**3GPP TSG-RAN WG2 Meeting #110-e *R2-200xxxx***

**Electronic, 01 June – 12 June 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **36.331** | **CR** | **4260** | **rev** | **2** | **Current version:** | **16.0.0** |  |
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| *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 |  | Core Network |  |

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| ***Title:*** | CR for 36.331 on CA/DC Enhancements | | | | | | | | | | |
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| ***Source to WG:*** | Ericsson (Rapporteur) | | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | | |
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| ***Work item code:*** | LTE\_NR\_DC\_CA\_enh-Core | | | | | |  | ***Date:*** | | | 2020-05- |
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| ***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 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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
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| ***Reason for change:*** | | | To capture the RAN2 agreements on LTE\_NR\_DC\_CA\_enh-Core WI (RAN2-109e), easy agreements from RRC email discussion *[Post109e][037][DCCA] RRC open issues* (R2-2003383) and miscellaneous corrections  *Early measurement configuration:*   * The cell quality derivation parameters (NR: nrofSS-BlocksToAverage-r16 and absThreshSS-BlocksConsolidation-r16; LTE: maxRS-IndexCellQual and threshRS-Index) will be kept under the ssb-MeasConfig. * A maximum of 8 cells per carrier can be reported for early measurements in LTE/NR rel-16. * In LTE, a need code of “Need OR” to be used for the following IEs inside ssb-MeasConfig of MeasIdleCarrierListNR: measTimingConfig-r15, maxRS-IndexCellQual-r15, threshRS-Index-r15 and ssb-ToMeasure-r15. * The early measurement configuration procedure will be captured in a subclause different from the early measurement performance procedure, in both LTE and NR   *MCG SCell and SCG Configuration with RRC Resume:*   * For restoreSCG upon RRC resume, Network shall always include secondaryCellGroup (with at least reconfigurationWithSync) together with restoreSCG. * Confirm the use of the new rel-16 IE SCellToAddModList IE (included in latest 36.331 DCCA CR) for SCell addition/modification in RRCConnectionResume   To capture the RAN2 agreements on LTE\_NR\_DC\_CA\_enh-Core WI (RAN2-109bis-e) and miscellaneous corrections discussed in [AT109bis-e][032][DCCA] RRC open issues (R2-2004120) as well as DCCA RILs  *Early measurement configuration:*   * The new rel-16 IE (in 36.331) to enable the reporting of up to 8 EUTRA carriers in early measurement results, will be used to include only the additional 5 carriers that can be reported in rel-16 * When the UE is configured to measure more frequencies than it is configured to report, it is left up to UE implementation on which frequencies to include in the early measurement report. * The cell quality and beam quality derivation procedures for connected mode will be reused also for early measurements (with appropriate changes to clarify that layer3 filtering is not applied for the case of early measurements). The proposals in R2-2003395/R2-2003718 to be used as baseline * (For 36.331) to enable the network to configure only NR carriers for early measurements, without the need to include E-UTRA carriers, the definition of the NR carrier list can be included in a separate IE outside the measIdleConfigSIB-r15. * (For 36.331/38.331) to explicitly capture in the procedure text that the UE will not consider the early measurement carrier list(s) in SIB if it has received any of the carrier lists (i.e. E-UTRA, NR, or both) in RRC(Connection)Release.   *MCG SCell and SCG Configuration with RRC Resume:*   * Add p-maxEUTRA, p-maxUE-FR1, and tdm-patternConfig in the RRCConnectionResume message. We allow the network to release these configurations when the UE is resumed without SCG. TBD if need codes is “Need OR” etc * Under the assumption that encryption for this message is possible now and no other functional changes are needed, LTE *RRCConnectionResume* message can be used to restore NR SCG in case of EN-DC (Note ngEN-DC with 5GCN was already agreed/assumed).   *MCG Failure recovery:*   * UE can include UTRAN-FDD measurement results in MCG Failure Information message. | | | | | | | | |
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| ***Summary of change:*** | | | *Early measurements:*   * The early measurement configuration procedure captured in a subclause (5.6.20.1a) different from the early measurement performance procedure (5.6.20.2) * Removed the FFS related to maxRS-IndexCellQual and threshRS-Index * A new rel-16 IE introduced to enable the reporting of up the additional 5 EUTRA carriers that UE can report in rel-16. * Updated RRCConnectionResumeComplete and UEInformationResponse (procedure and IEs) and VarMeasIdleReport to account for the usage of this new IE. * The early measurement configuration procedure captured in a subclause ( 5.6.20.1a) different from the early measurement performance proceured (5.6.20.2) * The cell quality and beam quality derivation procedures for connected mode reused also for early measurements (with appropriate changes to section 5.5.3 to clarify the procedure applies to idle/ianctive mode and that layer3 filtering is not applied for the case of idel/inactive measurements). * the definition of the NR carrier list included in a separate IE outside the measIdleConfigSIB-r15.to enable the network to configure only NR carriers for early measurements, without the need to include E-UTRA carriers, * Explicitly captured that the UE will not consider the early measurement carrier list(s) in SIB if it has received any of the carrier lists (i.e. E-UTRA, NR, or both) in RRC(Connection)Release. * Miscllaneous corrections, such as need codes for early measuremnet configuration/results IEs, max values for sequences, etc.   *MCG SCell and SCG Configuration with RRC Resume:*   * Conditional presence of the secondary cell group configuration in RRCConnectionResume added, indicating that network will always include secondaryCellGroup (with at least reconfigurationWithSync) together with restoreSCG. * The SCellToAddModList-r16 defined that is used for adding/modifying SCells in RRC Connection Resume * Corrected erroneous indenting that was leading to the release of p-maxEUTRA, p-maxUE-FR1, and tdm-PatternConfig even when the UE supports the resumption of the SCG upon connection resumption in (NG)EN-DC * Added p-maxEUTRA, p-maxUE-FR1, and tdm-patternConfig in the RRCConnectionResume message. We allow the network to release these configurations when the UE is resumed without SCG. TBD if need codes is “Need OR” etc * Missing text to restore the SCell/SCG added in resume and field descriptions limitations to only 5GC corrected to enable resume with EN-DC.   *MCG Failure Recovery:*   * On reception of reconfiguraion with mobilityControlInfo, if T316 was running, the stoppage of the timer and the resumption of MCG is performed before other actions such as synch/RA. * Added missing trigger conditions for RRC connection re-establishment (RLF on MCG while SCG is suspended, RLF on the MCG while NR PSCell change is ongoing) * T310 is stopped when MCG failure recovery is initiated and T310 not started if T316 is running * Called the RLF-Timers procedure when if *rlf-TimersAndConstantsMCG-Failure* is included in radioResourceConfigDedicated * IEs and procedure to enable UE to include UTRAN-FDD and GERAN measurement results in MCG Failure Information message.   *Other:*   * Miscellanous corrections proposed in R2-2003718/R2-2003395 * The following ASN.1 review RILs implemented (which may overlap with some of the changes described above) :   + *Z301:* Moved the detailes of SIB handling of early measurement configuration from section 5.2.2.12 to 5.6.20.1a   + *Z303:* ensured the idle/inactive availability indication is included in the Resume Complete only if the UE has not be asked to include the measurements in the Resume message   + *Z304:* ensured that double reconfiguration complete message is not sent if the *RRCConnectionReconfigurationComplete* message was already embedded in *Resume Complete* message   + *Z305:* validity area check moved to the beginning of section 5.6.20.1a, as that check should be done as part of the idle/inactive meas configuration update procedure   + *Z306:* clarified that the idle/inactive meas config update is done not only in reselection but also on cell selection after connection release   + *N003:* TDM-PatternConfig-r16 IE deleted as it’s defintion was exaclty the same as TDM-PatternConfig-r15.   + *N007:* the sCellToAddModList-r16 in resume is set to use the new defined IE   + *Z311:* conditional presence and field description of the secondary cell group configuration in RRCConnectionResume added/updated   + *Z307/8*: limitations to 5GC removed with regard to resuming with DC (i.e. EN-DC in resume supported)   + *B001:* idleModeMeasurements-r16 flag removed to idleModeMeasurementsNR-r16 and moved to the SIB2 extension group where the additioanl Rel-16 IEs are placed   + *Z309:* field defintion of validityAreaList shortened.   + *N006:* maxCellMeasIdle-r16 removed, as it has the same value as the rel-15 IE   + *Z310*: included cell selection to a cell out of validity area as one of the triggers for stopping T331. | | | | | | | | |
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| ***Consequences if not approved:*** | | | The agreements regarding Rel-16 DC/CA enhancements such as early measurements for fast CA/DC setup, SCG/SCell resume, direct SCell state configuration in handover/addition/resume, fast MCG failure recovery, async CA and cross carrier scheduling with different numerologies will not be captured properly, leading to specification unclarity and ambiguity in UE behavior. | | | | | | | | |
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| ***Clauses affected:*** | | | 5.2.2.3 System information required by the UE  5.2.2.12 Actions upon reception of SystemInformationBlockType5  5.2.2.31 Actions upon reception of SystemInformationBlockType24  5.3.3.2 RRC connection establishment (Initiation)  5.3.3.3a Actions related to transmission of RRCConnectionResumeRequest message  5.3.3.4 Reception of RRCConnectionSetup by the UE.  5.3.3.4a Reception of RRCConnectionResume by the UE.  5.3.5.3 Reception of an *RRCConnectionReconfiguration* not including the *mobilityControlInfo* by the UE.  5.3.5.4 Reception of an *RRCConnectionReconfiguration* including the *mobilityControlInfo* by the UE (handover)  5.3.7.2 RRC Connection re-establishment (initiation)  5.3.8.3 Reception of RRC Connection release by the UE  5.3.10.0 Radio Resouce Configuration (General)  5.3.10.7 Radio Link Failure Timers and Constants Reconfiguration  5.3.11.1 Detection of physical layer problems in RRC\_CONNECTED  5.5.3.3 Derivation of NR cell quality  5.6.5.3 Reception of UEInformationRequest message  5.6.20 Idle/Inactive measurements  5.6.26 MCG failure information  6.2.2 Message definitions (*MCGFailureInformation, RRCConnectionReconfiguration, RRCConnectionResume, RRCConnectionResumeComplete, UEInformationResponse*)  6.3.1 System information blocks (SIB2, SIB5)  6.3.2 Radio resource control information elements (*RLF-TimersAndConstants*)  6.3.5 Measurement information elements (*MeasIdleConfig*, *MeasResults*)  6.4 RRC multiplicity and type constraint values (*Multiplicity and type constraint definitions*)  7.1 UE variables (*VarMeasIdleReport*)  7.3.1 Timers (Informative) | | | | | | | | |
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|  | | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | |  |  | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | |  |  | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
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| ***Other comments:*** | | |  | | | | | | | | |
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| ***This CR's revision history:*** | | |  | | | | | | | | |

START OF CHANGES

# 5 Procedures

## 5.2 System information

### 5.2.2 System information acquisition

#### 5.2.2.3 System information required by the UE

The UE shall:

1> ensure having a valid version, as defined below, of (at least) the following system information, also referred to as the 'required' system information:

2> if in RRC\_IDLE:

3> if the UE is a NB-IoT UE:

4> the *MasterInformationBlock-NB/ MasterInformationBlock-TDD-NB* and *SystemInformationBlockType1-NB* as well as *SystemInformationBlockType2-NB* through *SystemInformationBlockType5-NB, SystemInformationBlockType22-NB*;

3> else:

4> the *MasterInformationBlock* and *SystemInformationBlockType1* (or *SystemInformationBlockType1-BR* depending on whether the UE is a BL UE or the UE in CE) as well as *SystemInformationBlockType2* through *SystemInformationBlockType8* and *SystemInformationBlockType24* (depending on support of the concerned RATs), *SystemInformationBlockType17* (depending on support of RAN-assisted WLAN interworking when the UE is connected to EPC), *SystemInformationBlockType25* (depending on support of E-UTRA/5GC);

2> if in RRC\_INACTIVE:

3> the *MasterInformationBlock* and *SystemInformationBlockType1* as well as *SystemInformationBlockType2* through *SystemInformationBlockType8* (depending on support of the concerned RATs), *SystemInformationBlockType24* (depending on support of the concerned RATs), *SystemInformationBlockType25*;

2> if in RRC\_CONNECTED; and

2> the UE is not a BL UE; and

2> the UE is not in CE; and

2> the UE is not a NB-IoT UE:

3> the *MasterInformationBlock*, *SystemInformationBlockType1* and *SystemInformationBlockType2* as well as *SystemInformationBlockType8* (depending on support of CDMA2000), *SystemInformationBlockType17* (depending on support of RAN-assisted WLAN interworking when the UE is connected to EPC), *SystemInformationBlockType25* (depending on support of E-UTRA/5GC);

2> if in RRC\_CONNECTED and T311 is running; and

2> the UE is a BL UE or the UE is in CE or the UE is a NB-IoT UE;

3> the *MasterInformationBlock* (or *MasterInformationBlock-NB/ MasterInformationBlock-TDD-NB* in NB-IoT), *SystemInformationBlockType1-BR* (or *SystemInformationBlockType1-NB* in NB-IoT) and *SystemInformationBlockType2* (or *SystemInformationBlockType2-NB* in NB-IoT), and for NB-IoT *SystemInformationBlockType22-NB*;

1> delete any stored system information after 3 hours or 24 hours from the moment it was confirmed to be valid as defined in 5.2.1.3, unless specified otherwise;

1> consider any stored system information except *SystemInformationBlockType10,* *SystemInformationBlockType11,* *systemInformationBlockType12* and *systemInformationBlockType14* (*systemInformationBlockType14-NB* in NB-IoT)to be invalid if *systemInfoValueTag* included in the *SystemInformationBlockType1* (*MasterInformationBlock-NB/ MasterInformationBlock-TDD-NB* in NB-IoT) is different from the one of the stored system information and in case of NB-IoT UEs, BL UEs and UEs in CE, *systemInfoValueTagSI* is not broadcasted. Otherwise consider system information validity as defined in 5.2.1.3;

*END OF CHANGES*

START OF CHANGES

#### 5.2.2.12 Actions upon reception of *SystemInformationBlockType5*

Upon receiving *SystemInformationBlockType5*, the UE shall:

1> if in RRC\_IDLE, the *redistributionInterFreqInfo* is included and the UE is redistribution capable:

2> perform E-UTRAN inter-frequency redistribution procedure as specified in TS 36.304 [4], clause 5.2.4.10;

1> if in RRC\_IDLE, or in RRC\_CONNECTED while T311 is running:

2> if the frequency band selected by the UE to represent a non-serving E UTRA carrier frequency is not a downlink only band:

3> if, for the selected frequency band, the *freqBandInfo* or the *multiBandInfoList-v10j0* is present and the UE capable of *multiNS-Pmax* supports at least one *additionalSpectrumEmission* in the *NS-PmaxList* within *freqBandInfo* or *multiBandInfoList-v10j0*:

4> apply the first listed *additionalSpectrumEmission* which it supports among the values included in *NS-PmaxList* within *freqBandInfo* or *multiBandInfoList-v10j0*;

4> if the *additionalPmax* is present in the same entry of the selected *additionalSpectrumEmission* within *NS-PmaxList*:

5> apply the *additionalPmax*;

4> else:

5> apply the *p-Max*;

3> else:

4> apply the *p-Max*;

1> if in RRC\_IDLE or RRC\_INACTIVE, and T331 is running:

2> perform the actions as specified in 5.6.20.1a;

Upon receiving *SystemInformationBlockType5-NB*, the UE shall:

1> if in RRC\_IDLE, or in RRC\_CONNECTED while T311 is running:

2> if, for the frequency band selected by the UE (from *multiBandInfoList*) to represent a non-serving NB-IoT carrier frequency, the *freqBandInfo* is present and the UE capable of *multiNS-Pmax* supports at least one *additionalSpectrumEmission* in the *NS-PmaxList* within the *freqBandInfo*:

3> apply the first listed *additionalSpectrumEmission* which it supports among the values included in *NS-PmaxList* within *freqBandInfo*;

3> if the *additionalPmax* is present in the same entry of the selected *additionalSpectrumEmission* within *NS-PmaxList*:

4> apply the *additionalPmax*;

3> else:

4> apply the *p-Max*;

2> else:

3> apply the *p-Max*;

*END OF CHANGES*

START OF CHANGES

#### 5.2.2.31 Actions upon reception of *SystemInformationBlockType24*

Upon receiving *SystemInformationBlockType24,* the UE shall:

1> if in RRC\_IDLE or RRC\_INACTIVE, and T331 is running:

2> perform the actions as specified in 5.6.20.1a;

*END OF CHANGES*

START OF CHANGES

## 5.3 Connection control

### 5.3.3 RRC connection establishment

#### 5.3.3.2 Initiation

The UE initiates the procedure when upper layers request establishment or resume of an RRC connection while the UE is in RRC\_IDLE or when upper layers request resume of an RRC connection or RRC layer requests resume of an RRC connection for, e.g. RNAU or reception of RAN paging while the UE is in RRC\_INACTIVE.

Except for NB-IoT, upon initiation of the procedure, if the UE is connected to EPC, the UE shall:

1> if *SystemInformationBlockType2* includes *ac-BarringPerPLMN-List* and the *ac-BarringPerPLMN-List* contains an *AC-BarringPerPLMN* entry with the *plmn-IdentityIndex* corresponding to the PLMN selected by upper layers (see TS 23.122 [11], TS 24.301 [35]):

2> select the *AC-BarringPerPLMN* entry with the *plmn-IdentityIndex* corresponding to the PLMN selected by upper layers;

2> in the remainder of this procedure, use the selected *AC-BarringPerPLMN* entry (i.e. presence or absence of access barring parameters in this entry) irrespective of the common access barring parameters included in *SystemInformationBlockType2;*

1> else

2> in the remainder of this procedure use the common access barring parameters (i.e. presence or absence of these parameters) included in *SystemInformationBlockType2;*

1> if *SystemInformationBlockType2* contains *acdc-BarringPerPLMN-List* and the *acdc-BarringPerPLMN-List* contains an *ACDC-BarringPerPLMN* entry with the *plmn-IdentityIndex* corresponding to the PLMN selected by upper layers (see TS 23.122 [11], TS 24.301 [35]):

2> select the *ACDC-BarringPerPLMN* entry with the *plmn-IdentityIndex* corresponding to the PLMN selected by upper layers;

2> in the remainder of this procedure, use the selected *ACDC-BarringPerPLMN* entry for ACDC barring check (i.e. presence or absence of access barring parameters in this entry) irrespective ofthe *acdc-BarringForCommon* parameters included in *SystemInformationBlockType2*;

1> else:

2> in the remainder of this procedure use the *acdc-BarringForCommon* (i.e. presence or absence of these parameters) included in *SystemInformationBlockType2* for ACDC barring check;

1> if upper layers indicate that the RRC connection is subject to EAB (see TS 24.301 [35]):

2> if the result of the EAB check, as specified in 5.3.3.12, is that access to the cell is barred:

3> inform upper layers about the failure to establish the RRC connection or failure to resume the RRC connection with suspend indication and that EAB is applicable, upon which the procedure ends;

1> if upper layers indicate that the RRC connection is subject to ACDC (see TS 24.301 [35]), *SystemInformationBlockType2* contains *BarringPerACDC-CategoryList*, and *acdc-HPLMNonly* indicates that ACDC is applicable for the UE:

2> if the *BarringPerACDC-CategoryList* contains a *BarringPerACDC-Category* entry corresponding to the ACDC category selected by upper layers:

3> select the *BarringPerACDC-Category* entry corresponding to the ACDC category selected by upper layers;

2> else:

3> select the last *BarringPerACDC-Category* entry in the *BarringPerACDC-CategoryList*;

2> stop timer T308, if running;

2> perform access barring check as specified in 5.3.3.13, using T308 as "Tbarring" and *acdc-BarringConfig* in the *BarringPerACDC-Category* as "ACDC barring parameter";

2> if access to the cell is barred:

3> inform upper layers about the failure to establish the RRC connection or failure to resume the RRC connection with suspend indication and that access barring is applicable due to ACDC, upon which the procedure ends;

1> else if the UE is establishing the RRC connection for mobile terminating calls:

2> if timer T302 is running:

3> inform upper layers about the failure to establish the RRC connection or failure to resume the RRC connection with suspend indication and that access barring for mobile terminating calls is applicable, upon which the procedure ends;

1> else if the UE is establishing the RRC connection for emergency calls:

2> if *SystemInformationBlockType2* includes the *ac-BarringInfo*:

3> if the *ac-BarringForEmergency* is set to *TRUE*:

4> if the UE has one or more Access Classes, as stored on the USIM, with a value in the range 11..15, which is valid for the UE to use according to TS 22.011 [10] and TS 23.122 [11]:

NOTE 1: ACs 12, 13, 14 are only valid for use in the home country and ACs 11, 15 are only valid for use in the HPLMN/ EHPLMN.

