**3GPP TSG- Meeting # *Draft***

**Electronic Meeting, 17th – 28th August 2020**

|  |
| --- |
| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** |  | **rev** | **1** | **Current version:** |  |  |
|  |
| *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 | **X** | Radio Access Network | **X** | Core Network |  |

|  |
| --- |
|  |
| ***Title:***  |  Corrections on idle mode measurements |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | LTE\_euCA-Core |  | ***Date:*** | 06 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** |  |
|  | *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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | * Some parts of the idle mode measurements feature in Rel-15 are missing and need to be clarified. It is e.g. not clear how the UE should select what frequencies to measure or report for idle mode measurements. This is an issue since up to 8 frequencies can be included in the measurement configuration but only up to 3 frequencies can be included in the measurement results in Rel-15.
* The descriptions for *SIB5* and for *MeasResults*, which include definitions for idle mode measurements, are lacking this information. This makes it cumbersome to find the needed information for idle mode measurements.

  |
|  |  |
| ***Summary of change:*** | 5.6.20.2:* Note added that it is up to UE implementation how to prioritize frequencies to measure or report

6.3.1:* Description that *SIB5* contains information for idle mode measurements is added.

6.3.5:* Description that MeasResults covers results also for idle mode measurements is added.

**Impact analysis**Impacted functionality:Idle mode measurementsInter-operability:There are no inter-operability issues. |
|  |  |
| ***Consequences if not approved:*** | It is not clear how the UE should select what frequencies to measure or report for idle mode measurements. The descriptions of *SIB5* and *MeasResults* are incomplete. |
|  |  |
| ***Clauses affected:*** | 5.6.20.2, 6.3.1, 6.3.5 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 36.300 CR1305  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

*START OF CHANGE*

### 5.6.20 IDLE Mode Measurements

#### 5.6.20.1 General

This procedure specifies the measurements done by a UE in RRC\_IDLE or RRC\_INACTIVE when it has an IDLE mode measurement configuration and the storage of the available measurements by a UE in RRC\_IDLE, RRC\_INACTIVE and RRC\_CONNECTED.

#### 5.6.20.2 Initiation

While T331 is running, the UE shall:

1> perform the measurements in accordance with the following:

2> for each entry in *measIdleCarrierListEUTRA* within *VarMeasIdleConfig*:

3> if UE supports carrier aggregation between serving carrier and the carrier frequency and bandwidth indicated by *carrierFreq* and *allowedMeasBandwidth* within the corresponding entry;

4> perform measurements in the carrier frequency and bandwidth indicated by *carrierFreq* and *allowedMeasBandwidth* within the corresponding entry;

NOTE: The fields *s-NonIntraSearch* in *SystemInformationBlockType3* do not affect the UE measurement procedures in IDLE mode. How the UE performs measurements in IDLE mode is up to UE implementation as long as the requirements in TS 36.133 [16] are met for measurement reporting. UE is not required to perform idle measurements if the SIB2 does not contain *idleModeMeasurements*.

4> if the *measCellList* is included:

5> consider the serving cell and cells identified by each entry within the *measCellList* to be applicable for idle mode measurement reporting;

4> else:

5> consider the serving cell and up to *maxCellMeasIdle* strongest identified cells whose RSRP/RSRQ measurement results are above the value(s) provided in *qualityThreshold* (if any) to be applicable for idle mode measurement reporting;

4> store measurement results for cells applicable for idle mode measurement reporting within the *VarMeasIdleReport*;

NOTE X: How the UE prioritizes which frequencies to measure or report (in case it is configured with more frequencies than it can measure or report) is left to UE implementation.

3> else:

4> do not consider the carrier frequency to be applicable for idle mode measurement reporting;

1> if *validityArea* is configured in *VarMeasIdleConfig* and UE reselects to a serving cell whose physical cell identity does not match any entry in *validityArea* for the corresponding carrier frequency:

2> stop T331;

#### 5.6.20.3 T331 expiry or stop

The UE shall:

1> if T331 expires or is stopped:

2> release the *VarMeasIdleConfig*;

NOTE: It is up to UE implementation whether to continue IDLE mode measurements according to SIB5 configuration after T331 has expired or stopped.

*END OF CHANGE*

*START OF CHANGE*

### 6.3.1 System information blocks

[…]

#### – *SystemInformationBlockType5*

The IE *SystemInformationBlockType5* contains information relevant for inter-frequency cell re-selection (i.e. information about other E‑UTRA frequencies and inter-frequency neighbouring cells relevant for cell re-selection) and the idle mode measurement configuration in RRC\_IDLE or RRC\_INACTIVE. The IE includes cell re-selection parameters common for a frequency as well as cell specific re-selection parameters.

