**3GPP TSG-RAN WG3 Meeting #114-e R3-21xxxx**

**E-meeting, 1-11 Nov 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **38.455** | **CR** | **0046** | **rev** | **1** | **Current version:** | **16.5.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **x** |

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|  |
| ***Title:***  | ASN.1 correction and alignement in tabular |
|  |  |
| ***Source to WG:*** | Huawei, Ericsson |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** | NR\_POS-Core  |  | ***Date:*** | 2021-10-20 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | A number of list IEs in the tabular are not aligned with the ASN.1. For example, the Measurement Quantities IE in the E-CID Measurement Initiation Request message reads:9.1.1.1 E-CID MEASUREMENT INITIATION REQUEST

|  |  |  |  |
| --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference |
| Message Type | M |  | 9.2.3 |
| NRPPa Transaction ID | M |  | 9.2.4 |
| LMF UE Measurement ID | M |  | INTEGER (1..15 ,…,256) |
| Report Characteristics | M |  | ENUMERATED (OnDemand, Periodic,…) |
| Measurement Periodicity | C-ifReportCharacteristicsPeriodic |  | ENUMERATED (120ms, 240ms, 480ms, 640ms, 1024ms, 2048ms, 5120ms, 10240ms, 1min, 6min, 12min, 30min, 60min,…, 20480ms, 40960ms) |
| **Measurement Quantities** |  | *1 .. <maxnoMeas>* |  |
| >Measurement Quantities Item | M |  | ENUMERATED (Cell-ID, Angle of Arrival, Timing Advance Type 1, Timing Advance Type 2, RSRP, RSRQ,…, SS-RSRP, SS-RSRQ, CSI-RSRP, CSI-RSRQ, NR Angle of Arrival) |
| Other-RAT Measurement Quantities |  | *0 .. <maxnoMeas>* |  |
| >Other-RAT Measurement Quantities Item | M |  | ENUMERATED (GERAN, UTRAN,…, NR, EUTRA) |
| WLAN Measurement Quantities |  | *0 .. <maxnoMeas>* |  |
| >WLAN Measurement Quantities Item | M |  | ENUMERATED (WLAN, ...) |

While in the ASN.1, the measurement quantitie IE has the following content:E-CIDMeasurementInitiationRequest-IEs NRPPA-PROTOCOL-IES ::= { { ID id-LMF-UE-Measurement-ID CRITICALITY reject TYPE UE-Measurement-ID 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-MeasurementQuantities CRITICALITY reject TYPE MeasurementQuantities PRESENCE mandatory}| { ID id-OtherRATMeasurementQuantities CRITICALITY ignore TYPE OtherRATMeasurementQuantities PRESENCE optional}| { ID id-WLANMeasurementQuantities CRITICALITY ignore TYPE WLANMeasurementQuantities PRESENCE optional}, ...}*-- Unrelated content ommited --*MeasurementQuantities ::= SEQUENCE (SIZE (1.. maxNoMeas)) OF ProtocolIE-Single-Container { {MeasurementQuantities-ItemIEs} }MeasurementQuantities-ItemIEs NRPPA-PROTOCOL-IES ::= { { ID id-MeasurementQuantities-Item CRITICALITY reject TYPE MeasurementQuantities-Item PRESENCE mandatory}}MeasurementQuantities-Item ::= SEQUENCE { measurementQuantitiesValue MeasurementQuantitiesValue, iE-Extensions ProtocolExtensionContainer { { MeasurementQuantitiesValue-ExtIEs} } OPTIONAL, ...}MeasurementQuantitiesValue-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= { ...}MeasurementQuantitiesValue ::= ENUMERATED { cell-ID, angleOfArrival, timingAdvanceType1, timingAdvanceType2, rSRP, rSRQ, ... , sS-RSRP, sS-RSRQ, cSI-RSRP, cSI-RSRQ, angleOfArrivalNR}Obviouly, the tabular and the ASN.1 are not aligned and the tabular should be corrected. There is a mix presence, optional or not, with the length of the list which was decided to avoid. Additionally, some of the IEs has the same name to its sub-IE. For example:OTDOA-Information-Type-Item ::= SEQUENCE { oTDOA-Information-Type-Item OTDOA-Information-Item, iE-Extensions ProtocolExtensionContainer { { OTDOA-Information-Type-ItemExtIEs} } OPTIONAL, ...}Obviously, the sub-IE of *oTDOA-Information-Type-Item* has the same name to *OTDOA-Information-Type-Item* IE. It should be corrected to *oTDOA-Information-Item* |
| ***R3-20*** |  |
| ***Summary of change:*** | 1. Correct the presentation of lists in the tabular.
2. Correct the name of the IEs in the ASN.1

