause,

 CriticalityDiagnostics,

 E-CID-MeasurementResult,

 OTDOACells,

 OTDOA-Information-Item,

 Measurement-ID,

 UE-Measurement-ID,

 MeasurementPeriodicity,

 MeasurementQuantities,

 ReportCharacteristics,

 RequestedSRSTransmissionCharacteristics,

 Cell-Portion-ID,

 OtherRATMeasurementQuantities,

 OtherRATMeasurementResult,

 WLANMeasurementQuantities,

 WLANMeasurementResult,

 Assistance-Information,

 Broadcast,

 AssistanceInformationFailureList,

 SRSConfiguration,

 TRPMeasurementQuantities,

 TrpMeasurementResult,

 TRP-ID,

 TRPInformationTypeListTRPReq,

 TRPInformationListTRPResp,

 TRP-MeasurementRequestList,

 TRP-MeasurementResponseList,

 TRP-MeasurementUpdateList,

 MeasurementBeamInfoRequest,

 PositioningBroadcastCells,

 SRSResourceSetID,

 SpatialRelationInfo,

 SRSResourceTrigger,

 TRPList,

 AbortTransmission,

 SystemFrameNumber,

 SlotNumber,

 RelativeTime1900,

 SpatialRelationPerSRSResource,

 MeasurementPeriodicityExtended,

 PRSTRPList,

 PRSTransmissionTRPList,

 ResponseTime,

 UEReportingInformation,

 UETxTEGAssociationList,

 TRP-PRS-Information-List,

 PRS-Measurements-Info-List,

 UE-TEG-Info-Request,

 MeasurementCharacteristicsRequestIndicator,

 MeasurementTimeOccasion,

 PRSConfigRequestType,

 MeasurementAmount,

 PreconfigurationResult,

 RequestType,

 UE-TEG-ReportingPeriodicity,

 MeasurementPeriodicityNR-AoA,

 SRSTransmissionStatus,

 CGI-NR,

 TimeWindowInformation-SRS-List,

 TimeWindowInformation-Measurement-List,

 PosValidityAreaCellList,

 SRSNewCellIdentity,

 SRSReservationRequestType

FROM NRPPA-IEs

 PrivateIE-Container{},

 ProtocolExtensionContainer{},

 ProtocolIE-Container{},

 ProtocolIE-ContainerList{},

 ProtocolIE-Single-Container{},

 NRPPA-PRIVATE-IES,

 NRPPA-PROTOCOL-EXTENSION,

 NRPPA-PROTOCOL-IES

FROM NRPPA-Containers

 maxnoOTDOAtypes,

 id-Cause,

 id-CriticalityDiagnostics,

 id-LMF-Measurement-ID,

 id-LMF-UE-Measurement-ID,

 id-OTDOACells,

 id-OTDOA-Information-Type-Group,

 id-OTDOA-Information-Type-Item,

 id-ReportCharacteristics,

 id-MeasurementPeriodicity,

 id-MeasurementQuantities,

 id-RAN-Measurement-ID,

 id-RAN-UE-Measurement-ID,

 id-E-CID-MeasurementResult,

 id-RequestedSRSTransmissionCharacteristics,

 id-Cell-Portion-ID,

 id-OtherRATMeasurementQuantities,

 id-OtherRATMeasurementResult,

 id-WLANMeasurementQuantities,

 id-WLANMeasurementResult,

 id-Assistance-Information,

 id-Broadcast,

 id-AssistanceInformationFailureList,

 id-SRSConfiguration,

 id-TRPMeasurementQuantities,

 id-MeasurementResult,

 id-TRP-ID,

 id-TRPInformationTypeListTRPReq,

 id-TRPInformationListTRPResp,

 id-TRP-MeasurementRequestList,

 id-TRP-MeasurementResponseList,

 id-TRP-MeasurementReportList,

 id-TRP-MeasurementUpdateList,

 id-MeasurementBeamInfoRequest,

 id-PositioningBroadcastCells,

 id-SRSType,

 id-ActivationTime,

 id-SRSResourceSetID,

 id-TRPList,

 id-SRSSpatialRelation,

 id-AbortTransmission,

 id-SystemFrameNumber,

 id-SlotNumber,

 id-SRSResourceTrigger,

 id-SFNInitialisationTime,

 id-SRSSpatialRelationPerSRSResource,

 id-MeasurementPeriodicityExtended,

 id-PRSTRPList,

 id-PRSTransmissionTRPList,

 id-ResponseTime,

 id-UEReportingInformation,

 id-UETxTEGAssociationList,

 id-TRP-PRS-Information-List,

 id-PRS-Measurements-Info-List,

 id-UE-TEG-Info-Request,

 id-MeasurementCharacteristicsRequestIndicator,

 id-MeasurementTimeOccasion,

 id-PRSConfigRequestType,