5> if the *ac-BarringInfo* includes *ac-BarringForMO-Data*, and for all of these valid Access Classes for the UE, the corresponding bit in the *ac-BarringForSpecialAC* contained in *ac-BarringForMO-Data* is set to *one*:

6> consider access to the cell as barred;

4> else:

5> consider access to the cell as barred;

2> if access to the cell is barred:

3> inform upper layers about the failure to establish the RRC connection or failure to resume the RRC connection with suspend indication, upon which the procedure ends;

1> else if the UE is establishing the RRC connection for mobile originating calls:

2> perform access barring check as specified in 5.3.3.11, using T303 as "Tbarring" and *ac-BarringForMO-Data* as "AC barring parameter";

2> if access to the cell is barred:

3> if *SystemInformationBlockType2* includes *ac-BarringForCSFB* or the UE does not support CS fallback:

4> inform upper layers about the failure to establish the RRC connection or failure to resume the RRC connection with suspend indication and that access barring for mobile originating calls is applicable, upon which the procedure ends;

3> else (*SystemInformationBlockType2* does not include *ac-BarringForCSFB* and the UE supports CS fallback):

4> if timer T306 is not running, start T306 with the timer value of T303;

4> inform upper layers about the failure to establish the RRC connection or failure to resume the RRC connection with suspend indication and that access barring for mobile originating calls and mobile originating CS fallback is applicable, upon which the procedure ends;

1> else if the UE is establishing the RRC connection for mobile originating signalling:

2> perform access barring check as specified in 5.3.3.11, using T305 as "Tbarring" and *ac-BarringForMO-Signalling* as "AC barring parameter";

2> if access to the cell is barred:

3> inform upper layers about the failure to establish the RRC connection or failure to resume the RRC connection with suspend indication and that access barring for mobile originating signalling is applicable, upon which the procedure ends;

1> else if the UE is establishing the RRC connection for mobile originating CS fallback:

2> if *SystemInformationBlockType2* includes *ac-BarringForCSFB*:

3> perform access barring check as specified in 5.3.3.11, using T306 as "Tbarring" and *ac-BarringForCSFB* as "AC barring parameter";

3> if access to the cell is barred:

4> inform upper layers about the failure to establish the RRC connection or failure to resume the RRC connection with suspend indication and that access barring for mobile originating CS fallback is applicable, due to *ac-BarringForCSFB*, upon which the procedure ends;

2> else:

3> perform access barring check as specified in 5.3.3.11, using T306 as "Tbarring" and *ac-BarringForMO-Data* as "AC barring parameter";

3> if access to the cell is barred:

4> if timer T303 is not running, start T303 with the timer value of T306;

4> inform upper layers about the failure to establish the RRC connection or failure to resume the RRC connection with suspend indication and that access barring for mobile originating CS fallback and mobile originating calls is applicable, due to *ac-BarringForMO-Data*, upon which the procedure ends;

1> else if the UE is establishing the RRC connection for mobile originating MMTEL voice, mobile originating MMTEL video, mobile originating SMSoIP or mobile originating SMS; or

1> if the UE is establishing the RRC connection after EPS fallback for IMS voice (see TS 23.502 [102]) was triggered in NR via *RRCRelease* with *voiceFallbackIndication* (see TS 38.331 [82]):

2> if the UE is establishing the RRC connection for mobile originating MMTEL voice and *SystemInformationBlockType2* includes *ac-BarringSkipForMMTELVoice*; or

2> if the UE is establishing the RRC connection for mobile originating MMTEL video and *SystemInformationBlockType2* includes *ac-BarringSkipForMMTELVideo*; or

2> if the UE is establishing the RRC connection for mobile originating SMSoIP or SMS and *SystemInformationBlockType2* includes *ac-BarringSkipForSMS*:

3> consider access to the cell as not barred;

2> else:

3> if *establishmentCause* received from higher layers is set to *mo-Signalling* (including the case that *mo-Signalling* is replaced by *highPriorityAccess* according to TS 24.301 [35] or by *mo-VoiceCall* according to the clause 5.3.3.3)*:*

4> perform access barring check as specified in 5.3.3.11, using T305 as "Tbarring" and *ac-BarringForMO-Signalling* as "AC barring parameter";

4> if access to the cell is barred:

5> inform upper layers about the failure to establish the RRC connection or failure to resume the RRC connection with suspend indication and that access barring for mobile originating signalling is applicable, upon which the procedure ends;

3> if *establishmentCause* received from higher layers is set to *mo-Data* (including the case that *mo-Data* is replaced by *highPriorityAccess* according to TS 24.301 [35] or by *mo-VoiceCall* according to the clause 5.3.3.3):

4> perform access barring check as specified in 5.3.3.11, using T303 as "Tbarring" and *ac-BarringForMO-Data* as "AC barring parameter";

4> if access to the cell is barred:

5> if *SystemInformationBlockType2* includes *ac-BarringForCSFB* or the UE does not support CS fallback:

6> inform upper layers about the failure to establish the RRC connection or failure to resume the RRC connection with suspend indication and that access barring for mobile originating calls is applicable, upon which the procedure ends;

5> else (*SystemInformationBlockType2* does not include *ac-BarringForCSFB* and the UE supports CS fallback):

6> if timer T306 is not running, start T306 with the timer value of T303;

6> inform upper layers about the failure to establish the RRC connection or failure to resume the RRC connection with suspend indication and that access barring for mobile originating calls and mobile originating CS fallback is applicable, upon which the procedure ends;

Upon initiation of the procedure, if the UE is connected to 5GC, the UE shall:

1> if the upper layers provide an Access Category and one or more Access Identities upon requesting establishment of an RRC connection:

2> perform the unified access control procedure as specified in 5.3.16 using the Access Category and Access Identities provided by upper layers;

3> if the access attempt is barred, the procedure ends;

1> if the resumption of the RRC connection is triggered by response to NG-RAN paging:

2> select '0' as the Access Category;

2> perform the unified access control procedure as specified in 5.3.16 using the selected Access Category and one or more Access Identities provided by upper layers;

3> if the access attempt is barred, the procedure ends;

1> else if the resumption of the RRC connection is triggered by upper layers:

2> if the upper layers provide an Access Category and one or more Access Identities:

3> perform the unified access control procedure as specified in 5.3.16 using the Access Category and Access Identities provided by upper layers;

4> if the access attempt is barred, the procedure ends;

2> set the *resumeCause* in accordance with the information received from upper layers;

1> else if the resumption of the RRC connection is triggered due to an RNAU:

2> if an emergency service is ongoing:

3> select '2' as the Access Category;

3> set the *resumeCause* to *emergency*;

2> else:

3> select '8' as the Access Category;

2> perform the unified access control procedure as specified in 5.3.16 using the selected Access Category and one or more Access Identities to be applied as specified in TS 24.501 [95];

3> if the access attempt is barred:

4> set the variable *pendingRnaUpdate* to 'TRUE';

4> the procedure ends;

Except for NB-IoT, upon initiating the procedure, if connected to EPC or 5GC, the UE shall:

1> if the UE is resuming an RRC connection from a suspended RRC connection or from RRC\_INACTIVE:

2> if the UE was configured with (NG)EN-DC:

3> if the UE does not support maintaining SCG configuration upon connection resumption:

4> perform MR-DC release, as specified in TS 38.331 [82], clause 5.3.5.10;

4> release *p-MaxEUTRA*, if configured;

4> release *p-MaxUE-FR1*, if configured;

4> release *tdm-PatternConfig*, if configured;

2> if the UE does not support maintaining the MCG SCell configurations upon connection resumption:

3> release the MCG SCell(s), if configured, in accordance with 5.3.10.3a;

2> release *powerPrefIndicationConfig*, if configured and stop timer T340, if running;

2> release *reportProximityConfig* and clear any associated proximity status reporting timer;

2> release *obtainLocationConfig*, if configured;

2> release *idc-Config*, if configured;

2> release *sps-AssistanceInfoReport*, if configured;

2> release *measSubframePatternPCell*, if configured;

2> if the UE was configured with DC:

3> release the entire SCG configuration, if configured, except for the DRB configuration (as configured by *drb-ToAddModListSCG*);

2> release *naics-Info* for the PCell, if configured;

2> release the LWA configuration, if configured, as described in 5.6.14.3;

2> release the LWIP configuration, if configured, as described in 5.6.17.3;

2> release *bw-PreferenceIndicationTimer*, if configured and stop timer T341, if running;

2> release *delayBudgetReportingConfig*, if configured and stop timer T342, if running;

2> release *ailc-BitConfig*, if configured;

2> release *uplinkDataCompression*, if configured;

NOTE 1a: The parameters and configurations are released from the UE Inactive AS context if the UE is resuming an RRC connection from RRC\_INACTIVE.

1> apply the default physical channel configuration as specified in 9.2.4;

1> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

1> apply the default MAC main configuration as specified in 9.2.2;

1> apply the CCCH configuration as specified in 9.1.1.2;

1> apply the *timeAlignmentTimerCommon* included in *SystemInformationBlockType2*;

1> start timer T300;

1> if the UE is resuming an RRC connection from a suspended RRC connection:

2> initiate transmission of the *RRCConnectionResumeRequest* message in accordance with 5.3.3.3a;

1> else if the UE is resuming an RRC connection from RRC\_INACTIVE:

2> set the variable *pendingRnaUpdate* to 'FALSE';

2> initiate transmission of the *RRCConnectionResumeRequest* message in accordance with 5.3.3.3a;

1> else:

2> if stored, discard the UE AS context, UE Inactive AS context and *resumeIdentity*;

2> release *rrc-InactiveConfig*, if configured;

2> if the UE is initiating CP-EDT in accordance with conditions in 5.3.3.1b; or

2> if the UE is initiating CP transmission using PUR in accordance with conditions in 5.3.3.1c:

3> initiate transmission of the *RRCEarlyDataRequest* message in accordance with 5.3.3.3b;

2> else:

3> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

NOTE 2: Upon initiating the connection establishment procedure, the UE is not required to ensure it maintains up to date system information applicable only for UEs in RRC\_IDLE state or UEs in RRC\_INACTIVE. However, the UE needs to perform system information acquisition upon cell re-selection.

For NB-IoT, upon initiation of the procedure, the UE shall:

1> if theUEis connected to EPC:

2> if theUEis establishing or resuming the RRC connection for mobile originating exception data;or

2> if theUEis establishing or resuming the RRC connection for mobile originating data;or

2> if theUEis establishing or resuming the RRC connection for delay tolerant access;or

2> if theUEis establishing or resuming the RRC connection for mobile originating signalling;

3> perform access barring check as specified in 5.3.3.14;

3> if access to the cell is barred:

4> inform upper layers about the failure to establish the RRC connection or failure to resume the RRC connection with suspend indication and that access barring is applicable, upon which the procedure ends;

1> if the UE is connected to 5GC:

2> if the Access Category provided by the upper layers is different from '0':

3> perform access barring check for per-NRSRP barring as specified in 5.3.3.14;

3> if access to the cell is barred:

4> inform upper layers about the failure to establish the RRC connection or failure to resume the RRC connection with suspend indication, upon which the procedure ends;

3> else:

4> perform the unified access control procedure as specified in 5.3.16 using the Access Category and Access Identities provided by upper layers;

4> if the access attempt is barred, the procedure ends;

1> apply the default physical channel configuration as specified in 9.2.4;

1> apply the default MAC main configuration as specified in 9.2.2;

1> apply the CCCH configuration as specified in 9.1.1.2;

1> start timer T300;

1> if the UE is establishing an RRC connection:

2> if stored, discard the UE AS context and *resumeIdentity*;

2> if the UE is initiating CP-EDT in accordance with conditions in 5.3.3.1b; or

2> if the UE is initiating CP transmission using PUR in accordance with conditions in 5.3.3.1c:

3> initiate transmission of the *RRCEarlyDataRequest* message in accordance with 5.3.3.3b;

2> else:

3> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

1> else if the UE is resuming an RRC connection:

2> release *schedulingRequestConfig*, if configured;

2> initiate transmission of the *RRCConnectionResumeRequest* message in accordance with 5.3.3.3a;

NOTE 3: Upon initiating the connection establishment or resumption procedure, the UE is not required to ensure it maintains up to date system information applicable only for UEs in RRC\_IDLE state. However, the UE needs to perform system information acquisition upon cell re-selection.

NOTE 4: For EDT and transmission using PUR, upon initiating the connection establishment or resumption procedure, it is up to UE implementation whether to continue cell re-selection related measurements as well as cell re-selection evaluation and, if the conditions for cell re-selection are fulfilled, whether to perform cell re-selection as specified in 5.3.3.5.

Editor's Note: Where to capture PUR release due to RACH initiation on a new cell.

*END OF CHANGES*

START OF CHANGES

#### 5.3.3.3a Actions related to transmission of *RRCConnectionResumeRequest* message

If the UE is resuming the RRC connection from a suspended RRC connection, the UE shall set the contents of *RRCConnectionResumeRequest* message as follows:

1> if the UE is a NB-IoT UE; or

1> if the UE is initiating UP-EDT for mobile originating calls in accordance with conditions in 5.3.3.1b; or

1> if the UE is initiating UP transmission using PUR in accordance with conditions in 5.3.3.1c; or

1> if field *useFullResumeID* is signalled in *SystemInformationBlockType2*:

2> set the *resumeID* to the stored *resumeIdentity*;

1> else:

2> set the *truncatedResumeID* to include bits in bit position 9 to 20 and 29 to 40 from the left in the stored *resumeIdentity*.

1> if the UE supports *mo-VoiceCall* establishment cause and UE is resuming the RRC connection for mobile originating MMTEL voice and *SystemInformationBlockType2* includes *voiceServiceCauseIndication* and the establishment cause received from upper layers is not set to *highPriorityAccess*:

2> set the *resumeCause* to *mo-VoiceCall*;

1> else if the UE supports *mo-VoiceCall* establishment cause for mobile originating MMTEL video and UE is resuming the RRC connection for mobile originating MMTEL video and *SystemInformationBlockType2* includes *videoServiceCauseIndication* and the establishment cause received from upper layers is not set to *highPriorityAccess*:

2> set the *resumeCause* to *mo-VoiceCall*;

1> else if the UE is initiating UP-EDT for mobile terminating calls in accordance with conditions in 5.3.3.1b:

2> set the *resumeCause* to *mt-EDT*;

1> else:

2> set the *resumeCause* in accordance with the information received from upper layers;

1> set the *shortResumeMAC-I* to the 16 least significant bits of the MAC-I calculated:

2> over the ASN.1 encoded as per clause 8 (i.e., a multiple of 8 bits) *VarShortResumeMAC-Input* (or *VarShortResumeMAC-Input-NB* in NB-IoT);

2> with the KRRCint key and the previously configured integrity protection algorithm; and

2> with all input bits for COUNT, BEARER and DIRECTION set to binary ones;

1> if the UE is a NB-IoT UE:

2> if the UE supports DL channel quality reporting in MSG3 and *cqi-Reporting* is present in *SystemInformationBlockType2-NB*:

3> set the *cqi-NPDCCH* to include the latest results of the downlink channel quality measurements of the carrier where the random access response is received as specified in TS 36.133 [16];

NOTE 0: The downlink channel quality measurements use measurement period T1 or T2, as defined in TS 36.133 [16].

2> set *earlyContentionResolution* to TRUE;

1> restore the RRC configuration and security context from the stored UE AS context, except for the following:

- MCG SCell(s) configuration, if stored,

- *nr-SecondaryCellGroupConfig*, if stored;

1> if the UE is initiating UP-EDT for mobile originating calls in accordance with conditions in 5.3.3.1b:

2> if the UE is a NB-IoT UE connected to EPC:

3> if the UE has ANR measurement s results available in *VarANR-MeasReport-NB* and if the RPLMN is included in *plmn-IdentityList* stored in *VarANR-MeasReport-NB*:

4> set *anr-InfoAvailable* to TRUE;

1> if the UE is resuming an RRC connection after early security reactivation in accordance with conditions in 5.3.3.18:

2> if the UE is initiating UP-EDT in accordance with conditions in 5.3.3.1b; or

2> if the UE is initiating UP transmission using PUR in accordance with conditions in 5.3.3.1c:

3> restore the PDCP state and re-establish PDCP entities for all SRBs and all DRBs;

3> if *drb-ContinueROHC* has been provided in immediately preceding RRC connection release message, and the UE is requesting to resume RRC connection in the same cell:

4> indicate to lower layers that stored UE AS context is used and that *drb-ContinueROHC* is configured;

4> continue the header compression protocol context for the DRBs configured with the header compression protocol;

3> else:

4> indicate to lower layers that stored UE AS context is used;

4> reset the header compression protocol context for the DRBs configured with the header compression protocol;

3> resume all SRBs and all DRBs;

2> else:

3> if the UE is a BL UE or UE in CE, restore the PDCP state and re-establish the PDCP entity for SRB1;

3> if the UE is a NB-IoT UE, apply the default configuration for SRB1 as specified in 9.2.1.1;

3> resume SRB1;

2> derive the KeNB key based on the KASME key to which the current KeNB is associated, using the stored value of *nextHopChainingCount* received in the *RRCConnectionRelease* message in the preceding connection, as specified in TS 33.401 [32] for EPC and TS 33.501 [86] for 5GC;

2> derive the KRRCint key associated with the previously configured integrity algorithm, as specified in TS 33.401 [32] for EPC and TS 33.501 [86] for 5GC;

2> derive the KRRCenc key and the KUPenc key associated with the previously configured ciphering algorithm, as specified in TS 33.401 [32] for EPC and TS 33.501 [86] for 5GC;

2> configure lower layers to resume integrity protection using the previously configured algorithm and the KRRCint key derived in this clause to all subsequent messages received and sent by the UE;

2> configure lower layers to resume ciphering and to apply the ciphering algorithm and the KRRCenc key derived in this clause to all subsequent messages received and sent by the UE;

2> configure lower layers to resume ciphering and to apply the ciphering algorithm and the KUPenc key derived in this clause immediately to the user data sent and received by the UE;

2> if the UE is initiating UP-EDT for mobile originated calls in accordance with conditions in 5.3.3.1b:

3> configure the lower layers to use EDT;

2> else if the UE is initiating UP transmission using PUR:

3> apply the physical channel configuration in accordance with the stored *pur-Config*;

1> else:

2> if SRB1 was configured with NR PDCP:

3> for SRB1, release the NR PDCP entity and establish an E-UTRA PDCP entity with the current (MCG) security configuration;

NOTE 1: The UE applies the LTE ciphering and integrity protection algorithms that are equivalent to the previously configured NR security algorithms.

