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Agenda Item: 23.2

Document for: Discussion and Decision

# TP for TS 38.455 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

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

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# 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.

- Area-specific SRS Information Transfer. This function allows the LMF to notify the NG-RAN node about area-specific SRS configuration information.

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 Initiation  b) E-CID Measurement Failure Indication  c) E-CID Measurement Report  d) E-CID Measurement Termination |
| OTDOA Information Transfer | OTDOA Information Exchange |
| Assistance Information Transfer | a) Assistance Information Control  b) Assistance Information Feedback |
| Reporting of General Error Situations | Error Indication |
| Positioning Information Transfer | a) Positioning Information Exchange  b) Positioning Information Update  c) Positioning Activation  d) Positioning Deactivation |
| TRP Information Transfer | TRP Information Exchange |
| Measurement Information Transfer | a) Measurement  b) Measurement Update  c) Measurement Report  d) Measurement Abort  e) Measurement Failure Indication |
| PRS Information Transfer | PRS Configuration Exchange |
| Measurement Preconfiguration Information Transfer | Measurement Preconfiguration  Measurement Activation |
| Area-specific SRS 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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8.2.6 Positioning Information Exchange

8.2.6.1 General

The Positioning Information Exchange procedure is initiated by the LMF to request to the NG-RAN node positioning information for the UE. This procedure applies only if the NG-RAN node is a gNB.

8.2.6.2 Successful Operation

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**Figure 8.2.6.2-1: Positioning Information Exchange procedure, successful operation**

The LMF initiates the procedure by sending a POSITIONING INFORMATION REQUEST message to the NG-RAN node.

If the *Requested SRS Transmission Characteristics* IE is included in the POSITIONING INFORMATION REQUEST message, the NG-RAN node may take this information into account when configuring SRS transmissions for the UE, and it shall include the *SRS Configuration* IE and the *SFN Initialisation Time* IE in the POSITIONING INFORMATION RESPONSE message.

If the *Spatial Relation Information per SRS Resource* IE and the *Periodicity List* IE are both included in the *Requested SRS Transmission Characteristics* IE, the NG-RAN node shall consider that the *Spatial Relation per SRS Resource Item* IE and the *Periodicity List Item* IE have one-to-one mapping relation.

If the *UE Reporting Information* IE is included in the POSITIONING INFORMATION REQUEST message, the NG-RAN node may take this information into account for allocating proper CG-SDT resources when positioning a UE.

If the *UE TEG Information Request* IE is included in the POSITIONING INFORMATION REQUEST message and set to "onDemand", the NG-RAN node shall, if supported, provide the UE Tx TEG association in the POSITIONING INFORMATION RESPONSE message.

If the *UE TEG Information Request* IE is set to "periodic", the NG-RAN node shall, if supported, reply with the POSITIONING INFORMATION RESPONSE message without including any UE Tx TEG association in this message. The NG-RAN node shall then take the *UE TEG Reporting Periodicity* IE into account when configuring the UE’s periodic UE Tx TEG association reporting and initiate the Positioning Information Update procedure for reporting the UE Tx TEG association received from the UE, if any.

If the *New NR CGI* IE is included in the POSITIONING INFORMATION RESPONSE message, the LMF shall, if supported, consider it as the new cell identity where the UE has currently resumed and take it into account for subsequent positioning procedures.

If the *Time Window Information for SRS* IE is included in the POSITIONING INFORMATION REQUEST message, the NG-RAN node shall, if supported, configure the UE to start transmitting its UL SRS transmission at the indicated time instance.

If the *Positioning Validity Area Cell List* IE within the *Requested SRS Transmission Characteristics* IE is included in the POSITIONING INFORMATION REQUEST message, the NG-RAN node may take this information into account for configuring SRS transmissions for the UE in the indicated validty area, and it shall include *SRS Configuration* IE the *SFN initialisation time* IE and the *Positioning Validity Area Cell List* IE in the POSITIONING INFORMATION RESPONSE message.

If the *Requested SRS Preconfiguration List* IE is included in the POSITIONING INFORMATION REQUEST message, the NG-RAN node shall, if supported, take this information into account when preconfiguring SRS for the UE, and include the *SRS Preconfiguration List* IE in the POSITIONING INFORMATION RESPONSE message.