 id-MeasurementAmount,

 id-PreconfigurationResult,

 id-RequestType,

 id-UE-TEG-ReportingPeriodicity,

 id-MeasurementPeriodicityNR-AoA,

 id-SRSTransmissionStatus,

 id-NewNRCGI,

 id-TimeWindowInformation-SRS-List,

 id-TimeWindowInformation-Measurement-List,

 id-PosValidityAreaCellList,

 id-SRSReservationRequestType

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

-- POSITIONING INFORMATION REQUEST

--

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

PositioningInformationRequest ::= SEQUENCE {

 protocolIEs ProtocolIE-Container {{PositioningInformationRequest-IEs}},

 ...

}

PositioningInformationRequest-IEs NRPPA-PROTOCOL-IES ::= {

 { ID id-RequestedSRSTransmissionCharacteristics CRITICALITY ignore TYPE RequestedSRSTransmissionCharacteristics PRESENCE optional }|

 { ID id-UEReportingInformation CRITICALITY ignore TYPE UEReportingInformation PRESENCE optional }|

 { ID id-UE-TEG-Info-Request CRITICALITY ignore TYPE UE-TEG-Info-Request PRESENCE optional }|

 { ID id-UE-TEG-ReportingPeriodicity CRITICALITY reject TYPE UE-TEG-ReportingPeriodicity PRESENCE conditional }|

 { ID id-TimeWindowInformation-SRS-List CRITICALITY reject TYPE TimeWindowInformation-SRS-List PRESENCE optional },

 ...

}

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

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

--

-- POSITIONING INFORMATION RESPONSE

--

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

PositioningInformationResponse ::= SEQUENCE {

 protocolIEs ProtocolIE-Container {{PositioningInformationResponse-IEs}},

 ...

}

PositioningInformationResponse-IEs NRPPA-PROTOCOL-IES ::= {

 { ID id-SRSConfiguration CRITICALITY ignore TYPE SRSConfiguration PRESENCE optional}|

 { ID id-SFNInitialisationTime CRITICALITY ignore TYPE RelativeTime1900 PRESENCE optional}|

 { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional}|

 { ID id-UETxTEGAssociationList CRITICALITY ignore TYPE UETxTEGAssociationList PRESENCE optional}|

 { ID id-NewNRCGI CRITICALITY ignore TYPE CGI-NR PRESENCE optional}|

 { ID id-PosValidityAreaCellList CRITICALITY ignore TYPE PosValidityAreaCellList PRESENCE optional},

 ...

}

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

--

-- POSITIONING INFORMATION FAILURE

--

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

PositioningInformationFailure ::= SEQUENCE {

 protocolIEs ProtocolIE-Container {{PositioningInformationFailure-IEs}},

 ...

}

PositioningInformationFailure-IEs NRPPA-PROTOCOL-IES ::= {

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

 { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional},

 ...

}

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

--

-- POSITIONING INFORMATION UPDATE

--

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

PositioningInformationUpdate ::= SEQUENCE {

 protocolIEs ProtocolIE-Container {{PositioningInformationUpdate-IEs}},

 ...

}

PositioningInformationUpdate-IEs NRPPA-PROTOCOL-IES ::= {

 { ID id-SRSConfiguration CRITICALITY ignore TYPE SRSConfiguration PRESENCE optional}|

 { ID id-SFNInitialisationTime CRITICALITY ignore TYPE RelativeTime1900 PRESENCE optional}|

 { ID id-UETxTEGAssociationList CRITICALITY ignore TYPE UETxTEGAssociationList PRESENCE optional}|

 { ID id-SRSTransmissionStatus CRITICALITY ignore TYPE SRSTransmissionStatus PRESENCE optional}|

 { ID id-SRSNewCellIdentity CRITICALITY ignore TYPE CGI-NR PRESENCE optional},

 ...