2> else:

3> for SRB1, restore the PDCP state and re-establish the PDCP entity;

If the UE is resuming the RRC connection from RRC\_INACTIVE, the UE shall set the contents of *RRCConnectionResumeRequest* message as follows:

2> if field *useFullResumeID* is signalled in *SystemInformationBlockType2*:

3> set the *fullI-RNTI* to the stored *fullI-RNTI* value provided in suspend;

2> else:

3> set the *shortI-RNTI* to the stored *shortI-RNTI* value provided in suspend;

2> restore the RRC configuration, RoHC state, the stored QoS flow to DRB mapping rules and the KeNB and KRRCint keys from the UE Inactive AS context except for the following:

- MCG physical layer,

- MCG MAC configuration,

- NR *pdcp-Config*,

- MCG SCell configurations, if stored,

- *nr*-*SecondaryCellGroupConfig*, if stored;

2> set the *shortResumeMAC-I* to the 16 least significant bits of the MAC-I calculated:

3> over the ASN.1 encoded as per clause 8 (i.e., a multiple of 8 bits) *VarShortINACTIVE-MAC-Input*;

3> with the KRRCint key in the UE Inactive AS Context and the previously configured integrity protection algorithm; and

3> with all input bits for COUNT, BEARER and DIRECTION set to binary ones;

2> derive the KeNB key based on the current KeNB or the NH, using the stored *nextHopChainingCount* value, as specified in TS 33.501 [86];

2> derive the KRRCenc key, the KRRCint and the KUPenc key, as specified in TS 33.401 [32];

2> apply the default configuration for SRB1 as specified in 9.2.1.1;

2> apply the default NR PDCP configuration as specified in TS 38.331 [82], clause 9.2.1 for SRB1;

2> configure lower layers to resume integrity protection for all SRBs except SRB0 using the configured algorithm and the KRRCint key derived in this clause immediately, i.e., integrity protection shall be applied to all subsequent messages received and sent by the UE;

2> configure lower layers to resume ciphering for all radio bearers except SRB0 and to apply the configured ciphering algorithm, the KRRCenc key and the KUPenc key derived in this clause, i.e. the ciphering configuration shall be applied to all subsequent messages received and sent by the UE;

Following procedures are applied for both suspended RRC connection and RRC\_INACTIVE:

2> resume SRB1;

NOTE 2: Until successful connection resumption, the default physical layer configuration and the default MAC Main configuration are applied for the transmission of SRB0 and SRB1, and SRB1 is used only for the transfer of *RRCConnectionResume* message, and *RRCConnectionRelease* message if security has been re-activated.

The UE shall submit the *RRCConnectionResumeRequest* message to lower layers for transmission.

The UE shall continue cell re-selection related measurements as well as cell re-selection evaluation.

If the UE is resuming the RRC connection from RRC\_INACTIVE and if lower layers indicate an integrity check failure while T300 is running, the UE shall perform actions specified in 5.3.3.16.

*END OF CHANGES*

*START OF CHANGES*

#### 5.3.3.4 Reception of the *RRCConnectionSetup* by the UE

NOTE 1: Prior to this, lower layer signalling is used to allocate a C-RNTI. For further details see TS 36.321 [6];

The UE shall:

1> if the *RRCConnectionSetup* is received in response to an *RRCConnectionResumeRequest* from a suspended RRC connection:

2> release all radio resources, including release of the RLC entity, the MAC configuration and the associated PDCP entity for all established or suspended RBs, except for SRB0;

2> discard the stored UE AS context and *resumeIdentity*;

2> if stored, discard the stored *nextHopChainingCount*;

2> if stored, discard the stored *drb-ContinueROHC*;

2> indicate to upper layers fallback of the RRC connection;

1> if the *RRCConnectionSetup* is received in response to an *RRCConnectionResumeRequest* from RRC\_INACTIVE:

2> stop T380 if running;

2> discard the stored UE Inactive AS context;

2> release *rrc-InactiveConfig*, if configured;

2> discard any current AS security context including the KRRCenc key, the KRRCint key, the KUPint key and the KUPenc key;

2> release radio resources for all established RBs except SRB0, including release of the RLC entities, of the associated PDCP entities and of SDAP entities;

2> release the RRC configuration except for the default L1 parameter values, default MAC main configuration and CCCH;

2> apply the default NR PDCP configuration as specified in TS 38.331 [82], clause 9.2.1.1 for SRB1;

2> use NR PDCP for all subsequent messages received and sent by the UE via SRB1;

2> indicate to upper layers fallback of the RRC connection;

1> if the *RRCConnectionSetup* is received in response to an *RRCConnectionResumeRequest* or *RRCEarlyDataRequest* for transmission using PUR:

2> if *newUE-Identity* is included:

3> apply the value of the *newUE-Identity* as the C-RNTI;

2> else:

3> apply the value of the *pur-RNTI* as the C-RNTI;

1> perform the radio resource configuration procedure in accordance with the received *radioResourceConfigDedicated* and as specified in 5.3.10;

1> if stored, discard the cell reselection priority information provided by the *idleModeMobilityControlInfo* or inherited from another RAT;

1> if stored, discard the dedicated offset provided by the *redirectedCarrierOffsetDedicated*;

1> stop timer T300;

1> if T302 is running:

2> stop timer T302;

2> if the UE is connected to 5GC:

3> perform the actions as specified in 5.3.16.4;

1> stop timer T303, if running;

1> stop timer T305, if running;

1> stop timer T306, if running;

1> stop timer T308, if running;

1> perform the actions as specified in 5.3.3.7;

1> stop timer T320, if running;

1> stop timer T350, if running;

1> perform the actions as specified in 5.6.12.4;

1> release *rclwi-Configuration*, if configured, as specified in 5.6.16.2;

1> stop timer T360, if running;

1> stop timer T322, if running;

1> if timer T331 is running:

2> stop timer T331, if running;

2> perform the actions as specified in 5.6.20.3;

1> forward the *dedicatedInfoNAS,* if received, to the upper layers;

1> if T309 is running:

2> stop timer T309 for all access categories;

2> perform the actions as specified in 5.3.16.4.

1> enter RRC\_CONNECTED;

1> stop the cell re-selection procedure;

1> consider the current cell to be the PCell;

1> set the content of *RRCConnectionSetup**Complete* message as follows:

2> if the *RRCConnectionSetup* is received in response to an *RRCConnectionResumeRequest*:

3> if upper layers provide an S-TMSI:

4> set the *s-TMSI* to the value received from upper layers;

3> else if upper layers provide a 5G-S-TMSI:

4> if the UE is a NB-IoT UE:

5> set the *ng-5G-S-TMSI* to the value received from upper layers;

4> else:

5> set the *ng-5G-S-TMSI-Bits* to *ng-5G-S-TMSI* with the value received from upper layers;

2> else if upper layers provide a 5G-S-TMSI:

3> except for NB-IoT, set the *ng-5G-S-TMSI-Bits* to *ng-5G-S-TMSI-Part2* to the leftmost 8 bits of 5G-S-TMSI received from upper layers;

2> set the *selectedPLMN-Identity* to the PLMN selected by upper layers (see TS 23.122 [11], TS 24.301 [35] for E-UTRA/EPC and TS 24.501 [95] for E-UTRA/5GC) from the PLMN(s) included in the *plmn-IdentityList* in *SystemInformationBlockType1* (or *SystemInformationBlockType1-NB* in NB-IoT);

2> if upper layers provide the 'Registered MME', include and set the *registeredMME* as follows:

3> if the PLMN identity of the 'Registered MME' is different from the PLMN selected by the upper layers:

4> include the *plmnIdentity* in the *registeredMME* and set it to the value of the PLMN identity in the 'Registered MME' received from upper layers;

3> set the *mmegi* andthe *mmec* to the value received from upper layers;

2> if upper layers provided the 'Registered MME':

3> include and set the *gummei-Type* to the value provided by the upper layers;

2> if upper layers provide the 'Registered AMF', include and set the *registeredAMF* as follows:

3> if the PLMN identity of the 'Registered AMF' is different from the PLMN selected by the upper layers:

4> include the *plmnIdentity* in the *registeredAMF* and set it to the value of the PLMN identity in the 'Registered AMF' received from upper layers;

3> set the *amf-Identifier* to AMF Identifier of the 'Registered AMF' received from upper layers;

2> if upper layers provided the 'Registered AMF':

3> include and set the *guami-Type* to the value provided by the upper layers;

2> if upper layers provide one or more S-NSSAI (see TS 23.003 [27]):

3> include the *s-NSSAI-list* and set the content to the values provided by the upper layers;

2> if the UE supports CIoT EPS optimisation(s):

3> include a*ttachWithoutPDN-Connectivity* if received from upper layers;

3> include *up-CIoT-EPS-Optimisation* if received from upper layers;

3> except for NB-IoT, include *cp-CIoT-EPS-Optimisation* if received from upper layers;

2> if the UE supports CIoT 5GS optimisation(s):

3> for NB-IoT, include *ng-U-DataTransfer* if received from upper layers;

3> except for NB-IoT, include *cp-CIoT-5GS-Optimisatoin* if received from upper layers;

2> if connecting as an RN:

3> include the *rn-SubframeConfigReq*;

2> if the *RRCConnectionSetup* is received in response to *RRCEarlyDataRequest*:

3> set the *dedicatedInfoNAS* to a zero-length octet string;

2> else:

3> set the *dedicatedInfoNAS* to include the information received from upper layers;

2> if the UE is connected to EPC:

3> except for NB-IoT:

4> if the UE has radio link failure or handover failure information available in *VarRLF-Report* and if the RPLMN is included in *plmn-IdentityList* stored in *VarRLF-Report*:

5> include *rlf-InfoAvailable*;

4> if the UE has MBSFN logged measurements available for E-UTRA and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*:

5> include *logMeasAvailableMBSFN*;

4> else if the UE has logged measurements available for E-UTRA and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*:

5> include *logMeasAvailable*;

4> if the UE has Bluetooth logged measurements available and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*:

5> include *logMeasAvailableBT*;

4> if the UE has WLAN logged measurements available and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*:

5> include *logMeasAvailableWLAN*;

4> if the UE has connection establishment failure information available in *VarConnEstFailReport* and if the RPLMN is equal to *plmn-Identity* stored in *VarConnEstFailReport*:

5> include *connEstFailInfoAvailable*;

4> include the *mobilityState* and set it to the mobility state (as specified in TS 36.304 [4]) of the UE just prior to entering RRC\_CONNECTED state;

4> if the UE has flight path information available:

5> include *flightPathInfoAvailable*;

3> for NB-IoT:

4> if the UE has radio link failure information available in *VarRLF-Report-NB* and if the RPLMN is included in *plmn-IdentityList* stored in *VarRLF-Report*:

5> include *rlf-InfoAvailable*;

4> if the UE has ANR measurements results available in *VarANR-MeasReport-NB* and if the RPLMN is included in *plmn-IdentityList* stored in *VarANR-MeasReport-NB*:

5> include *anr-InfoAvailable*;

3> include *dcn-ID* if a DCN-ID value (see TS 23.401 [41]) is received from upper layers;

2> except for NB-IoT:

3> if the UE supports storage of mobility history information and the UE has mobility history information available in *VarMobilityHistoryReport*:

4> include the *mobilityHistoryAvail*;

3> if the SIB2 contains *idleModeMeasurements* and the UE has E-UTRA idle/inactive measurement information concerning cells other than the PCell available in *VarMeasIdleReport*; or

3> if the SIB2 contains *idleModeMeasurementsNR* and the UE has NR idle/inactive measurement information available in *VarMeasIdleReport:*

4> include the *idleMeasAvailable*;

3> if upper layers indicate that access to RLOS is initiated (see TS 23.401 [41] subclause 4.3.8.3):

4> set *rlos-Request* to *true*;

2> if UE needs UL gaps during continuous uplink transmission:

3> include *ue-CE-NeedULGaps*;

2> for NB-IoT:

3> if the UE supports serving cell idle mode measurements reporting and *servingCellMeasInfo* is present in *SystemInformationBlockType2-NB*:

4> set the *measResultServCell* to include the measurements of the serving cell;

NOTE 2: The UE includes the latest results of the serving cell measurements as used for cell selection/ reselection evaluation, which are performed in accordance with the performance requirements as specified in TS 36.133 [16].

2> if connecting as an IAB-node:

3> include *iab-NodeIndication;*

1> submit the *RRCConnectionSetupComplete* message to lower layers for transmission;

1> the procedure ends.

END OF CHANGES

#### 5.3.3.4a Reception of the *RRCConnectionResume* by the UE

The UE shall:

1> stop timer T300;

1> if T309 is running:

2> stop timer T309 for all access categories;

2> perform the actions as specified in 5.3.16.4.

1> stop T380 if running;

1> if the *RRCConnectionResume* is received in response to an *RRCConnectionResumeRequest* for EDT or for transmission using PUR:

2> discard the stored UE AS context and *resumeIdentity*;

1> else:

2> if resuming an RRC connection from a suspended RRC connection in EPC; or

2> for NB-IoT, if resuming an RRC connection from a suspended RRC connection in 5GC and *fullConfig* is not present in the *RRCConnectionResume* message:

3> restore the PDCP state and re-establish PDCP entities for SRB2, if configured withE-UTRA PDCP, and for all DRBs that are configured with E-UTRA PDCP;

3> if *drb-ContinueROHC* is included:

4> indicate to lower layers that stored UE AS context is used and that *drb-ContinueROHC* is configured;

4> continue the header compression protocol context for the DRBs configured with the header compression protocol;

3> else:

4> indicate to lower layers that stored UE AS context is used;

4> reset the header compression protocol context for the DRBs configured with the header compression protocol;

3> if *restoreMCG-SCells* is included:

4> restore the MCG SCell(s) configuration, if stored;

3> else:

4> release the MCG SCell(s) from the UE AS context, if stored;

3> if *restoreSCG* is included:

4> restore *nr-SecondaryCellGroupConfig*, if stored;

3> else if the UE was configured with EN-DC:

4> perform MR-DC release, as specified in TS 38.331 [82], clause 5.3.5.10;

3> discard the stored UE AS context and *resumeIdentity*;

3> configure lower layers to consider the restored MCG and SCG SCell(s) (if any) to be in deactivated state;

2> else if the *RRCConnectionResume* message includes the *fullConfig* (i.e., for resuming an RRC connection from RRC\_INACTIVE or for resuming a suspended RRC connection in 5GC):

3> perform the radio configuration procedure as specified in 5.3.5.8;

2> else (i.e., for resuming an RRC connection from RRC\_INACTIVE, or except for NB-IoT for resuming a suspended RRC connection in 5GC):

3> restore the following from the stored UE Inactive AS context:

- MCG physical layer configuration,

- MCG MAC configuration,

- MCG RLC configuration,

- PDCP configuration;

3> if *restoreMCG-SCells* is included:

4> restore the MCG SCell(s) configuration, if stored;

3> else:

4> release the MCG SCell(s) from the UE AS context, if stored;

3> if *restoreSCG* is included:

4> restore *nr-SecondaryCellGroupConfig*, if stored;

3> else if the UE was configured with NGEN-DC:

4> perform MR-DC release, as specified in TS 38.331 [82], clause 5.3.5.10;

3> discard the stored UE Inactive AS context;

3> configure lower layers to consider the restored MCG and SCG SCell(s) (if any) to be in deactivated state;

3> release the *rrc-InactiveConfig*, except *ran-NotificationAreaInfo*;

1> perform the radio resource configuration procedure in accordance with the received *radioResourceConfigDedicated* and as specified in 5.3.10;

NOTE 1: When performing the radio resource configuration procedure, for the physical layer configuration and the MAC Main configuration, the restored RRC configuration from the stored UE AS context is used as basis for the reconfiguration.

1> if the received *RRCConnectionResume* includes the *sCellToReleaseList*:

2> perform SCell release as specified in 5.3.10.3a;

1> if the received *RRCConnectionResume* includes the *sCellToAddModList*:

2> perform SCell addition or modification as specified in 5.3.10.3b;

1> if the received *RRCConnectionResume* includes the *sCellGroupToReleaseList*:

2> perform SCell group release as specified in 5.3.10.3d;

1> if the received *RRCConnectionResume* includes the *sCellGroupToAddModList*:

2> perform SCell group addition or modification as specified in 5.3.10.3e;

1> if the received *RRCConnectionResume* message includes the *nr-SecondaryCellGroupConfig*:

2> perform NR RRC Reconfiguration as specified in TS 38.331 [82], clause 5.3.5.3;

1> if the received *RRCConnectionResume* message includes the *sk-Counter*:

2> perform key update procedure as specified in TS 38.331 [82], clause 5.3.5.8;

1> if the received *RRCConnectionResume* message includes the *nr-RadioBearerConfig1*:

2> perform radio bearer configuration as specified in TS 38.331 [82], clause 5.3.5.6;

1> if the received *RRCConnectionResume* message includes the *nr-RadioBearerConfig2*:

2> perform radio bearer configuration as specified in TS 38.331 [82], clause 5.3.5.6;

1> except if the *RRCConnectionResume* is received in response to an *RRCConnectionResumeRequest* for EDT or for transmission using PUR:

2> resume SRB2, SRB3 (if configured), and all DRBs, if any, including RBs configured with NR PDCP;

1> if stored, discard the cell reselection priority information provided by the *idleModeMobilityControlInfo* or inherited from another RAT;

1> if stored, discard the dedicated offset provided by the *redirectedCarrierOffsetDedicated*;

1> if the *RRCConnectionResume* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

1> if T302 is running:

2> stop timer T302;

2> if the UE is connected to 5GC:

3> perform the actions as specified in 5.3.16.4;

1> stop timer T303, if running;

1> stop timer T305, if running;

1> stop timer T306, if running;

1> stop timer T308, if running;

1> perform the actions as specified in 5.3.3.7;

1> stop timer T320, if running;

1> stop timer T350, if running;

1> perform the actions as specified in 5.6.12.4;

1> stop timer T360, if running;

1> stop timer T322, if running;

1> if timer T331 is running:

2> stop timer T331;

2> perform the actions as specified in 5.6.20.3;

1> if the UE is resuming an RRC connection after early security reactivation in accordance with conditions in 5.3.3.18 or *RRCConnectionResume* is received in response to an *RRCConnectionResumeRequest* from RRC\_INACTIVE:

2> ignore the *nextHopChainingCount* value indicated in the *RRCConnectionResume* message;

2> if the *RRCConnectionResume* is received in response to an *RRCConnectionResumeRequest* for transmission using PUR:

3> if *newUE-Identity* is included:

4> apply the value of the *newUE-Identity* as the C-RNTI;

3> else:

4> apply the value of the *pur-RNTI* as the C-RNTI;

1> else:

2> if resuming an RRC connection from a suspended RRC connection in EPC:

3> update the KeNB key based on the KASME key to which the current KeNB is associated, using the *nextHopChainingCount* value indicated in the *RRCConnectionResume* message, as specified in TS 33.401 [32];

3> store the *nextHopChainingCount* value;