*SystemInformationBlockType5* information element

-- ASN1START

SystemInformationBlockType5 ::= SEQUENCE {

 interFreqCarrierFreqList InterFreqCarrierFreqList,

 ...,

 lateNonCriticalExtension OCTET STRING (CONTAINING SystemInformationBlockType5-v8h0-IEs) OPTIONAL,

 [[ interFreqCarrierFreqList-v1250 InterFreqCarrierFreqList-v1250 OPTIONAL, -- Need OR

 interFreqCarrierFreqListExt-r12 InterFreqCarrierFreqListExt-r12 OPTIONAL -- Need OR

 ]],

 [[ interFreqCarrierFreqListExt-v1280 InterFreqCarrierFreqListExt-v1280 OPTIONAL -- Need OR

 ]],

 [[ interFreqCarrierFreqList-v1310 InterFreqCarrierFreqList-v1310 OPTIONAL, -- Need OR

 interFreqCarrierFreqListExt-v1310 InterFreqCarrierFreqListExt-v1310 OPTIONAL -- Need OR

 ]],

 [[ interFreqCarrierFreqList-v1350 InterFreqCarrierFreqList-v1350 OPTIONAL, -- Need OR

 interFreqCarrierFreqListExt-v1350 InterFreqCarrierFreqListExt-v1350 OPTIONAL -- Need OR

 ]],

 [[ interFreqCarrierFreqListExt-v1360 InterFreqCarrierFreqListExt-v1360 OPTIONAL -- Need OR

 ]],

 [[ scptm-FreqOffset-r14 INTEGER (1..8) OPTIONAL -- Need OP

 ]],

 [[ interFreqCarrierFreqList-v1530 InterFreqCarrierFreqList-v1530 OPTIONAL, -- Need OR

 interFreqCarrierFreqListExt-v1530 InterFreqCarrierFreqListExt-v1530 OPTIONAL, -- Need OR

 measIdleConfigSIB-r15 MeasIdleConfigSIB-r15 OPTIONAL -- Need OR

 ]]

}

-- Late non critical extensions

SystemInformationBlockType5-v8h0-IEs ::= SEQUENCE {

 interFreqCarrierFreqList-v8h0 SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-v8h0 OPTIONAL, -- Need OP

 nonCriticalExtension SystemInformationBlockType5-v9e0-IEs OPTIONAL

}

SystemInformationBlockType5-v9e0-IEs ::= SEQUENCE {

 interFreqCarrierFreqList-v9e0 SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-v9e0 OPTIONAL, -- Need OR

 nonCriticalExtension SystemInformationBlockType5-v10j0-IEs OPTIONAL

}

SystemInformationBlockType5-v10j0-IEs ::= SEQUENCE {

 interFreqCarrierFreqList-v10j0 SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-v10j0 OPTIONAL, -- Need OR

 nonCriticalExtension SystemInformationBlockType5-v10l0-IEs OPTIONAL

}

SystemInformationBlockType5-v10l0-IEs ::= SEQUENCE {

 interFreqCarrierFreqList-v10l0 SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-v10l0 OPTIONAL, -- Need OR

 nonCriticalExtension SystemInformationBlockType5-v13a0-IEs OPTIONAL

}

SystemInformationBlockType5-v13a0-IEs ::= SEQUENCE {

 -- Late non critical extensions from REL-10 upto REL-12

 lateNonCriticalExtension OCTET STRING OPTIONAL, -- Need OR

 interFreqCarrierFreqList-v13a0 InterFreqCarrierFreqList-v13a0 OPTIONAL, -- Need OR

 -- Late non critical extensions from REL-13

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

InterFreqCarrierFreqList ::= SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo

InterFreqCarrierFreqList-v1250 ::= SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-v1250

InterFreqCarrierFreqList-v1310 ::= SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-v1310

InterFreqCarrierFreqList-v1350 ::= SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-v1350

InterFreqCarrierFreqList-v13a0 ::= SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-v1360

InterFreqCarrierFreqList-v1530 ::= SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-v1530

InterFreqCarrierFreqListExt-r12 ::= SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-r12

InterFreqCarrierFreqListExt-v1280 ::= SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-v10j0

InterFreqCarrierFreqListExt-v1310 ::= SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-v1310

InterFreqCarrierFreqListExt-v1350 ::= SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-v1350

InterFreqCarrierFreqListExt-v1360 ::= SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-v1360

InterFreqCarrierFreqListExt-v1530 ::= SEQUENCE (SIZE (1..maxFreq)) OF InterFreqCarrierFreqInfo-v1530

InterFreqCarrierFreqInfo ::= SEQUENCE {

 dl-CarrierFreq ARFCN-ValueEUTRA,

 q-RxLevMin Q-RxLevMin,

 p-Max P-Max OPTIONAL, -- Need OP

 t-ReselectionEUTRA T-Reselection,

 t-ReselectionEUTRA-SF SpeedStateScaleFactors OPTIONAL, -- Need OP

 threshX-High ReselectionThreshold,

 threshX-Low ReselectionThreshold,

 allowedMeasBandwidth AllowedMeasBandwidth,

 presenceAntennaPort1 PresenceAntennaPort1,

 cellReselectionPriority CellReselectionPriority OPTIONAL, -- Need OP

 neighCellConfig NeighCellConfig,

 q-OffsetFreq Q-OffsetRange DEFAULT dB0,

 interFreqNeighCellList InterFreqNeighCellList OPTIONAL, -- Need OR

 interFreqBlackCellList InterFreqBlackCellList OPTIONAL, -- Need OR

 ...,

 [[ q-QualMin-r9 Q-QualMin-r9 OPTIONAL, -- Need OP

 threshX-Q-r9 SEQUENCE {

 threshX-HighQ-r9 ReselectionThresholdQ-r9,

 threshX-LowQ-r9 ReselectionThresholdQ-r9

 } OPTIONAL -- Cond RSRQ

 ]],

 [[ q-QualMinWB-r11 Q-QualMin-r9 OPTIONAL -- Cond WB-RSRQ

 ]]