}

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

-- MEASUREMENT REQUEST

--

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

MeasurementRequest ::= SEQUENCE {

 protocolIEs ProtocolIE-Container {{MeasurementRequest-IEs}},

 ...

}

MeasurementRequest-IEs NRPPA-PROTOCOL-IES ::= {

 { ID id-LMF-Measurement-ID CRITICALITY reject TYPE Measurement-ID PRESENCE mandatory}|

 { ID id-TRP-MeasurementRequestList CRITICALITY reject TYPE TRP-MeasurementRequestList PRESENCE mandatory}|

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

 { ID id-MeasurementPeriodicity CRITICALITY reject TYPE MeasurementPeriodicity PRESENCE conditional}|

-- The IE shall be present if the Report Characteritics IE is set to “periodic” –

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

 { ID id-SFNInitialisationTime CRITICALITY ignore TYPE RelativeTime1900 PRESENCE optional}|

 { ID id-SRSConfiguration CRITICALITY ignore TYPE SRSConfiguration PRESENCE optional}|

 { ID id-MeasurementBeamInfoRequest CRITICALITY ignore TYPE MeasurementBeamInfoRequest PRESENCE optional}|

 { ID id-SystemFrameNumber CRITICALITY ignore TYPE SystemFrameNumber PRESENCE optional}|

 { ID id-SlotNumber CRITICALITY ignore TYPE SlotNumber PRESENCE optional}|

 { ID id-MeasurementPeriodicityExtended CRITICALITY reject TYPE MeasurementPeriodicityExtended PRESENCE conditional}|

-- The IE shall be present the MeasurementPeriodicity IE is set to the value "extended"

 { ID id-ResponseTime CRITICALITY ignore TYPE ResponseTime PRESENCE optional}|

 { ID id-MeasurementCharacteristicsRequestIndicator CRITICALITY ignore TYPE MeasurementCharacteristicsRequestIndicator PRESENCE optional}|

 { ID id-MeasurementTimeOccasion CRITICALITY ignore TYPE MeasurementTimeOccasion PRESENCE optional}|

 { ID id-MeasurementAmount CRITICALITY ignore TYPE MeasurementAmount PRESENCE optional}|

 { ID id-TimeWindowInformation-Measurement-List CRITICALITY ignore TYPE TimeWindowInformation-Measurement-List PRESENCE optional },

 ...

}

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

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

--

-- SRS INFORMATION RESERVATION NOTIFICATION

--

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

SRSInformationReservationNotification ::= SEQUENCE {

 protocolIEs ProtocolIE-Container {{ SRSInformationReservationNotification-IEs}},

 ...

}

SRSInformationReservationNotification-IEs NRPPA-PROTOCOL-IES ::= {

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

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

 { ID id-PosValidityAreaCellList CRITICALITY reject TYPE PosValidityAreaCellList PRESENCE mandatory},

 ...

