**3GPP TSG-RAN2#119-e *draft-*R2-2209210**

**e-meeting, 17-29 August**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | 36.331 | **CR** | 4869 | **rev** | 2 | **Current version:** | 17.1.0 |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | MeasConfig corrections for above 71 GHz operation | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE Corporation, Sanechips | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_ext\_to\_71GHz-Core | | | | |  | ***Date:*** | | | 26/08/2022 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***Release:*** | | | *Rel-17* |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier elease)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | RRM measurement for FR2-2 cell should be supported. This is currently missing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add the necessary parameters to support FR2-2 operation for RRM measurements.  **Impact analysis**  Impacted 5G architecture options:  SA, ENDC  Impacted functionality:  FR2-2  Inter-operability:   * If the UE is implemented according to this CR while the network is not, there will be no interoperability issue as the network cannot configure the measurements and the UE will not perform or report any measurements specific to FR2-2. * If the network is implemented according to this CR while the UE is not, the network may configure measurements for FR2-2 according to this CR which will result in invalid (unsupported) configuration on the UE side. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Mobility from E-UTRA to NR FR2-2 is not supported | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.2.2, 6.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS/TR 36.306 CR 1856 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

*first Change*

6.2.2 Message definitions

– *RRCConnectionRelease*

The *RRCConnectionRelease* message is used to command the release of an RRC connection, or to complete an UP-EDT procedure.

Signalling radio bearer: SRB1

RLC-SAP: AM

Logical channel: DCCH

Direction: E‑UTRAN to UE

***RRCConnectionRelease message***

-- ASN1START

RRCConnectionRelease ::= SEQUENCE {

rrc-TransactionIdentifier RRC-TransactionIdentifier,

criticalExtensions CHOICE {

c1 CHOICE {

rrcConnectionRelease-r8 RRCConnectionRelease-r8-IEs,

spare3 NULL, spare2 NULL, spare1 NULL

},

criticalExtensionsFuture SEQUENCE {}

}

}

RRCConnectionRelease-r8-IEs ::= SEQUENCE {

releaseCause ReleaseCause,

redirectedCarrierInfo RedirectedCarrierInfo OPTIONAL, -- Need ON

idleModeMobilityControlInfo IdleModeMobilityControlInfo OPTIONAL, -- Need OP

nonCriticalExtension RRCConnectionRelease-v890-IEs OPTIONAL

}

RRCConnectionRelease-v890-IEs ::= SEQUENCE {

lateNonCriticalExtension OCTET STRING (CONTAINING RRCConnectionRelease-v9e0-IEs) OPTIONAL,

nonCriticalExtension RRCConnectionRelease-v920-IEs OPTIONAL

}

-- Late non critical extensions

RRCConnectionRelease-v9e0-IEs ::= SEQUENCE {

redirectedCarrierInfo-v9e0 RedirectedCarrierInfo-v9e0 OPTIONAL, -- Cond NoRedirect-r8

idleModeMobilityControlInfo-v9e0 IdleModeMobilityControlInfo-v9e0 OPTIONAL, -- Cond IdleInfoEUTRA

nonCriticalExtension SEQUENCE {} OPTIONAL

}

-- Regular non critical extensions

RRCConnectionRelease-v920-IEs ::= SEQUENCE {

cellInfoList-r9 CHOICE {

geran-r9 CellInfoListGERAN-r9,

utra-FDD-r9 CellInfoListUTRA-FDD-r9,

utra-TDD-r9 CellInfoListUTRA-TDD-r9,

...,

utra-TDD-r10 CellInfoListUTRA-TDD-r10

} OPTIONAL, -- Cond Redirection

nonCriticalExtension RRCConnectionRelease-v1020-IEs OPTIONAL

}

RRCConnectionRelease-v1020-IEs ::= SEQUENCE {

extendedWaitTime-r10 INTEGER (1..1800) OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionRelease-v1320-IEs OPTIONAL

}

RRCConnectionRelease-v1320-IEs::= SEQUENCE {

resumeIdentity-r13 ResumeIdentity-r13 OPTIONAL, -- Need OR

nonCriticalExtension RRCConnectionRelease-v1530-IEs OPTIONAL

}

RRCConnectionRelease-v1530-IEs ::= SEQUENCE {

drb-ContinueROHC-r15 ENUMERATED {true} OPTIONAL, -- Cond UP-EDTorPUR

nextHopChainingCount-r15 NextHopChainingCount OPTIONAL, -- Cond EarlySec

measIdleConfig-r15 MeasIdleConfigDedicated-r15 OPTIONAL, -- Need ON

rrc-InactiveConfig-r15 RRC-InactiveConfig-r15 OPTIONAL, -- Need OR

cn-Type-r15 ENUMERATED {epc,fivegc} OPTIONAL, -- Need OR

nonCriticalExtension RRCConnectionRelease-v1540-IEs OPTIONAL

}

RRCConnectionRelease-v1540-IEs ::= SEQUENCE {

waitTime INTEGER (1..16) OPTIONAL, -- Cond 5GC

nonCriticalExtension RRCConnectionRelease-v15b0-IEs OPTIONAL

}

RRCConnectionRelease-v15b0-IEs ::= SEQUENCE {

noLastCellUpdate-r15 ENUMERATED {true} OPTIONAL, -- Need OP

nonCriticalExtension RRCConnectionRelease-v1610-IEs OPTIONAL

}

RRCConnectionRelease-v1610-IEs ::= SEQUENCE {

fullI-RNTI-r16 I-RNTI-r15 OPTIONAL, -- Need OR

shortI-RNTI-r16 ShortI-RNTI-r15 OPTIONAL, -- Need OR

pur-Config-r16 SetupRelease {PUR-Config-r16} OPTIONAL, -- Need ON

rrc-InactiveConfig-v1610 RRC-InactiveConfig-v1610 OPTIONAL, -- Cond BLCE-IDLEeDRX