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### 8.2.7 Positioning Information Update

#### 8.2.7.1 General

The Positioning Information Update procedure is initiated by the NG-RAN node to indicate to the LMF that a change has occurred in the SRS configuration or in the UE Tx TEG association. This procedure applies only if the NG-RAN node is a gNB.

#### 8.2.7.2 Successful Operation



Figure 8.2.7.2-1: Positioning Information Update procedure, successful operation

The NG-RAN node initiates the procedure by sending a POSITIONING INFORMATION UPDATE message to the LMF. If the *SRS Configuration* IE is included in the POSITIONING INFORMATION UPDATE message, the LMF shall consider this information as the updated SRS Configuration for the UE. If the *SFN Initialisation Time* IE is included in the POSITIONING INFORMATION UPDATE message, the LMF shall consider this information as the SFN Initialisation Time associated to the SRS Configuration.

If the *UE Tx TEG Association* *List* IE is included in the POSITIONING INFORMATION UPDATE message, the LMF shall consider it as the UE Tx TEG association for the SRS resources that have changed their TEG association during the latest reporting interval.

If the *SRS Transmission Status* IE is included in the POSITIONING INFORMATION UPDATE message and set to "stopped", the LMF shall consider that the SRS transmission has stopped.

If the *SRS* *New Cell Identity* IE is included in the POSITIONING INFORMATION UPDATE message, the LMF shall consider that the UE requests for new SRS resources in that cell.

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### 8.2.x SRS Information Reservation Notification

#### 8.2.x.1 General

The purpose of the SRS Information Reservation Notification procedure is to allow the LMF to notify the NG-RAN node to reserve or release SRS resources in the positioning validity area.

#### 8.2.x.2 Successful Operation



Figure 8.2.x.2-1: SRS Information Reservation Notification procedure, successful operation

The LMF initiates the procedure by sending a SRS INFORMATION RESERVATION NOTIFICATION message to the NG-RAN node.

If the *SRS Reservation Request* IE is set to "reserve", the NG-RAN node shall reserve the indicated SRS configuration in the indicated Validity Area Cells. If *SRS Reservation Request* IE is set to "release", the NG-RAN node shall release the indicated SRS configuration in the indicated Validity Area Cells.

#### 8.2.x.3 Unsuccessful Operation

Not Applicable.

#### 8.2.x.4 Abnormal Conditions

Void.

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9.1.1.10 POSITIONING INFORMATION REQUEST

This message is sent by the LMF to request positioning information.

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 |  | - |  |
| Requested SRS Transmission Characteristics | O |  | 9.2.27 |  | YES | ignore |
| UE Reporting Information | O |  | 9.2.70 |  | YES | ignore |
| UE TEG Information Request | O |  | ENUMERATED(onDemand, periodic, stop, …) |  | YES | ignore |
| UE TEG Reporting Periodicity | C-ifUeTegInfoReqPeriodic |  | ENUMERATED (160ms, 320ms, 1280ms, 2560ms, 61440ms, 81920ms, 368640ms, 737280ms, …) |  | YES | reject |
| Time Window Information SRS List | O |  | 9.2.x1 |  | YES | reject |
| Requested SRS Preconfiguration List | O |  | 9.2.x8 |  | YES | ignore |

|  |  |
| --- | --- |
| **Condition** | **Explanation** |
| ifUeTegInfoReqPeriodic | This IE shall be present if the *UE TEG Information Request* IE is set to the value "periodic". |

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#### 9.1.1.11 POSITIONING INFORMATION RESPONSE

This message is sent by the NG-RAN node to provide positioning information.

Direction: NG-RAN node → LMF.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 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 |  | - |  |
| SRS Configuration | O |  | 9.2.28 |  | YES | ignore |
| SFN Initialisation Time | O |  | Relative Time 1900  9.2.36 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.2.2 |  | YES | ignore |
| UE Tx TEG Association List | O |  | 9.2.78 |  | YES | ignore |
| New NR CGI | O |  | NR CGI  9.2.9 |  | YES | ignore |
| Positioning Validity Area Cell List | O |  | 9.2.x4 |  | YES | ignore |
| SRS Preconfiguration List | O |  | 9.2.x9 |  | YES | ignore |

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#### 9.1.1.13 POSITIONING INFORMATION UPDATE

This message is sent by the NG-RAN node to indicate that a change in the SRS configuration or UE Tx TEG association has occurred.