}

-- FFS on details of the IE encoding

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

9.3.5 Information Element definitions

-- ASN1START

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

--

-- Information Element Definitions

--

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

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

 id-MeasurementQuantities-Item,

 id-CGI-NR,

 id-SFNInitialisationTime-NR,

 id-GeographicalCoordinates,

 id-ResultSS-RSRP,

 id-ResultSS-RSRQ,

 id-ResultCSI-RSRP,

 id-ResultCSI-RSRQ,

 id-AngleOfArrivalNR,

 id-ResultNR,

 id-ResultEUTRA,

 maxCellinRANnode,

 maxCellReport,

 maxNrOfErrors,

 maxNoMeas,

 maxnoOTDOAtypes,

 maxServCell,

 id-OtherRATMeasurementQuantities-Item,

 id-WLANMeasurementQuantities-Item,

 maxGERANMeas,

 maxUTRANMeas,

 maxWLANchannels,

 maxnoFreqHoppingBandsMinusOne,

 id-TDD-Config-EUTRA-Item,

 maxNrOfPosSImessage,

 maxnoAssistInfoFailureListItems,

 maxNrOfSegments,

 maxNrOfPosSIBs,

 maxnoPosMeas,

 maxnoTRPs,

 maxnoTRPInfoTypes,

 maxNoOfMeasTRPs,

 maxNoPath,

 maxnoofAngleInfo,

 maxnolcs-gcs-translation,

 maxnoBcastCell,

 maxnoSRSTriggerStates,

 maxnoSpatialRelations,

 maxNRMeas,

 maxEUTRAMeas,

 maxIndexesReport,

 maxCellReportNR,

 maxnoSRS-Carriers,

 maxnoSCSs,

 maxnoSRS-Resources,

 maxnoSRS-PosResources,

 maxnoSRS-ResourceSets,

 maxnoSRS-ResourcePerSet,

 maxnoSRS-PosResourceSets,

 maxnoSRS-PosResourcePerSet,

 maxPRS-ResourceSets,

 maxPRS-ResourcesPerSet,

 maxNoSSBs,

 maxnoofPRSresourceSet,

 maxnoofPRSresource,

 maxnoofULAoAs,

 maxNoPathExtended,

 maxnoARPs,

 maxnoTRPTEGs,

 maxnoUETEGs,

 maxFreqLayers,

 maxnoPRSTRPs,

 maxNumResourcesPerAngle,

 maxnoAzimuthAngles,

 maxnoElevationAngles,

 maxnoVACell,

 maxnoaggregatedPosSRS-Resources,

 maxnoaggregatedPosSRS-ResourceSets,

 maxnoAggPosPRSResourceSets,

 maxnoofTimeWindowSRS,

 maxnoofTimeWindowMea,

 id-Cell-ID,

 id-TRPInformationTypeItem,

 id-SrsFrequency,

 id-TRPType,

 id-SRSSpatialRelationPerSRSResource,

 id-PRS-Resource-ID,

 id-OnDemandPRS,

 id-AoA-SearchWindow,

 id-ZoA,

 id-MultipleULAoA,

 id-UL-SRS-RSRPP,

 id-SRSResourcetype,

 id-ExtendedAdditionalPathList,

 id-ARPLocationInfo,

 id-ARP-ID,

 id-LoS-NLoSInformation,

 id-NumberOfTRPRxTEG,

 id-NumberOfTRPRxTxTEG,

 id-TRPTxTEGAssociation,

 id-TRPTEGInformation,

 id-TRP-Rx-TEGInformation,

 id-TRPBeamAntennaInformation,

 id-NR-TADV,

 id-pathPower,

 id-SRSPortIndex,

 id-UETxTimingErrorMargin,

 id-nrofSymbolsExtended,

 id-repetitionFactorExtended,

 id-StartRBHopping,

 id-StartRBIndex,

 id-transmissionCombn8,

 id-ExtendedResourceSymbolOffset,

 id-Mobile-TRP-LocationInformation,

 id-Mobile-IAB-MT-UE-ID,

 id-MobileAccessPointLocation,

 id-CommonTAParameters,

 id-UL-RSCPMeas,

 id-Bandwidth-Aggregation-Request-Indication,

 id-PosSRSResourceSet-Aggregation-List,

 id-ReportingGranularitykminus1,

 id-ReportingGranularitykminus2,

 id-ReportingGranularitykminus3,

 id-ReportingGranularitykminus4,

 id-ReportingGranularitykminus5,

 id-ReportingGranularitykminus6,

 id-SymbolIndex,

 id-TimingReportingGranularityFactorExtended,

 id-PosValidityAreaCellList,

 id-TransmissionCombPos,

 id-ResourceMapping,

 id-FreqDomainShift,

 id-C-SRS,

 id-ResourceTypePos,

 id-SequenceIDPos,

 id-PRSBWAggregationRequestIndication,

 id-AggregatedPosSRSResourceID-List,

 id-AggregatedPRSResourceSetList,

 id-TRPPhaseQuality,

 id-ReportingGranularitykminus1AdditionalPath,

 id-ReportingGranularitykminus2AdditionalPath,

 id-ReportingGranularitykminus3AdditionalPath,

 id-ReportingGranularitykminus4AdditionalPath,

 id-ReportingGranularitykminus5AdditionalPath,

 id-ReportingGranularitykminus6AdditionalPath

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

-- A

AbortTransmission ::= CHOICE {

 deactivateSRSResourceSetID SRSResourceSetID,

 releaseALL NULL,

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

}

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

 ...

}

ActiveULBWP ::= SEQUENCE {

 locationAndBandwidth INTEGER (0..37949,...),

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

 cyclicPrefix ENUMERATED {normal, extended},

 txDirectCurrentLocation INTEGER (0..3301,...),

 shift7dot5kHz ENUMERATED {true, ...} OPTIONAL,

 sRSConfig SRSConfig,

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

 ...