releaseIdleMeasConfig-r16 ENUMERATED {true} OPTIONAL, -- Need ON

altFreqPriorities-r16 ENUMERATED {true} OPTIONAL, -- Need ON

t323-r16 ENUMERATED {

min5, min10, min20, min30, min60, min120, min180,

min720} OPTIONAL, -- Need OR

nonCriticalExtension RRCConnectionRelease-v1650-IEs OPTIONAL

}

RRCConnectionRelease-v1650-IEs ::= SEQUENCE {

mpsPriorityIndication-r16 ENUMERATED {true} OPTIONAL, -- Cond Redirection2

nonCriticalExtension SEQUENCE {} OPTIONAL

}

ReleaseCause ::= ENUMERATED {loadBalancingTAUrequired,

other, cs-FallbackHighPriority-v1020, rrc-Suspend-v1320}

RedirectedCarrierInfo ::= CHOICE {

eutra ARFCN-ValueEUTRA,

geran CarrierFreqsGERAN,

utra-FDD ARFCN-ValueUTRA,

utra-TDD ARFCN-ValueUTRA,

cdma2000-HRPD CarrierFreqCDMA2000,

cdma2000-1xRTT CarrierFreqCDMA2000,

...,

utra-TDD-r10 CarrierFreqListUTRA-TDD-r10,

nr-r15 CarrierInfoNR-r15,

nr-r17 CarrierInfoNR-r17

}

RedirectedCarrierInfo-v9e0 ::= SEQUENCE {

eutra-v9e0 ARFCN-ValueEUTRA-v9e0

}

RRC-InactiveConfig-r15::= SEQUENCE {

fullI-RNTI-r15 I-RNTI-r15,

shortI-RNTI-r15 ShortI-RNTI-r15,

ran-PagingCycle-r15 ENUMERATED { rf32, rf64, rf128, rf256} OPTIONAL, --Need OR

ran-NotificationAreaInfo-r15 RAN-NotificationAreaInfo-r15 OPTIONAL, --Need ON

periodic-RNAU-timer-r15 ENUMERATED {min5, min10, min20, min30, min60,

min120, min360, min720} OPTIONAL, --Need OR

nextHopChainingCount-r15 NextHopChainingCount OPTIONAL, --Cond INACTIVE

dummy SEQUENCE{} OPTIONAL

}

RRC-InactiveConfig-v1610::= SEQUENCE {

ran-PagingCycle-v1610 ENUMERATED {rf512, rf1024}

}

RAN-NotificationAreaInfo-r15 ::= CHOICE {

cellList-r15 PLMN-RAN-AreaCellList-r15,

ran-AreaConfigList-r15 PLMN-RAN-AreaConfigList-r15

}

PLMN-RAN-AreaCellList-r15 ::= SEQUENCE (SIZE (1..maxPLMN-r15)) OF PLMN-RAN-AreaCell-r15

PLMN-RAN-AreaCell-r15 ::= SEQUENCE {

plmn-Identity-r15 PLMN-Identity OPTIONAL,

ran-AreaCells-r15 SEQUENCE (SIZE (1..32)) OF CellIdentity

}

PLMN-RAN-AreaConfigList-r15 ::= SEQUENCE (SIZE (1..maxPLMN-r15)) OF PLMN-RAN-AreaConfig-r15

PLMN-RAN-AreaConfig-r15 ::= SEQUENCE {

plmn-Identity-r15 PLMN-Identity OPTIONAL,

ran-Area-r15 SEQUENCE (SIZE (1..16)) OF RAN-AreaConfig-r15

}

RAN-AreaConfig-r15 ::= SEQUENCE {

trackingAreaCode-5GC-r15 TrackingAreaCode-5GC-r15,

ran-AreaCodeList-r15 SEQUENCE (SIZE (1..32)) OF RAN-AreaCode-r15 OPTIONAL --Need OR

}

CarrierFreqListUTRA-TDD-r10 ::= SEQUENCE (SIZE (1..maxFreqUTRA-TDD-r10)) OF ARFCN-ValueUTRA

IdleModeMobilityControlInfo ::= SEQUENCE {

freqPriorityListEUTRA FreqPriorityListEUTRA OPTIONAL, -- Need ON

freqPriorityListGERAN FreqsPriorityListGERAN OPTIONAL, -- Need ON

freqPriorityListUTRA-FDD FreqPriorityListUTRA-FDD OPTIONAL, -- Need ON

freqPriorityListUTRA-TDD FreqPriorityListUTRA-TDD OPTIONAL, -- Need ON

bandClassPriorityListHRPD BandClassPriorityListHRPD OPTIONAL, -- Need ON

bandClassPriorityList1XRTT BandClassPriorityList1XRTT OPTIONAL, -- Need ON

t320 ENUMERATED {

min5, min10, min20, min30, min60, min120, min180,

spare1} OPTIONAL, -- Need OR

...,

[[ freqPriorityListExtEUTRA-r12 FreqPriorityListExtEUTRA-r12 OPTIONAL -- Need ON

]],

[[ freqPriorityListEUTRA-v1310 FreqPriorityListEUTRA-v1310 OPTIONAL, -- Need ON

freqPriorityListExtEUTRA-v1310 FreqPriorityListExtEUTRA-v1310 OPTIONAL -- Need ON

]],

[[ freqPriorityListNR-r15 FreqPriorityListNR-r15 OPTIONAL -- Need ON

]]

}

IdleModeMobilityControlInfo-v9e0 ::= SEQUENCE {

freqPriorityListEUTRA-v9e0 SEQUENCE (SIZE (1..maxFreq)) OF FreqPriorityEUTRA-v9e0

}

FreqPriorityListEUTRA ::= SEQUENCE (SIZE (1..maxFreq)) OF FreqPriorityEUTRA

FreqPriorityListExtEUTRA-r12 ::= SEQUENCE (SIZE (1..maxFreq)) OF FreqPriorityEUTRA-r12

FreqPriorityListEUTRA-v1310 ::= SEQUENCE (SIZE (1..maxFreq)) OF FreqPriorityEUTRA-v1310

FreqPriorityListExtEUTRA-v1310 ::= SEQUENCE (SIZE (1..maxFreq)) OF FreqPriorityEUTRA-v1310

FreqPriorityEUTRA ::= SEQUENCE {

carrierFreq ARFCN-ValueEUTRA,

cellReselectionPriority CellReselectionPriority

}

FreqPriorityEUTRA-v9e0 ::= SEQUENCE {

carrierFreq-v9e0 ARFCN-ValueEUTRA-v9e0 OPTIONAL -- Cond EARFCN-max

}

FreqPriorityEUTRA-r12 ::= SEQUENCE {

carrierFreq-r12 ARFCN-ValueEUTRA-r9,

cellReselectionPriority-r12 CellReselectionPriority

}

FreqPriorityEUTRA-v1310 ::= SEQUENCE {

cellReselectionSubPriority-r13 CellReselectionSubPriority-r13 OPTIONAL -- Need ON

}

FreqPriorityListNR-r15 ::= SEQUENCE (SIZE (1..maxFreq)) OF FreqPriorityNR-r15

FreqPriorityNR-r15 ::= SEQUENCE {

carrierFreq-r15 ARFCN-ValueNR-r15,

cellReselectionPriority-r15 CellReselectionPriority,

cellReselectionSubPriority-r15 CellReselectionSubPriority-r13 OPTIONAL -- Need OR

}

FreqsPriorityListGERAN ::= SEQUENCE (SIZE (1..maxGNFG)) OF FreqsPriorityGERAN

FreqsPriorityGERAN ::= SEQUENCE {

carrierFreqs CarrierFreqsGERAN,

cellReselectionPriority CellReselectionPriority

}

FreqPriorityListUTRA-FDD ::= SEQUENCE (SIZE (1..maxUTRA-FDD-Carrier)) OF FreqPriorityUTRA-FDD

FreqPriorityUTRA-FDD ::= SEQUENCE {

carrierFreq ARFCN-ValueUTRA,

cellReselectionPriority CellReselectionPriority

}

FreqPriorityListUTRA-TDD ::= SEQUENCE (SIZE (1..maxUTRA-TDD-Carrier)) OF FreqPriorityUTRA-TDD

FreqPriorityUTRA-TDD ::= SEQUENCE {

carrierFreq ARFCN-ValueUTRA,

cellReselectionPriority CellReselectionPriority

}

BandClassPriorityListHRPD ::= SEQUENCE (SIZE (1..maxCDMA-BandClass)) OF BandClassPriorityHRPD

BandClassPriorityHRPD ::= SEQUENCE {

bandClass BandclassCDMA2000,

cellReselectionPriority CellReselectionPriority

}

BandClassPriorityList1XRTT ::= SEQUENCE (SIZE (1..maxCDMA-BandClass)) OF BandClassPriority1XRTT

BandClassPriority1XRTT ::= SEQUENCE {

bandClass BandclassCDMA2000,

cellReselectionPriority CellReselectionPriority

}

CellInfoListGERAN-r9 ::= SEQUENCE (SIZE (1..maxCellInfoGERAN-r9)) OF CellInfoGERAN-r9