}

InterFreqCarrierFreqInfo-v8h0 ::= SEQUENCE {

 multiBandInfoList MultiBandInfoList OPTIONAL -- Need OR

}

InterFreqCarrierFreqInfo-v9e0 ::= SEQUENCE {

 dl-CarrierFreq-v9e0 ARFCN-ValueEUTRA-v9e0 OPTIONAL, -- Cond dl-FreqMax

 multiBandInfoList-v9e0 MultiBandInfoList-v9e0 OPTIONAL -- Need OR

}

InterFreqCarrierFreqInfo-v10j0 ::= SEQUENCE {

 freqBandInfo-r10 NS-PmaxList-r10 OPTIONAL, -- Need OR

 multiBandInfoList-v10j0 MultiBandInfoList-v10j0 OPTIONAL -- Need OR

}

InterFreqCarrierFreqInfo-v10l0 ::= SEQUENCE {

 freqBandInfo-v10l0 NS-PmaxList-v10l0 OPTIONAL, -- Need OR

 multiBandInfoList-v10l0 MultiBandInfoList-v10l0 OPTIONAL -- Need OR

}

InterFreqCarrierFreqInfo-v1250 ::= SEQUENCE {

 reducedMeasPerformance-r12 ENUMERATED {true} OPTIONAL, -- Need OP

 q-QualMinRSRQ-OnAllSymbols-r12 Q-QualMin-r9 OPTIONAL -- Cond RSRQ2

}

InterFreqCarrierFreqInfo-r12 ::= SEQUENCE {

 dl-CarrierFreq-r12 ARFCN-ValueEUTRA-r9,

 q-RxLevMin-r12 Q-RxLevMin,

 p-Max-r12 P-Max OPTIONAL, -- Need OP

 t-ReselectionEUTRA-r12 T-Reselection,

 t-ReselectionEUTRA-SF-r12 SpeedStateScaleFactors OPTIONAL, -- Need OP

 threshX-High-r12 ReselectionThreshold,

 threshX-Low-r12 ReselectionThreshold,

 allowedMeasBandwidth-r12 AllowedMeasBandwidth,

 presenceAntennaPort1-r12 PresenceAntennaPort1,

 cellReselectionPriority-r12 CellReselectionPriority OPTIONAL, -- Need OP

 neighCellConfig-r12 NeighCellConfig,

 q-OffsetFreq-r12 Q-OffsetRange DEFAULT dB0,

 interFreqNeighCellList-r12 InterFreqNeighCellList OPTIONAL, -- Need OR

 interFreqBlackCellList-r12 InterFreqBlackCellList OPTIONAL, -- Need OR

 q-QualMin-r12 Q-QualMin-r9 OPTIONAL, -- Need OP

 threshX-Q-r12 SEQUENCE {

 threshX-HighQ-r12 ReselectionThresholdQ-r9,

 threshX-LowQ-r12 ReselectionThresholdQ-r9

 } OPTIONAL, -- Cond RSRQ

 q-QualMinWB-r12 Q-QualMin-r9 OPTIONAL, -- Cond WB-RSRQ

 multiBandInfoList-r12 MultiBandInfoList-r11 OPTIONAL, -- Need OR

 reducedMeasPerformance-r12 ENUMERATED {true} OPTIONAL, -- Need OP

 q-QualMinRSRQ-OnAllSymbols-r12 Q-QualMin-r9 OPTIONAL, -- Cond RSRQ2

...

}

InterFreqCarrierFreqInfo-v1310 ::= SEQUENCE {

 cellReselectionSubPriority-r13 CellReselectionSubPriority-r13 OPTIONAL, -- Need OP

 redistributionInterFreqInfo-r13 RedistributionInterFreqInfo-r13 OPTIONAL, --Need OP

 cellSelectionInfoCE-r13 CellSelectionInfoCE-r13 OPTIONAL, -- Need OP

 t-ReselectionEUTRA-CE-r13 T-ReselectionEUTRA-CE-r13 OPTIONAL -- Need OP

}

InterFreqCarrierFreqInfo-v1350 ::= SEQUENCE {

 cellSelectionInfoCE1-r13 CellSelectionInfoCE1-r13 OPTIONAL -- Need OP

}

InterFreqCarrierFreqInfo-v1360 ::= SEQUENCE {

 cellSelectionInfoCE1-v1360 CellSelectionInfoCE1-v1360 OPTIONAL -- Cond QrxlevminCE1

}

InterFreqCarrierFreqInfo-v1530 ::= SEQUENCE {

 hsdn-Indication-r15 BOOLEAN,

 interFreqNeighHSDN-CellList-r15 InterFreqNeighHSDN-CellList-r15 OPTIONAL, -- Need OR

 cellSelectionInfoCE-v1530 CellSelectionInfoCE-v1530 OPTIONAL -- Need OP

}

InterFreqNeighCellList ::= SEQUENCE (SIZE (1..maxCellInter)) OF InterFreqNeighCellInfo

InterFreqNeighHSDN-CellList-r15 ::= SEQUENCE (SIZE (1..maxCellInter)) OF PhysCellIdRange