Impact assessment towards the previous version of the specification (same release): This CR has isolated impact with the previous version of the specification (same release).The impact can be considered isolated because the change only affects the tabular presentations and the name representation in the ASN.1.The change is Backward compatible |
|  |  |
| ***Consequences if not approved:*** | The tabular and the ASN.1 are not aligned. |
|  |  |
| ***Clauses affected:*** | 9.1.1.1, 9.1.1.7, 9.2.5, 9.2.13, 9.2.14, 9.2.15, 9.2.28, 9.2.44, 9.2.54, 9.2.58 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **x** |  |  Other core specifications  | TS/TR 38.473 CR  |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Rev. formatting quantities and items IEs in bold |

<<<<<<<<<<<<<<<<<<<< Changes Begin >>>>>>>>>>>>>>>>>>>>

#### 9.1.1.1 E-CID MEASUREMENT INITIATION REQUEST

This message is sent by LMF to initiate E-CID measurements.

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 UE Measurement ID | M |  | INTEGER (1..15 ,…,256) |  | YES | reject |
| 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) | The codepoint 60min applies only for ng-eNB. | YES | reject |
| **Measurement Quantities** |  | *1*  |  |  | EACH | reject |
| **> Measurement Quantities Item** |  | *1..<maxnoMeas>* |  |  |  |  |
| >>Measurement Quantities Value | M |  | ENUMERATED (Cell-ID, Angle of Arrival, Timing Advance Type 1, Timing Advance Type 2, RSRP, RSRQ,…, SS-RSRP, SS-RSRQ, CSI-RSRP, CSI-RSRQ, NR Angle of Arrival) |  | - | - |
| **Other-RAT Measurement Quantities** |  | *0 .. 1* |  |  | EACH | ignore |
| >**Other-RAT Measurement Quantities Item** |  | *0 .. <maxnoMeas>* |  |  |  |  |
| >>Other-RAT Measurement Quantities Value | M |  | ENUMERATED (GERAN, UTRAN,…, NR, EUTRA) |  |  |  |
| **WLAN Measurement Quantities** |  | *0 .. 1* |  |  | EACH | ignore |
| **> WLAN Measurement Quantities Item** |  | *0 .. <maxnoMeas>* |  |  |  |  |
| >>WLAN Measurement Quantities Value | M |  | ENUMERATED (WLAN, ...) |  | - |  |

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| Range bound | Explanation |
| maxnoMeas | Maximum no. of measured quantities that can be configured and reported with one message. Value is 64. |

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

<<<<<<<<<<<<<<<<<<<< Unchanged Text Omitted >>>>>>>>>>>>>>>>>>>>

#### 9.1.1.7 OTDOA INFORMATION REQUEST

This message is sent by LMF to request OTDOA 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 |  | - |  |
| **OTDOA Information Type** |  | *1*  |  |  | EACH | reject |
| **> OTDOA Information Type Item** |  | *1 .. <maxnoOTDOAtypes>* |  |  |  |  |
| >>OTDOA Information Item  | M |  | ENUMERATED (pci, cellid, tac, earfcn, prsBandwidth, prsConfigIndex, cpLength, noDlFrames, noAntennaPorts, sFNInitTime, nG-RANAccessPointPosition, prsmutingconfiguration, prsid, tpid, tpType, crsCPlength, dlBandwidth, multipleprsConfigurationsperCell, prsOccasionGroup, prsFrequencyHoppingConfiguration, …,tddConfig) |  | - | - |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoOTDOAtypes | Maximum no. of OTDOA information types that can be requested and reported with one message. Value is 63. |