CellInfoGERAN-r9 ::= SEQUENCE {

physCellId-r9 PhysCellIdGERAN,

carrierFreq-r9 CarrierFreqGERAN,

systemInformation-r9 SystemInfoListGERAN

}

CarrierInfoNR-r15 ::= SEQUENCE {

carrierFreq-r15 ARFCN-ValueNR-r15,

subcarrierSpacingSSB-r15 ENUMERATED {kHz15, kHz30, kHz120, kHz240},

smtc-r15 MTC-SSB-NR-r15 OPTIONAL -- Need OP

}

CarrierInfoNR-r17 ::= SEQUENCE {

carrierFreq-r17 ARFCN-ValueNR-r15,

subcarrierSpacingSSB-r17 ENUMERATED {kHz15, kHz30, kHz120, kHz240, kHz480, spare1},

smtc-r17 MTC-SSB-NR-r15 OPTIONAL -- Need OP

}

CellInfoListUTRA-FDD-r9 ::= SEQUENCE (SIZE (1..maxCellInfoUTRA-r9)) OF CellInfoUTRA-FDD-r9

CellInfoUTRA-FDD-r9 ::= SEQUENCE {

physCellId-r9 PhysCellIdUTRA-FDD,

utra-BCCH-Container-r9 OCTET STRING

}

CellInfoListUTRA-TDD-r9 ::= SEQUENCE (SIZE (1..maxCellInfoUTRA-r9)) OF CellInfoUTRA-TDD-r9

CellInfoUTRA-TDD-r9 ::= SEQUENCE {

physCellId-r9 PhysCellIdUTRA-TDD,

utra-BCCH-Container-r9 OCTET STRING

}

CellInfoListUTRA-TDD-r10 ::= SEQUENCE (SIZE (1..maxCellInfoUTRA-r9)) OF CellInfoUTRA-TDD-r10

CellInfoUTRA-TDD-r10 ::= SEQUENCE {

physCellId-r10 PhysCellIdUTRA-TDD,

carrierFreq-r10 ARFCN-ValueUTRA,

utra-BCCH-Container-r10 OCTET STRING

}

-- ASN1STOP

| ***RRCConnectionRelease* field descriptions** |
| --- |
| ***altFreqPriorities***  Indicates that the UE shall apply the alternative cell reselectionpriorities, when available. This field is not configured together with *idleModeMobilityControlInfo*. |
| ***carrierFreq or bandClass***  The carrier frequency (UTRA, E-UTRA, and NR) and band class (HRPD and 1xRTT) for which the associated cellReselectionPriority is applied. For NR, the *ARFCN-ValueNR* corresponds to a GSCN value as specified in TS 38.101 [85]. |
| ***carrierFreqs***  The list of GERAN carrier frequencies organised into one group of GERAN carrier frequencies. |
| ***cellInfoList***  Used to provide system information of one or more cells on the redirected inter-RAT carrier frequency. The system information can be used if, upon redirection, the UE selects an inter-RAT cell indicated by the *physCellId* and *carrierFreq* (GERAN and UTRA TDD) or by the *physCellId* (other RATs). The choice shall match the *redirectedCarrierInfo*. In particular, E-UTRAN only applies value *utra-TDD-r10* in case *redirectedCarrierInfo* is set to *utra-TDD-r10*. |
| ***cellList***  Indicates a list of cells configured as RAN area. For each element, in the absence of *plmn-Identity* the UE considers the registered PLMN. Total number of cells across all PLMNs does not exceed 32. |
| ***cn-Type***  The*cn-Type* is used to indicate that the UE is redirected from 5GC to EPC or 5GC when*redirectedCarrierInfo* indicates E-UTRA frequency. |
| ***drb-ContinueROHC***  This field indicates whether to continue or reset the header compression protocol context for the DRBs configured with the header compression protocol. Presence of the field indicates that the header compression protocol context continues when UE initiates UP-EDT in the same cell, while absence indicates that the header compression protocol context is reset. |
| ***dummy***  This field is not used in the specification. If received it shall be ignored by the UE. |
| ***extendedWaitTime***  Value in seconds for the wait time for Delay Tolerant access requests. |
| ***freqPriorityListX***  Provides a cell reselection priority for each frequency, by means of separate lists for each RAT (including E-UTRA). The UE shall be able to store at least 3 occurrences of *FreqsPriorityGERAN*. If E-UTRAN includes *freqPriorityListEUTRA-v9e0* and/or *freqPriorityListEUTRA-v1310* it includes the same number of entries, and listed in the same order, as in *freqPriorityListEUTRA* (i.e. without suffix). Field *freqPriorityListExt* includes additional neighbouring inter-frequencies, i.e. extending the size of the inter-frequency carrier list using the general principles specified in 5.1.2. EUTRAN only includes *freqPriorityListExtEUTRA* if *freqPriorityListEUTRA* (i.e without suffix) includes *maxFreq* entries. If E-UTRAN includes *freqPriorityListExtEUTRA-v1310* it includes the same number of entries, and listed in the same order, as in *freqPriorityListExtEUTRA-r12.* |
| ***idleModeMobilityControlInfo***  Provides dedicated cell reselection priorities. Used for cell reselection as specified in TS 36.304 [4]. For E-UTRA and UTRA frequencies, a UE that supports multi-band cells for the concerned RAT considers the dedicated priorities to be common for all overlapping bands (i.e. regardless of the ARFCN that is used). |
| ***measIdleConfig***  Indicates a one-shot measurement configuration to be stored and used by the UE while in RRC\_IDLE or RRC\_INACTIVE. |
| ***mpsPriorityIndication***  Indicates the UE can set the establishment cause to *highPriorityAccess* for a new connection to a new RAT following a redirect to E-UTRA. If the target RAT is NR, see TS 38.331 [82]. The eNB/ng-eNB sets the indication only for UEs authorized to receive MPS treatment as indicated by ARP and/or QoS characteristics at the eNB/ng-eNB, and it is applicable only for this instance of release with redirection to carrier/RAT included in the *redirectedCarrierInfo* field in the *RRCConnectionRelease* message. |
| ***noLastCellUpdate***  Presence of the field indicates that the last used cell for (G)WUS shall not be updated. |
| ***periodic-RNAU-timer***  Refers to the timer that triggers the periodic RNAU procedure in UE. Value min5 corresponds to 5 minutes, value min10 corresponds to 10 minutes and so on. |
| ***ran-Area***  Indicates whether TA code(s) or RAN area code(s) are used for the RAN notification area. The network uses only TA code(s) or RAN area code(s) to configure a UE. Total number of TACs across all PLMNs does not exceed 16. Total number of RAN-AreaCode across all PLMNs does not exceed 32. |
| ***ran-NotificationAreaInfo***  Network ensures that the UE in RRC\_INACTIVE always has a valid *ran-NotificationAreaInfo*. |
| ***ranAreaConfigList***  Indicates a list of RAN area codes or RA code(s) as RAN area. For each element, in the absence of *plmn-Identity* the UE considers the registered PLMN. |
| ***ran-pagingCycle***  Refers to the UE specific cycle for RAN-initiated paging. Value rf32 corresponds to 32 radio frames, rf64 corresponds to 64 radio frames and so on. |
| ***redirectedCarrierInfo***  The r*edirectedCarrierInfo* indicates a carrier frequency (downlink for FDD) and is used to redirect the UE to an E‑UTRA or an inter-RAT carrier frequency, by means of the cell selection upon leaving RRC\_CONNECTED as specified in TS 36.304 [4]. The value *geran* can only be included after successful security activation when UE is connected to 5GC. |
| ***releaseCause***  The *releaseCause* is used to indicate the reason for releasing the RRC Connection. The cause value *cs-FallbackHighPriority* is only applicable when *redirectedCarrierInfo* is present with the value set to *utra-FDD,* *utra-TDD* or *utra-TDD-r10*. E-UTRAN should not set the *releaseCause* to *loadBalancingTAURequired* or to *cs-FallbackHighPriority* if the *extendedWaitTime* is present. The network should not set the *releaseCause* to *loadBalancingTAURequired* if the UE is connected to 5GC. The network does not set the *releaseCause* to *rrc-Suspend* if the UE is configured with a DAPS bearer, i.e. if source PCell resources after a DAPS handover have not been released. |
| ***releaseIdleMeasConfig***  Indicates that the UE shall release the idle/inactive measurement configurations, if configured. |
| ***rrc-InactiveConfig***  Indicates configuration for the RRC\_INACTIVE state. The network does not configure this field when the UE is redirected to an inter-RAT carrier frequency or if the UE is configured with a DAPS bearer. |
| ***smtc***  The SSB periodicity/offset/duration configuration of the redirected target NR frequency. It is based on the timing reference of EUTRAN PCell. If the field is absent, the UE uses the SMTC configured in the *measObjectNR* having the same SSB frequency and subcarrier spacing |
| ***subcarrierSpacingSSB***  Indicate subcarrier spacing of SSB of redirected target NR frequency. Only the values 15 kHz or 30 kHz (FR1), 120 kHz or 240 kHz (FR2-1), 120kHz or 480kHz (FR2-2) are applicable. |
| ***systemInformation***  Container for system information of the GERAN cell i.e. one or more System Information (SI) messages as defined in TS 44.018 [45], table 9.1.1. |
| ***t320***  Timer T320 as described in clause 7.3. Value minN corresponds to N minutes. |
| ***t323***  Timer T323 as described in clause 7.3. Value minN corresponds to N minutes. |
| ***utra-BCCH-Container***  Contains System Information Container message as defined in TS 25.331 [19]. |
| ***waitTime***  Wait time value in seconds. |