}

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

 ...

}

AdditionalPathList ::= SEQUENCE (SIZE (1.. maxNoPath)) OF AdditionalPathListItem

AdditionalPathListItem ::= SEQUENCE {

 relativeTimeOfPath RelativePathDelay,

 pathQuality TrpMeasurementQuality OPTIONAL,

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

 ...

}

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

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

 { ID id-pathPower CRITICALITY ignore EXTENSION UL-SRS-RSRPP PRESENCE optional},

 ...

}

AggregatedPosSRSResourceID-List ::= SEQUENCE (SIZE (1..maxnoaggregatedPosSRS-Resources)) OF AggregatedPosSRSResourceID-Item

AggregatedPosSRSResourceID-Item ::= SEQUENCE {

 sRSPosResource-ID SRSPosResourceID,

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

 ...

}

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

 ...

}

AggregatedPRSResourceSetList ::= SEQUENCE (SIZE (1..maxnoAggPosPRSResourceSets)) OF AggregatedPRSResourceSet-Item

AggregatedPRSResourceSet-Item ::= SEQUENCE {

 pointA INTEGER (0..3279165),

 posPRSResourceSetID PRS-Resource-Set-ID,

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

 ...

}

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

 ...

}

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

-- B

BandwidthSRS ::= CHOICE {

 fR1 ENUMERATED {mHz5, mHz10, mHz20, mHz40, mHz50, mHz80, mHz100, ... ,mHz160, mHz200},

 fR2 ENUMERATED {mHz50, mHz100, mHz200, mHz400, ..., mHz600, mHz800},

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

}

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

 ...

}

Bandwidth-Aggregation-Request-Indication ::= ENUMERATED { true, ...}

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

-- G

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

GNBRxTxTimeDiffMeas ::= 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 { { GNBRxTxTimeDiffMeas-ExtIEs } }

}

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

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

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

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

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

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

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

 ...

}

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

-- L

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

PosValidityAreaCell-Item ::= SEQUENCE {

 nR-CGI CGI-NR,

 nR-PCI NR-PCI OPTIONAL,

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

 ...

}

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

 ...

}

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

-- P

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

PRSBWAggregationRequestIndication ::= ENUMERATED {true, ...}

PosSRSResourceID-List ::= SEQUENCE (SIZE (1..maxnoSRS-PosResources)) OF SRSPosResourceID

PosSRSResourceSet-List ::= SEQUENCE (SIZE (1..maxnoSRS-PosResourceSets)) OF PosSRSResourceSet-Item

PosSRSResourceIDPerSet-List ::= SEQUENCE (SIZE (1..maxnoSRS-PosResourcePerSet)) OF SRSPosResourceID

PosSRSResourceSet-Item ::= SEQUENCE {

 possrsResourceSetID INTEGER(0..15),

 possRSResourceIDPerSet-List PosSRSResourceIDPerSet-List,

 posresourceSetType PosResourceSetType,

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

 ...

}

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

{ ID id-PosSRSResourceSet-Aggregation-List CRITICALITY ignore EXTENSION PosSRSResourceSet-Aggregation-List PRESENCE optional },

...

}

PosSRSResourceSet-Aggregation-List ::= SEQUENCE (SIZE (1.. maxnoaggregatedPosSRS-ResourceSets)) OF PosSRSResourceSet-Aggregation-Item

PosSRSResourceSet-Aggregation-Item ::= SEQUENCE {

 pointA INTEGER (0..3279165),

 pCI-NR INTEGER(0..1007) OPTIONAL,

 possrsResourceSetID INTEGER(0..15),

 iE-Extensions ProtocolExtensionContainer { { PosSRSResourceSet-Aggregation-Item-ExtIEs} } OPTIONAL,

 ...

}

PosSRSResourceSet-Aggregation-Item-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 ...

}

PosResourceSetType ::= CHOICE {

 periodic PosResourceSetTypePeriodic,

 semi-persistent PosResourceSetTypeSemi-persistent,

 aperiodic PosResourceSetTypeAperiodic,

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

}

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

 ...

}

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

PosValidityAreaCellList ::= SEQUENCE (SIZE (1..maxnoVACell)) OF PosValidityAreaCell-Item

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

-- R

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

RequestedDLPRSTransmissionCharacteristics ::= SEQUENCE {

 requestedDLPRSResourceSet-List RequestedDLPRSResourceSet-List,

 numberofFrequencyLayers INTEGER(1..4) OPTIONAL,

 startTimeAndDuration StartTimeAndDuration OPTIONAL,

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

 ...