InterFreqNeighCellInfo ::= SEQUENCE {

 physCellId PhysCellId,

 q-OffsetCell Q-OffsetRange

}

InterFreqBlackCellList ::= SEQUENCE (SIZE (1..maxCellBlack)) OF PhysCellIdRange

RedistributionInterFreqInfo-r13 ::= SEQUENCE {

 redistributionFactorFreq-r13 RedistributionFactor-r13 OPTIONAL, --Need OP

 redistributionNeighCellList-r13 RedistributionNeighCellList-r13 OPTIONAL --Need OP

}

RedistributionNeighCellList-r13 ::= SEQUENCE (SIZE (1..maxCellInter)) OF RedistributionNeighCell-r13

RedistributionNeighCell-r13 ::= SEQUENCE {

 physCellId-r13 PhysCellId,

 redistributionFactorCell-r13 RedistributionFactor-r13

}

RedistributionFactor-r13 ::= INTEGER(1..10)

-- ASN1STOP

[…]

*END OF CHANGE*

*START OF CHANGE*

### 6.3.5 Measurement information elements

[…]

#### – *MeasResults*

The IE *MeasResults* covers measured results for intra-frequency, inter-frequency and inter- RAT mobility and for idle mode measurements in RRC\_IDLE or RRC\_INACTIVE.

*MeasResults* information element

-- ASN1START

MeasResults ::= SEQUENCE {

 measId MeasId,

 measResultPCell SEQUENCE {

 rsrpResult RSRP-Range,

 rsrqResult RSRQ-Range

 },

 measResultNeighCells CHOICE {

 measResultListEUTRA MeasResultListEUTRA,

 measResultListUTRA MeasResultListUTRA,

 measResultListGERAN MeasResultListGERAN,

 measResultsCDMA2000 MeasResultsCDMA2000,

 ...,

 measResultNeighCellListNR-r15 MeasResultCellListNR-r15

 } OPTIONAL,

 ...,

 [[ measResultForECID-r9 MeasResultForECID-r9 OPTIONAL

 ]],

 [[ locationInfo-r10 LocationInfo-r10 OPTIONAL,

 measResultServFreqList-r10 MeasResultServFreqList-r10 OPTIONAL

 ]],

 [[ measId-v1250 MeasId-v1250 OPTIONAL,

 measResultPCell-v1250 RSRQ-Range-v1250 OPTIONAL,

 measResultCSI-RS-List-r12 MeasResultCSI-RS-List-r12 OPTIONAL

 ]],

 [[ measResultForRSSI-r13 MeasResultForRSSI-r13 OPTIONAL,

 measResultServFreqListExt-r13 MeasResultServFreqListExt-r13 OPTIONAL,

 measResultSSTD-r13 MeasResultSSTD-r13 OPTIONAL,

 measResultPCell-v1310 SEQUENCE {

 rs-sinr-Result-r13 RS-SINR-Range-r13

 } OPTIONAL,

 ul-PDCP-DelayResultList-r13 UL-PDCP-DelayResultList-r13 OPTIONAL,

 measResultListWLAN-r13 MeasResultListWLAN-r13 OPTIONAL

 ]],

 [[ measResultPCell-v1360 RSRP-Range-v1360 OPTIONAL

 ]],

 [[ measResultListCBR-r14 MeasResultListCBR-r14 OPTIONAL,

 measResultListWLAN-r14 MeasResultListWLAN-r14 OPTIONAL

 ]],

 [[ measResultServFreqListNR-r15 MeasResultServFreqListNR-r15 OPTIONAL,

 measResultCellListSFTD-r15 MeasResultCellListSFTD-r15 OPTIONAL

 ]],

 [[ logMeasResultListBT-r15 LogMeasResultListBT-r15 OPTIONAL,

 logMeasResultListWLAN-r15 LogMeasResultListWLAN-r15 OPTIONAL,

 measResultSensing-r15 MeasResultSensing-r15 OPTIONAL,

 heightUE-r15 INTEGER (-400..8880) OPTIONAL

 ]]

}

MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultEUTRA

MeasResultEUTRA ::= SEQUENCE {

 physCellId PhysCellId,

 cgi-Info SEQUENCE {

 cellGlobalId CellGlobalIdEUTRA,

 trackingAreaCode TrackingAreaCode,

 plmn-IdentityList PLMN-IdentityList2 OPTIONAL

 } OPTIONAL,

 measResult SEQUENCE {

 rsrpResult RSRP-Range OPTIONAL,

 rsrqResult RSRQ-Range OPTIONAL,

 ...,

 [[ additionalSI-Info-r9 AdditionalSI-Info-r9 OPTIONAL

 ]],

 [[ primaryPLMN-Suitable-r12 ENUMERATED {true} OPTIONAL,

 measResult-v1250 RSRQ-Range-v1250 OPTIONAL

 ]],

 [[ rs-sinr-Result-r13 RS-SINR-Range-r13 OPTIONAL,

 cgi-Info-v1310 SEQUENCE {

 freqBandIndicator-r13 FreqBandIndicator-r11 OPTIONAL,

 multiBandInfoList-r13 MultiBandInfoList-r11 OPTIONAL,

 freqBandIndicatorPriority-r13 ENUMERATED {true} OPTIONAL

 } OPTIONAL

 ]],

 [[

 measResult-v1360 RSRP-Range-v1360 OPTIONAL

 ]],

 [[

 cgi-Info-5GC-r15 SEQUENCE (SIZE (1..maxPLMN-r11)) OF CellAccessRelatedInfo-5GC-r15 OPTIONAL

 ]]

 }

}

MeasResultListIdle-r15 ::= SEQUENCE (SIZE (1..maxIdleMeasCarriers-r15)) OF MeasResultIdle-r15

MeasResultIdle-r15 ::= SEQUENCE {

 measResultServingCell-r15 SEQUENCE {

 rsrpResult-r15 RSRP-Range,

 rsrqResult-r15 RSRQ-Range-r13

 },

 measResultNeighCells-r15 CHOICE {

 measResultIdleListEUTRA-r15 MeasResultIdleListEUTRA-r15,

 ...