3> derive the KRRCint key associated with the previously configured integrity algorithm, as specified in TS 33.401 [32];

3> request lower layers to verify the integrity protection of the *RRCConnectionResume* message, using the previously configured algorithm and the KRRCint key;

3> if the integrity protection check of the *RRCConnectionResume* message fails:

4> perform the actions upon leaving RRC\_CONNECTED as specified in 5.3.12, with release cause 'other', upon which the procedure ends;

3> derive the KRRCenc key and the KUPenc key associated with the previously configured ciphering algorithm, as specified in TS 33.401 [32];

3> configure lower layers to resume integrity protection using the previously configured algorithm and the KRRCint key immediately, i.e., integrity protection shall be applied to all subsequent messages received and sent by the UE;

3> configure lower layers to resume ciphering and to apply the ciphering algorithm, the KRRCenc key and the KUPenc key, i.e. the ciphering configuration shall be applied to all subsequent messages received and sent by the UE;

1> enter RRC\_CONNECTED;

1> indicate to upper layers that the suspended RRC connection has been resumed;

1> stop the cell re-selection procedure;

1> consider the current cell to be the PCell;

1> set the content of *RRCConnectionResumeComplete* message as follows:

2> set the *selectedPLMN-Identity* to the PLMN selected by upper layers (see TS 23.122 [11], TS 24.301 [35] for E-UTRA/EPC and TS 24.501 [95] for E-UTRA/5GC) from the PLMN(s) included in the *plmn-IdentityList* in *SystemInformationBlockType1*;

2> set the *dedicatedInfoNAS* to include the information received from upper layers;

2> except for NB-IoT:

3> if resuming an RRC connection from a suspended RRC connection:

4> if the UE has radio link failure or handover failure information available in *VarRLF-Report* and if the RPLMN is included in *plmn-IdentityList* stored in *VarRLF-Report*:

5> include rlf-InfoAvailable;

4> if the UE has MBSFN logged measurements available for E-UTRA and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*:

5> include logMeasAvailableMBSFN;

4> else if the UE has logged measurements available for E-UTRA and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*:

5> include logMeasAvailable;

4> if the UE has Bluetooth logged measurements available and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*:

5> include logMeasAvailableBT;

4> if the UE has WLAN logged measurements available and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*:

5> include logMeasAvailableWLAN;

4> if the UE has connection establishment failure information available in *VarConnEstFailReport* and if the RPLMN is equal to *plmn-Identity* stored in *VarConnEstFailReport*:

5> include connEstFailInfoAvailable;

4> include the *mobilityState* and set it to the mobility state (as specified in TS 36.304 [4]) of the UE just prior to entering RRC\_CONNECTED state;

4> if the UE has flight path information available:

5> include *flightPathInfoAvailable*;

3> if the UE supports storage of mobility history information and the UE has mobility history information available in *VarMobilityHistoryReport*:

4> include *mobilityHistoryAvail*;

3> if the *idleModeMeasurementReq* is included in the *RRCConnectionResume* message:

4> if the UE has idle/inactive measurement information concerning cells other than the PCell available in *VarMeasIdleReport*:

5> if the *SIB2* includes *idleModeMeasurements*:

6> set the *measResultListIdle-r15* in the *RRCConnectionResumeComplete* message to the value of *measReportIdle-r15* in the *VarMeasIdleReport*;

6> if the *SIB2* includes *idleModeMeasurementsNR*:

7> set the *measResultListIdle*-r16 in the *RRCConnectionResumeComplete* message to the value of *measReportIdle-r16* in the *VarMeasIdleReport*, if available;

5> if the *SIB2* includes *idleModeMeasurementsNR*:

6> set the *measResultListIdleNR* in the *RRCConnectionResumeComplete* message to the value of *measReportIdleNR* in the *VarMeasIdleReport*, if available;

5> discard the *VarMeasIdleReport* upon successful delivery of the *RRCConnectionResumeComplete* message is confirmed by lower layers;

3> else:

4> if the *SIB2* contains *idleModeMeasurements* and the UE has E-UTRA idle/inactive measurement information concerning cells other than the PCell available in *VarMeasIdleReport*; or

4> if the *SIB2* contains *idleModeMeasurementsNR* and the UE has NR idle/inactive measurement information available in *VarMeasIdleReport:*

5> include the *idleMeasAvailable*;

3> if the *RRCConnectionResume* message includes *nr-SecondaryCellGroupConfig*:

4> include *scg-ConfigResponseNR* in accordance with TS 38.331 [82], clause 5.3.5.3;

2> for NB-IoT:

3> if the UE supports serving cell idle mode measurements reporting and *servingCellMeasInfo* is present in *SystemInformationBlockType2-NB*:

4> set the *measResultServCell* to include the measurements of the serving cell;

NOTE 2: The UE includes the latest results of the serving cell measurements as used for cell selection/ reselection evaluation, which are performed in accordance with the performance requirements as specified in TS 36.133 [16].

3> if the UE is connected to EPC:

4> if the UE has radio link failure information available in *VarRLF-Report-NB* and if the RPLMN is included in *plmn-IdentityList* stored in *VarRLF-Report-NB*:

5> include *rlf-InfoAvailable*;

4> if the UE has ANR measurements information available in *VarANR-MeasReport-NB* and if the RPLMN is included in *plmn-IdentityList* stored in *VarANR-MeasReport-NB*:

5> include *anr-InfoAvailable*;

1> if the UE is configured to operate in EN-DC as result of this procedure, forward *upperLayerIndication* to upper layers as if the UE has received this field from SIB2; otherwise indicate to upper layers the absence of this field;

1> submit the *RRCConnectionResumeComplete* message to lower layers for transmission;

1> the procedure ends.

*END OF CHANGES*

START OF CHANGES

### 5.3.5 RRC connection reconfiguration

#### 5.3.5.3 Reception of an *RRCConnectionReconfiguration* not including the *mobilityControlInfo* by the UE

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and theUE is able to comply with the configuration included in this message, the UE shall:

1> if the received *RRCConnectionReconfiguration* includes the *daps-SourceRelease*:

2> reset source MCG MAC and release the source MCG MAC configuration;

2> for each DRB with a DAPS PDCP entity:

3> re-establish the RLC entity for the source PCell;

3> release the RLC entity and the associated DTCH logical channel for the source PCell;

3> reconfigure the DAPS PDCP entity to normal PDCP associated to the target PCell, as specified in TS 36.323 [8];

2> for each SRB:

3> release the PDCP entity for the source PCell;

3> release the RLC entity and the associated DCCH logical channel for the source PCell;

2> release the physical channel configuration for the source PCell;

1> if this is the first *RRCConnectionReconfiguration* message after successful completion of the RRC connection re-establishment procedure:

2> re-establish PDCP for SRB2 configured with E-UTRA PDCP entity and for all DRBs that are established and configured with E-UTRA PDCP, if any;

2> re-establish RLC for SRB2 and for all DRBs that are established and configured with E-UTRA RLC, if any;

2> if the *RRCConnectionReconfiguration* message includes the *fullConfig*:

3> perform the radio configuration procedure as specified in 5.3.5.8;

2> if the *RRCConnectionReconfiguration* message includes the *radioResourceConfigDedicated*:

3> perform the radio resource configuration procedure as specified in 5.3.10;

NOTE 1: Void

NOTE 2: Void

1> else:

2> if the *RRCConnectionReconfiguration* message includes the *radioResourceConfigDedicated*:

3> perform the radio resource configuration procedure as specified in 5.3.10;

NOTE 3: If the *RRCConnectionReconfiguration* message includes the establishment of radio bearers other than SRB1, the UE may start using these radio bearers immediately, i.e. there is no need to wait for an outstanding acknowledgment of the *SecurityModeComplete* message.

1> if the received *RRCConnectionReconfiguration* includes the *sCellToReleaseList*:

2> perform SCell release as specified in 5.3.10.3a;

1> if the received *RRCConnectionReconfiguration* includes the *sCellToAddModList*:

2> perform SCell addition or modification as specified in 5.3.10.3b;

1> if the received *RRCConnectionReconfiguration* includes the *sCellGroupToReleaseList*:

2> perform SCell group release as specified in 5.3.10.3d;

1> if the received *RRCConnectionReconfiguration* includes the *sCellGroupToAddModList*:

2> perform SCell group addition or modification as specified in 5.3.10.3e;

1> if the received *RRCConnectionReconfiguration* includes the *scg-Configuration*; or

1> if the current UE configuration includes one or more split DRBs configured with *pdcp-Config* and the received *RRCConnectionReconfiguration* includes *radioResourceConfigDedicated* including *drb-ToAddModList*:

2> perform SCG reconfiguration as specified in 5.3.10.10;

1> if the received *RRCConnectionReconfiguration* includes the *nr-Config* and it is set to *release*: or

1> if the received *RRCConnectionReconfiguration* includes *endc-ReleaseAndAdd* and it is set to *TRUE*:

2> perform MR-DC release as specified in TS 38.331 [82], clause 5.3.5.10;

1> if the received *RRCConnectionReconfiguration* includes the *sk-Counter*:

2> perform key update procedure as specified in TS 38.331 [82], clause 5.3.5.7;

1> if the received *RRCConnectionReconfiguration* includes the *nr-SecondaryCellGroupConfig*:

2> perform NR RRC Reconfiguration as specified in TS 38.331 [82], clause 5.3.5.3;

1> if the received *RRCConnectionReconfiguration* includes the *nr-RadioBearerConfig1*:

2> perform radio bearer configuration as specified in TS 38.331 [82], clause 5.3.5.6;

1> if the received *RRCConnectionReconfiguration* includes the *nr-RadioBearerConfig2*:

2> perform radio bearer configuration as specified in TS 38.331 [82], clause 5.3.5.6;

1> if this is the first *RRCConnectionReconfiguration* message after successful completion of the RRC connection re-establishment procedure:

2> resume SRB2 and all DRBs that are suspended, if any, including RBs configured with NR PDCP;

NOTE 4: The handling of the radio bearers after the successful completion of the PDCP re-establishment, e.g. the re-transmission of unacknowledged PDCP SDUs (as well as the associated status reporting), the handling of the SN and the HFN, is specified in TS 36.323 [8].

NOTE 5: The UE may discard SRB2 messages and data that it receives prior to completing the reconfiguration used to resume these bearers.

1> if the received *RRCConnectionReconfiguration* includes the *systemInformationBlockType1Dedicated*:

2> perfom the actions upon reception of the *SystemInformationBlockType1* message as specified in 5.2.2.7*;*

1> if the received *RRCConnectionReconfiguration* includes the *systemInformationBlockType2Dedicated*:

2> perfom the actions upon reception of the *SystemInformationBlockType2* message as specified in 5.2.2.9;

1> if the *RRCConnectionReconfiguration* message includes the *dedicatedInfoNASList*:

2> forward each element of the *dedicatedInfoNASList* to upper layers in the same order as listed;

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

1> perform the measurement identity autonomous removal as specified in 5.5.2.2a;

1> if the *RRCConnectionReconfiguration* message includes the *otherConfig*:

2> perform the other configuration procedure as specified in 5.3.10.9;

1> if the *RRCConnectionReconfiguration* message includes the *sl-DiscConfig* or *sl-CommConfig*:

2> perform the sidelink dedicated configuration procedure as specified in 5.3.10.15;

1> if the *RRCConnectionReconfiguration* message includes the *sl-V2X-ConfigDedicated*:

2> perform the V2X sidelink communication dedicated configuration procedure as specified in 5.3.10.15a;

1> if the RRCConnectionReconfiguration message includes the sl-ConfigDedicatedNR:

2> perform the NR sidelink communication dedicated configuration procedure as specified in 5.3.5.x in TS 38.331 [82];

1> if the *RRCConnectionReconfiguration* message includes *wlan-OffloadInfo*:

2> perform the dedicated WLAN offload configuration procedure as specified in 5.6.12.2;

1> if the *RRCConnectionReconfiguration* message includes *rclwi-Configuration*:

2> perform the WLAN traffic steering command procedure as specified in 5.6.16.2;

1> if the *RRCConnectionReconfiguration* message includes *lwa-Configuration*:

2> perform the LWA configuration procedure as specified in 5.6.14.2;

1> if the *RRCConnectionReconfiguration* message includes *lwip-Configuration*:

2> perform the LWIP reconfiguration procedure as specified in 5.6.17.2;

1> upon RRC connection establishment, if UE does not need UL gaps during continuous uplink transmission:

2> configure lower layers to stop using UL gaps during continuous uplink transmission in FDD for *RRCConnectionReconfigurationComplete* message and subsequent uplink transmission in RRC\_CONNECTED except for UL transmissions as specified in TS36.211 [21];

1> if the *RRCConnectionReconfiguration* message includes the *conditionalReconfiguration*:

2> perform conditional reconfiguration as specified in 5.3.5.9;

NOTE 6: In case of conditional reconfiguration the text "if the received *RRCConnectionReconfiguration. . .*" corresponds to applying the stored *RRCConnectionReconfiguration* message (according to 5.3.5.9.4).

1> set the content of *RRCConnectionReconfigurationComplete* message as follows:

2> if the *RRCConnectionReconfiguration* message includes *perCC-GapIndicationRequest*:

3> include *perCC-GapIndicationList* and *numFreqEffective*;

2> if the frequencies are configured for reduced measurement performance:

3> include *numFreqEffectiveReduced*;

2> if the received *RRCConnectionReconfiguration* message included *nr-SecondaryCellGroupConfig*:

3> include *scg-ConfigResponseNR* in accordance with TS 38.331 [82], clause 5.3.5.3;

2> if the received *RRCConnectionReconfiguration* message was included in an NR *RRCResume* message:

3> include the *RRCConnectionReconfigurationComplete* message in the NR MCG RRC message *RRCResumeComplete* in accordance with TS 38.331 [82], clause 5.3.13.4, upon which the procedure ends;

1> if the UE is configured with NE-DC:

2> transfer the *RRCConnectionReconfigurationComplete* message via SRB1 embedded in NR RRC message *RRCReconfigurationComplete* as specified in TS 38.331 [82];

1> else:

2> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission using the new configuration, upon which the procedure ends;

END OF CHANGES

*START OF CHANGES*

#### 5.3.5.4 Reception of an *RRCConnectionReconfiguration* including the *mobilityControlInfo* by the UE (handover)

If the *RRCConnectionReconfiguration* message includes the *mobilityControlInfo* and theUE is able to comply with the configuration included in this message, the UE shall:

1> if *daps-HO* is not configured for any DRB:

2> stop timer T310, if running;

2> stop timer T312, if running;

2> stop timer T316, if running;

2> resume MCG transmission, if suspended;

1> start timer T304 with the timer value set to *t304,* as included in the *mobilityControlInfo*;

1> stop timer T370, if running;

1> if the *carrierFreq* is included:

2> consider the target PCell to be one on the frequency indicated by the *carrierFreq* with a physical cell identity indicated by the *targetPhysCellId*;

1> else:

2> consider the target PCell to be one on the frequency of the source PCell with a physical cell identity indicated by the *targetPhysCellId*;

1> if T309 is running:

2> stop timer T309 for all access categories;

2> perform the actions as specified in 5.3.16.4.

1> start synchronising to the DL of the target PCell;

NOTE 1: The UE should perform the handover as soon as possible following the reception of the RRC message triggering the handover, which could be before confirming successful reception (HARQ and ARQ) of this message.

1> if BL UE or UE in CE:

2> if *sameSFN-Indication* is not present in *mobilityControlInfo*:

3> acquire the *MasterInformationBlock* in the target PCell;

1> if *makeBeforeBreak* is configured:

2> perform the remainder of this procedure including and following resetting MAC after the UE has stopped the uplink transmission/downlink reception with the source PCell;

NOTE 1a: It is up to UE implementation when to stop the uplink transmission/ downlink reception with the source PCell to initiate re-tuning for connection to the target cell, as specified in TS 36.133 [16], if *makeBeforeBreak* is configured.

NOTE 1b: It is up to UE implementation when to stop the uplink transmission/ downlink reception with the source SCell(s) after receiving *RRCConnectionReconfiguration* message.

1> if *daps-HO* is configured for any DRB:

2> establish a MAC entity for the target PCell, with the same configuration as the MAC entity for the source PCell;

2> for each DRB configured with *daps-HO*:

3> establish an RLC entity and an associated DTCH logical channel for the target PCell, with the same configurations as for the source PCell;

3> reconfigure the PDCP entity to DAPS PDCP entity as specified in TS36.323 [8].

2> for each DRB not configured with *daps-HO*:

3> re-establish PDCP;

3> re-establish the RLC entity and associate it, and the associated DTCH logical channel, to the target PCell;

2> for each SRB:

3> establish a PDCP entity for the target PCell, with the same configuration as the PDCP entity for the source PCell;

3> establish an RLC entity and an associated DCCH logical channel for the target PCell, with the same configuration as for the source PCell;

3> suspend the SRBs for the source PCell;

1> else (if *daps-HO* is not configured):

2> reset MCG MAC and SCG MAC, if configured;

2> release *uplinkDataCompression*, if configured;

2> re-establish PDCP for all RBs configured with *pdcp-config* that are established;

NOTE 2: The handling of the radio bearers after the successful completion of the PDCP re-establishment, e.g. the re-transmission of unacknowledged PDCP SDUs (as well as the associated status reporting), the handling of the SN and the HFN, is specified in TS 36.323 [8].

NOTE 2a: At handover the *reestablishPDCP* flag will be set for all RBs configured with NR PDCP in *nr-RadioBearerConfig1* or *nr-RadioBearerConfig2* TS 38.331 [82] which will cause the PDCP entity to be re-established also for these RBs.

2> re-establish MCG RLC and SCG RLC, if configured, for all RBs that are established;

1> for each SCell configured for the UE other than the PSCell:

2> if the received *RRCConnectionReconfiguration* message includes *sCellState* for the SCell and indicates *activated*:

3> configure lower layers to consider the SCell to be in activated state;

2> else if the received *RRCConnectionReconfiguration* message includes *sCellState* for the SCell and indicates *dormant*:

3> configure lower layers to consider the SCell to be in dormant state;

2> else:

3> configure lower layers to consider the SCell to be in deactivated state;

1> apply the value of the *newUE-Identity* as the C-RNTI in the target MCG;

1> if the *RRCConnectionReconfiguration* message includes the *fullConfig*:

2> perform the radio configuration procedure as specified in 5.3.5.8;

1> configure lower layers in accordance with the received *radioResourceConfigCommon*;

1> if the received *RRCConnectionReconfiguration* message includes the *rach-Skip*:

2> configure lower layers to apply the *rach-Skip* for the target MCG, as specified in TS 36.213 [23] and 36.321 [6];

1> configure lower layers in accordance with any additional fields, not covered in the previous, if included in the received mobilityControlInfo;

1> if the received *RRCConnectionReconfiguration* includes the *sCellToReleaseList*:

2> perform SCell release as specified in 5.3.10.3a;

1> if the received *RRCConnectionReconfiguration* includes the *sCellGroupToReleaseList*:

2> perform SCell group release as specified in 5.3.10.3d;

1> if the received *RRCConnectionReconfiguration* includes the *scg-Configuration*; or

1> if the current UE configuration includes one or more split DRBs and the received *RRCConnectionReconfiguration* includes *radioResourceConfigDedicated* including *drb-ToAddModList*:

2> perform SCG reconfiguration as specified in 5.3.10.10;

1> if the *RRCConnectionReconfiguration* message includes the *radioResourceConfigDedicated*:

2> perform the radio resource configuration procedure as specified in 5.3.10;

1> if the *securityConfigHO* (without suffix) is included in the *RRCConnectionReconfiguration*:

2> if the *keyChangeIndicator* received in the *securityConfigHO* is set to *TRUE*:

3> update the KeNB key based on the KASME key taken into use with the latest successful NAS SMC procedure, as specified in TS 33.401 [32];

2> else:

3> update the KeNB key based on the current KeNB or the NH, using the *nextHopChainingCount* value indicated in the *securityConfigHO*, as specified in TS 33.401 [32];

NOTE 2b: If the UE needs to update the S-KeNB key as specified in 5.3.10.10, the UE updates the S-KeNB after updating the KeNB key.