<<<<<<<<<<<<<<<<<<<< Unchanged Text Omitted >>>>>>>>>>>>>>>>>>>>

#### 9.2.5 E-CID Measurement Result

The purpose of the E-CID Measurement Result information element is to provide the E-CID measurement result.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
| Serving Cell ID | M |  | NG-RAN CGI9.2.6 | NG-RAN Cell Identifier of the serving cell | - |  |
| Serving Cell TAC | M |  | TAC9.2.11 | Tracking Area Code of the serving cell | - |  |
| NG-RAN Access Point Position | O |  | 9.2.10 | The configured estimated geographical position of the antenna of the cell.If the *Geographical Coordinates* IE is used, the *NG-RAN Access Point Position* IE shall be ignored. | - |  |
| **Measured Results** |  | *0 .. 1* |  | Measurement results of the serving RAT. | - |  |
| **>CHOICE Measured Results Value** |  | *1 ..<maxnoMeas>* |  |  |  |  |
|  |  |  |  |  |  |  |
| >>Value Angle of Arrival EUTRA | M |  | INTEGER (0..719) | According to mapping in TS 36.133 [9] | - |  |
| >>Value Timing Advance Type 1 EUTRA | M |  | INTEGER (0..7690) | According to mapping in TS 36. 214 [17] | - |  |
| >>Value Timing Advance Type 2 EUTRA | M |  | INTEGER (0..7690) | According to mapping in TS 36. 214 [17] | - |  |
| >>**Result RSRP EUTRA** |  | *1*  |  |  | - |  |
| >>> **Result RSRP EUTRA Item** |  | *1 .. <maxCellReport>*  |  |  |  |  |
| >>>> PCI EUTRA | M |  | INTEGER (0..503) | Physical Cell Identifier of the reported E-UTRA cell | - |  |
| >>>>EARFCN | M |  | INTEGER (0.. 262143, …) | Corresponds to NDL for FDD and NDL/UL for TDD in ref. TS 36.104 [7] | - |  |
| >>>> CGI EUTRA | O |  | 9.2.7 | Cell Global Identifier of the reported E-UTRA cell | - |  |
| >>>>Value RSRP EUTRA | M |  | INTEGER (0..97, …) |  | - |  |
| >>**Result RSRQ EUTRA** |  | *1*  |  |  | - |  |
| **>>>Result RSRQ EUTRA Item** |  | *1 . <maxCellReport>* |  |  |  |  |
| >>>> PCI EUTRA | M |  | INTEGER (0..503) | Physical Cell Identifier of the reported E-UTRA cell | - |  |
| >>>>EARFCN | M |  | INTEGER (0..262143, …) | Corresponds to NDL for FDD and NDL/UL for TDD in ref. TS 36.104 [7] | - |  |
| >>>> CGI EUTRA | O |  | 9.2.7 | Cell Global Identifier of the reported E-UTRA cell | - |  |
| >>>>Value RSRQ EUTRA | M |  | INTEGER (0..34, …) |  | - |  |
| **>>Result SS-RSRP** |  | *1*  |  |  | YES | ignore |
| **>>> Result SS-RSRP Item** |  | *1 .. <maxCellReportNR>* |  |  |  |  |
| >>>>NR PCI | M |  | INTEGER (0..1007) |  | - |  |
| >>>>NR ARFCN | M |  | INTEGER (0..3279165) |  | - |  |
| >>>>NR CGI | O |  | 9.2.9 |  | - |  |
| >>>>Value SS-RSRP Cell | O |  | INTEGER (0..127) | SS-RSRP measurement aggregated at cell level | - |  |