 } OPTIONAL,

 ...

}

MeasResultIdleListEUTRA-r15 ::= SEQUENCE (SIZE (1..maxCellMeasIdle-r15)) OF MeasResultIdleEUTRA-r15

MeasResultIdleEUTRA-r15 ::= SEQUENCE {

 carrierFreq-r15 ARFCN-ValueEUTRA-r9,

 physCellId-r15 PhysCellId,

 measResult-r15 SEQUENCE {

 rsrpResult-r15 RSRP-Range,

 rsrqResult-r15 RSRQ-Range-r13

 },

 ...

}

MeasResultServFreqListNR-r15 ::= SEQUENCE (SIZE (1..maxServCell-r13)) OF MeasResultServFreqNR-r15

MeasResultServFreqNR-r15 ::= SEQUENCE {

 carrierFreq-r15 ARFCN-ValueNR-r15,

 measResultSCell-r15 MeasResultCellNR-r15 OPTIONAL,

 measResultBestNeighCell-r15 MeasResultCellNR-r15 OPTIONAL,

 ...

}

MeasResultCellListNR-r15::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultCellNR-r15

MeasResultCellNR-r15 ::= SEQUENCE {

 pci-r15 PhysCellIdNR-r15,

 measResultCell-r15 MeasResultNR-r15,

 measResultRS-IndexList-r15 MeasResultSSB-IndexList-r15 OPTIONAL,

 ...,

 [[ cgi-Info-r15 CGI-InfoNR-r15 OPTIONAL

 ]]

}

MeasResultNR-r15 ::= SEQUENCE {

 rsrpResult-r15 RSRP-RangeNR-r15 OPTIONAL,

 rsrqResult-r15 RSRQ-RangeNR-r15 OPTIONAL,

 rs-sinr-Result-r15 RS-SINR-RangeNR-r15 OPTIONAL,

 ...

}

MeasResultSSB-IndexList-r15::= SEQUENCE (SIZE (1..maxRS-IndexReport-r15)) OF MeasResultSSB-Index-r15

MeasResultSSB-Index-r15 ::= SEQUENCE {

 ssb-Index-r15 RS-IndexNR-r15,

 measResultSSB-Index-r15 MeasResultNR-r15 OPTIONAL,

 ...

}

MeasResultServFreqList-r10 ::= SEQUENCE (SIZE (1..maxServCell-r10)) OF MeasResultServFreq-r10

MeasResultServFreqListExt-r13 ::= SEQUENCE (SIZE (1..maxServCell-r13)) OF MeasResultServFreq-r13

MeasResultServFreq-r10 ::= SEQUENCE {

 servFreqId-r10 ServCellIndex-r10,

 measResultSCell-r10 SEQUENCE {

 rsrpResultSCell-r10 RSRP-Range,

 rsrqResultSCell-r10 RSRQ-Range

 } OPTIONAL,

 measResultBestNeighCell-r10 SEQUENCE {

 physCellId-r10 PhysCellId,

 rsrpResultNCell-r10 RSRP-Range,

 rsrqResultNCell-r10 RSRQ-Range

 } OPTIONAL,

 ...,

 [[ measResultSCell-v1250 RSRQ-Range-v1250 OPTIONAL,

 measResultBestNeighCell-v1250 RSRQ-Range-v1250 OPTIONAL

 ]],

 [[ measResultSCell-v1310 SEQUENCE {

 rs-sinr-Result-r13 RS-SINR-Range-r13

 } OPTIONAL,

 measResultBestNeighCell-v1310 SEQUENCE {

 rs-sinr-Result-r13 RS-SINR-Range-r13

 } OPTIONAL

 ]]

}

MeasResultServFreq-r13 ::= SEQUENCE {

 servFreqId-r13 ServCellIndex-r13,

 measResultSCell-r13 SEQUENCE {

 rsrpResultSCell-r13 RSRP-Range,

 rsrqResultSCell-r13 RSRQ-Range-r13,

 rs-sinr-Result-r13 RS-SINR-Range-r13 OPTIONAL

 } OPTIONAL,

 measResultBestNeighCell-r13 SEQUENCE {

 physCellId-r13 PhysCellId,

 rsrpResultNCell-r13 RSRP-Range,

 rsrqResultNCell-r13 RSRQ-Range-r13,

 rs-sinr-Result-r13 RS-SINR-Range-r13 OPTIONAL

 } OPTIONAL,

 ...,

 [[ measResultBestNeighCell-v1360 SEQUENCE {

 rsrpResultNCell-v1360 RSRP-Range-v1360

 } OPTIONAL

 ]]

}

MeasResultCSI-RS-List-r12 ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultCSI-RS-r12

MeasResultCSI-RS-r12 ::= SEQUENCE {

 measCSI-RS-Id-r12 MeasCSI-RS-Id-r12,

 csi-RSRP-Result-r12 CSI-RSRP-Range-r12,

 ...