}

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

 { ID id-PRSBWAggregationRequestIndication CRITICALITY ignore EXTENSION PRSBWAggregationRequestIndication PRESENCE optional},

 ...

}

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

RelativePathDelay ::= CHOICE {

 k0 INTEGER(0..16351),

 k1 INTEGER(0..8176),

 k2 INTEGER(0..4088),

 k3 INTEGER(0..2044),

 k4 INTEGER(0..1022),

 k5 INTEGER(0..511),

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

}

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

 {ID id-ReportingGranularitykminus1AdditionalPath CRITICALITY ignore TYPE ReportingGranularitykminus1AdditionalPath PRESENCE mandatory}|

 {ID id-ReportingGranularitykminus2AdditionalPath CRITICALITY ignore TYPE ReportingGranularitykminus2AdditionalPath PRESENCE mandatory}|

 {ID id-ReportingGranularitykminus3AdditionalPath CRITICALITY ignore TYPE ReportingGranularitykminus3AdditionalPath PRESENCE mandatory}|
 {ID id-ReportingGranularitykminus4AdditionalPath CRITICALITY ignore TYPE ReportingGranularitykminus4AdditionalPath PRESENCE mandatory}|
 {ID id-ReportingGranularitykminus5AdditionalPath CRITICALITY ignore TYPE ReportingGranularitykminus5AdditionalPath PRESENCE mandatory}|
 {ID id-ReportingGranularitykminus6AdditionalPath CRITICALITY ignore TYPE ReportingGranularitykminus6AdditionalPath PRESENCE mandatory},

 ...

}

RepetitionFactorExtended ::= ENUMERATED {n3, n5, n6, n7, n8, n10, n12, n14, ...}

ReportCharacteristics ::= ENUMERATED {

 onDemand,

 periodic,

 ...

}

ReportingGranularitykminus1 ::= INTEGER(0..3940097)

ReportingGranularitykminus2 ::= INTEGER(0..7880193)

ReportingGranularitykminus3 ::= INTEGER(0..15760385)

ReportingGranularitykminus4 ::= INTEGER(0..31520769)

ReportingGranularitykminus5 ::= INTEGER(0..63041537)

ReportingGranularitykminus6 ::= INTEGER(0..126083073)

ReportingGranularitykminus1AdditionalPath ::= INTEGER(0..32701)

ReportingGranularitykminus2AdditionalPath ::= INTEGER(0..65401)

ReportingGranularitykminus3AdditionalPath ::= INTEGER(0..130801)

ReportingGranularitykminus4AdditionalPath ::= INTEGER(0..261601)

ReportingGranularitykminus5AdditionalPath ::= INTEGER(0..523201)

ReportingGranularitykminus6AdditionalPath ::= INTEGER(0..1046401)

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

RequestedSRSTransmissionCharacteristics ::= SEQUENCE {

 numberOfTransmissions INTEGER (0..500,...) OPTIONAL,

-- The IE shall be present if the Resource Type IE is set to “periodic” --

 resourceType ENUMERATED {periodic, semi-persistent, aperiodic, ...},

 bandwidth BandwidthSRS,

 listOfSRSResourceSet SEQUENCE (SIZE (1.. maxnoSRS-ResourceSets)) OF SRSResourceSet-Item OPTIONAL,

 sSBInformation SSBInfo OPTIONAL,

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

 ...

}

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

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

 { ID id-Bandwidth-Aggregation-Request-Indication CRITICALITY ignore EXTENSION Bandwidth-Aggregation-Request-Indication PRESENCE optional }|

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

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

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

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

 { ID id-C-SRS CRITICALITY ignore EXTENSION C-SRS PRESENCE optional }|

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

 { ID id-SequenceIDPos CRITICALITY ignore EXTENSION SequenceIDPos PRESENCE optional },

 ...

}

FreqDomainShift ::= INTEGER (0..268)

C-SRS ::= INTEGER (0..63)

SequenceIDPos ::= INTEGER (0..65535)

ResourceMapping ::= SEQUENCE {

 startPosition INTEGER (0..13),

 nrofSumbols ENUMERATED {n1, n2, n4, n8, n12},

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

 ...