| **>>>>SS-RSRP per SSB Resource** |  | *0 .. 1* |  |  | - |  |
| **>>>>>SS-RSRP per SSB Resource Item** |  | *1 .. <maxIndexesReport>* |  |  |  |  |
| >>>>>>SSB Index | M |  | INTEGER (0..63) |  | - |  |
| >>>>>>Value SS-RSRP | M |  | INTEGER (0..127) | SS-RSRP measurement per SSB resource | - |  |
| **>>Result SS-RSRQ** |  | *1*  |  |  | YES | ignore |
| **>>> ResultSS-RSRQ-Item** |  | *1 .. <maxCellReportNR>* |  |  |  |  |
| >>>>NR PCI | M |  | INTEGER (0..1007) |  | - |  |
| >>>>NR ARFCN | M |  | INTEGER (0..3279165) |  | - |  |
| >>>>NR CGI | O |  | 9.2.9 |  | - |  |
| >>>>Value SS-RSRQ Cell | O |  | INTEGER (0..127) | SS-RSRQ measurement aggregated at cell level | - |  |
| **>>>>SS-RSRQ per SSB Resource** |  | *0 .. 1* |  |  | - |  |
| **>>>>>SS-RSRQ PerSSB Resource Item** |  | *1 .. <maxIndexesReport>* |  |  |  |  |
| >>>>>>SSB Index | M |  | INTEGER (0..63) |  | - |  |
| >>>>>>Value SS-RSRQ | M |  | INTEGER (0..127) | SS-RSRQ measurement per SSB resource | - |  |
| **>>Result CSI-RSRP** |  | *1*  |  |  | YES | ignore |
| **>>>Result CSI-RSRP Item** |  | *1 .. <maxCellReportNR>* |  |  |  |  |
| >>>>NR PCI | M |  | INTEGER (0..1007) |  | - |  |
| >>>>NR ARFCN | M |  | INTEGER (0..3279165) |  | - |  |
| >>>>NR CGI | O |  | 9.2.9 |  | - |  |
| >>>>Value CSI-RSRP Cell | O |  | INTEGER (0..127) | CSI-RSRP measurement aggregated at cell level | - |  |
| **>>>>CSI-RSRP per CSI-RS Resource** |  | *0 .. 1* |  |  | - |  |
| **>>>>>CSI-RSRP per CSI-RS Resource Item** |  | *1.. <maxIndexesReport>* |  |  |  |  |
| >>>>>>CSI-RS Index | M |  | INTEGER (0..95) |  | - |  |
| >>>>>>Value CSI-RSRP | M |  | INTEGER (0..127) | CSI-RSRP measurement per CSI-RS resource | - |  |
| **>>Result CSI-RSRQ** |  | *1*  |  |  | YES | ignore |
| **>>>Result CSI-RSRQ Item** |  | *1 .. <maxCellReportNR>* |  |  |  |  |
| >>>>NR PCI | M |  | INTEGER (0..1007) |  | - |  |
| >>>>NR ARFCN | M |  | INTEGER (0..3279165) |  | - |  |
| >>>>NR CGI | O |  | 9.2.9 |  | - |  |
| >>>>Value CSI-RSRQ Cell | O |  | INTEGER (0..127) | CSI-RSRQ measurement aggregated at cell level | - |  |
| **>>>>CSI-RSRQ per CSI-RS Resource** |  | *0 .. 1* |  |  | - |  |
| **>>>>> CSI-RSRQ per CSI-RS Resource Item** |  | *1 .. <maxIndexesReport>* |  |  |  |  |
| >>>>>>CSI-RS Index | M |  | INTEGER (0..95) |  | - |  |
| >>>>>>Value CSI-RSRQ | M |  | INTEGER (0..127) | CSI-RSRQ measurement per CSI-RS resource | - |  |
| >>Angle of Arrival NR | M |  | UL Angle of Arrival9.2.38 |  | YES | ignore |
| Geographical Coordinates | O |  | 9.2.46 |  | YES | ignore |