| **Conditional presence** | **Explanation** |
| --- | --- |
| *5GC* | The field is optionally present, Need ON, if the UE is connected to 5GC; otherwise the field is not present. |
| *BLCE-IDLEeDRX* | The field is optionally present, Need OR, if the UE is a BL UE or UE in CE and the UE is connected to 5GC and IDLE mode eDRX is configured and *ran-PagingCycle-r15* is absent; otherwise the field is not present. | |
| *EARFCN-max* | The field is mandatory present if the corresponding *carrierFreq* (i.e. without suffix) is set to *maxEARFCN*. Otherwise the field is not present. |
| *EarlySec* | When the UE is connected to 5GC, the field is mandatory present. When the UE is connected to EPC, the field is optionally present, Need ON, if the UE supports UP-EDT or UP transmission using PUR or early security reactivation and *releaseCause* is set to *rrc-Suspend*; otherwise the field is not present. | |
| *IdleInfoEUTRA* | The field is optionally present, Need OP, if the *IdleModeMobilityControlInfo* (i.e. without suffix) is included and includes *freqPriorityListEUTRA*; otherwise the field is not present. |
| *INACTIVE* | The field is mandatory present in this release. |
| *NoRedirect-r8* | The field is optionally present, Need OP, if the *redirectedCarrierInfo* (i.e. without suffix) is not included; otherwise the field is not present. |
| *Redirection* | The field is optionally present, Need ON, if the *redirectedCarrierInfo* is included and set to *geran*, *utra-FDD*, *utra-TDD* or *utra-TDD-r10*; otherwise the field is not present. |
| *Redirection2* | The field is optionally present, Need OR, if *redirectedCarrierInfo* is included; otherwise the field is not present. |
| *UP-EDTorPUR* | The field is optionally present, Need ON, if the UE supports UP-EDT or UP transmission using PUR and *releaseCause* is set to *rrc-Suspend*; otherwise the field is not present. |

*Second Change*

– *SystemInformationBlockType24*

The IE *SystemInformationBlockType24* contains information relevant for inter-RAT cell re-selection (i.e. information about NR frequencies and NR neighbouring cells relevant for cell re-selection), which can also be used for NR idle/inactive measurements. The IE includes cell re-selection parameters common for a frequency.

***SystemInformationBlockType24* information element**

-- ASN1START

SystemInformationBlockType24-r15 ::= SEQUENCE {

carrierFreqListNR-r15 CarrierFreqListNR-r15 OPTIONAL, -- Need OR

t-ReselectionNR-r15 T-Reselection,

t-ReselectionNR-SF-r15 SpeedStateScaleFactors OPTIONAL, -- Need OR

lateNonCriticalExtension OCTET STRING OPTIONAL,

...,

[[ carrierFreqListNR-v1610 CarrierFreqListNR-v1610 OPTIONAL -- Need OR

]],

[[ carrierFreqListNR-v1700 CarrierFreqListNR-v1700 OPTIONAL -- Need OR

]],

[[ carrierFreqListNR-v17xx CarrierFreqListNR-v17xx OPTIONAL -- Need OR

]]

}

CarrierFreqListNR-r15 ::= SEQUENCE (SIZE (1..maxFreq)) OF CarrierFreqNR-r15

CarrierFreqListNR-v1610 ::= SEQUENCE (SIZE (1..maxFreq)) OF CarrierFreqNR-v1610

CarrierFreqListNR-v1700 ::= SEQUENCE (SIZE (1..maxFreq)) OF CarrierFreqNR-v1700

CarrierFreqListNR-v17xx ::= SEQUENCE (SIZE (1..maxFreq)) OF CarrierFreqNR-v17xx

CarrierFreqNR-r15 ::= SEQUENCE {

carrierFreq-r15 ARFCN-ValueNR-r15,

multiBandInfoList-r15 MultiFrequencyBandListNR-r15 OPTIONAL, -- Need OR

multiBandInfoListSUL-r15 MultiFrequencyBandListNR-r15 OPTIONAL, -- Need OR

measTimingConfig-r15 MTC-SSB-NR-r15 OPTIONAL, -- Need OR

subcarrierSpacingSSB-r15 ENUMERATED {kHz15, kHz30, kHz120, kHz240},

ss-RSSI-Measurement-r15 SS-RSSI-Measurement-r15 OPTIONAL, -- Cond RSRQ2

cellReselectionPriority-r15 CellReselectionPriority OPTIONAL, -- Need OP

cellReselectionSubPriority-r15 CellReselectionSubPriority-r13 OPTIONAL, -- Need OR

threshX-High-r15 ReselectionThreshold,

threshX-Low-r15 ReselectionThreshold,

threshX-Q-r15 SEQUENCE {

threshX-HighQ-r15 ReselectionThresholdQ-r9,

threshX-LowQ-r15 ReselectionThresholdQ-r9

} OPTIONAL, -- Cond RSRQ

q-RxLevMin-r15 INTEGER (-70..-22),

q-RxLevMinSUL-r15 INTEGER (-70..-22) OPTIONAL, -- Need OR

p-MaxNR-r15 P-MaxNR-r15,

ns-PmaxListNR-r15 NS-PmaxListNR-r15 OPTIONAL, -- Need OR

q-QualMin-r15 INTEGER (-43..-12) OPTIONAL, -- Need OP

deriveSSB-IndexFromCell-r15 BOOLEAN,

maxRS-IndexCellQual-r15 MaxRS-IndexCellQualNR-r15 OPTIONAL, -- Need OR

threshRS-Index-r15 ThresholdListNR-r15 OPTIONAL, -- Need OR

...,

[[ multiBandNsPmaxListNR-v1550 MultiBandNsPmaxListNR-1-v1550 OPTIONAL, -- Need OR

multiBandNsPmaxListNR-SUL-v1550 MultiBandNsPmaxListNR-v1550 OPTIONAL, -- Need OR

ssb-ToMeasure-r15 SSB-ToMeasure-r15 OPTIONAL -- Need OR

]]