Direction: NG-RAN node → LMF.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.2.3 |  | YES | ignore |
| NRPPa Transaction ID | M |  | 9.2.4 |  | - |  |
| SRS Configuration | O |  | 9.2.28 |  | YES | ignore |
| SFN Initialisation Time | O |  | Relative Time 1900  9.2.36 |  | YES | ignore |
| UE Tx TEG Association List | O |  | 9.2.78 |  | YES | ignore |
| SRS Transmission Status | O |  | ENUMERATED (stopped, ...) |  | YES | ignore |
| SRS New Cell Identity | O |  | NR CGI  9.2.9 |  | YES | ignore |

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

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 Information | 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. |

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#### 9.1.1.y1 SRS INFORMATION RESERVATION NOTIFICATION

This message is sent by the LMF to notify the NG-RAN node to reserve or release SRS resources in a Validity Area.

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 |  | - |  |
| SRS Reservation Type | M |  | ENUMERATED(reserve, release, …) |  | YES | ignore |
| Requested SRS Transmission Characteristics | O |  | 9.2.27 |  | YES | ignore |

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

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

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

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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 Information | O |  | ENUMERATED(true, …) |  | YES | ignore |
| Positioning Validity Area Cell List | O |  | 9.2.x4 |  | YES | ignore |
| Validity Area Specific SRS Information | O |  | 9.2.x7 |  | YES | ignore |
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| --- | --- |
| **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 >>>>>>>>>>>>>>>>>>>>

9.2.32 Positioning SRS Resource Set

This information element indicates a positioning SRS resource set in the UE for UL SRS transmission.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Positioning SRS Resource Set ID | M |  | INTEGER(0..15) |  | - |  |
| **Positioning SRS Resource ID List** |  | 1..<*maxnoSRS-PosResourcePerSet*> |  |  | - |  |
| >Positioning SRS Resource ID | M |  | INTEGER(0..63) |  | - |  |
| CHOICE *Resource Type* | M |  |  |  | - |  |
| *>periodic* |  |  |  |  |  |  |
| >>PosperiodicSet | M |  | ENUMERATED(true,…) |  | - |  |
| *>semi-persistent* |  |  |  |  |  |  |
| >>Possemi-persistentSet | M |  | ENUMERATED(true,…) |  | - |  |
| *>aperiodic* |  |  |  |  |  |  |
| >>SRS Resource Trigger | M |  | INTEGER(1..3) |  | - |  |
| Aggregated Positioning SRS Resource Set List | O |  | 9.2.x5 |  | YES | ignore |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoSRS-PosResourcePerSet | Maximum no of positioning SRS resources per positioning SRS resource set. Value is 16. |

<<<<<<<<<<<<<<<<<<<< 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* |  |  | 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.x3 |  | YES | reject |
| >Time Stamp | M |  | 9.2.42 |  | - |  |
| >Measurement Quality | O |  | 9.2.43 |  | - |  |
| >Measurement Beam Information | O |  | 9.2.57 |  | - |  |
| >SRS Resource type | O |  | 9.2.73 |  | YES | ignore |
| >ARP ID | O |  | 9.2.75 |  | YES | ignore |
| >LoS/NLoS Information | O |  | 9.2.77 |  | YES | ignore |
| >Mobile TRP Location Information | O |  | 9.2.88 |  | YES | ignore |
| **>Aggregated Positioning SRS Resource ID List** |  | *0..1* |  | Indicates the used SRS for positioning resources across aggregated carriers. | YES | ignore |
| **>>Aggregated Positioning SRS Resource ID Item** |  | 1..< *maxnoaggregatedPosSRS-Resources* > |  |  | - |  |
| >>>Positioning SRS Resource ID | M |  | INTEGER (0..63) |  |  |  |

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

<<<<<<<<<<<<<<<<<<< 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 |
| 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 |
| 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 |
| >Path Quality | O |  | Measurement Quality  9.2.43 |  | - |  |
| >Multiple UL-AoA | O |  | 9.2.71 |  | YES | ignore |
| >Path Power | O |  | UL SRS-RSRPP  9.2.72 |  | YES | ignore |

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

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

### 9.2.42 Time Stamp

This information element contains the time stamp.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
| System Frame Number | M |  | INTEGER(0..1023) |  | - |  |
| CHOICE *Slot Index* | M |  |  |  | - |  |
| *>SCS-15* |  |  | INTEGER(0..9) |  |  |  |
| *>SCS-30* |  |  | INTEGER(0..19) |  |  |  |
| *>SCS-60* |  |  | INTEGER(0..39) |  |  |  |
| *>**SCS-120* |  |  | INTEGER(0..79) |  |  |  |
| Measurement time | O |  | Relative Time 1900  9.2.36 |  | - |  |
| Symbol Index | O |  | INTEGER(0..13) | Applicable to UL RSCP measurement only | YES | Ignore |