<<<<<<<<<<<<<<<<<<<< Unchanged Text Omitted >>>>>>>>>>>>>>>>>>>>

#### 9.2.13 Other-RAT Measurement Result

The purpose of the Other-RAT Measurement Result information element is to provide the measurement results of RATs other than the serving RAT.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
| **Other-RAT Measured Results** |  | *1*  |  |  |  |  |
| >CHOICE *Other-RAT Measured Results Value* |  | *1.. <maxnoMeas>* |  |  |  |  |
|  |  |  |  |  |  |  |
| >>**Result GERAN** |  | *1.*  |  |  |  |  |
| **>>>Result GERAN Item** |  | *1..<maxGERANMeas>* |  |  |  |  |
| >>>>ARFCN of BCCH | M |  | INTEGER (0..1023, ...) |  |  |  |
| >>>>Physical CellId GERAN | M |  | INTEGER (0..63, ...) |  |  |  |
| >>>>RSSI | M |  | INTEGER (0..63, ...) |  |  |  |
| >>**Result UTRAN** |  | *1*  |  |  |  |  |
| **>>>Result UTRAN Item** |  | *1..<maxUTRANMeas>*  |  |  |  |  |
| >>>>UARFCN | M |  | INTEGER (0..16383, ...) |  |  |  |
| >>>>CHOICE Physical CellId UTRA | M |  |  |  |  |  |
| >>>>>Physical CellId UTRA FDD | M |  | INTEGER (0..511, ...) |  |  |  |
| >>>>>Physical CellId UTRA TDD | M |  | INTEGER (0..127, ...) |  |  |  |
| >>>>UTRA RSCP | O |  | INTEGER (-5..91, ...) |  |  |  |
| >>>>UTRA EcNo | O |  | INTEGER (0..49, ...) | This IE applies to FDD only. |  |  |
| **>>Result NR** |  | *1*  |  |  | YES | ignore |
| **>>>Result NR Item** |  | *1..<maxNRMeas>* |  |  |  |  |
| >>>>NR PCI | M |  | INTEGER (0..1007) |  | - |  |
| >>>>NR ARFCN | M |  | INTEGER (0..3279165) |  | - |  |
| >>>>SS-RSRP Cell | O |  | INTEGER (0..127) | SS-RSRP measurement aggregated at cell level | - |  |
| >>>>SS-RSRQ Cell | O |  | INTEGER (0..127) | SS-RSRQ measurement aggregated at cell level | - |  |
| **>>>>SS-RSRP per SSB Resource**  |  | *0 .. 1* |  |  | - |  |
| **>>>>>ResultSS RSRP PerSSB Item** |  | *1..<maxIndexesReport)>* |  |  |  |  |
| >>>>>>SSB Index | M |  | INTEGER (0..63) |  | - |  |
| >>>>>>Value SS-RSRP | M |  | INTEGER (0..127) | SS-RSRP measurement per SSB resource | - |  |
| **>>>>SS-RSRQ per SSB Resource**  |  | *0 .. 1* |  |  | - |  |
| **>>>>>Result SS RSRQ PerSSB Item** |  | *1..<maxIndexesReport>* |  |  |  |  |
| >>>>>>SSB Index | M |  | INTEGER (0..63) |  | - |  |
| >>>>>>Value SS-RSRQ | M |  | INTEGER (0..127) | SS-RSRQ measurement per SSB resource | - |  |
| >>>>CGI NR  | O |  | 9.2.9 | Cell Global Identifier of the reported NR cell | - |  |
| **>>Result EUTRA** |  | *1*  |  |  | YES | ignore |
| **>>>Result EUTRA Item** |  | *1..<maxEUTRAMeas>* |  |  |  |  |
| >>>>PCI EUTRA | M |  | INTEGER (0..503) |  | - |  |
| >>>>EARFCN | M |  | INTEGER (0..262143) |  | - |  |
| >>>>RSRP EUTRA | O |  | INTEGER (0..97) |  | - |  |
| >>>>RSRQ EUTRA | O |  | INTEGER (0..34) |  | - |  |
| >>>>CGI EUTRA | O |  | 9.2.7 | Cell Global Identifier of the reported E-UTRA cell | - |  |