}

CarrierFreqNR-v1610 ::= SEQUENCE {

smtc2-LP-r16 MTC-SSB2-LP-NR-r16 OPTIONAL, -- Need OR

ssb-PositionQCL-CommonNR-r16 SSB-PositionQCL-RelationNR-r16 OPTIONAL, -- Cond SharedSpectrum2

allowedCellListNR-r16 AllowedCellListNR-r16 OPTIONAL, -- Cond SharedSpectrum

highSpeedCarrierNR-r16 ENUMERATED {true} OPTIONAL -- Need OR

}

CarrierFreqNR-v1700 ::= SEQUENCE {

nr-FreqNeighHSDN-CellList-r17 NR-FreqNeighHSDN-CellList-r17 OPTIONAL -- Need OR

}

CarrierFreqNR-v17xx ::= SEQUENCE {

nr-FreqNeighHSDN-CellList-r17 NR-FreqNeighHSDN-CellList-r17 OPTIONAL, -- Need OR

subcarrierSpacingSSB-r17 ENUMERATED {kHz480, spare1} OPTIONAL, -- Need OR

ssb-PositionQCL-CommonNR-r17 SSB-PositionQCL-RelationNR-r17 OPTIONAL -- Cond SharedSpectrum2

}

MultiBandNsPmaxListNR-1-v1550 ::= SEQUENCE (SIZE (1.. maxMultiBandsNR-1-r15)) OF NS-PmaxListNR-r15

MultiBandNsPmaxListNR-v1550 ::= SEQUENCE (SIZE (1.. maxMultiBandsNR-r15)) OF NS-PmaxListNR-r15

AllowedCellListNR-r16 ::= SEQUENCE (SIZE (1..maxCellAllowedNR-r16)) OF PhysCellIdNR-r15

NR-FreqNeighHSDN-CellList-r17 ::= SEQUENCE (SIZE (1..maxCellNR-r17)) OF PhysCellIdRangeNR-r16

-- ASN1STOP

| ***SystemInformationBlockType24* field descriptions** |
| --- |
| ***allowedCellListNR***  List of allow-listed neighbouring NR cells. |
| ***carrierFreqListNR***  List of carrier frequencies of NR carriers. These frequencies correspond to GSCN values as specified in TS 38.101 [85]. If the *carrierFreqListNR-v1610* is present, it contains the same number of entries, listed in the same order as in the *carrierFreqListNR* (without suffix). |
| ***cellReselectionPriority***  The field concerns the absolute priority of the concerned carrier frequency as used by the cell reselection procedure. Corresponds with parameter "priority" in TS 36.304 [4]. |
| ***deriveSSB-IndexFromCell***  The field indicates whether the UE may use, to derive the SSB index of a cell on the indicated SSB frequency and subcarrier spacing, the timing of any detected cell with the same SSB frequency and subcarrier spacing. If this field is set to TRUE, the UE assumes SFN and frame boundary alignment across cells on the same NR carrier frequency as specified in TS 36.133 [16]. |
| ***highSpeedCarrierNR***  If the field is present, the UE shall apply the enhanced inter-RAT NR measurement requirements to support high speed up to 500 km/h as specified in TS 36.133 [16] to the NR carrier. |
| ***maxRS-IndexCellQual***  Number of SS blocks to average for cell measurement derivation. Corresponds to the parameter *nrofSS-BlocksToAverage* in TS 38.304 [92]. |
| ***measTimingConfig***  Used to configure measurement timing configurations, i.e., timing occasions at which the UE measures SSBs. If the field is absent, the UE assumes that SSB periodicity is 5ms in this frequency. |
| ***multiBandInfoList***  Indicates the list of frequency bands for which the NR cell reselection parameters apply. The UE shall select the first listed band which it supports in the *multiBandInfoList* field to represent the NR neighbour carrier frequency. The network always includes this field. |
| ***multiBandInfoListSUL***  Indicates the list of frequency bands for which the NR cell reselection parameters apply. The UE shall select the first listed band which it supports in the *multiBandInfoListSUL* field to represent the NR neighbour carrier frequency. |
| ***multiBandNsPmaxListNR***  Indicates the *NS-PmaxListNR* configuration for the NR frequency band(s) listed in *multiBandInfoList*. The first entry corresponds to the second listed band in *multiBandInfoList*, and second entry corresponds to the third listed band in *multiBandInfoList*, and so on. |
| ***multiBandNsPmaxListNR-SUL***  Indicates the *NS-PmaxListNR* configuration for the NR SUL frequency band(s) listed in *multiBandInfoListSUL*. The first entry corresponds to the first listed band in *multiBandInfoListSUL*, and second entry corresponds to the second listed band in *multiBandInfoListSUL*, and so on. |
| ***nr-FreqNeighHSDN-CellList***  List of neighbouring NR HSDN cells as specified in TS 38.304 [92]. |
| ***ns-PmaxListNR***  Indicates a list of *additionalPmax* and *additionalSpectrumEmission*, corresponds to the first listed band in the *multiBandInfoList*. |
| ***p-MaxNR***  Indicates the maximum power for NR (see TS 38.104 [91]) the UE can use in NR SCG. |
| ***q-QualMin***  Parameter "Qqualmin" in TS 36.304 [4], applicable for NR neighbour cells. If the field is not present, the UE applies the (default) value of negative infinity for Qqualmin. The actual value Qqualmin = field value [dB]. |
| ***q-RxLevMin***  Parameter "Qrxlevmin" in TS 38.304 [92], applicable for NR neighbour cells. The actual value Qrxlevmin = field value \* 2 [dBm]. |
| ***q-RxLevMinSUL***  Parameter "Qrxlevmin" in TS 38.304 [92], applicable for NR neighbouring cells. The actual value Qrxlevmin = field value \* 2 [dBm]. |
| ***smtc2-LP***  Measurement timing configuration for inter-RAT neighbour cells in NR with a Long Periodicity (LP) indicated by periodicity in *smtc2-LP*. The timing offset and duration are equal to the offset and duration indicated in *measTimingConfig* in *CarrierFreqNR*. The periodicity in *smtc2-LP* can only be set to a value strictly larger than the periodicity in *measTimingConfig* in *CarrierFreqNR* (e.g. if *measTimingConfig* indicates sf20 the Long Periodicity can only be set to sf40, sf80 or sf160, if *measTimingConfig* indicates sf160, *smtc2-LP* cannot be configured). The *pci-List*, if present, includes the physical cell identities of the inter-RAT neighbour cells with Long Periodicity. If *smtc2-LP* is absent, the UE assumes that there are no inter-RAT neighbour cells with a Long Periodicity. |
| ***ssb-PositionQCL-CommonNR***  Indicates the QCL relationship between SS/PBCH blocks for NR neighbor cells on the indicated frequency as specified in TS 38.213 [88], clause 4.1. If *ssb-PositionQCL-CommonNR-r17* is present, the UE ignores *ssb-PositionQCL-CommonNR-r16*. |
| ***ssb-ToMeasure***  The set of SS blocks to be measured within the SMTC measurement duration (see TS 38.215 [89]). When the field is absent the UE measures on all SS-blocks. |
| ***ss-RSSI-Measurements***  Indicates the SSB-based RSSI measurement configuration. If the field is absent, the UE behaviour is defined in TS 38.215 [89], clause 5.1.3. |
| ***subcarrierSpacingSSB***  Indicates the subcarrier spacing of SSB of NR frequency. Only the values 15 kHz or 30 kHz (FR1), 120 kHz or 240 kHz (FR2-1), 120 kHz or 480 kHz (FR2-2) are applicable. If *subcarrierSpacingSSB-r17* is present, the UE ignores *subcarrierSpacingSSB-r15*. |
| ***threshRS-Index***  List of thresholds for consolidation of L1 measurements per RS index. Corresponds to the parameter *absThreshSS-BlocksConsolidation* in TS 38.304 [92]. |
| ***threshX-High***  Parameter "ThreshX, HighP" in TS 36.304 [4]. |
| ***threshX-HighQ***  Parameter "ThreshX, HighQ" in TS 36.304 [4]. |
| ***threshX-Low***  Parameter "ThreshX, LowP" in TS 36.304 [4]. |
| ***threshX-LowQ***  Parameter "ThreshX, LowQ" in TS 36.304 [4]. |
| ***t-ReselectionNR***  Parameter "TreselectionNR" in TS 36.304 [4]. |
| ***t-ReselectionNR-SF***  Parameter "Speed dependent ScalingFactor for TreselectionNR" in TS 36.304 [4]. If the field is not present, the UE behaviour is specified in TS 36.304 [4]. |