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

### 9.2.43 Measurement Quality

This information element contains the TRP’s best estimate of the quality of the measurement.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
| CHOICE *Measurement Quality* | M |  |  |  | - |  |
| *>Timing Measurement Quality* |  |  |  | Corresponds to information provided in *NR-TimingQuality* IE as defined in TS 37.355 [14] |  |  |
| >>Measurement Quality | M |  | INTEGER(0..31) |  | - |  |
| >>Resolution | M |  | ENUMERATED(0.1m, 1m, 10m, 30m, …) |  | - |  |
| *>Angle Measurement Quality* |  |  |  |  |  |  |
| >>Azimuth Quality | M |  | INTEGER(0..255) |  | - |  |
| >>Zenith Quality | O |  | INTEGER(0..255) |  | - |  |
| >>Resolution | M |  | ENUMERATED (0.1deg, …) |  | - |  |
| *>Phase Quality* |  |  |  | Corresponds to information provided in NR-PhaseQuality IE as defined in TS 37.355 [14]. | YES | Ignore |
| >>Phase Quality Index | M |  | INTEGER(0..179) |  | - |  |
| >>Phase Quality Resolution | M |  | ENUMERATED (0.1deg, 1deg …) |  | - |  |

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

9.2.44 PRS Configuration

This information element contains the DL PRS configuration for the TRP.

| **IE/Group Name** | **Presence** | **Range** | **IE Type and Reference** | **Semantics Description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| **PRS Resource Set List** |  | 1 |  |  | - |  |
| **>PRS Resource Set Item** |  | *1..<maxnoofPRSresourceSet>* |  |  | - |  |
| >>PRS Resource Set ID | M |  | INTEGER(0..7) |  | - |  |
| >>Subcarrier Spacing | M |  | ENUMERATED(kHz15, kHz30, kHz60, kHz120, …) |  | - |  |
| >>PRS bandwidth | M |  | INTEGER(1..63) | 24,28,…,272 PRBs | - |  |
| >>Start PRB | M |  | INTEGER(0..2176) | Starting PRB to Point A | - |  |
| >>Point A | M |  | INTEGER (0..3279165) | NR ARFCN | - |  |
| >>Comb Size | M |  | ENUMERATED(2, 4, 6, 12, …) |  | - |  |
| >>CP Type | M |  | ENUMERATED(normal, extended, …) |  | - |  |
| >>Resource Set Periodicity | M |  | 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 Set Slot Offset | M |  | INTEGER(0..81919,…) |  | - |  |
| >>Resource Repetition Factor | M |  | ENUMERATED(rf1,rf2,rf4,rf6,rf8,rf16,rf32,…) |  | - |  |
| >>Resource Time Gap | M |  | ENUMERATED(tg1,tg2,tg4,tg8,tg16,tg32,…) |  | - |  |
| >>Resource Number of Symbols | M |  | ENUMERATED(n2,n4,n6,n12,…,n1) |  | - |  |
| **>>PRS Muting** | O |  |  |  | - |  |
| **>>>Option1** | O |  |  |  | - |  |
| >>>>Muting Pattern | M |  | DL-PRS Muting Pattern  9.2.56 | Muting pattern option 1 is used to mute the whole PRS resource set (within a period) | - |  |
| >>>>Muting Bit Repetition Factor | M |  | ENUMERATED(1,2,4,8,…) |  | - |  |
| **>>>Option2** | O |  |  |  | - |  |
| >>>>Muting Pattern | M |  | DL-PRS Muting Pattern  9.2.56 | Muting pattern option 2 is used to mute the selected repetition of the resource set (within the period) | - |  |
| >>PRS Resource Transmit Power | M |  | INTEGER(-60..50) |  | - |  |
| **>>PRS Resource List** |  | 1 |  | Corresponds to information provided in *NR-DL-PRS-Resource* contained in *NR-DL-PRS-Info* IE as defined in TS 37.355 [14] | - |  |
| **>>>PRS Resource Item** |  | *1..<maxnoofPRSresources>* |  |  | *-* |  |
| >>>>PRS Resource ID | M |  | INTEGER(0..63) |  | - |  |
| >>>>Sequence ID | M |  | INTEGER(0..4095) |  | - |  |
| >>>>RE Offset | M |  | INTEGER(0..11,…) |  | - |  |
| >>>>Resource Slot Offset | M |  | INTEGER(0..511) |  | - |  |
| >>>>Resource Symbol Offset | M |  | INTEGER(0..12) | This IE is ignored if the *Extended Resource Symbol Offset* IE is present. | - |  |
| >>>>CHOICE *QCL Info* | O |  |  |  |  |  |
| *>>>>>SSB* |  |  |  |  |  |  |
| >>>>>>NR PCI | M |  | INTEGER(0..1007) |  | - |  |
| >>>>>>SSB Index | O |  | INTEGER(0..63) |  | - |  |
| *>>>>>DL-PRS* |  |  |  |  |  |  |
| >>>>>>QCL Source PRS Resource Set ID | M |  | INTEGER(0..7) |  | - |  |
| >>>>>>QCL Source PRS Resource ID | O |  | INTEGER(0..63) | If it is absent, the QCL source PRS resource ID is the same as the PRS resource ID | - |  |
| >>>>Extended Resource Symbol Offset | O |  | INTEGER(0..13,...) |  | YES | ignore |
| >>Aggregated PRS Resource Set List | O |  | 9.2.x6 | Indicates the PRS Resource Set ID values linked for PRS bandwidth aggregation. | YES | ignore |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofPRSresourceSet | Maximum no of PRS resources set. Value is 8. |
| maxnoofPRSresource | Maximum no of PRS resources per PRS resource set. Value is 64. |