}

MeasResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultUTRA

MeasResultUTRA ::= SEQUENCE {

 physCellId CHOICE {

 fdd PhysCellIdUTRA-FDD,

 tdd PhysCellIdUTRA-TDD

 },

 cgi-Info SEQUENCE {

 cellGlobalId CellGlobalIdUTRA,

 locationAreaCode BIT STRING (SIZE (16)) OPTIONAL,

 routingAreaCode BIT STRING (SIZE (8)) OPTIONAL,

 plmn-IdentityList PLMN-IdentityList2 OPTIONAL

 } OPTIONAL,

 measResult SEQUENCE {

 utra-RSCP INTEGER (-5..91) OPTIONAL,

 utra-EcN0 INTEGER (0..49) OPTIONAL,

 ...,

 [[ additionalSI-Info-r9 AdditionalSI-Info-r9 OPTIONAL

 ]],

 [[ primaryPLMN-Suitable-r12 ENUMERATED {true} OPTIONAL

 ]]

 }

}

MeasResultListGERAN ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultGERAN

MeasResultGERAN ::= SEQUENCE {

 carrierFreq CarrierFreqGERAN,

 physCellId PhysCellIdGERAN,

 cgi-Info SEQUENCE {

 cellGlobalId CellGlobalIdGERAN,

 routingAreaCode BIT STRING (SIZE (8)) OPTIONAL

 } OPTIONAL,

 measResult SEQUENCE {

 rssi INTEGER (0..63),

 ...

 }

}

MeasResultsCDMA2000 ::= SEQUENCE {

 preRegistrationStatusHRPD BOOLEAN,

 measResultListCDMA2000 MeasResultListCDMA2000

}

MeasResultListCDMA2000 ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultCDMA2000

MeasResultCDMA2000 ::= SEQUENCE {

 physCellId PhysCellIdCDMA2000,

 cgi-Info CellGlobalIdCDMA2000 OPTIONAL,

 measResult SEQUENCE {

 pilotPnPhase INTEGER (0..32767) OPTIONAL,

 pilotStrength INTEGER (0..63),

 ...

 }

}

MeasResultListWLAN-r13 ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultWLAN-r13

MeasResultListWLAN-r14 ::= SEQUENCE (SIZE (1..maxWLAN-Id-Report-r14)) OF MeasResultWLAN-r13

MeasResultWLAN-r13 ::= SEQUENCE {

 wlan-Identifiers-r13 WLAN-Identifiers-r12,

 carrierInfoWLAN-r13 WLAN-CarrierInfo-r13 OPTIONAL,

 bandWLAN-r13 WLAN-BandIndicator-r13 OPTIONAL,

 rssiWLAN-r13 WLAN-RSSI-Range-r13,

 availableAdmissionCapacityWLAN-r13 INTEGER (0..31250) OPTIONAL,

 backhaulDL-BandwidthWLAN-r13 WLAN-backhaulRate-r12 OPTIONAL,

 backhaulUL-BandwidthWLAN-r13 WLAN-backhaulRate-r12 OPTIONAL,

 channelUtilizationWLAN-r13 INTEGER (0..255) OPTIONAL,

 stationCountWLAN-r13 INTEGER (0..65535) OPTIONAL,

 connectedWLAN-r13 ENUMERATED {true} OPTIONAL,

 ...

}

MeasResultListCBR-r14 ::= SEQUENCE (SIZE (1..maxCBR-Report-r14)) OF MeasResultCBR-r14

MeasResultCBR-r14 ::= SEQUENCE {

 poolIdentity-r14 SL-V2X-TxPoolReportIdentity-r14,

 cbr-PSSCH-r14 SL-CBR-r14,

 cbr-PSCCH-r14 SL-CBR-r14 OPTIONAL

}

MeasResultSensing-r15 ::= SEQUENCE {

 sl-SubframeRef-r15 INTEGER (0..10239),

 sensingResult-r15 SEQUENCE (SIZE (0..400)) OF SensingResult-r15

}

SensingResult-r15 ::= SEQUENCE {

 resourceIndex-r15 INTEGER (1..2000)

}

MeasResultForECID-r9 ::= SEQUENCE {

 ue-RxTxTimeDiffResult-r9 INTEGER (0..4095),

 currentSFN-r9 BIT STRING (SIZE (10))

}

PLMN-IdentityList2 ::= SEQUENCE (SIZE (1..5)) OF PLMN-Identity

AdditionalSI-Info-r9 ::= SEQUENCE {

 csg-MemberStatus-r9 ENUMERATED {member} OPTIONAL,

 csg-Identity-r9 CSG-Identity OPTIONAL

}

MeasResultForRSSI-r13 ::= SEQUENCE {

 rssi-Result-r13 RSSI-Range-r13,

 channelOccupancy-r13 INTEGER (0..100),

 ...

}

UL-PDCP-DelayResultList-r13 ::= SEQUENCE (SIZE (1..maxQCI-r13)) OF UL-PDCP-DelayResult-r13

UL-PDCP-DelayResult-r13 ::= SEQUENCE {

 qci-Id-r13 ENUMERATED {qci1, qci2, qci3, qci4, spare4, spare3, spare2, spare1},

 excessDelay-r13 INTEGER (0..31),

 ...