<<<<<<<<<<<<<<<<<<<< Unchanged Text Omitted >>>>>>>>>>>>>>>>>>>>

#### 9.2.14 WLAN Measurement Result

The WLAN Measurement Result information element provides the WLAN measurement results.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| **WLAN Measured Results** |  | *1* |  |  |
| **>WLAN Measurement Result Item** |  | *1.. <maxnoMeas>* |  |  |
| >>WLAN RSSI | M |  | INTEGER (0..141, ...) |  |
| >>SSID | O |  | OCTET STRING (SIZE(1..32)) | Includes the SSID field as defined in subclause 8.4.2.2 of IEEE 802.11™ [11]. |
| >>BSSID | M |  | OCTET STRING (SIZE(6)) | Includes the BSSID field as defined in subclause 8.2.4.3.4 of IEEE 802.11™ [11]. |
| >>HESSID | O |  | OCTET STRING (SIZE(6)) | Includes the HESSID field as defined in subclause 8.4.2.94 of IEEE 802.11™ [11]. |
| >>Operating Class | O |  | INTEGER (0..255) | Indicates the WLAN Operating Class as defined in IEEE 802.11™ [11]. |
| >>Country Code |  |  | ENUMERATED (unitedStates, europe, japan, global, …) | Indicates the WLAN country code as defined in IEEE 802.11™ [11]. |
| **>>WLAN Channel List** |  | *0..1* |  |  |
| **>>>WLAN Channel List Item** |  | *1..<maxWLANchannels>* |  |  |
| >>>>WLAN Channel |  |  | INTEGER (0..255) | Indicates the WLAN channel number as defined in IEEE 802.11™ [11]. |
| >>WLAN Band | O |  | ENUMERATED (band2dot4, band5, …) | Indicates the WLAN band as defined in IEEE 802.11™ [11]. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoMeas | Maximum no. of measured quantities that can be configured and reported with one message. Value is 63. |
| maxWLANchannels | Maximum no. of WLAN channels that can be reported within one list. Value is 16. |

<<<<<<<<<<<<<<<<<<<< Unchanged Text Omitted >>>>>>>>>>>>>>>>>>>>

#### 9.2.15 OTDOA Cell Information

This IE contains OTDOA information of a cell/TP.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned criticality |
| **CHOICE *OTDOA Cell Information item*** |  | *1 <maxnoOTDOAtypes>* |  |  |  |  |
|  |  |  |  |  |  |  |
| >PCI EUTRA | M |  | INTEGER (0..503, …) | Physical Cell ID of the reported E-UTRA cell. |  |  |
| >CGI EUTRA | M |  | 9.2.7 | Cell Global Identifier of the E-UTRA cell. |  |  |
| >TAC | M |  | 9.2.11 | Tracking Area Code |  |  |
| >EARFCN | M |  | INTEGER (0.. 262143, …) | Corresponds to NDL for FDD and NDL/UL for TDD in ref. TS 36.104 [7]. |  |  |
| >PRS Bandwidth EUTRA | M |  | ENUMERATED (bw6, bw15, bw25, bw50, bw75, bw100, ...) | Transmission bandwidth of PRS |  |  |
| >PRS Configuration Index EUTRA | M |  | INTEGER (0..4095, ...) | PRS Configuration Index, ref TS 36.211 [10] |  |  |
| >CP Length EUTRA | M |  | ENUMERATED (Normal, Extended, ...) | Cyclic prefix length of the PRS |  |  |
| >Number of DL Frames EUTRA | M |  | ENUMERATED (sf1, sf2, sf4, sf6, …)  | Number of consecutive downlink subframes NPRS with PRS, ref TS 36.211 [10] |  |  |
| >Number of Antenna Ports EUTRA | M |  | ENUMERATED(n1-or-n2, n4, …) | Number of used antenna ports, where n1-or-n2 corresponds to 1 or 2 ports, n4 corresponds to 4 ports |  |  |
| >SFN Initialisation Time EUTRA | M |  | BIT STRING (64) | Time in seconds relative to 00:00:00 on 1 January 1900 (calculated as continuous time without leap seconds and traceable to a common time reference) where binary encoding of the integer part is in the first 32 bits and binary encoding of the fraction part in the last 32 bits. The fraction part is expressed with a granularity of 1 /2\*\*32 second. |  |  |
| >NG-RAN Access Point Position | M |  | 9.2.10 | The configured estimated geographical position of the antenna of the cell/TP. |  |  |
| >PRS Muting Configuration EUTRA | M |  | 9.2.16  | The configuration of positioning reference signals muting pattern. |  |  |
| >PRS-ID EUTRA | M |  | INTEGER (0..4095, …) | PRS ID, ref TS 36.211 [10]. |  |  |
| >TP-ID EUTRA | M |  | INTEGER (0..4095, …) | Identity of the transmission point. This IE together with the *PCI* and/or *PRS-ID* may be used to identify the transmission point in case the same physical cell ID is shared by multiple transmission points. |  |  |
| >TP Type EUTRA | M |  | ENUMERATED (prs-only-tp, …) | A TP which transmits PRS only. |  |  |
| >Number of DL Frames-Extended EUTRA | M |  | INTEGER (1..160, …) | Number of consecutive downlink subframes NPRS with PRS, ref TS 36.211 [10]. |  |  |
| >CRS CP Length EUTRA | M |  | ENUMERATED (Normal, Extended, ...) | Cyclic prefix length of the CRS. |  |  |
| >DL Bandwidth EUTRA | M |  | ENUMERATED (bw6, bw15, bw25, bw50, bw75, bw100, ...) | DL transmission bandwidth expressed in units of resource blocks NRB, ref TS 36.104 [7]. |  |  |
| >PRS Occasion Group EUTRA | M |  | ENUMERATED (og2, og4, og8, og16, og32, og64, og128, ...) | PRS occasion group in a PRS period, ref TS 36.211 [10]. |  |  |
| >PRS Frequency Hopping Configuration EUTRA | M |  | 9.2.17  | PRS frequency hopping configuration. |  |  |
| >TDD Configuration EUTRA | M |  | 9.2.18 | TDD specific physical channel configuration. | YES | ignore |
| >NR CGI | M |  | 9.2.9 | Cell Global Identifier of the NR cell. | YES | ignore |
| >SFN Initialisation Time NR | M |  | BIT STRING (64) | Time in seconds relative to 00:00:00 on 1 January 1900 (calculated as continuous time without leap seconds and traceable to a common time reference) where binary encoding of the integer part is in the first 32 bits and binary encoding of the fraction part in the last 32 bits. The fraction part is expressed with a granularity of 1 /2\*\*32 second. | YES | ignore |