2> store the *nextHopChainingCount* value;

2> if the *securityAlgorithmConfig* is included in the *securityConfigHO*:

3> derive the KRRCint key associated with the *integrityProtAlgorithm*, as specified in TS 33.401 [32];

3> if connected as an RN:

4> derive the KUPint key associated with the *integrityProtAlgorithm*, as specified in TS 33.401 [32];

3> derive the KRRCenc key and the KUPenc key associated with the *cipheringAlgorithm*, as specified in TS 33.401 [32];

2> else:

3> derive the KRRCint key associated with the current integrity algorithm, as specified in TS 33.401 [32];

3> if connected as an RN:

4> derive the KUPint key associated with the current integrity algorithm, as specified in TS 33.401 [32];

3> derive the KRRCenc key and the KUPenc key associated with the current ciphering algorithm, as specified in TS 33.401 [32];

2> configure lower layers to apply the integrity protection algorithm and the KRRCint key, i.e. the integrity protection configuration shall be applied to all subsequent messages received and sent by the UE, including the message used to indicate the successful completion of the procedure;

2> configure lower layers to apply the ciphering algorithm, the KRRCenc key and the KUPenc key, i.e. the ciphering configuration shall be applied to all subsequent messages received and sent by the UE, including the message used to indicate the successful completion of the procedure;

NOTE 2c: For a DRB configured for DAPS HO, the new ciphering algorithm and the KUPenc key is applied for traffic exchange between the UE and the target MCG while the old ciphering algorithm and KUPenc key is applied for traffic exchange between the UE and the source MCG.

1> else if the *securityConfigHO-v1530* is included in the *RRCConnectionReconfiguration*:

2> if the *nas-Container* is received:

3> forward the *nas-Container* to upper layers;

2> if the *keyChangeIndicator-r15* is received and is set to *TRUE*:

3> update the KeNB key based on the KAMF key, as specified in TS 33.501 [86];

2> else:

3> update the KeNB key based on the current KeNB or the NH, using the received *nextHopChainingCount-r15*, as specified in TS 33.501 [86];

2> store the *nextHopChainingCount-r15* value;

2> if the security*AlgorithmConfig-r15* is received:

3> derive the KRRCint key associated with the *integrityProtAlgorithm*, as specified in TS 33.401 [32];

3> derive the KRRCenc key and the KUPenc key associated with the *cipheringAlgorithm*, as specified in TS 33.401 [32];

2> else:

3> derive the KRRCint key associated with the current integrity algorithm, as specified in TS 33.401 [32];

3> derive the KRRCenc key and the KUPenc key associated with the current ciphering algorithm, as specified in TS 33.401 [32];

1> if the received *RRCConnectionReconfiguration* includes the *nr-Config* and it is set to *release*; or

1> if the received *RRCConnectionReconfiguration* includes *endc-ReleaseAndAdd* and it is set to *TRUE*:

2> perform MR-DC release as specified in TS 38.331 [82], clause 5.3.5.10;

1> if the received *RRCConnectionReconfiguration* includes the *sk-Counter*:

2> perform key update procedure as specified in in TS 38.331 [82], clause 5.3.5.7;

1> if the received *RRCConnectionReconfiguration* includes the *nr-SecondaryCellGroupConfig*:

2> perform NR RRC Reconfiguration as specified in TS 38.331 [82], clause 5.3.5.3.

1> if the received *RRCConnectionReconfiguration* includes the *nr-RadioBearerConfig1*:

2> perform radio bearer configuration as specified in TS 38.331 [82], clause 5.3.5.6;

1> if the received *RRCConnectionReconfiguration* includes the *nr-RadioBearerConfig2*:

2> perform radio bearer configuration as specified in TS 38.331 [82], clause 5.3.5.6.

1> if connected as an RN:

2> configure lower layers to apply the integrity protection algorithm and the KUPint key, for current or subsequently established DRBs that are configured to apply integrity protection, if any;

1> if the received *RRCConnectionReconfiguration* includes the *sCellToAddModList*:

2> perform SCell addition or modification as specified in 5.3.10.3b;

1> if the received *RRCConnectionReconfiguration* includes the *sCellGroupToAddModList*:

2> perform SCell group addition or modification as specified in 5.3.10.3e;

1> if the received *RRCConnectionReconfiguration* includes the *systemInformationBlockType1Dedicated*:

2> perfom the actions upon reception of the *SystemInformationBlockType1* message as specified in 5.2.2.7;

1> perform the measurement related actions as specified in 5.5.6.1;

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

1> perform the measurement identity autonomous removal as specified in 5.5.2.2a;

1> release *reportProximityConfig* and clear any associated proximity status reporting timer;

1> if the *RRCConnectionReconfiguration* message includes the *otherConfig*:

2> perform the other configuration procedure as specified in 5.3.10.9;

1> if the *RRCConnectionReconfiguration* message includes the *sl-DiscConfig* or *sl-CommConfig*:

2> perform the sidelink dedicated configuration procedure as specified in 5.3.10.15;

1> if the *RRCConnectionReconfiguration* message includes *wlan-OffloadInfo*:

2> perform the dedicated WLAN offload configuration procedure as specified in 5.6.12.2;

1> if *handoverWithoutWT-Change* is not configured:

2> release the LWA configuration, if configured, as described in 5.6.14.3;

1> release the LWIP configuration, if configured, as described in 5.6.17.3;

1> if the *RRCConnectionReconfiguration* message includes *rclwi-Configuration*:

2> perform the WLAN traffic steering command procedure as specified in 5.6.16.2;

1> if the *RRCConnectionReconfiguration* message includes *lwa-Configuration*:

2> perform the LWA configuration procedure as specified in 5.6.14.2;

1> if the *RRCConnectionReconfiguration* message includes *lwip-Configuration*:

2> perform the LWIP reconfiguration procedure as specified in 5.6.17.2;

1> if the *RRCConnectionReconfiguration* message includes the *sl-V2X-ConfigDedicated* or *mobilityControlInfoV2X*:

2> perform the V2X sidelink communication dedicated configuration procedure as specified in 5.3.10.15a;

NOTE 2d: In case of conditional reconfiguration the text "if the received *RRCConnectionReconfiguration. . .*" corresponds to applying the stored *RRCConnectionReconfiguration* message (according to 5.3.5.9.4).

1> set the content of *RRCConnectionReconfigurationComplete* message as follows:

2> if the UE has radio link failure or handover failure information available in *VarRLF-Report* and if the RPLMN is included in *plmn-IdentityList* stored in *VarRLF-Report*:

3> include *rlf-InfoAvailable*;

2> if the UE has MBSFN logged measurements available for E-UTRA and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport* and if T330 is not running:

3> include *logMeasAvailableMBSFN*;

2> else if the UE has logged measurements available for E-UTRA and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*:

3> include the *logMeasAvailable*;

2> if the UE has Bluetooth logged measurements available and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*:

3> include *logMeasAvailableBT*;

2> if the UE has WLAN logged measurements available and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*:

3> include *logMeasAvailableWLAN*;

2> if the UE has connection establishment failure information available in *VarConnEstFailReport* and if the RPLMN is equal to *plmn-Identity* stored in *VarConnEstFailReport*:

3> include *connEstFailInfoAvailable*;

2> if the *RRCConnectionReconfiguration* message includes *perCC-GapIndicationRequest*:

3> include *perCC-GapIndicationList* and *numFreqEffective*;

2> if the frequencies are configured for reduced measurement performance:

3> include *numFreqEffectiveReduced*;

2> if the UE has flight path information available:

3> include *flightPathInfoAvailable*;

2> if the received *RRCConnectionReconfiguration* message included *nr-SecondaryCellGroupConfig*:

3> include *scg-ConfigResponseNR* in accordance with TS 38.331 [82], clause 5.3.5.3;

1> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission;

1> if MAC successfully completes the random access procedure; or

1> if MAC indicates the successful reception of a PDCCH transmission addressed to C-RNTI and if *rach-Skip* is configured:

2> stop timer T304;

2> if *daps-HO* is configured for any DRB:

3> stop timer T310, if running;

3> stop timer T312, if running;

3> for each DRB configured with DAPS PDCP trigger UL data switching, as specified in TS 36.323 [8];

2> release *rach-Skip*;

2> apply the parts of the CQI reporting configuration, the scheduling request configuration and the sounding RS configuration that do not require the UE to know the SFN of the target PCell, if any;

2> apply the parts of the measurement and the radio resource configuration that require the UE to know the SFN of the target PCell (e.g. measurement gaps, periodic CQI reporting, scheduling request configuration, sounding RS configuration), if any, upon acquiring the SFN of the target PCell;

NOTE 3: Whenever the UE shall setup or reconfigure a configuration in accordance with a field that is received it applies the new configuration, except for the cases addressed by the above statements.

2> if the UE is configured to provide IDC indications:

3> if the UE has transmitted an *InDeviceCoexIndication* message during the last 1 second preceding reception of the *RRCConnectionReconfiguration* message including *mobilityControlInfo*:

4> initiate transmission of the *InDeviceCoexIndication* message in accordance with 5.6.9.3;

2> if the UE is configured to provide power preference indications, overheating assistance information, SPS assistance information, delay budget report or maximum bandwidth preference indications:

3> if the UE has transmitted a *UEAssistanceInformation* message during the last 1 second preceding reception of the *RRCConnectionReconfiguration* message including *mobilityControlInfo*:

4> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.6.10.3;

2> if *SystemInformationBlockType15* is broadcast by the PCell:

3> if the UE has transmitted a *MBMSInterestIndication* message during the last 1 second preceding reception of the *RRCConnectionReconfiguration* message including *mobilityControlInfo*:

4> ensure having a valid version of *SystemInformationBlockType15* for the PCell;

4> determine the set of MBMS frequencies of interest in accordance with 5.8.5.3;

4> determine the set of MBMS services of interest in accordance with 5.8.5.3a;

4> initiate transmission of the *MBMSInterestIndication* message in accordance with 5.8.5.4;

2> if *SystemInformationBlockType18* is broadcast by the target PCell; and the UE transmitted a *SidelinkUEInformation* message indicating a change of sidelink communication related parameters relevant in target PCell (i.e. change of *commRxInterestedFreq* or *commTxResourceReq*, *commTxResourceReqUC* if *SystemInformationBlockType18* includes *commTxResourceUC-ReqAllowed* or *commTxResourceInfoReqRelay* if PCell broadcasts *SystemInformationBlockType19* including *discConfigRelay*) during the last 1 second preceding reception of the *RRCConnectionReconfiguration* message including *mobilityControlInfo*; or

2> if *SystemInformationBlockType19* is broadcast by the target PCell; and the UE transmitted a *SidelinkUEInformation* message indicating a change of sidelink discovery related parameters relevant in target PCell (i.e. change of *discRxInterest* or *discTxResourceReq*, *discTxResourceReqPS* if *SystemInformationBlockType19* includes *discConfigPS* or *discRxGapReq* or *discTxGapReq* if the UE is configured with *gapRequestsAllowedDedicated* set to *true* or if the UE is not configured with *gapRequestsAllowedDedicated* and *SystemInformationBlockType19* includes *gapRequestsAllowedCommon*) during the last 1 second preceding reception of the *RRCConnectionReconfiguration* message including *mobilityControlInfo*; or

2> if *SystemInformationBlockType21* is broadcast by the target PCell; and the UE transmitted a *SidelinkUEInformation* message indicating a change of V2X sidelink communication related parameters relevant in target PCell (i.e. change of *v2x-CommRxInterestedFreqList* or *v2x-CommTxResourceReq*) during the last 1 second preceding reception of the *RRCConnectionReconfiguration* message including *mobilityControlInfo*:

3> initiate transmission of the *SidelinkUEInformation* message in accordance with 5.10.2.3;

2> remove all the entries within *VarConditionalReconfiguration*, if any;

2> for each *measId* of the source SpCell configuration, if the associated *reportConfig* is *condReconfigurationTrigger*:

3> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

3> remove the entry with the matching *reportConfigId* from the *reportConfigList* within the *VarMeasConfig*;

3> if the *measObjectId* is only included in a *MeasIdToAddMod*:

4> remove the entry with the matching *measObjectId* from the *measObjectList* within the *VarMeasConfig*;

2> the procedure ends;

NOTE 4: The UE is not required to determine the SFN of the target PCell by acquiring system information from that cell before performing RACH access in the target PCell, except for BL UEs or UEs in CE when *sameSFN-Indication* is not present in *mobilityControlInfo*.

Editor's Note: FFS How to handle possible differences for the cases where UE connects to 5GC or EPC.

Editor's Note: The release of the SCG configuration at CHO remains to be captured.

*END OF CHANGES*

START OF CHANGES

### 5.3.7 RRC connection re-establishment

#### 5.3.7.2 Initiation

The UE shall only initiate the procedure either when AS security has been activated or for a NB-IoT UE supporting RRC connection re-establishment for the Control Plane CIoT EPS optimisation. The UE initiates the procedure when one of the following conditions is met:

1> upon detecting radio link failure and T316 is not configured, in accordance with 5.3.11; or

1> upon detecting radio link failure of the MCG while SCG transmission is suspended, in accordance with 5.3.11; or

1> upon detecting radio link failure of the MCG while NR PSCell change is ongoing, in accordance with 5.3.11; or

1> upon handover failure, in accordance with 5.3.5.6; or

1> upon mobility from E-UTRA failure, in accordance with 5.4.3.5; or

1> except for UP-EDT, upon integrity check failure indication from lower layers concerning SRB1 or SRB2; or

1> upon an RRC connection reconfiguration failure, in accordance with 5.3.5.5; or

1> upon an RRC connection reconfiguration failure, in accordance with TS38.331 [82], clause 5.3.5.8; or

1> upon detecting radio link failure for the SCG while MCG transmission is suspended, in accordance with TS 38.331 [82] subclause 5.3.10.3 in (NG)EN-DC; or

1> upon SCG change failure while MCG transmission is suspended, in accordance with TS 38.331 [82] subclause 5.3.5.8.3 in (NG)EN-DC; or

1> upon SCG configuration failure while MCG transmission is suspended in accordance with subclause TS 38.331 [82] subclause 5.3.5.8.2 in (NG)EN-DC; or

1> upon integrity check failure indication from SCG lower layers concerning SRB3 while MCG transmission is suspended; or

1> upon T316 expiry, in accordance with sub-clause 5.6.26.5.

NOTE: For UP-EDT, integrity check failure indication from lower layers is handled in accordance with clause 5.3.3.16.

Upon initiation of the procedure, the UE shall:

1> stop timer T310, if running;

1> stop timer T312, if running;

1> stop timer T313, if running;

1> stop timer T316, if running;

1> stop timer T307, if running;

1> start timer T311;

1> stop timer T370, if running;

1> release *uplinkDataCompression*, if configured;

1> suspend all RBs, including RBs configured with NR PDCP, except SRB0;

1> reset MAC;

1> release the MCG SCell(s), if configured, in accordance with 5.3.10.3a;

1> release the SCell group(s), if configured, in accordance with 5.3.10.3d;

1> apply the default physical channel configuration as specified in 9.2.4;

1> except for NB-IoT, for the MCG, apply the default semi-persistent scheduling configuration as specified in 9.2.3;

1> for NB-IoT, release *schedulingRequestConfig*, if configured;

1> for the MCG, apply the default MAC main configuration as specified in 9.2.2;

1> release *powerPrefIndicationConfig*, if configured and stop timer T340, if running;

1> release *reportProximityConfig*, if configured and clear any associated proximity status reporting timer;

1> release *obtainLocationConfig*, if configured;

1> release *idc-Config*, if configured;

1> release *sps-AssistanceInfoReport*, if configured;

1> release *measSubframePatternPCell*, if configured;

1> release the entire SCG configuration, if configured, except for the DRB configuration (as configured by *drb-ToAddModListSCG*);

1> if (NG)EN-DC is configured:

2> perform MR-DC release, as specified in TS 38.331[82], clause 5.3.5.10;

2> release *p-MaxEUTRA*, if configured;

2> release *p-MaxUE-FR1*, if configured;

2> release *tdm-PatternConfig*, if configured;

1> release *naics-Info* for the PCell, if configured;

1> if connected as an RN and configured with an RN subframe configuration:

2> release the RN subframe configuration;

1> release the LWA configuration, if configured, as described in 5.6.14.3;

1> release the LWIP configuration, if configured, as described in 5.6.17.3;

1> release *delayBudgetReportingConfig*, if configured and stop timer T342, if running;

1> perform cell selection in accordance with the cell selection process as specified in TS 36.304 [4];

1> release *bw-PreferenceIndicationTimer*, if configured and stop timer T341, if running;

1> release *overheatingAssistanceConfig*, if configured and stop timer T345, if running;

1> release *ailc-BitConfig*, if configured;

Editor's Note: Where to capture PUR release due to RACH initiation on a new cell.

*END OF CHANGES*

START OF CHANGES

### 5.3.8 RRC connection release

#### 5.3.8.3 Reception of the *RRCConnectionRelease* by the UE

The UE shall:

1> except for NB-IoT, BL UEs or UEs in CE, delay the following actions defined in this sub-clause 60 ms from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> for BL UEs or UEs in CE, delay the following actions defined in this sub-clause 1.25 seconds from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> for NB-IoT, delay the following actions defined in this sub-clause 10 seconds from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier.

NOTE: For BL UEs, UEs in CE and NB-IoT, when STATUS reporting, as defined in TS 36.322 [7], has not been triggered and the UE has sent positive HARQ feedback (ACK), as defined in TS 36.321 [6], the lower layers can be considered to have indicated that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged.

1> stop T380, if running;

1> for NB -IoT, if the UE has reported *anr-InfoAvailable*, clear *VarANR-MeasConfig-NB* and *VarANR-MeasReport-NB*;

1> if the *RRCConnectionRelease* message is received in response to an *RRCConnectionResumeRequest* for EDT or for UP transmission using PUR:

2> indicate to upper layers that the suspended RRC connection has been resumed;

2> discard the stored UE AS context and *resumeIdentity*;

2> stop timer T300;

2> stop timer T302, if running;

2> stop timer T303, if running;

2> stop timer T305, if running;

2> stop timer T306, if running;

2> stop timer T308, if running;

2> perform the actions as specified in 5.3.3.7;

2> stop timer T316, if running;

2> stop timer T320, if running;

2> stop timer T322, if running;

1> if ASsecurity is not activated and if UE is connected to 5GC:

2> ignore any field included in *RRCConnectionRelease* message except *waitTime*;

2> perform the actions upon leaving RRC\_CONNECTED or RRC\_INACTIVE as specified in 5.3.12 with the release cause '*other'* upon which the procedure ends;

1> if the *RRCConnectionRelease* message includes *redirectedCarrierInfo* indicating redirection to *geran*; or

1> if the *RRCConnectionRelease* message includes *idleModeMobilityControlInfo* including *freqPriorityListGERAN*:

2> if AS security has not been activated; and

2> if upper layers indicate that redirect to GERAN without AS security is not allowed:

3> ignore the content of the *RRCConnectionRelease*;

3> perform the actions upon leaving RRC\_CONNECTED or RRC\_INACTIVE as specified in 5.3.12, with release cause 'other', upon which the procedure ends;

1> if AS security has not been activated:

2> ignore the content of *redirectedCarrierInfo*, if included and indicating redirection to *nr*;

2> ignore the content of *idleModeMobilityControlInfo*, if included and including *freqPriorityListNR*;

2> if the UE ignores the content of *redirectedCarrierInfo* or of *idleModeMobilityControlInfo*:

3> perform the actions upon leaving RRC\_CONNECTED as specified in 5.3.12, with release cause 'other', upon which the procedure ends;

1> if the *RRCConnectionRelease* message includes *redirectedCarrierInfo* indicating redirection to *eutra* and if UE is connected to 5GC:

2> if *cn-Type* is included:

3> after the cell selection, indicate the available CN Type(s) and the received *cn-Type* to upper layers;

NOTE 1: Handling the case if the E-UTRA cell selected after the redirection does not support the core network type specified by the *cn-Type,* is up to UE implementation.