}

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

 ...

}

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

-- S

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

StartTimeAndDuration ::= SEQUENCE {

 startTime RelativeTime1900 OPTIONAL,

 duration INTEGER (0..90060, ...) OPTIONAL,

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

 ...

}

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

 ...

}

SymbolIndex ::= INTEGER (0..13)

SystemFrameNumber ::= INTEGER (0..1023)

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

SRSReservationRequestType::= ENUMERATED {reserve, release, ...}

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

-- T

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

TimeStamp ::= SEQUENCE {

 systemFrameNumber SystemFrameNumber,

 slotIndex TimeStampSlotIndex,

 measurementTime RelativeTime1900 OPTIONAL,

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

 ...

}

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

 { ID id-SymbolIndex CRITICALITY ignore EXTENSION SymbolIndex PRESENCE optional },

 ...

}

TimeStampSlotIndex ::= CHOICE {

 sCS-15 INTEGER(0..9),

 sCS-30 INTEGER(0..19),

 sCS-60 INTEGER(0..39),

 sCS-120 INTEGER(0..79),

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

}

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

 ...

}

TimeWindowDurationMeasurement ::= CHOICE {

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

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

}

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

 ...

}

TimeWindowDurationSRS ::= CHOICE {

 durationSymbols ENUMERATED {n1, n2, n4, n8, n12, ...},

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

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

}

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

 ...

}

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

TimeWindowPeriodicitySRS ::= ENUMERATED {ms0dot125, ms0dot25, ms0dot5, ms0dot625, ms1, ms1dot25, ms2, ms2dot5, ms4, ms5, ms8, ms10, ms16, ms20, ms32, ms40, ms64, ms80, ms160, ms320, ms640, ms1280, ms2560, ms5120, ms10240, ...}

TimeWindowStartSRS ::= SEQUENCE {

 systemFrameNumber SystemFrameNumber,

 slotNumber SlotNumber,

 symbolIndex INTEGER (0..13),

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

 ...

}

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

 ...

}

TimingReportingGranularityFactorExtended ::=INTEGER(-6..-1, ...)

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

TimeWindowInformation-Measurement-Item ::= SEQUENCE {

 timeWindowDurationMeasurement TimeWindowDurationMeasurement,

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

 ...

}

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

 ...

}

TimeWindowInformation-SRS-List ::= SEQUENCE (SIZE (1.. maxnoofTimeWindowSRS)) OF TimeWindowInformation-SRS-Item

TimeWindowInformation-SRS-Item ::= SEQUENCE {

 timeWindowStartSRS TimeWindowStartSRS,

 timeWindowDurationSRS TimeWindowDurationSRS,

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

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

 ...

}

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

 ...

}

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

TRPList ::= SEQUENCE (SIZE(1.. maxnoTRPs)) OF TRPItem

TRPItem ::= SEQUENCE {

 tRP-ID TRP-ID,

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

 ...

}

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

 { ID id-PRSBWAggregationRequestIndication CRITICALITY ignore EXTENSION PRSBWAggregationRequestIndication PRESENCE optional},

 ...

}

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

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

TRPMeasurementQuantitiesList-Item ::= SEQUENCE {

 tRPMeasurementQuantities-Item TRPMeasurementQuantities-Item,

 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},

 ...

}

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>>>>

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-AggregatedPosSRSResourceID-List CRITICALITY ignore EXTENSION AggregatedPosSRSResourceID-List PRESENCE optional },

 ...

}

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>>>>

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},

 ...

}

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

TrpMeasurementQuality ::= CHOICE {

 timingMeasQuality TrpMeasurementTimingQuality,

 angleMeasQuality TrpMeasurementAngleQuality,

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

}

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

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

 ...

}

TrpMeasurementTimingQuality ::= SEQUENCE {

 measurementQuality INTEGER (0..31),

 resolution ENUMERATED {m0dot1, m1, m10, m30, ...},

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

 ...

}

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

 ...

}

TrpMeasurementAngleQuality ::= SEQUENCE {

 azimuthQuality INTEGER (0..255),

 zenithQuality INTEGER (0..255) OPTIONAL,

 resolution ENUMERATED {deg0dot1, ...},

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

 ...

}

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

 ...

}

TRPPhaseQuality ::= SEQUENCE {

 phaseQualityIndex INTEGER(0..179),

 resolution ENUMERATED {deg0dot1, deg1, ...},

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

 ...