<<<<<<<<<<<<<<<<<<< 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 Duration  9.2.63 | 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 Information | 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 |
| >Path Quality | O |  | Measurement Quality  9.2.43 |  | - |  |
| >Multiple UL-AoA | O |  | 9.2.71 |  | - |  |
| >Path Power | O |  | UL SRS-RSRPP  9.2.72 |  | - |  |

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

<<<<<<<<<<<<<<<<<<< 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 Information  Second bit: Extended Additional Path List  Third bit: Additional Path Power  Fourth Bit: Multiple UL AoA of Additional Path  Fifth bit: LoS/NLoS Information  Sixth bit: TRP Rx TEG association for UL-TDOA  Seventh bit: TRP RxTxTEG-ID information for DL+UL positioning.  Eighth bit: SRS Resource Type  Ninth bit: Multiple Measurement Instances  Tenth bit: Mobile TRP location information  X-th bit: Aggregated SRS resources IDs used for joint UL positioning measurement.  Other bits reserved for future use. Value ‘1’ indicates ‘requested measurement characteristic’, Value ‘0’ indicates ‘not requested’. |

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

9.2.x1 Time Window Information SRS List

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| Time Window Information SRS List |  | 1 |  |  |
| **>Time Window Information SRS Item** |  | *1..<maxnoofTimeWindowSRS>* |  |  |
| >>Time Window Start |  | *1* |  |  |
| >>>System Frame Number | M |  | INTEGER(0..1023) |  |
| >>>Slot Number | M |  | INTEGER(0..79) |  |
| >>>Symbol Index | M |  | INTEGER(0..13) |  |
| >>CHOICE *Time Window Duration* | M |  |  |  |
| *>>>Symbols* |  |  |  |  |
| >>>>Duration in Symbols | M |  | ENUMERATED (1, 2, 4, 8, 12, …) |  |
| *>>>Slots* |  |  |  |  |
| >>>>Duration in Slots | M |  | ENUMERATED (1, 2, 4, 6, 8, 12, 16, …) |  |
| >>Time Window Type | M |  | ENUMERATED (single, periodic, …) |  |
| >>Time Window Periodicity | C-ifTimeWindowTypePeriodic |  | ENUMERATED (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, …) | Unit: Milli-seconds |

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

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofTimeWindowSRS | Maximum no of Time Window of SRS. Value is 16. |

9.2.x2 Time Window Information Measurement List

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

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

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

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofTimeWindowMeas | Maximum no of Time Window for measurement. Value is 16. |

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

9.2.x3 UL RSCP

This IE contains the UL Reference Signal Carrier Phase (RSCP) measurement.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| UL RSCP | M |  | INTEGER (0..3599) | TS 38.133 [16] |