1> if the *RRCConnectionRelease* message includes the *idleModeMobilityControlInfo*:

2> store the cell reselection priority information provided by the *idleModeMobilityControlInfo*;

2> if the *t320* is included:

3> start timer T320, with the timer value set according to the value of *t320*;

1> else:

2> apply the cell reselection priority information broadcast in the system information;

1> if the *RRCConnectionRelease* message includes the *releaseMeasIdleConfig*:

2> if timer T331 is running:

3> stop timer T331;

3> perform the actions as specified in 5.6.20.3;

1> if the *RRCConnectionRelease* message includes the *measIdleConfig*:

2> clear *VarMeasIdleConfig* and *VarMeasIdleReport*;

2> store the received *measIdleDuration* in *VarMeasIdleConfig*;

2> start or restart T331 with the value of *measIdleDuration*;

2> if the *measIdleConfig* contains *measIdleCarrierListEUTRA*:

3> store the received *measIdleCarrierListEUTRA* in *VarMeasIdleConfig*;

2> if the *measIdleConfig* contains *measIdleCarrierListNR*:

3> store the received *measIdleCarrierListNR* in *VarMeasIdleConfig*;

2> if the *measIdleConfig* contains *validityAreaList*:

3> store the received *validityAreaList* in *VarMeasIdleConfig*;

NOTE 2: If the *measIdleConfig* contains neither *measIdleCarrierListEUTRA* nor *measIdleCarrierListNR*, UE may receive *measIdleCarrierListEUTRA* and/or *measIdleCarrierListNR* as specified in 5.6.20.1a

1> for NB-IoT, if the *RRCConnectionRelease* message includes the *anr-MeasConfig*:

2> store the received *anr-QualityThreshold* in *VarANR-MeasConfig-NB*;

2> if the *anr-MeasConfig* contains *anr-CarrierList*:

3> store the received *anr-CarrierList* in *VarANR-MeasConfig-NB*;

2> set *plmn-IdentityList* in *VarANR-MeasReport-NB* to include the list of EPLMNs stored by the UE (i.e. includes the RPLMN);

2> set *servCellIdentity* in *VarANR-MeasReport-NB* to the global cell identity of the Pcell;

2> start performing ANR measurements as specified in 5.6.24;

1> if the *RRCConnectionRelease* message includes the *pur-Config*:

2> if *pur-Config* is set to *setup*:

3> store or replace the PUR configuration provided by the *pur-Config*;

3> configure MAC in accordance with the stored *pur-Config*;

2> else:

3> release *pur-Config*, if configured;

3> discard previously stored *pur-Config*, if any;

2> indicate to lower layers that *pur-Config* is released.

1> for NB-IoT, if the *RRCConnectionRelease* message includes the *redirectedCarrierInfo*:

2> if the *redirectedCarrierOffsetDedicated* isincluded in the *redirectedCarrierInfo*:

3> store the dedicated offsetfor the frequency in *redirectedCarrierInfo*;

3> start timer T322, with the timer value set according to the value of *T322* in *redirectedCarrierInfo*;

1> if the *releaseCause* received in the *RRCConnectionRelease* message indicates *loadBalancingTAURequired*:

2> perform the actions upon leaving RRC\_CONNECTED as specified in 5.3.12, with release cause 'load balancing TAU required';

1> else if the *releaseCause* received in the *RRCConnectionRelease* message indicates *cs-FallbackHighPriority*:

2> perform the actions upon leaving RRC\_CONNECTED as specified in 5.3.12, with release cause 'CS Fallback High Priority';

1> else:

2> if the *extendedWaitTime* is present; and

2> if the UE supports delay tolerant access or the UE is a NB-IoT UE:

3> forward the *extendedWaitTime* to upper layers;

2> if the *extendedWaitTime-CPdata* is present and the NB-IoT UE only supports the Control Plane CIoT EPS optimisation:

3> forward the *extendedWaitTime-CPdata* to upper layers;

2> if the *releaseCause* received in the *RRCConnectionRelease* message indicates *rrc-Suspend*:

3> perform the actions upon leaving RRC\_CONNECTED as specified in 5.3.12, with release cause 'RRC suspension';

2> else if *rrc-InactiveConfig* is included:

3> perform the actions upon entering RRC\_INACTIVE as specified in 5.3.8.7;

2> else:

3> perform the actions upon leaving RRC\_CONNECTED or RRC\_INACTIVE as specified in 5.3.12, with release cause 'other';

*END OF CHANGES*

*START OF CHANGES*

#### 5.3.8.7 UE actions upon entering RRC\_INACTIVE

Upon entering RRC\_INACTIVE, the UE shall:

1> reset MAC and release the default MAC configuration if any;

1> stop all timers that are running except T302, T309, T320 and T325;

1> re-establish RLC entities for all SRBs and DRBs;

1> if the *RRCConnectionRelease* message is including the *waitTime*:

2> start timer T302, with the timer value set according to the *waitTime*;

2> inform the upper layer that access barring is applicable for all access categories except categories '0' and '2';

1> if T309 is running:

2> stop timer T309 for all access categories;

2> perform the actions as specified in 5.3.16.4.

1> apply the received *rrc-InactiveConfig*;

1> if the *RRCConnectionRelease* message was received in response to an *RRCConnectionResumeRequest*:

2> in the stored UE Inactive AS context:

3> replace the KeNB and KRRCint keys with the current KeNB and KRRCint keys;

3> replace the C-RNTI with the temporary C-RNTI which the UE has used to receive the *RRCConnectionRelease* message;

3> replace the *cellIdentity* with the *cellIdentity* of the PCell at the time the UE has received the *RRCConnectionRelease* message;

3> replace the previously stored physical cell identitywith the physical cell identity of the PCell at the time the UE has received the *RRCConnectionRelease* message;

1> else:

2> store in the UE Inactive AS Context, the current KeNB and KRRCint keys, the ROHC state, the stored QoS flow to DRB mapping rules, the C-RNTI used in the source PCell, the *cellIdentity* and the physical cell identity of the source PCell, the *spCellConfigCommon* within *ReconfigurationWithSync* of the PSCell (if configured), and all other parameters configured;

1> if the *periodic-RNAU-timer* is included:

2> start timer T380, with the timer value set to the *periodic-RNAU-timer*;

1> suspend all SRB(s) and DRB(s), except SRB0;

1> indicate PDCP suspend to lower layers of all DRBs;

1> indicate the suspension of the RRC connection to upper layers;

1> enter RRC\_INACTIVE and perform procedures as specified in TS 36.304 [4], clause 5.2.7;

Upon selecting to an inter-RAT cell or switching to another CN type, the UE shall:

1> perform the actions upon leaving RRC\_INACTIVE as specified in 5.3.12, with release cause 'other';

*END OF CHANGES*

START OF CHANGES

### 5.3.10 Radio resource configuration

#### 5.3.10.0 General

The UE shall:

1> if the received *radioResourceConfigDedicated* includes the *srb-ToAddModList*:

2> perform the SRB addition or reconfiguration as specified in 5.3.10.1;

1> if the received *radioResourceConfigDedicated* includes the *drb-ToReleaseList*:

2> perform DRB release as specified in 5.3.10.2;

1> if the received *radioResourceConfigDedicated* includes the *drb-ToAddModList*:

2> perform DRB addition or reconfiguration as specified in 5.3.10.3;

1> if the received *radioResourceConfigDedicated* includes the *mac-MainConfig*:

2> perform MAC main reconfiguration as specified in 5.3.10.4;

1> if the received *radioResourceConfigDedicated* includes *sps-Config*:

2> perform SPS reconfiguration according to 5.3.10.5;

1> if the received *radioResourceConfigDedicated* includes the *physicalConfigDedicated*:

2> reconfigure the physical channel configuration as specified in 5.3.10.6.

1> if the received *radioResourceConfigDedicated* includes the *rlf-TimersAndConstants* or the *rlf-TimersAndConstantsMCG-Failure*:

2> reconfigure the values of timers and constants as specified in 5.3.10.7;

1> if the received *radioResourceConfigDedicated* includes the *measSubframePatternPCell*:

2> reconfigure the time domain measurement resource restriction for the serving cell as specified in 5.3.10.8;

1> if the received *radioResourceConfigDedicated* includes the *naics-Info*:

2> perform NAICS neighbour cell information reconfiguration for the PCell as specified in 5.3.10.13;

1> ifthe received *RadioResourceConfigDedicatedPSCell* includes the *naics-Info*:

2> perform NAICS neighbour cell information reconfiguration for the PSCell as specified in 5.3.10.13;

1> ifthe received *RadioResourceConfigDedicatedSCell-r10* includes the *naics-Info*:

2> perform NAICS neighbour cell information reconfiguration for the SCell as specified in 5.3.10.13;

1> if the received *radioResourceConfigDedicated* includes the *srb-ToReleaseList*:

2> perform SRB release as specified in 5.3.10.17;

1> ifthe received *radioResourceConfigDedicated* includes the *schedulingRequestConfig*:

2> perform scheduling request reconfiguration for the SCell as specified in 5.3.10.18.

*END OF CHANGES*

START OF CHANGES

#### 5.3.10.7 Radio Link Failure Timers and Constants reconfiguration

The UE shall:

1> if the received *rlf-TimersAndConstants* is set to release:

2> use values for timers T301, T310, T311 and constants N310, N311, as included in *ue-TimersAndConstants* received in *SystemInformationBlockType2*(or *SystemInformationBlockType2-NB* in NB-IoT);

1> else:

2> reconfigure the value of timers and constants in accordance with received *rlf-TimersAndConstants*;

NOTE: In case of a DAPS HO, the timer and constant values are to be applied in the target PCell after timer T304 has been stopped.

1> if the received *rlf-TimersAndConstantsSCG* is set to release:

2> stop timer T313, if running, and

2> release the value of timer *t313* as well as constants *n313* and *n314*;

1> else:

2> reconfigure the value of timers and constants in accordance with received *rlf-TimersAndConstantsSCG*;

*END OF CHANGES*

START OF CHANGES

### 5.3.11 Radio link failure related actions

#### 5.3.11.1 Detection of physical layer problems in RRC\_CONNECTED

The UE shall:

1> upon receiving N310 consecutive "out-of-sync" indications for the PCell from lower layers while neither T300, T301, T304, T311, nor T316 is running; or

1> if *daps-HO* is configured for any DRB, upon receiving N310 consecutive "out-of-sync" indications for the source PCell from lower layers while neither T300, T301 nor T311 is running:

2> start timer T310;

1> upon receiving N313 consecutive "out-of-sync" indications for the PSCell from lower layers while T307 is not running:

2> start T313;

NOTE: Physical layer monitoring and related autonomous actions do not apply to SCells except for the PSCell.

*END OF CHANGES*

*START OF CHANGES*

### 5.3.12 UE actions upon leaving RRC\_CONNECTED or RRC\_INACTIVE

Upon leaving RRC\_CONNECTED or RRC\_INACTIVE, the UE shall:

1> reset MAC;

1> if leaving RRC\_INACTIVE was not triggered by the reception of *RRCConnectionRelease* including *idleModeMobilityControlInfo*:

2> stop the timer T320, if running;

2> if stored, discard the cell reselection priority information provided by the *idleModeMobilityControlInfo*;

1> if entering RRC\_IDLE was triggered by reception of the *RRCConnectionRelease* message including a *waitTime*:

2> start timer T302, with the timer value set according to the *waitTime*;

2> inform the upper layer that access barring is applicable for all access categories except categories '0' and '2';

1> else if T302 is running:

2> stop timer T302;

2> if the UE is connected to 5GC:

3> perform the actions as specified in 5.3.16.4;

1> if T309 is running:

2> stop timer T309 for all access categories;

2> perform the actions as specified in 5.3.16.4.

1> stop all timers that are running except T302, T320, T322, T325, T330, T331;

1> release *crs-ChEstMPDCCH-ConfigDedicated*, if configured;

1> if leaving RRC\_CONNECTED was triggered by suspension of the RRC:

2> re-establish RLC entities for all SRBs and DRBs, including RBs configured with NR PDCP;

2> store the UE AS Context including the current RRC configuration, the current security context, the PDCP state including ROHC state, C-RNTI used in the source PCell, the *cellIdentity* and the physical cell identity of the source PCell, and the *spCellConfigCommon* within *ReconfigurationWithSync* of the PSCell (if configured);

2> store the following information provided by E-UTRAN:

3> the *resumeIdentity*;

3> the *nextHopChainingCount*, if present. Otherwise discard any stored *nextHopChainingCount* that does not correspond to stored key KRRCint;

3> the *drb-ContinueROHC*, if present. Otherwise discard any stored *drb-ContinueROHC*;

2> suspend all SRB(s) and DRB(s), including RBs configured with NR PDCP, except SRB0;

2> if the UE connected to 5GC is a BL UE or UE in CE, indicate PDCP suspend to lower layers of all DRBs;

2> indicate the suspension of the RRC connection to upper layers;

2> configure lower layers to suspend integrity protection and ciphering;

NOTE 1: Except when resuming an RRC connection after early security reactivation in accordance with conditions in 5.3.3.18, ciphering is not applied for the subsequent *RRCConnectionResume* message used to resume the connection and an integrity check is performed by lower layers, but merely upon request from RRC.

1> else:

2> upon leaving RRC\_INACTIVE:

3> discard the UE Inactive AS context;

3> release *rrc-InactiveConfig*, if configured;

3> discard the KeNB, the KRRCenc key, the KRRCint and the KUPenc key;

2> release *rrc-InactiveConfig*, if configured;

2> remove all entries within *VarConditionalReconfiguration*, if any;

2> for each *measId*, that is part of the current UE configuration in *VarMeasConfig,* if the associated *reportConfig* has *condReconfigurationTriggerEUTRA* configured:

3> remove the entry with the matching *reportConfigId* from the *reportConfigList* within the *VarMeasConfig*;

3> if the associated *measObjectId* is only associated with *condReconfigurationTriggerEUTRA*:

4> remove the entry with the matching *measObjectId* from the *measObjectList* within the *VarMeasConfig*;

3> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

2> release all radio resources, including release of the MAC configuration, the RLC entity and the associated PDCP entity and SDAP (if any) for all established RBs;

2> indicate the release of the RRC connection to upper layers together with the release cause;

1> if leaving RRC\_CONNECTED was triggered neither by reception of the *MobilityFromEUTRACommand* message nor by selecting an inter-RAT cell while T311 was running; or

1> if leaving RRC\_INACTIVE was not triggered by the inter-RAT cell reselection:

2> if timer T350 is configured:

3> start timer T350;

3> apply *rclwi-Configuration* if configured, otherwise apply the *wlan-Id-List* corresponding to the RPLMN included in *SystemInformationBlockType17*;

2> else:

3> release the *wlan-OffloadConfigDedicated*, if received;

3> if the *wlan-OffloadConfigCommon* corresponding to the RPLMN is broadcast by the cell:

4> apply the *wlan-OffloadConfigCommon* corresponding to the RPLMN included in *SystemInformationBlockType17*;

4> apply *steerToWLAN* if configured, otherwise apply the *wlan-Id-List* corresponding to the RPLMN included in *SystemInformationBlockType17*;

2> enter RRC\_IDLE and perform procedures as specified in TS 36.304 [4], clause 5.2.7;

1> else:

2> release the *wlan-OffloadConfigDedicated*, if received;

NOTE 2: BL UEs or UEs in CE verifies validity of SI when released to RRC\_IDLE.

1> release the LWA configuration, if configured, as described in 5.6.14.3;

1> release the LWIP configuration, if configured, as described in 5.6.17.3;

END OF CHANGES

START OF CHANGES

## 5.4 Inter-RAT mobility

### 5.4.3 Mobility from E-UTRA

#### 5.4.3.2 Initiation

E-UTRAN initiates the mobility from E-UTRA procedure to a UE in RRC\_CONNECTED, possibly in response to a *MeasurementReport* message, in response to reception of CS fallback indication for the UE from MME, or in response to an *MCGFailureInformation* message by sending a *MobilityFromEUTRACommand* message. E-UTRAN applies the procedure as follows:

- the procedure is initiated only when AS-security has been activated, and SRB2 with at least one DRB are setup and not suspended;

#### 5.4.3.3 Reception of the *MobilityFromEUTRACommand* by the UE

The UE shall be able to receive a *MobilityFromEUTRACommand* message and perform a cell change order to GERAN, even if no prior UE measurements have been performed on the target cell.

The UE shall:

1> stop timer T310, if running;

1> stop timer T312, if running;

1> stop timer T316, if running;

1> if T309 is running:

2> stop timer T309 for all access categories;

2> perform the actions as specified in 5.3.16.4.

1> if the *MobilityFromEUTRACommand* message includes the *purpose* set to *handover*:

2> if the *targetRAT-Type* is set to *utra* or *geran*:

3> consider inter-RAT mobility as initiated towards the RAT indicated by the *targetRAT-Type* included in the *MobilityFromEUTRACommand* message;

3> forward the *nas-SecurityParamFromEUTRA* to the upper layers;

3> access the target cell indicated in the inter-RAT message in accordance with the specifications of the target RAT;

3> if the *targetRAT-Type* is set to *geran*:

4> use the contents of *systemInformation*, if provided for PS Handover, as the system information to begin access on the target GERAN cell;

NOTE 1: If there are DRBs for which no radio bearers are established in the target RAT as indicated in the *targetRAT-MessageContainer* in the message, the E-UTRA RRC part of the UE does not indicate the release of the concerned DRBs to the upper layers. Upper layers may derive which bearers are not established from information received from the AS of the target RAT.

NOTE 2: In case of SR-VCC, the DRB to be replaced is specified in TS 23.216 [61].