}

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

 ...

}

<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

-- U

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

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},

 ...

}

<<<<<<<<<<<<<<<<<<< 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 ::= xx

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

--

-- Lists

--

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

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 ::= 48

maxnoAggPosPRSResourceSets INTEGER ::= 3

maxnoofTimeWindowSRS INTEGER ::= 16

maxnoofTimeWindowMea INTEGER ::= 16

<<<<<<<<< unchanged texts omitted >>>>>>>>>>>

id-SRSPortIndex ProtocolIE-ID ::= 100

id-procedure-code-101-not-to-be-used ProtocolIE-ID ::= 101

id-procedure-code-102-not-to-be-used ProtocolIE-ID ::= 102

id-procedure-code-103-not-to-be-used ProtocolIE-ID ::= 103

id-UETxTimingErrorMargin ProtocolIE-ID ::= 104

id-MeasurementPeriodicityNR-AoA ProtocolIE-ID ::= 105

id-SRSTransmissionStatus ProtocolIE-ID ::= 106

id-nrofSymbolsExtended ProtocolIE-ID ::= 107

id-repetitionFactorExtended ProtocolIE-ID ::= 108

id-StartRBHopping ProtocolIE-ID ::= 109

id-StartRBIndex ProtocolIE-ID ::= 110

id-transmissionCombn8 ProtocolIE-ID ::= 111

id-ExtendedResourceSymbolOffset ProtocolIE-ID ::= 112

id-NewNRCGI ProtocolIE-ID ::= 113

id-Mobile-TRP-LocationInformation ProtocolIE-ID ::= 114

id-Mobile-IAB-MT-UE-ID ProtocolIE-ID ::= 115

id-MobileAccessPointLocation ProtocolIE-ID ::= 116

id-CommonTAParameters ProtocolIE-ID ::= 117

id-Bandwidth-Aggregation-Request-Indication ProtocolIE-ID ::= xx1

id-PosSRSResourceSet-Aggregation-List ProtocolIE-ID ::= xx2

id-TimingReportingGranularityFactorExtended ProtocolIE-ID ::= xx5

id-TimeWindowInformation-SRS-List ProtocolIE-ID ::= xx6

id-TimeWindowInformation-Measurement-List ProtocolIE-ID ::= xx7

id-UL-RSCPMeas ProtocolIE-ID ::= xx8

id-SymbolIndex ProtocolIE-ID ::= xx9

id-PosValidityAreaCellList ProtocolIE-ID ::= x10

id-SRSReservationRequestType ProtocolIE-ID ::= x11

id-TransmissionCombPos ProtocolIE-ID ::= x12

id-ResourceMapping ProtocolIE-ID ::= x13

id-FreqDomainShift ProtocolIE-ID ::= x14

id-C-SRS ProtocolIE-ID ::= x15

id-ResourceTypePos ProtocolIE-ID ::= x16

id-SequenceIDPos ProtocolIE-ID ::= x17

id-PRSBWAggregationRequestIndication ProtocolIE-ID ::= x18

id-AggregatedPosSRSResourceID-List ProtocolIE-ID ::= x19

id-AggregatedPRSResourceSetList ProtocolIE-ID ::= x20

id-TRPPhaseQuality ProtocolIE-ID ::= x21

id-SRSNewCellIdentity ProtocolIE-ID ::= x22

id-ReportingGranularitykminus3 ProtocolIE-ID ::= x23

id-ReportingGranularitykminus4 ProtocolIE-ID ::= x24

id-ReportingGranularitykminus5 ProtocolIE-ID ::= x25

id-ReportingGranularitykminus6 ProtocolIE-ID ::= x26

id-ReportingGranularitykminus1AdditionalPath ProtocolIE-ID ::= x27

id-ReportingGranularitykminus2AdditionalPath ProtocolIE-ID ::= x28

id-ReportingGranularitykminus3AdditionalPath ProtocolIE-ID ::= x29

id-ReportingGranularitykminus4AdditionalPath ProtocolIE-ID ::= x30

id-ReportingGranularitykminus5AdditionalPath ProtocolIE-ID ::= x31

id-ReportingGranularitykminus6AdditionalPath ProtocolIE-ID ::= x32

END

-- ASN1STOP

<<<<<<<<<<<<<<<<<<<< End of Changes >>>>>>>>>>>>>>>