}

CGI-InfoNR-r15 ::= SEQUENCE {

 plmn-IdentityInfoList-r15 PLMN-IdentityInfoListNR-r15 OPTIONAL,

 frequencyBandList-r15 MultiFrequencyBandListNR-r15 OPTIONAL,

 noSIB1-r15 SEQUENCE {

 ssb-SubcarrierOffset-r15 INTEGER (0..15),

 pdcch-ConfigSIB1-r15 INTEGER (0..255)

 } OPTIONAL,

 ...

}

CellIdentityNR-r15 ::= BIT STRING (SIZE (36))

PLMN-IdentityListNR-r15 ::= SEQUENCE (SIZE (1..maxPLMN-NR-r15)) OF PLMN-Identity

PLMN-IdentityInfoListNR-r15 ::= SEQUENCE (SIZE (1..maxPLMN-NR-r15)) OF PLMN-IdentityInfoNR-r15

PLMN-IdentityInfoNR-r15 ::= SEQUENCE {

 plmn-IdentityList-r15 PLMN-IdentityListNR-r15,

 trackingAreaCode-r15 TrackingAreaCodeNR-r15 OPTIONAL,

 ran-AreaCode-r15 RAN-AreaCode-r15 OPTIONAL,

 cellIdentity-r15 CellIdentityNR-r15

}

TrackingAreaCodeNR-r15 ::= BIT STRING (SIZE (24))