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#### 9.2.28 SRS Configuration

This information element contains the SRS configuration configured by the NG-RAN node for the UE.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| **SRS Carrier List** |  | *1.* |  |  |
| **>SRS Carrier List Item** |  | *1..<maxnoSRS-Carriers>* |  |  |
| >>Point A | M |  | INTEGER (0..3279165) | NR ARFCN |
| **>>Uplink Channel BW-PerSCS-List** |  | *1.* |  | SCS-SpecificCarrier TS 38.331 [13] |
| **>>>SCS Specific Carrier** |  | *1. .<maxnoSCSs>* |  |  |
| >>>>Offset To Carrier | M |  | INTEGER(0..2199,…) | First usable RB to Point A in the number of PRBs |
| >>>>Subcarrier Spacing | M |  | ENUMERATED(kHz15, kHz30, kHz60, kHz120,…) |  |
| >>>>Carrier Bandwidth | M |  | INTEGER(1..275,…) |  |
| **>>Active UL BWP** | M |  |  | Only the configuration in the active UL BWP is needed. |
| >>>Location And Bandwidth | M |  | INTEGER(0..37949,…) | BWP TS 38.331 [13] |
| >>>Subcarrier Spacing | M |  | ENUMERATED(kHz15, kHz30, kHz60, kHz120,…) |  |
| >>>Cyclic Prefix | M |  | ENUMERATED(Normal, Extended) |  |
| >>>Tx Direct Current Location | M |  | INTEGER(0..3301,…) |  |
| >>>Shift7dot5kHz | O |  | ENUMERATED(true,…) |  |
| >>>SRS Config | M |  |  | *SRS-Config* as defined in TS 38.331 [13] |
| **>>>>SRS Resource List** |  | *0..<maxnoSRS-Resources>* |  |  |
| >>>>>SRS Resource | M |  | 9.2.29 | *SRS-Resource* as defined in TS 38.331 [13] |
| **>>>>Positioning SRS Resource List** |  | *0..<maxnoSRS-Resources>* |  |  |
| >>>>>Positioning SRS Resource | M |  | 9.2.30 | *SRS-PosResource-r16* as defined in TS 38.331 [13] |
| **>>>>SRS Resource Set List** |  | *0..<maxnoSRS-Resources>* |  |  |
| >>>>>SRS Resource Set | M |  | 9.2.31 | *SRS-ResourceSet* as defined in TS 38.331 [13] |
| **>>>>Positioning SRS Resource Set List** |  | *0..<maxnoSRS-Resources>* |  |  |
| >>>>>Positioning SRS Resource Set  | M |  | 9.2.32 | *SRS-PosResourceSet-r16* as defined in TS 38.331 [13] |
| >>NR PCI | O |  | INTEGER (0..1007) | Physical Cell ID of the cell that contains the SRS carrier |