| **Conditional presence** | **Explanation** |
| --- | --- |
| *RSRQ* | The field is mandatory present if the *threshServingLowQ* is present in *systemInformationBlockType3*; otherwise it is not present. |
| *RSRQ2* | The field is optional Need OP if the *threshServingLowQ* is present in *systemInformationBlockType3*; otherwise it is not present. |
| *SharedSpectrum* | The field is optional Need OP if NR operates with shared spectrum channel access; otherwise, it is not present. |
| *SharedSpectrum2* | The field is mandatory present if NR operates with shared spectrum channel access; otherwise, it is not present. |

*Next Change*

– *MeasIdleConfig*

The IE *MeasIdleConfig* is used to convey information to UE about measurements requested to be done while in RRC\_IDLE or RRC\_INACTIVE.

***MeasIdleConfig* information element**

-- ASN1START

MeasIdleConfigSIB-r15 ::= SEQUENCE {

measIdleCarrierListEUTRA-r15 EUTRA-CarrierList-r15,

...

}

MeasIdleConfigSIB-NR-r16 ::= SEQUENCE {

measIdleCarrierListNR-r16 NR-CarrierList-r16,

...

}

MeasIdleConfigDedicated-r15 ::= SEQUENCE {

measIdleCarrierListEUTRA-r15 EUTRA-CarrierList-r15 OPTIONAL, -- Need OR

measIdleDuration-r15 ENUMERATED {sec10, sec30, sec60, sec120,

sec180, sec240, sec300, spare},

...,

[[

measIdleCarrierListNR-r16 NR-CarrierList-r16 OPTIONAL, -- Need OR

validityAreaList-r16 ValidityAreaList-r16 OPTIONAL -- Need OR

]]

}

EUTRA-CarrierList-r15 ::= SEQUENCE (SIZE (1..maxFreqIdle-r15)) OF MeasIdleCarrierEUTRA-r15

NR-CarrierList-r16 ::= SEQUENCE (SIZE (1..maxFreqIdle-r15)) OF MeasIdleCarrierNR-r16

MeasIdleCarrierEUTRA-r15::= SEQUENCE {

carrierFreq-r15 ARFCN-ValueEUTRA-r9,

allowedMeasBandwidth-r15 AllowedMeasBandwidth,

validityArea-r15 CellList-r15 OPTIONAL, -- Need OR

measCellList-r15 CellList-r15 OPTIONAL, -- Need OR

reportQuantities ENUMERATED {rsrp, rsrq, both},

qualityThreshold-r15 SEQUENCE {

idleRSRP-Threshold-r15 RSRP-Range OPTIONAL, -- Need OR

idleRSRQ-Threshold-r15 RSRQ-Range-r13 OPTIONAL -- Need OR

} OPTIONAL, -- Need OP

...

}

ValidityAreaList-r16 ::= SEQUENCE (SIZE (1..maxFreqIdle-r15)) OF ValidityArea-r16

ValidityArea-r16 ::= SEQUENCE {

carrierFreq-r16 ARFCN-ValueEUTRA-r9,

validityCellList-r16 ValidityCellList-r16 OPTIONAL -- Need ON

}

ValidityCellList-r16 ::= SEQUENCE (SIZE (1.. maxCellMeasIdle-r15)) OF PhysCellIdRange

MeasIdleCarrierNR-r16 ::= SEQUENCE {

carrierFreqNR-r16 ARFCN-ValueNR-r15,

subcarrierSpacingSSB-r16 ENUMERATED {kHz15, kHz30, kHz120, kHz240},

frequencyBandList MultiFrequencyBandListNR-r15 OPTIONAL, -- Need OR

measCellListNR-r16 CellListNR-r16 OPTIONAL, -- Need OR

reportQuantitiesNR-r16 ENUMERATED {rsrp, rsrq, both},

qualityThresholdNR-r16 SEQUENCE {

idleRSRP-ThresholdNR-r16 RSRP-RangeNR-r15 OPTIONAL, -- Need OR

idleRSRQ-ThresholdNR-r16 RSRQ-RangeNR-r15 OPTIONAL -- Need OR

} OPTIONAL, -- Need OR

ssb-MeasConfig-r16 SEQUENCE {

maxRS-IndexCellQual-r16 MaxRS-IndexCellQualNR-r15 OPTIONAL, -- Need OR

threshRS-Index-r16 ThresholdListNR-r15 OPTIONAL, -- Need OR

measTimingConfig-r16 MTC-SSB-NR-r15 OPTIONAL, -- Need OR

ssb-ToMeasure-r16 SSB-ToMeasure-r15 OPTIONAL, -- Need OR

deriveSSB-IndexFromCell-r16 BOOLEAN,

ss-RSSI-Measurement-r16 SS-RSSI-Measurement-r15 OPTIONAL -- Need OP

} OPTIONAL, -- Need OP

beamMeasConfigIdle-r16 BeamMeasConfigIdleNR-r16 OPTIONAL, -- Need OR

...,

[[

subcarrierSpacingSSB-r17 ENUMERATED {kHz480, spare1} OPTIONAL -- Need OR

]]

}

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

CellListNR-r16 ::= SEQUENCE (SIZE (1..maxCellMeasIdle-r15)) OF PhysCellIdRangeNR-r16