2> else if the *targetRAT-Type* is set to *eutra*:

3> consider inter-system mobility as initiated towards E-UTRA;

3> forward the *nas-SecurityParamFromEUTRA* to the upper layers, if included;

3> access the target cell indicated in the inter-RAT message in accordance with clause 5.4.2.3;

2> else if the *targetRAT-Type* is set to *nr*:

3> consider inter-RAT mobility as initiated towards NR;

3> access the target cell indicated in the inter-RAT message in accordance with the specifications in TS 38.331 [82];

2> else if the *targetRAT-Type* is set to *cdma2000-1XRTT* or *cdma2000-HRPD*:

3> forward the *targetRAT-Type* and the *targetRAT-MessageContainer* to the CDMA2000 upper layers for the UE to access the cell(s) indicated in the inter-RAT message in accordance with the specifications of the CDMA2000 target-RAT;

1> else if the *MobilityFromEUTRACommand* message includes the *purpose* set to *cellChangeOrder*:

2> start timer T304 with the timer value set to *t304,* as included in the *MobilityFromEUTRACommand* message;

2> if the *targetRAT-Type* is set to *geran*:

3> if *networkControlOrder* is included in the *MobilityFromEUTRACommand* message:

4> apply the value as specified in TS 44.060 [36];

3> else:

4> acquire *networkControlOrder* and apply the value as specified in TS 44.060 [36];

3> use the contents of *systemInformation*, if provided, as the system information to begin access on the target GERAN cell;

2> establish the connection to the target cell indicated in the *CellChangeOrder*;

NOTE 3: The criteria for success or failure of the cell change order to GERAN are specified in TS 44.060 [36].

1> if the *MobilityFromEUTRACommand* message includes the *purpose* set to *e-CSFB*:

2> if *messageContCDMA2000-1XRTT* is present:

3> forward the *messageContCDMA2000-1XRTT* to the CDMA2000 upper layers for the UE to access the cell(s) indicated in the inter-RAT message in accordance with the specification of the target RAT;

2> if *mobilityCDMA2000-HRPD* is present and is set to *handover*:

3> forward the *messageContCDMA2000-HRPD* to the CDMA2000 upper layers for the UE to access the cell(s) indicated in the inter-RAT message in accordance with the specification of the target RAT;

2> if *mobilityCDMA2000-HRPD* is present and is set to *redirection*:

3> forward the *redirectCarrierCDMA2000-HRPD* to the CDMA2000 upper layers;

NOTE 4: When the CDMA2000 upper layers in the UE receive both the *messageContCDMA2000-1XRTT* and *messageContCDMA2000-HRPD* the UE performs concurrent access to both CDMA2000 1xRTT and CDMA2000 HRPD RAT.

NOTE 5: The UE should perform the handover, the cell change order or enhanced 1xRTT CS fallback as soon as possible following the reception of the RRC message *MobilityFromEUTRACommand*, which could be before confirming successful reception (HARQ and ARQ) of this message.

*END OF CHANGES*

START OF CHANGES

## 5.5 Measurements

### 5.5.3 Performing measurements

#### 5.5.3.3 Derivation of NR cell quality

The UE shall:

1> if the associated *measObject*, in RRC\_CONNECTED, or the associated entry in *measIdleCarrierListNR* within *VarMeasIdleConfig*, for measurements performed according to 5.6.20.2 in RRC\_IDLE or RRC\_INACTIVE, includes *maxRS-IndexCellQual*; and

1> if there are multiple detected NR-SS beams associated to the cell; and

1> if *threshRS-Index* is configured and if for more than one of the NR-SS beams the measured result exceeds this threshold:

2> consider the cell quality to be the linear average of the power values of the, up to *maxRS-IndexCellQual*, best of the detected NR-SS beams exceeding *threshRS-Index*;

1> else:

2> consider the cell quality to be the measurement result of the detected NR-SS beam, associated to the cell, with the highest measurement result;

*END OF CHANGES*

START OF CHANGES

## 5.6 Other

### 5.6.5 UE Information

#### 5.6.5.3 Reception of the *UEInformationRequest* message

Upon receiving the *UEInformationRequest* message, the UE shall, only after successful security activation:

1> if *rach-ReportReq* is set to *true*, set the contents of the *rach-Report* in the *UEInformationResponse* message as follows:

2> set the *numberOfPreamblesSent* to indicate the number of preambles sent by MAC for the last successfully completed random access procedure;

2> if contention resolution was not successful as specified in TS 36.321 [6] for at least one of the transmitted preambles for the last successfully completed random access procedure:

3> set the *contentionDetected* to *true*;

2> else:

3> set the *contentionDetected* to *false*;

2> if the UE is a BL UE or UE in CE:

3> set the *initialCEL* to indicate the initial CE level used for the last successfully completed random access procedure;

2> if the UE is a NB-IoT UE:

3> set the *initialNRSRP-Level* to indicate the NRSRP level of the NPRACH resource selected for the first preamble transmission for the last successfully completed random access procedure;

2> if the UE is a BL UE, UE in CE or NB-IoT UE:

3> if the last successfully completed random access procedure was initiated with EDT PRACH resource and succeeded after receiving EDT fallback indication from lower layers:

4> set the *edt-Fallback* to *true*;

3> else:

4> set the *edt-Fallback* to *false*;

1> if *rlf-ReportReq* is set to *true* and the UE has radio link failure information or handover failure information available in *VarRLF-Report* and if the RPLMN is included in *plmn-IdentityList* stored in *VarRLF-Report*:

2> set *timeSinceFailure* in *VarRLF-Report* to the time that elapsed since the last radio link or handover failure in E-UTRA;

2> set the *rlf-Report* in the *UEInformationResponse* message to the value of *rlf-Report* in *VarRLF-Report*;

2> discard the *rlf-Report* from *VarRLF-Report* upon successful delivery of the *UEInformationResponse* message confirmed by lower layers;

1> except for NB-IoT, if *connEstFailReportReq* is set to *true* and the UE has connection establishment failure information in *VarConnEstFailReport* and if the RPLMN is equal to *plmn-Identity* stored in *VarConnEstFailReport*:

2> set *timeSinceFailure* in *VarConnEstFailReport* to the time that elapsed since the last connection establishment failure in E-UTRA;

2> set the *connEstFailReport* in the *UEInformationResponse* message to the value of *connEstFailReport* in *VarConnEstFailReport*;

2> discard the *connEstFailReport* from *VarConnEstFailReport* upon successful delivery of the *UEInformationResponse* message confirmed by lower layers;

1> except for NB-IoT, if the *logMeasReportReq* is present and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*:

2> if *VarLogMeasReport* includes one or more logged measurement entries, set the contents of the *logMeasReport* in the *UEInformationResponse* message as follows:

3> include the *absoluteTimeStamp* and set it to the value of *absoluteTimeInfo* in the *VarLogMeasReport*;

3> include the *traceReference* and set it to the value of *traceReference* in the *VarLogMeasReport*;

3> include the *traceRecordingSessionRef* and set it to the value of *traceRecordingSessionRef* in the *VarLogMeasReport;*

3> include the *tce-Id* and set it to the value of *tce-Id* in the *VarLogMeasReport*;

3> include the *logMeasInfoList* and set it to include one or more entries from *VarLogMeasReport* starting from the entries logged first;

3> if the *VarLogMeasReport* includes one or more additional logged measurement entries that are not included in the *logMeasInfoList* within the *UEInformationResponse* message:

4> include the *logMeasAvailable*;

3> if the *VarLogMeasReport* includes one or more additional logged Bluetooth measurement entries that are not included in the *logMeasInfoList* within the *UEInformationResponse* message:

4> include the *logMeasAvailableBT*;

3> if the *VarLogMeasReport* includes one or more additional logged WLAN measurement entries that are not included in the *logMeasInfoList* within the *UEInformationResponse* message:

4> include the *logMeasAvailableWLAN*;

1> except for NB-IoT, if *mobilityHistoryReportReq* is set to *true*:

2> include the *mobilityHistoryReport* and set it to include entries from *VarMobilityHistoryReport*;

2> include in the *mobilityHistoryReport* an entry for the current cell, possibly after removing the oldest entry if required, and set its fields as follows:

3> set *visitedCellId* to the global cell identity of the current cell:

3> set field *timeSpent* to the time spent in the current cell;

1> except for NB-IoT, if the *idleModeMeasurementReq* is included in the *UEInformationRequest* and the UE has stored *VarMeasIdleReport* that contains measurement information concerning cells other than the PCell:

2> if the SIB2 includes *idleModeMeasurements*:

3> set the *measResultListIdle-r15* in the *UEInformationResponse* message to the value of *measReportIdle-r15* in the *VarMeasIdleReport*;

3> if the *SIB2* includes *idleModeMeasurementsNR*:

4> set the *measResultListIdle-r16* in the *UEInformationResponse* message to the value of *measReportIdle-r16* in the *VarMeasIdleReport*, if available;

2> if the *SIB2* includes *idleModeMeasurementsNR*:

3> set the *measResultListIdleNR* in the UEInformationResponse message to the value of *measReportIdleNR* in the *VarMeasIdleReport*, if available;

2> discard the *VarMeasIdleReport* upon successful delivery of the *UEInformationResponse* message confirmed by lower layers;

1> except for NB-IoT, if *flightPathInfoReq* field is present and the UE has flight path information available:

2> include the *flightPathInfoReport* and set it to include the list of waypoints along the flight path;

2> if the *includeTimeStamp* is set to TRUE:

3> set the field *timeStamp* to the time when UE intends to arrive to each waypoint if this information is available at the UE;

1> for NB-IoT, if *anr-ReportReq* is set to *true* and the UE has *measResultList* available in *VarANR-MeasReport-NB*:

2> set the *anr-MeasReport* in the *UEInformationResponse* message as follows:

3> if the global cell identity of the PCell is different from *servCellIdentity* in the *VarANR-MeasReport-NB*;

4> include the *servCellIdentity* and set it to the value of *servCellIdentity* in the *VarANR-MeasReport-NB*;

3> set *measResultServCell* to the value of *measResultServCell* in the *VarANR-MeasReport-NB*;

3> set *measResultList* to the value of *measResultList* in the *VarANR-MeasReport-NB*;

2> discard the *VarANR-MeasReport-NB* upon successful delivery of the *UEInformationResponse* message confirmed by lower layers;

1> if the *logMeasReport* is included in the *UEInformationResponse*:

2> submit the *UEInformationResponse* message to lower layers for transmission via SRB2;

2> discard the logged measurement entries included in the *logMeasInfoList* from *VarLogMeasReport* upon successful delivery of the *UEInformationResponse* message confirmed by lower layers;

1> else:

2> submit the *UEInformationResponse* message to lower layers for transmission via SRB1;

*END OF CHANGES*

START OF CHANGES

### 5.6.20 Idle/Inactive Measurements

#### 5.6.20.1 General

This procedure specifies the measurements to be performed and stored by a UE in RRC\_IDLE or RRC\_INACTIVE when it has an idle/inactive measurement configuration.

#### 5.6.20.1a Measurement configuration

The purpose of this procedure is to update the idle/inactive measurement configuration.

The UE initiates this procedure while T331 is running and one of the following conditions is met:

1> upon selecting a cell when entering RRC\_IDLE or RRC-INACTIVE from RRC\_CONNECTED; or

1> upon cell selection/reselection; or

1> upon update of system information (*SIB5*, or *SIB24*)

While in RRC\_IDLE or RRC\_INACTIVE and T331 is running, the UE shall:

1> if *validityAreaList* is configured in *VarMeasIdleConfig*:

2> if the serving cell frequency does not match with the *carrierFreq* of any entry in the *validityAreaList*; or

2> if the serving frequency matches with the *carrierFreq* of an entry in the *validityAreaList*, the *validityCellList* is included in thatentry, and the physical cell identity of the serving cell does not match with any entry in *validityCellList*:

3> stop timer T331;

3> perform the actions as specified in 5.6.20.3, upon which the procedure ends;

1> else 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;

2> perform the actions as specified in 5.6.20.3, upon which the procedure ends;

1> if *VarMeasIdleConfig* includes neither a *measIdleCarrierListEUTRA* nor a *measIdleCarrierListNR* received from the *RRCConnectionRelease* message:

2> if the UE is capable of idle/inactive measurements for CA:

3> if the *SIB5* includes the *measIdleConfigSIB*:

4> store or replace the *measIdleCarrierListEUTRA* of *measIdleConfigSIB* of *SIB5* within *VarMeasIdleConfig*;

2> else:

4> remove the *measIdleCarrierListEUTRA* in *VarMeasIdleConfig*, if stored;

2> if the UE is capable of idle/inactive measurements for (NG)EN-DC:

3> if the *SIB5* includes the *measIdleConfigSIB-NR*:

4> store or replace the *measIdleCarrierListNR* of *measIdleConfigSIB-NR* of *SIB5* within *VarMeasIdleConfig*;

3> else:

4> remove the *measIdleCarrierListNR* in *VarMeasIdleConfig*, if stored;

1> for each entry in the *measIdleCarrierListNR* within *VarMeasIdleConfig* that does not contain an *ssb-MeasConfig* received from the *RRCConnectionRelease* message:

2> if there is an entry in *measIdleCarrierListNR* in *measIdleConfigSIB-NR* of *SIB5* that has the same carrier frequency and subcarrier spacing as the entry in the *measIdleCarrierListNR* within *VarMeasIdleConfig* and that contains *ssb-MeasConfig*:

3> delete the *ssb-MeasConfig* of the corresponding entry in the *measIdleCarrierListNR* within *VarMeasIdleConfig*;

3> store the SSB measurement configuration from *SIB5* into *maxRS-IndexCellQual*, *threshRS-Index*, *measTimingConfig*, *ssb-ToMeasure*, *deriveSSB-IndexFromCell*, and *ss-RSSI-Measurement* within *ssb-MeasConfig* of the corresponding entry in the *measIdleCarrierListNR* within *VarMeasIdleConfig*;

2> else if there is an entry in *carrierFreqListNR* of *SIB24* with the same carrier frequency and subcarrier spacing as the entry in *measIdleCarrierListNR* within *VarMeasIdleConfig*:

3> delete the *ssb-MeasConfig* of the corresponding entry in the *measIdleCarrierListNR* within *VarMeasIdleConfig*;

3> store the SSB measurement configuration from *SIB24* into *maxRS-IndexCellQual*, *threshRS-Index*, *measTimingConfig*, *ssb-ToMeasure*, *deriveSSB-IndexFromCell*, and *ss-RSSI-Measurement* within *ssb-MeasConfig* of the corresponding entry in *measIdleCarrierListNR* within *VarMeasIdleConfig*;

2> else:

3> remove the *ssb-MeasConfig* of the corresponding entry in the *measIdleCarrierListNR* within *VarMeasIdleConfig*, if stored;

#### 5.6.20.2 Performing measurements

When performing measurements on NR carriers according to this clause, the UE shall derive the cell quality as specified in 5.5.3.3 and consider the beam quality to be the value of the measurement results of the concerned beam, where each result is averaged as described in TS 38.215 [89].

While in RRC\_IDLE or RRC\_INACTIVE, and T331 is running, the UE shall:

1> perform the measurements in accordance with the following:

2> if the *SIB2* contains *idleModeMeasurements*, 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 1: The fields *s-NonIntraSearch* in *SystemInformationBlockType3* do not affect the idle/inactive measurement procedures. How the UE performs the idle/inactive measurements is up to UE implementation as long as the requirements in TS 36.133 [16] are met for measurement reporting.

4> if the *reportQuantities* is set to *rsrq*:

5> consider RSRQ as the sorting quantity;

4> else:

5> consider RSRP as the sorting quantity;

4> if the *measCellList* is included:

5> consider cells identified by each entry within the *measCellList* to be applicable for idle /inactive measurement reporting;

4> else:

5> consider up to *maxCellMeasIdle* strongest identified cells, according to the sorting quantity, to be applicable for idle/inactive measurement reporting;

4> for all cells applicable for idle/inactive measurement reporting and for the serving cell, derive measurement results for the measurement quantities indicated by *reportQuantities;*

4> store the derived measurement result as indicated by *reportQuantities* for the serving cell within *measResultServingCell* in the *measReportIdle* in *VarMeasIdleReport*;

4> store the derived measurement results as indicated by *reportQuantities* for cells applicable for idle/inactive measurement reporting within the *VarMeasIdleReport* in decreasing order of the sorting quantity, i.e. the best cell is included first, as follows:

5> if *qualityThreshold* is configured:

6> include the measurement results from the cells applicable for idle/inactive measurement reporting whose RSRP/RSRQ measurement results are above the value(s) provided in *qualityThreshold;*

5> else:

6> include the measurement results from all cells applicable for idle/inactive measurement reporting;

2> if the *SIB2* contains *idleModeMeasurementsNR* and *VarMeasIdleConfig* includes the *measIdleCarrierListNR*:

3> for each entry in *measIdleCarrierListNR* within *VarMeasIdleConfig* that contains *ssb-MeasConfig*:

4> if UE supports (NG)EN-DC between serving carrier and the carrier frequency and subcarrier spacing indicated by *carrierFreqNR* and *subCarrierSpacingSSB* within the corresponding entry:

5> perform measurements in the carrier frequency and subcarrier spacing indicated by *carrierFreqNR* and *subCarrierSpacingSSB* within the corresponding entry;

5> if the *reportQuantitiesNR* is set to *rsrq*:

6> consider RSRQ as the cell sorting quantity;

5> else:

6> consider RSRP as the cell sorting quantity;

5> if the *measCellListNR* is included:

6> consider cells identified by each entry within the *measCellListNR* to be applicable for idle/inactive measurement reporting;

5> else:

6> consider up to *maxCellMeasIdle* strongest identified cells, according to the sorting quantity, to be applicable for idle/inactive measurement reporting;

5> for all cells applicable for idle/inactive measurement reporting, derive the cell measurement results for the measurement quantities indicated by *reportQuantitiesNR*;

5> store the derived measurement results as indicated by *reportQuantitiesNR* within the *measReportIdleNR* in *VarMeasIdleReport* in decreasing order of the cell sorting quantity, i.e. the best cell is included first, as follows:

6> if *qualityThreshold* is configured:

7> include the measurement results from the cells applicable for idle/inactive measurement reporting whose RSRP/RSRQ measurement results are above the value(s) provided in *qualityThreshold;*

6> else:

7> include the measurement results from all cells applicable for idle/inactive measurement reporting;

5> if *beamMeasConfigIdle* is included in the associated entry in *measIdleCarrierListNR*, for each cell in the measurement results:

6> derive beam measurements based on SS/PBCH block for each measurement quantity indicated in *reportQuantityRS-IndexNR*, as described in TS 38.215 [89];

6> if the *reportQuantityRS*-*IndexNR* is set to *rsrq*:

7> consider RSRQ as the beam sorting quantity;

6> else:

7> consider RSRP as the beam sorting quantity;

6> set *resultRS-IndexList* to include up to *maxReportRS-Index* SS/PBCH block indexes in order of decreasing sorting quantity as follows:

7> include the index associated to the best beam for the sorting quantity and if *threshRS-Index* is included, the remaining beams whose sorting quantity is above *threshRS-Index*;

6> if the *reportRS-IndexResultsNR* is set to true:

7> include the beam measurement results as indicated by *reportQuantityRS*-*IndexNR*;

NOTE 2: The UE is not required to perform idle/inactive measurements on a given carrier if the SSB configuration of that carrier provided via dedicated signaling is different from the SSB configuration broadcasted in the serving cell, if any.

NOTE 3: 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.

#### 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/inactive measurements according to SIB5 and SIB24 configuration after T331 has expired or stopped.

#### 5.6.20.4 Cell re-selection or selection while T331 is running

The UE shall:

1> if intra-RAT cell selection or reselection occurs while T331 is runing:

2> perform the actions as specified in 5.6.20.1a;

1> if inter-RAT cell reselection occurs while timer T331 is running;

2> stop timer T331;

2> perform the actions as specified in 5.6.20.3;

*END OF CHANGES*

START OF CHANGES

### 5.6.26 MCG failure information

#### 5.6.26.1 General



Figure 5.6.26.1-1: MCG failure information

The purpose of this procedure is to inform the network about an MCG failure the UE has experienced i.e. MCG radio link failure. A UE in RRC\_CONNECTED, for which AS security has been activated with SRB2 and at least one DRB setup, may initiate the fast MCG link recovery procedure in order to continue the RRC connection without re-establishment.