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

9.2.x4 Positioning Validity Area Cell List

This IE is used to indicate the cells belong to the validity area.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **Positioning Validity Area Cell List** |  | 1 |  |  |
| >Positioning Validity Area Cell Item |  | *1 .. <maxnoVACell>* |  |  |
| >>NR CGI | M |  | 9.2.9 |  |
| >>NR PCI | O |  | INTEGER (0..1007) |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| *maxnoVACell* | Maximum no of cells in a Positioning Validity Area. Value is 32 |

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

### 9.2.x5 Aggregated Positioning SRS Resource Set List

This information element is used to indicate the aggregated Positioning SRS Resource Set List.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **Aggregated SRS Positioning Resource Set List** |  | 1 |  |  |
| **>Aggregated SRS Positioning Resource Set Item** |  | *1.. < maxnoaggregatedPosSRS-ResourceSets>* |  |  |
| >>Point A | M |  | INTEGER (0..3279165) | NR ARFCN |
| >>NR PCI | O |  | INTEGER(0..1007) |  |
| >>Positioning SRS Resource Set ID | M |  | INTEGER(0..15) |  |

| **Range bound** | **Explanation** |
| --- | --- |
| maxnoaggregatedPosSRS-ResourceSets | Maximum no of aggregated SRS Positioning Resource Sets. Value is 48. |

### 9.2.x6 Aggregated PRS Resource Set List

This information element is used to indicate the aggregated PRS Resource Set List.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **Aggregated PRS Resource Set List** |  | 1 |  |  |
| **>Aggregated Positioning PRS Resource Set Item** |  | *1.. < maxnoAggPosPRSResourceSets >* |  |  |
| >>Point A | M |  | INTEGER (0..3279165) | NR ARFCN |
| >>PRS Resource Set ID | M |  | INTEGER(0..7) |  |

| **Range bound** | **Explanation** |
| --- | --- |
| maxnoAggPosPRSResourceSets | Maximum no of PRS resource sets aggregated. Value is 3. |

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

9.2.x7 Validity Area Specific SRS Information

This IE contains the validity area specific SRS Information when area-specific SRS is requested.

| **IE/Group Name** | **Presence** | **Range** | **IE Type and Reference** | **Semantics Description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| 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 |

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

### 9.2.x8 Requested SRS Preconfiguration List

This information element is used to indicate the requested SRS Preconfiguration List.

| **IE/Group Name** | **Presence** | **Range** | **IE Type and Reference** | **Semantics Description** |
| --- | --- | --- | --- | --- |
| **Requested SRS Preconfiguration List** |  | 1 |  |  |
| **>Requested SRS Preconfiguration Item** |  | 1..< *maxnoPreconfiguredSRS* > |  |  |
| >>Requested SRS Transmission Characteristics | M |  | 9.2.27 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoPreconfiguredSRS | Maximum no of preconfigured SRS. Value is 16. |

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

### 9.2.x9 SRS Preconfiguration List

This information element is used to indicate the SRS Preconfiguration List.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **SRS Preconfiguration List** |  | 1 |  |  |
| **>SRS Preconfiguration Item** |  | 1..< *maxnoPreconfiguredSRS*> |  |  |
| >>SRS Configuration | M |  | 9.2.28 |  |
| >>Positioning Validity Area Cell List | M |  | 9.2.x4 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoPreconfiguredSRS | Maximum no of preconfigured SRS. Value is 16. |

<<<<<<<<<<<<<<<<<<< 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,

SRSReservationType,

RequestedSRSPreconfiguration-List,

SRSPreconfiguration-List

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-SRSReservationType,

id-SRSNewCellIdentity,

id-RequestedSRSPreconfiguration-List,

id-SRSPreconfiguration-List

<<<<<<<<<<<<<<<<<<< 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 }|

{ ID id-RequestedSRSPreconfiguration-List CRITICALITY ignore TYPE RequestedSRSPreconfiguration-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}|

{ ID id-SRSPreconfiguration-List CRITICALITY ignore TYPE SRSPreconfiguration-List 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-SRSReservationType CRITICALITY ignore TYPE SRSReservationtType PRESENCE mandatory}|

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

...