BeamMeasConfigIdleNR-r16 ::= SEQUENCE {

reportQuantityRS-IndexNR-r16 ENUMERATED {rsrp, rsrq, both},

maxReportRS-Index-r16 INTEGER (0..maxRS-IndexReport-r15),

reportRS-IndexResultsNR-r16 BOOLEAN

}

-- ASN1STOP

| ***MeasIdleConfig* field descriptions** |
| --- |
| ***allowedMeasBandwidth***  If absent, the value corresponding to the downlink bandwidth indicated by the *dl-Bandwidt*h included in *MasterInformationBlock* of serving cell applies. |
| ***beamMeasConfigIdle***  Indicates the beam level measurement configuration. |
| ***carrierFreq***  Indicates the E-UTRA carrier frequency to be used for measurements during RRC\_IDLE or RRC\_INACTIVE. |
| ***carrierFreqNR***  Indicates the NR carrier frequency to be used for measurements during RRC\_IDLE or RRC\_INACTIVE. |
| ***frequencyBandList***  Indicates the list of frequency bands for which the NR idle/inactive measurement parameters apply. The UE shall select the first listed band which it supports in the frequencyBandList field to represent the NR neighbour carrier frequency. |
| ***deriveSSB-IndexFromCell***  The field indicates whether the UE may use, to derive the SSB index of a cell on the indicated SSB frequency and subcarrier spacing, the timing of any detected cell with the same SSB frequency and subcarrier spacing. If this field is set to TRUE, the UE assumes SFN and frame boundary alignment across cells on the same NR carrier frequency as specified in TS 36.133 [16]. |
| ***maxReportRS-Index***  Max number of beam indices to include in the idle/inactive measurement result. |
| ***maxRS-IndexCellQual***  Number of SS blocks to average for cell measurement derivation. Corresponds to the parameter *nrofSS-BlocksToAverage* in TS 38.304 [92]. |
| ***measCellList***  Indicates the list of E-UTRA cells which the UE is requested to measure and report for idle/inactive measurements. |
| ***measCellListNR***  Indicates the list of NR cells which the UE is requested to measure and report for idle/inactive measurements. |
| ***measIdleCarrierListEUTRA***  Indicates the E-UTRA carriers to be measured during RRC\_IDLE or RRC\_INACTIVE. |
| ***measIdleCarrierListNR***  Indicates the NR carriers to be measured during RRC\_IDLE or RRC\_INACTIVE. |
| ***measIdleDuration***  Indicates the duration for performing measurements during RRC\_IDLE or RRC\_INACTIVE for measurements assigned via *RRCConnectionRelease*. Value sec10 correspond to 10 seconds, value sec30 to 30 seconds and so on. |
| ***measTimingConfig***  Used to configure the NR measurement timing configurations, i.e., timing occasions at which the UE measures SSBs. If the field is absent in *VarMeasConfig*, the UE assumes that SSB periodicity is 5ms in this frequency. |
| ***qualityThreshold***  Indicates the quality thresholds for reporting the measured cells for idle/inactive E-UTRA measurements. |
| ***qualityThresholdNR***  Indicates the quality thresholds for reporting the measured cells for idle/inactive NR measurements. |
| ***reportQuantities***  Indicates which E-UTRA measurement quantities the UE is requested to report in the idle/inactive measurement report. In this version of the specification, E-UTRAN always configures the value '*both*'. |
| ***reportQuantitiesNR***  Indicates which NR measurement quantities the UE is requested to report in the idle/inactive measurement report. |
| ***reportQuantityRS-IndexNR***  Indicates which measurement information per beam index the UE shall include in the NR idle/inactive measurement results. |
| ***reportRS-IndexResultsNR***  Indicates whether or not the UE shall include beam measurements in the NR idle/inactive measurement results. |
| ***ss-RSSI-Measurement***  Indicates the SSB-based RSSI measurement configuration. If the field is absent in *VarMeasConfig*, the UE behaviour is defined in TS 38.215 [89], clause 5.1.3. |
| ***ssb-ToMeasure***  The set of SS blocks to be measured within the SMTC measurement duration (see TS 38.215 [89]). When the field is absent in *VarMeasConfig,* the UE measures on all SS-blocks. |
| ***subcarrierSpacingSSB***  Indicates subcarrier spacing of SSB of NR frequency. If *subcarrierSpacingSSB-r17* is present, the UE shall ignore *subcarrierSpacingSSB-r16*. |
| ***threshRS-Index***  List of thresholds for consolidation of L1 measurements per RS index. Corresponds to the *parameter absThreshSS-BlocksConsolidation* in TS 38.304 [92]. |
| ***validityArea***  Indicates the list of cells within which UE is requested to do measurements during RRC\_IDLE or RRC\_INACTIVE. If the UE reselects to a cell whose physical cell identity does not match any entry in *validityArea* for the corresponding carrier frequency, the measurements are no longer required. E-UTRAN configures this field only in *RRCConnectionRelease*. |
| ***validityAreaList***  Indicates the list of frequencies and optionally, for each frequency, a list of cells within which the UE is required to perform measurements during RRC\_IDLE or RRC\_INACTIVE. E-UTRAN configures this field only in *RRCConnectionRelease*. A UE can be configured either with *validityArea* or *validityAreaList*, but not both. |

*Next Change*

– *MeasObjectNR*

The IE *MeasObjectNR* specifies information applicable for inter-RAT NR neighbouring cells.

***MeasObjectNR* information element**

-- ASN1START

MeasObjectNR-r15 ::= SEQUENCE {

carrierFreq-r15 ARFCN-ValueNR-r15,

rs-ConfigSSB-r15 RS-ConfigSSB-NR-r15,

threshRS-Index-r15 ThresholdListNR-r15 OPTIONAL, -- Need OR

maxRS-IndexCellQual-r15 MaxRS-IndexCellQualNR-r15 OPTIONAL, -- Need OR

offsetFreq-r15 Q-OffsetRangeInterRAT DEFAULT 0,

excludedCellsToRemoveList-r15 CellIndexList OPTIONAL, -- Need ON

excludedCellsToAddModList-r15 CellsToAddModListNR-r15 OPTIONAL, -- Need ON

quantityConfigSet-r15 INTEGER (1.. maxQuantSetsNR-r15),

cellsForWhichToReportSFTD-r15 SEQUENCE (SIZE (1..maxCellSFTD)) OF PhysCellIdNR-r15 OPTIONAL, -- Need OR

...,

[[ cellForWhichToReportCGI-r15 PhysCellIdNR-r15 OPTIONAL, -- Need ON

deriveSSB-IndexFromCell-r15 BOOLEAN OPTIONAL, -- Need ON

ss-RSSI-Measurement-r15 SS-RSSI-Measurement-r15 OPTIONAL, -- Need ON

bandNR-r15 CHOICE {

release NULL,

setup FreqBandIndicatorNR-r15

} OPTIONAL -- Need ON

]],

[[

rmtc-ConfigNR-r16 SetupRelease {RMTC-ConfigNR-r16} OPTIONAL -- Cond SharedSpectrum

]]

}

RS-ConfigSSB-NR-r15 ::= SEQUENCE {

measTimingConfig-r15 MTC-SSB-NR-r15,

subcarrierSpacingSSB-r15 ENUMERATED {kHz15, kHz30, kHz120, kHz240},

...,

[[ ssb-ToMeasure-r15 CHOICE {

release NULL,

setup SSB-ToMeasure-r15

} OPTIONAL -- Need ON

]],

[[

ssb-PositionQCL-CommonNR-r16 SSB-PositionQCL-RelationNR-r16 OPTIONAL, -- Cond SharedSpectrum2

ssb-PositionQCL-CellsToAddModListNR-r16 SSB-PositionQCL-CellsToAddModListNR-r16 OPTIONAL, -- Cond SharedSpectrum

ssb-PositionQCL-CellsToRemoveListNR-r16 SEQUENCE (SIZE (1..maxCellMeas)) OF PhysCellIdNR-r15 OPTIONAL -- Cond SharedSpectrum