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#### 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 |
| **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,…) |  |
| >>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,…) |  |
| >>PRS Muting | O |  |  |  |
| >>>Option1 | O |  |  |  |
| >>>>Muting Pattern | M |  | DL-PRS Muting Pattern9.2.56 | 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 Pattern9.2.56 | 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 |  | *NR-DL-PRS-Resource-r16* 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) |  |
| >>>> 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 |

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#### 9.2.54 SSB Information

This information element contains the SSB time/frequency information for the TRPs.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| **SSB Info List** |  | *1* |  |  |
| **>SSB Info Item** |  | *1…<maxNoSSBs>* |  |  |
| >>SSB Configuration | M |  | SSB Time/Frequency Configuration 9.2.55 |  |
| >> NR PCI | M |  | INTEGER (0..1007) |  |

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#### 9.2.58 NR-PRS Beam Information

This IE contains spatial direction information of the DL-PRS Resources.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **NR-PRS Beam Information** |  | *1*  |  |  |
| **>NR-PRS Beam Information Item** |  | *1.. < maxPRS-ResourceSets >* |  |  |
| >>PRS Resource Set ID | M |  | INTEGER (0..7) | The resource set in which the resources are associated with the angle. |
| **>>PRS Angle** |   | *1* |   |  |
| **>>>PRS Angle Item** |  | *1.. ..<* *maxPRS-ResourcesPerSet >* |  |  |
| >>>>NR PRS Azimuth | M |  | INTEGER (0..359) |  |
| >>>>NR PRS Azimuth fine | O |  | INTEGER (0..9) | Fine angles |
| >>>>NR PRS Elevation | O |  | INTEGER (0..180) |  |
| >>>>NR PRS Elevation fine | O |  | INTEGER (0..9) | Fine angles |
| **LCS to GCS Translation** |  | *0 .. 1* |  | If absent, the azimuth and elevation are provided in GCS. |
| **> LCS to GCS Translation Item** |  | *1..<maxnolcs-gcs-translation>* |  |  |
| >>Alpha | M |  | INTEGER (0..359) |  |
| >>Alpha-fine | O |  | INTEGER (0..9) | Fine angles |
| >>Beta | M |  | INTEGER (0..359) |  |
| >>Beta-fine | O |  | INTEGER (0..9) | Fine angles |
| >>Gamma | M |  | INTEGER (0..359) |  |
| >>Gamma-fine | O |  | INTEGER (0..9) | Fine angles |

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OTDOA-Information-Type ::= SEQUENCE (SIZE(1..maxnoOTDOAtypes)) OF ProtocolIE-Single-Container { { OTDOA-Information-Type-ItemIEs} }

OTDOA-Information-Type-ItemIEs NRPPA-PROTOCOL-IES ::= {

 { ID id-OTDOA-Information-Type-Item CRITICALITY reject TYPE OTDOA-Information-Type-Item PRESENCE mandatory},

 ...

}

OTDOA-Information-Type-Item ::= SEQUENCE {

 oTDOA-Information-Item OTDOA-Information-Item,

 iE-Extensions ProtocolExtensionContainer { { OTDOA-Information-Type-ItemExtIEs} } OPTIONAL,

 ...

}

OTDOA-Information-Type-ItemExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 ...

}

<<<<<<<<<<<<<<<<<<<< Unchanged Text Omitted >>>>>>>>>>>>>>>>>>>>

NR-PRS-Beam-InformationItem ::= SEQUENCE {

 pRSresourceSetID PRS-Resource-Set-ID,

 pRSAngle SEQUENCE (SIZE(1..maxPRS-ResourcesPerSet)) OF PRSAngleItem,

 iE-Extensions ProtocolExtensionContainer { { NR-PRS-Beam-InformationItem-ExtIEs} } OPTIONAL,

 ...

}

NR-PRS-Beam-InformationItem-ExtIEs NRPPA-PROTOCOL-EXTENSION ::= {

 ...

}

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