-- ASN1STOP

| *MeasResults* field descriptions |
| --- |
| ***availableAdmissionCapacityWLAN***Indicates the available admission capacity of WLAN as defined in IEEE 802.11-2012 [67]. |
| ***backhaulDL-BandwidthWLAN***Indicates the backhaul available downlink bandwidth of WLAN, equal to Downlink Speed times Downlink Load defined in Wi-Fi Alliance Hotspot 2.0 [76]. |
| ***backhaulUL-BandwidthWLAN***Indicates the backhaul available uplink bandwidth of WLAN, equal to Uplink Speed times Uplink Load defined in Wi-Fi Alliance Hotspot 2.0 [76]. |
| ***bandWLAN***Indicates the WLAN band. |
| ***carrierFreq***Indicates the carrier frequency. Within *MeasResultIdleListEUTRA-r15*, UE only includes measurements with the same carrier frequency. |
| ***carrierInfoWLAN***Indicates the WLAN channel information. |
| ***cbr-PSSCH***Indicates the CBR measurement results on the PSSCH of the pool indicated by *poolIdentity*. If *adjacencyPSCCH-PSSCH* is set to *TRUE* for the pool indicated by *pooIIdentit*y, this field indicates the CBR measurement of both the PSSCH and PSCCH resources which are measured together. |
| ***cbr-PSCCH***Indicates the CBR measurement results on the PSCCH of the pool indicated by *poolIdentity.* This field is only included if *adjacencyPSCCH-PSSCH* is set to *FALSE* for the pool indicated by *pooIIdentity*. |
| ***channelOccupancy***Indicates the percentage of samples when the RSSI was above the configured *channelOccupancyThreshold* for the associated *reportConfig*. |
| ***channelUtilizationWLAN***Indicates WLAN channel utilization as defined in IEEE 802.11-2012 [67]. |
| ***connectedWLAN***Indicates whether the UE is connected to the WLAN for which the measurement results are applicable. |
| ***csg-MemberStatus***Indicates whether or not the UE is a member of the CSG of the neighbour cell. |
| ***currentSFN***Indicates the current system frame number when receiving the UE Rx-Tx time difference measurement results from lower layer. |
| ***excessDelay***Indicates excess queueing delay ratio in UL, according to excess delay ratio measurement report mapping table, as defined in TS 36.314 [71], Table 4.2.1.1.1-1. |
| ***heightUE***Indicates height of the UE in meters relative to the sea level. Value 0 corresponds to sea level (i.e., negative value indicates depth of the UE below sea level). Value -400 corresponds to -400 m, value -399 corresponds to -399 m and so on. |
| ***locationAreaCode***A fixed length code identifying the location area within a PLMN, as defined in TS 23.003 [27]. |
| ***measId***Identifies the measurement identity for which the reporting is being performed. If the *measId-v1250* is included, the *measId* (i.e. without a suffix) is ignored by eNB. |
| ***measResult***Measured result of an E‑UTRA cell;Measured result of a UTRA cell;Measured result of a GERAN cell or frequency;Measured result of a CDMA2000 cell;Measured result of a WLAN;Measured result of UE Rx–Tx time difference;Measured result of UE SFN, radio frame and subframe timing difference; orMeasured result of RSSI and channel occupancy. |
| ***measResultCSI-RS-List***Measured results of the CSI-RS resources in discovery signals measurement.  |
| ***measResultListCDMA2000***List of measured results for the maximum number of reported best cells for a CDMA2000 measurement identity. |
| ***measResultListEUTRA***List of measured results for the maximum number of reported best cells for an E‑UTRA measurement identity. For UE supporting CE Mode B, when CE mode B is not restricted by upper layers, *measResult-v1360* is reported if the measured RSRP is less than -140 dBm. |
| ***measResultListGERAN***List of measured results for the maximum number of reported best cells or frequencies for a GERAN measurement identity. |
| ***measResultListSFTD***List of measured SFTD results for the reported cells for a NR measurement identity. |
| ***measResultListUTRA***List of measured results for the maximum number of reported best cells for a UTRA measurement identity. |
| ***measResultListWLAN***List of measured results for the maximum number of reported best WLAN outside the WLAN mobility set and connected WLAN, if any, for a WLAN measurement identity. |
| ***measResultPCell***Measured result of the PCell. For BL UEs or UEs in CE, when operating in CE Mode B, *measResultPCell-v1360* is reported if the measured RSRP is less than -140 dBm. |
| **measResultsCDMA2000**Contains the CDMA2000 HRPD pre-registration status and the list of CDMA2000 measurements. |
| ***MeasResultServFreqList***Measured results of the serving frequencies: the measurement result of each SCell, if any, and of the best neighbouring cell on each serving frequency. For UE supporting CE Mode B, when CE mode B is not restricted by upper layers, *measResultBestNeighCell-v1360* is reported if the measured RSRP is less than -140 dBm. |
| ***measResultServingCell***Measured results of the serving cell (i.e., PCell) from IDLE mode measurements. |
| ***noSIB1***Contains *ssb-SubcarrierOffset* and *pdcch-ConfigSIB1* fields acquired by the UE from MIB of the cell for which report CGI procedure was requested by the network in case SIB1 was not broadcast by the cell. |
| ***pilotPnPhase***Indicates the arrival time of a CDMA2000 pilot, measured relative to the UE's time reference in units of PN chips, see C.S0005 [25]. This information is used in either SRVCC handover or enhanced 1xRTT CS fallback procedure to CDMA2000 1xRTT. |
| ***pilotStrength***CDMA2000 Pilot Strength, the ratio of pilot power to total power in the signal bandwidth of a CDMA2000 Forward Channel. See C.S0005 [25] for CDMA2000 1xRTT and C.S0024 [26] for CDMA2000 HRPD. |
| ***poolIdentity***The identity of the transmission resource pool which is corresponding to the *poolReportId* configured ina resource pool for V2X sidelink communication. |
| ***plmn-IdentityList***The list of PLMN Identity read from broadcast information when the multiple PLMN Identities are broadcast. |
| ***preRegistrationStatusHRPD***Set to TRUE if the UE is currently pre-registered with CDMA2000 HRPD. Otherwise set to FALSE. This can be ignored by the eNB for CDMA2000 1xRTT. |
| ***qci-Id***Indicates QCI value for which *excessDelay* is provided, according to TS 36.314 [71]. |
| **resourceIndex**Indicates the available resource candidates within the [T1, T2] window as specified in TS 36.213 [23]. clause 14.1.1.6. Value 1 indicates the resource candidate on the subframe indicated by *sl-SubframeRe*f, from subchannel 0 to *sensingSubchannelNumber*-1. Value 2 indicates the resource candidate on the first subframe following the subframe indicated by *sl-SubframeRef*, from subchannel 0 to *sensingSubchannelNumber*-1 (Value 101 indicates the resource candidate on the subframe indicated by *sl-SubframeRef*, from subchannel 1 to *sensingSubchannelNumber*, if the *numSubchannel* of the resource pool is larger than *sensingSubchannelNumber*) and so on. |
| ***routingAreaCode***The RAC identity read from broadcast information, as defined in TS 23.003 [27]. |
| ***rsrpResult***Measured RSRP result of an E‑UTRA cell.The rsrpResult is only reported if configured by the eNB. |
| ***rsrqResult***Measured RSRQ result of an E‑UTRA cell.The rsrqResult is only reported if configured by the eNB. |
| ***rssi***GERAN Carrier RSSI. RXLEV is mapped to a value between 0 and 63, TS 45.008 [28]. When mapping the RXLEV value to the RSSI bit string, the first/leftmost bit of the bit string contains the most significant bit. |
| ***rssi-Result***Measured RSSI result in dBm. |
| ***rs-sinr-Result***Measured RS-SINR result of an E‑UTRA or NR cell. The *rs-sinr-Result* is only reported if configured by the eNB. |
| ***rssiWLAN***Measured WLAN RSSI result in dBm. |
| ***sl-SubframeRef***Indicates the subframe corresponding to n+T1 used to obtain the sensing measurement results (see TS 36.213 [23]). Specifically, the value indicates the timing offset with respect to subframe#0 of DFN#0 in milliseconds. |
| ***stationCountWLAN***Indicates the total number stations currently associated with this WLAN as defined in IEEE 802.11-2012 [67]. |
| ***ue-RxTxTimeDiffResult***UE Rx-Tx time difference measurement result of the PCell, provided by lower layers. If *ue-RxTxTimeDiffPeriodicalTDD-r13* is set to *TRUE*, the measurement mapping is according to EUTRAN TDD UE Rx-Tx time difference report mapping in TS 36.133 [16] and measurement result includes *NTAoffset*, else the measurement mapping is according to EUTRAN FDD UE Rx-Tx time difference report mapping in TS 36.133 [16]. |
| ***utra-EcN0***According to CPICH\_Ec/No in TS 25.133 [29] for FDD. Fourteen spare values. The field is not present for TDD. |
| ***utra-RSCP***According to CPICH\_RSCP in TS 25.133 [29] for FDD and P-CCPCH\_RSCP in TS 25.123 [30] for TDD. Thirty-one spare values. |
| ***wlan-Identifiers***Indicates the WLAN parameters used for identification of the WLAN for which the measurement results are applicable. |

[…]

*END OF CHANGE*