}

<<<<<<<<<<<<<<<<<<< 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,

maxnoPreconfiguredSRS,

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-Information,

id-PosSRSResourceSet-Aggregation-List,

id-ReportingGranularitykminus1,

id-ReportingGranularitykminus2,

id-SymbolIndex,

id-TimingReportingGranularityFactorExtended,

id-PosValidityAreaCellList,

id-PRSBWAggregationRequestInfo,

id-AggregatedPosSRSResourceID-List,

id-AggregatedPRSResourceSetList,

id-TRPPhaseQuality,

id-ValidityAreaSpecificSRSInformation

<<<<<<<<<<<<<<<<<<< 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-Information ::= 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 },

...

}

<<<<<<<<<<<<<<<<<<< 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 >>>>>>>>>>>

PRSBWAggregationRequestInfo ::= 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-PRSBWAggregationRequestInfo CRITICALITY ignore EXTENSION PRSBWAggregationRequestInfo 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-ReportingGranularitykminus1 CRITICALITY ignore TYPE ReportingGranularitykminus1AdditionalPath PRESENCE mandatory}|

{ID id-ReportingGranularitykminus2 CRITICALITY ignore TYPE ReportingGranularitykminus2AdditionalPath PRESENCE mandatory},

...

}

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

ReportCharacteristics ::= ENUMERATED {

onDemand,

periodic,

...

}

ReportingGranularitykminus1 ::= INTEGER(0..3940097)

ReportingGranularitykminus2 ::= INTEGER(0..7880193)

ReportingGranularitykminus1AdditionalPath ::= INTEGER(0..32701)

ReportingGranularitykminus2AdditionalPath ::= INTEGER(0..65401)

<<<<<<<<< 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-Information CRITICALITY ignore EXTENSION Bandwidth-Aggregation-Request-Information PRESENCE optional }|

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

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

...

}

ResourceMapping ::= SEQUENCE {

startPosition INTEGER (0..13),

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

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

...

}

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

...

}

RequestedSRSPreconfiguration-List ::= SEQUENCE (SIZE (1.. maxnoPreconfiguredSRS)) OF RequestedSRSPreconfiguration-Item

RequestedSRSPreconfiguration-Item ::= SEQUENCE {

requestedSRSTransmissionCharacteristics RequestedSRSTransmissionCharacteristics,

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

...

}

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

...

}

-- 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 >>>>>>>>>>>

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

SRSPreconfiguration-List ::= SEQUENCE (SIZE (1.. maxnoPreconfiguredSRS)) OF SRSPreconfiguration-Item

SRSPreconfiguration-Item ::= SEQUENCE {

sRSConfiguration SRSConfiguration,

posValidityAreaCellList PosValidityAreaCellList,

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

...

}

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

...

}

<<<<<<<<<<<<<<<<<<< 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(-2..-1, ...)

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

TimeWindowInformation-Measurement-Item ::= SEQUENCE {

timeWindowDurationMeasurement TimeWindowDurationMeasurement,

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

timeWindowPeriodicityMeasurement TimeWindowPeriodicityMeasurement OPTIONAL,

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

...

}

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, ...},

timeWindowPeriodicitySRS TimeWindowPeriodicitySRS OPTIONAL,

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-PRSBWAggregationRequestInfo CRITICALITY ignore EXTENSION PRSBWAggregationRequestInfo 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 },

...

}

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

-- V

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

ValidityAreaSpecificSRSInformation ::= SEQUENCE {

transmissionCombPos TransmissionCombPos OPTIONAL,

resourceMapping ResourceMapping OPTIONAL,

freqDomainShift INTEGER (0..268) OPTIONAL,

c-SRS INTEGER (0..63) OPTIONAL,

resourceTypePos ResourceTypePos OPTIONAL,

sequenceIDPos INTEGER (0..65535) OPTIONAL,

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

...

}

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

...

}

<<<<<<<<<<<<<<<<<<< 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

maxnoPreconfiguredSRS 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-Information ProtocolIE-ID ::= xx1

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

id-ReportingGranularitykminus1 ProtocolIE-ID ::= xx3

id-ReportingGranularitykminus2 ProtocolIE-ID ::= xx4

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-SRSReservationType ProtocolIE-ID ::= x11

id-PRSBWAggregationRequestInfo 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-ValidityAreaSpecificSRSInformation ProtocolIE-ID ::= x23

id-RequestedSRSPreconfiguration-List ProtocolIE-ID ::= x24

id-SRSPreconfiguration-List ProtocolIE-ID ::= x25

END

-- ASN1STOP

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