]],

[[

subcarrierSpacingSSB-r17 ENUMERATED {kHz480, kHz960} OPTIONAL, -- Need OR

ssb-PositionQCL-CommonNR-r17 SSB-PositionQCL-RelationNR-r17 OPTIONAL, -- Cond SharedSpectrum2

ssb-PositionQCL-CellsToAddModListNR-r17 SSB-PositionQCL-CellsToAddModListNR-r17 OPTIONAL, -- Cond SharedSpectrum

ssb-PositionQCL-CellsToRemoveListNR-r17 SEQUENCE (SIZE (1..maxCellMeas)) OF PhysCellIdNR-r15 OPTIONAL -- Cond SharedSpectrum

]]

}

CellsToAddModListNR-r15 ::= SEQUENCE (SIZE (1..maxCellMeas)) OF CellsToAddModNR-r15

CellsToAddModNR-r15 ::= SEQUENCE {

cellIndex-r15 INTEGER (1..maxCellMeas),

physCellId-r15 PhysCellIdNR-r15

}

SSB-PositionQCL-CellsToAddModListNR-r16 ::= SEQUENCE (SIZE (1..maxCellMeas)) OF SSB-PositionQCL-CellsToAddNR-r16

SSB-PositionQCL-CellsToAddNR-r16 ::= SEQUENCE {

physCellId-r16 PhysCellIdNR-r15,

ssb-PositionQCL-NR-r16 SSB-PositionQCL-RelationNR-r16

}

RMTC-ConfigNR-r16 ::= SEQUENCE {

rmtc-PeriodicityNR-r16 ENUMERATED {ms40, ms80, ms160, ms320, ms640},

rmtc-SubframeOffsetNR-r16 INTEGER(0..639) OPTIONAL, -- Need ON

measDurationNR-r16 ENUMERATED {sym1, sym14or12, sym28or24, sym42or36, sym70or60},

rmtc-FrequencyNR-r16 ARFCN-ValueNR-r15,

refSCS-CP-NR-r16 ENUMERATED {kHz15, kHz30, kHz60-NCP, kHz60-ECP},

...,

[[

rmtc-BandwidthNR-r17 ENUMERATED {mhz100, mhz400, mhz800, mhz1600, mhz2000} OPTIONAL, -- Need OR

measDurationNR-r17 ENUMERATED {sym140, sym560, sym1120} OPTIONAL, -- Need OR

refSCS-CP-NR-r17 ENUMERATED {kHz120, kHz480, kHz960} OPTIONAL -- Need OR

]]

}

SSB-PositionQCL-CellsToAddModListNR-r17 ::= SEQUENCE (SIZE (1..maxCellMeas)) OF SSB-PositionQCL-CellsToAddNR-r17

SSB-PositionQCL-CellsToAddNR-r17 ::= SEQUENCE {

physCellIdNR-r17 PhysCellIdNR-r15,

ssb-PositionQCL-NR-r17 SSB-PositionQCL-RelationNR-r17

}

-- ASN1STOP

| ***MeasObjectNR* field descriptions** |
| --- |
| ***bandNR***  Indicates the frequency band of the NR carrier frequency configured in this *MeasObjectNR*. This field is always set to setup when the network configures measurements with this *MeasObjectNR*. |
| ***carrierFreq***  Identifies the SSB frequency to be measured. E-UTRAN does not configure more than one measurement object for the same SSB frequency. |
| ***deriveSSB-IndexFromCell***  The field indicates whether the UE may use, to derive the SSB index of a cell on the indicated SSB frequency and subcarrier spacing, the timing of the NR serving cell with the same SSB frequency and subcarrier spacing if configured. Otherwise, the field indicates whether the UE may use the timing of any detected cell with the same SSB frequency and subcarrier spacing. |
| ***measDurationNR***  Number of consecutive symbols for which the Physical Layer reports samples of RSSI (see TS 38.215 [89]). Value *sym1* corresponds to one symbol, *sym14or12* corresponds to 14 *symbols* of the reference numerology for NCP and 12 symbols for ECP, and so on. If *measDurationNR-r17* is present, the UE shall ignore *measDurationNR-r16*. |
| ***quantityConfigSet***  Indicates the n-th element of *quantityConfigNRList* provided in *MeasConfig*. |
| ***refSCS-CP-NR***  Indicates a reference subcarrier spacing and cyclic prefix to be used for RSSI measurements (see TS 38.215 [89]). |
| ***rmtc-FrequencyNR***  Indicates the center frequency of the measured bandwidth (see TS 38.215 [89]). |
| ***rmtc-PeriodicityNR***  Indicates the RSSI measurement timing configuration (RMTC) periodicity (see TS 38.215 [89]). Value *ms40* corresponds to 40 ms periodicity, *ms80* corresponds to 80 ms periodicity, and so on. |
| ***rmtc-SubframeOffsetNR***  Indicates the RSSI measurement timing configuration (RMTC) subframe offset (see TS 38.215 [89)). If not configured, the UE chooses a random value as *rmtc-SubframeOffsetNR* for *measDurationNR* which shall be selected to be between 0 and the configured *rmtc-PeriodicityNR* with equal probability. |
| ***rs-ConfigSSB***  Indicates the SSB configuration for measuring the set of SS blocks within the SMTC measurement duration. |
| ***ssb-PositionQCL-NR***  Indicates the QCL relationship between SS/PBCH blocks for a specific neighbor cell as specified in TS 38.213 [88], clause 4.1. If provided, the cell specific value overwrites the common value signalled by *ssb-PositionQCL-CommonNR* in *MeasObjectNR* for the indicated cell. |
| ***ssb-PositionQCL-CommonNR***  Indicates the QCL relationship between SS/PBCH blocks for NR neighbor cells as specified in TS 38.213 [88], clause 4.1. If *ssb-PositionQCL-CommonNR-r17* is present, the UE shall ignore *ssb-PositionQCL-CommonNR-r15*. |
| ***subcarrierSpacingSSB***  Subcarrier spacing of SSB.  Only the following values are applicable depending on the used frequency:  FR1: 15 or 30 kHz  FR2-1: 120 or 240 kHz  FR2-2: 120, 480, or 960 kHz |
| ***rmtc-BandwidthNR***  Indicates the bandwidth for the RSSI measurement. |
| ***threshRS-Index***  List of thresholds for consolidation of L1 measurements per RS index. |

| **Conditional presence** | **Explanation** |
| --- | --- |
| *SharedSpectrum* | The field is optional Need ON if NR operates with shared spectrum channel access; otherwise, it is not present. |
| *SharedSpectrum2* | The field is mandatory present if NR operates with shared spectrum channel access; otherwise, it is not present. |

*Next Change*

– *SSB-PositionQCL-RelationNR*

The IE *SSB-PositionQCL-RelationNR* is used to indicate the QCL relationship between SSB positions on the indicated frequency or cell (see TS 38.213 [88], clause 4.1) for NR operation with shared spectrum channel access. Value n1 corresponds to 1, value n2 corresponds to 2 and so on.

***SSB-PositionQCL-RelationNR* information element**

-- ASN1START

SSB-PositionQCL-RelationNR-r16 ::= ENUMERATED {n1, n2, n4, n8}

SSB-PositionQCL-RelationNR-r17 ::= ENUMERATED {n32, n64}

-- ASN1STOP