#### 5.6.26.2 Initiation

A UE configured with split SRB1 or SRB3 initiates the procedure to report MCG failures when neither MCG nor SCG transmission is suspended, *t316* is configured, and when the following condition is met:

1> upon detecting radio link failure of the MCG, in accordance with 5.3.11, while T316 is not running.

Upon initiating the procedure, the UE shall:

1> stop timer T310, if running;

1> stop timer T312, if running;

1> suspend MCG transmission for all SRBs and DRBs, except SRB0;

1> reset MCG MAC;

1> initiate transmission of the *MCGFailureInformation* message in accordance with 5.6.26.4.

NOTE: The handling of any outstanding UL RRC messages during the initiation of the fast MCG link recovery is left to UE implementation.

#### 5.6.26.3 Failure type determination

The UE shall set the MCG failure type as follows:

1> if the UE initiates transmission of the *MCGFailureInformation* message due to T310 expiry:

2> set the failureType as *t310-Expiry*;

1> else if the UE initiates transmission of the *MCGFailureInformation* message due to T312 expiry:

2> set the *failureType* as *t312-Expiry*;

1> else if the UE initiates transmission of the *MCGFailureInformation* message to provide random access problem indication from MCG MAC:

2> set the failureType as *randomAccessProblem*;

1> else if the UE initiates transmission of the *MCGFailureInformation* message to provide indication from MCG RLC that the maximum number of retransmissions has been reached:

2> set the failureType as *rlc-MaxNumRetx*;

1> else if connected as an IAB-node and the *MCGFailureInformation* is initiated due to the reception of a BH RLF indication from the MCG BAP entity:

2> set the *failureType* as *bh-RLF*.

#### 5.6.26.4 Actions related to transmission of *MCGFailureInformation* message

The UE shall set the contents of the *MCGFailureInformation* message as follows:

1> include and set *failureType* in accordance with 5.6.26.3;

1> for each *measObjectEUTRA* for which a *measId* is configured and for which measurement results are available:

2> include an entry in *measResultsFreqListEUTRA*;

2> if a serving cell is associated with the *MeasObjectEUTRA*:

3> set *measResultServingCell* to include the available quantities of the concerned cell and in accordance with the performance requirements in TS 36.133 [16];

2> set the *measResultNeighCellList* to include the best measured cells, ordered such that the best cell is listed first, and based on measurements collected up to the moment the UE detected the failure, and set its fields as follows:

3> ordering the cells with sorting as follows:

4> using RSRP if RSRP measurement results are available, otherwise using RSRQ if RSRQ measurement results are available, otherwise using SINR;

3> for each neighbour cell included:

4> include the optional fields for which measurement results are available;

NOTE 1: The measured quantities are filtered by the L3 filter as configured in the mobility measurement configuration. The measurements are based on the time domain measurement resource restriction, if configured. Blacklisted cells are not required to be reported.

1> for each NR frequency the UE is configured to measure by *measConfig* for which measurement results are available:

2> set the *measResultFreqListNR* to include the best measured cells, ordered such that the best cell is listed first using RSRP to order the cells if RSRP measurement results are available for cells on this frequency, otherwise using RSRQ to order the cells if RSRQ measurement results are available for cells on this frequency, otherwise using SINR to order the cells, based on measurements collected up to the moment the UE detected the failure, and for each cell that is included, include the optional fields that are available;

1> for each UTRA frequency the UE is configured to measure by *measConfig* for which measurement results are available:

2> set the *measResultFreqListUTRA* to include the best measured cells, ordered such that the best cell is listed first using RSCP to order the cells if RSCP measurement results are available for cells on this frequency, otherwise using EcN0 to order the cells, based on measurements collected up to the moment the UE detected the failure, and for each cell that is included, include the optional fields that are available;

1> for each GERAN frequency the UE is configured to measure by *measConfig* for which measurement results are available:

2> set the *measResultFreqListGERAN* to include the best measured cells based on measurements collected up to the moment the UE detected the failure, and for each cell that is included, include the optional fields that are available;

1> if the UE is in (NG)EN-DC:

2> include and set *measResultSCG* in accordance with TS 38.331 [82], clause 5.7.3.4:

NOTE 2: Field *measResultSCG* is used to report available results for NR frequencies the UE is configured to measure by NR RRC signalling.

1> if SRB1 is configured as split SRB and *pdcp-Duplication* is not configured in accordance with TS 38.331 [82, 6.3.2]:

2> if the *primaryPath* for the PDCP entity of SRB1 refers to to the MCG:

3> set the *primaryPath* to refer to the SCG.

The UE shall:

1> start timer T316;

1> if SRB1 is configured as split SRB:

2> submit the *MCGFailureInformation* message to lower layers for transmission via SRB1, upon which the procedure ends;

1> else (i.e. SRB3 is configured):

2> submit the *MCGFailureInformation* message to lower layers for transmission, embedded in NR RRC message *ULInformationTransferMRDC* via SRB3as specified in TS 38.331 [82], clause 5.7.2a.3.

#### 5.6.26.5 T316 expiry

The UE shall:

1> if T316 expires:

2> initiate the connection re-establishment procedure as specified in 5.3.7.

*END OF CHANGES*

START OF CHANGES

# 6 Protocol data units, formats and parameters (tabular & ASN.1)

### 6.2.2 Message definitions

#### – *MCGFailureInformation*

The *MCGFailureInformation* message is used to provide information regarding E-UTRA MCG failures detected by the UE.

Signalling radio bearer: SRB1

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to Network

*MCGFailureInformation* message

-- ASN1START

MCGFailureInformation-r16 ::= SEQUENCE {

criticalExtensions CHOICE {

mcgFailureInformation MCGFailureInformation-r16-IEs,

criticalExtensionsFuture SEQUENCE {}

}

}

MCGFailureInformation-r16-IEs ::= SEQUENCE {

failureReportMCG FailureReportMCG OPTIONAL,

lateNonCriticalExtension OCTET STRING OPTIONAL,

nonCriticalExtension SEQUENCE {} OPTIONAL

}

FailureReportMCG ::= SEQUENCE {

failureType ENUMERATED {

t310-Expiry, randomAccessProblem,

rlc-MaxNumRetx, t312-Expiry, bh-RLF,

spare3, spare2, spare1} OPTIONAL,

measResultFreqListEUTRA MeasResultList3EUTRA-r15 OPTIONAL,

measResultFreqListNR MeasResultFreqListFailNR-r15 OPTIONAL,

measResultFreqListGERAN MeasResultList2GERAN-r10 OPTIONAL,

measResultFreqListUTRA MeasResultList2UTRA-r9 OPTIONAL,

measResultSCG OCTET STRING OPTIONAL,

...

}

-- ASN1STOP

| *MCGFailureInformation* field descriptions |
| --- |
| ***measResultFreqListEUTRA***  The field contains available results of measurements on EUTRA frequencies the UE is configured to measure by *measConfig*. |
| ***measResultFreqListGERAN***  The field contains available results of measurements on GERAN frequencies the UE is configured to measure by *measConfig*. |
| ***measResultFreqListNR***  The field contains available results of measurements on NR frequencies the UE is configured to measure by *measConfig*. |
| ***measResultFreqListUTRA***  The field contains available results of measurements on UTRA frequencies the UE is configured to measure by *measConfig*. |
| ***measResultSCG***  Includes the NR *MeasResultSCG-Failure* IE as specified in TS 38.331 [82]. The field contains available results of measurements on NR frequencies the UE is configured to measure by the NR RRCConfiguration message. |

*END OF CHANGES*

START OF CHANGES

#### – *RRCConnectionReconfiguration*

The *RRCConnectionReconfiguration* message is the command to modify an RRC connection. It may convey information for measurement configuration, mobility control, conditional reconfigurations (conditional handover), radio resource configuration (including RBs, MAC main configuration and physical channel configuration) including any associated dedicated NAS information and security configuration.

Signalling radio bearer: SRB1

RLC-SAP: AM

Logical channel: DCCH

Direction: E‑UTRAN to UE

*RRCConnectionReconfiguration message*

-- ASN1START

RRCConnectionReconfiguration ::= SEQUENCE {

rrc-TransactionIdentifier RRC-TransactionIdentifier,

criticalExtensions CHOICE {

c1 CHOICE{

rrcConnectionReconfiguration-r8 RRCConnectionReconfiguration-r8-IEs,

spare7 NULL,

spare6 NULL, spare5 NULL, spare4 NULL,

spare3 NULL, spare2 NULL, spare1 NULL

},

criticalExtensionsFuture SEQUENCE {}

}

}

RRCConnectionReconfiguration-r8-IEs ::= SEQUENCE {

measConfig MeasConfig OPTIONAL, -- Need ON

mobilityControlInfo MobilityControlInfo OPTIONAL, -- Cond HO

dedicatedInfoNASList SEQUENCE (SIZE(1..maxDRB)) OF

DedicatedInfoNAS OPTIONAL, -- Cond nonHO

radioResourceConfigDedicated RadioResourceConfigDedicated OPTIONAL, -- Cond HO-toEUTRA

securityConfigHO SecurityConfigHO OPTIONAL, -- Cond HO-toEPC

nonCriticalExtension RRCConnectionReconfiguration-v890-IEs OPTIONAL

}

RRCConnectionReconfiguration-v890-IEs ::= SEQUENCE {

lateNonCriticalExtension OCTET STRING (CONTAINING RRCConnectionReconfiguration-v8m0-IEs) OPTIONAL,

nonCriticalExtension RRCConnectionReconfiguration-v920-IEs OPTIONAL

}

-- Late non-critical extensions:

RRCConnectionReconfiguration-v8m0-IEs ::= SEQUENCE {

-- Following field is only for pre REL-10 late non-critical extensions

lateNonCriticalExtension OCTET STRING OPTIONAL,

nonCriticalExtension RRCConnectionReconfiguration-v10i0-IEs OPTIONAL

}

RRCConnectionReconfiguration-v10i0-IEs ::= SEQUENCE {

antennaInfoDedicatedPCell-v10i0 AntennaInfoDedicated-v10i0 OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionReconfiguration-v10l0-IEs OPTIONAL

}

RRCConnectionReconfiguration-v10l0-IEs ::= SEQUENCE {

mobilityControlInfo-v10l0 MobilityControlInfo-v10l0 OPTIONAL,

sCellToAddModList-v10l0 SCellToAddModList-v10l0 OPTIONAL, -- Need ON

-- Following field is only for late non-critical extensions from REL-10 to REL-11

lateNonCriticalExtension OCTET STRING OPTIONAL,

nonCriticalExtension RRCConnectionReconfiguration-v12f0-IEs OPTIONAL

}

RRCConnectionReconfiguration-v12f0-IEs ::= SEQUENCE {

scg-Configuration-v12f0 SCG-Configuration-v12f0 OPTIONAL, -- Cond nonFullConfig

-- Following field is only for late non-critical extensions from REL-12

lateNonCriticalExtension OCTET STRING OPTIONAL,

nonCriticalExtension RRCConnectionReconfiguration-v1370-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1370-IEs ::= SEQUENCE {

radioResourceConfigDedicated-v1370 RadioResourceConfigDedicated-v1370 OPTIONAL, -- Need ON

sCellToAddModListExt-v1370 SCellToAddModListExt-v1370 OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionReconfiguration-v13c0-IEs OPTIONAL

}

RRCConnectionReconfiguration-v13c0-IEs ::= SEQUENCE {

radioResourceConfigDedicated-v13c0 RadioResourceConfigDedicated-v13c0 OPTIONAL, -- Need ON

sCellToAddModList-v13c0 SCellToAddModList-v13c0 OPTIONAL, -- Need ON

sCellToAddModListExt-v13c0 SCellToAddModListExt-v13c0 OPTIONAL, -- Need ON

scg-Configuration-v13c0 SCG-Configuration-v13c0 OPTIONAL, -- Need ON

-- Following field is only for late non-critical extensions from REL-13 onwards

nonCriticalExtension SEQUENCE {} OPTIONAL

}

-- Regular non-critical extensions:

RRCConnectionReconfiguration-v920-IEs ::= SEQUENCE {

otherConfig-r9 OtherConfig-r9 OPTIONAL, -- Need ON

fullConfig-r9 ENUMERATED {true} OPTIONAL, -- Cond HO-Reestab

nonCriticalExtension RRCConnectionReconfiguration-v1020-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1020-IEs ::= SEQUENCE {

sCellToReleaseList-r10 SCellToReleaseList-r10 OPTIONAL, -- Need ON

sCellToAddModList-r10 SCellToAddModList-r10 OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionReconfiguration-v1130-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1130-IEs ::= SEQUENCE {

systemInformationBlockType1Dedicated-r11 OCTET STRING (CONTAINING SystemInformationBlockType1) OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionReconfiguration-v1250-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1250-IEs ::= SEQUENCE {

wlan-OffloadInfo-r12 CHOICE {

release NULL,

setup SEQUENCE {

wlan-OffloadConfigDedicated-r12 WLAN-OffloadConfig-r12,

t350-r12 ENUMERATED {min5, min10, min20, min30, min60,

min120, min180, spare1} OPTIONAL -- Need OR

}

} OPTIONAL, -- Need ON

scg-Configuration-r12 SCG-Configuration-r12 OPTIONAL, -- Cond nonFullConfig

sl-SyncTxControl-r12 SL-SyncTxControl-r12 OPTIONAL, -- Need ON

sl-DiscConfig-r12 SL-DiscConfig-r12 OPTIONAL, -- Need ON

sl-CommConfig-r12 SL-CommConfig-r12 OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionReconfiguration-v1310-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1310-IEs ::= SEQUENCE {

sCellToReleaseListExt-r13 SCellToReleaseListExt-r13 OPTIONAL, -- Need ON

sCellToAddModListExt-r13 SCellToAddModListExt-r13 OPTIONAL, -- Need ON

lwa-Configuration-r13 LWA-Configuration-r13 OPTIONAL, -- Need ON

lwip-Configuration-r13 LWIP-Configuration-r13 OPTIONAL, -- Need ON

rclwi-Configuration-r13 RCLWI-Configuration-r13 OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionReconfiguration-v1430-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1430-IEs ::= SEQUENCE {

sl-V2X-ConfigDedicated-r14 SL-V2X-ConfigDedicated-r14 OPTIONAL, -- Need ON

sCellToAddModListExt-v1430 SCellToAddModListExt-v1430 OPTIONAL, -- Need ON

perCC-GapIndicationRequest-r14 ENUMERATED{true} OPTIONAL, -- Need ON

systemInformationBlockType2Dedicated-r14 OCTET STRING (CONTAINING SystemInformationBlockType2) OPTIONAL, -- Cond nonHO

nonCriticalExtension RRCConnectionReconfiguration-v1510-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1510-IEs ::= SEQUENCE {

nr-Config-r15 CHOICE {

release NULL,

setup SEQUENCE {

endc-ReleaseAndAdd-r15 BOOLEAN,

nr-SecondaryCellGroupConfig-r15 OCTET STRING OPTIONAL, -- Need ON

p-MaxEUTRA-r15 P-Max OPTIONAL -- Need ON

}

} OPTIONAL, -- Need ON

sk-Counter-r15 INTEGER (0.. 65535) OPTIONAL, -- Need ON

nr-RadioBearerConfig1-r15 OCTET STRING OPTIONAL, -- Need ON

nr-RadioBearerConfig2-r15 OCTET STRING OPTIONAL, -- Need ON

tdm-PatternConfig-r15 TDM-PatternConfig-r15 OPTIONAL, -- Cond FDD-PCell

nonCriticalExtension RRCConnectionReconfiguration-v1530-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1530-IEs ::= SEQUENCE {

securityConfigHO-v1530 SecurityConfigHO-v1530 OPTIONAL, -- Cond HO-5GC

sCellGroupToReleaseList-r15 SCellGroupToReleaseList-r15 OPTIONAL, -- Need ON

sCellGroupToAddModList-r15 SCellGroupToAddModList-r15 OPTIONAL, -- Need ON

dedicatedInfoNASList-r15 SEQUENCE (SIZE(1..maxDRB-r15)) OF

DedicatedInfoNAS OPTIONAL, -- Cond nonHO

p-MaxUE-FR1-r15 P-Max OPTIONAL, -- Need OR

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

nonCriticalExtension RRCConnectionReconfiguration-v16xy-IEs OPTIONAL

}

RRCConnectionReconfiguration-v16xy-IEs ::= SEQUENCE {

conditionalReconfiguration-r16 ConditionalReconfiguration-r16 OPTIONAL, -- Need ON

daps-SourceRelease-r16 ENUMERATED{true} OPTIONAL, -- Need ON

tdm-PatternConfig2-r16 TDM-PatternConfig-r15 OPTIONAL, -- Need ON

sl-ConfigDedicatedNR-r16 OCTET STRING OPTIONAL, -- Need ON

sl-SSB-PriorityEUTRA-r16 INTEGER (1..8) OPTIONAL, -- Need ON

nonCriticalExtension SEQUENCE {} OPTIONAL

}

SL-SyncTxControl-r12 ::= SEQUENCE {

networkControlledSyncTx-r12 ENUMERATED {on, off} OPTIONAL -- Need OP

}

PSCellToAddMod-r12 ::= SEQUENCE {

sCellIndex-r12 SCellIndex-r10,

cellIdentification-r12 SEQUENCE {

physCellId-r12 PhysCellId,

dl-CarrierFreq-r12 ARFCN-ValueEUTRA-r9

} OPTIONAL, -- Cond SCellAdd

radioResourceConfigCommonPSCell-r12 RadioResourceConfigCommonPSCell-r12 OPTIONAL, -- Cond SCellAdd

radioResourceConfigDedicatedPSCell-r12 RadioResourceConfigDedicatedPSCell-r12 OPTIONAL, -- Cond SCellAdd2

...,

[[ antennaInfoDedicatedPSCell-v1280 AntennaInfoDedicated-v10i0 OPTIONAL -- Need ON

]],

[[ sCellIndex-r13 SCellIndex-r13 OPTIONAL -- Need ON

]],

[[ radioResourceConfigDedicatedPSCell-v1370 RadioResourceConfigDedicatedPSCell-v1370 OPTIONAL -- Need ON

]],

[[ radioResourceConfigDedicatedPSCell-v13c0 RadioResourceConfigDedicatedPSCell-v13c0 OPTIONAL -- Need ON

]]

}

PSCellToAddMod-v12f0 ::= SEQUENCE {

radioResourceConfigCommonPSCell-r12 RadioResourceConfigCommonPSCell-v12f0 OPTIONAL

}

PSCellToAddMod-v1440 ::= SEQUENCE {

radioResourceConfigCommonPSCell-r14 RadioResourceConfigCommonPSCell-v1440 OPTIONAL

}

PowerCoordinationInfo-r12 ::= SEQUENCE {

p-MeNB-r12 INTEGER (1..16),

p-SeNB-r12 INTEGER (1..16),

powerControlMode-r12 INTEGER (1..2)

}

SCellToAddModList-r10 ::= SEQUENCE (SIZE (1..maxSCell-r10)) OF SCellToAddMod-r10

SCellToAddModList-v10l0 ::= SEQUENCE (SIZE (1..maxSCell-r10)) OF SCellToAddMod-v10l0

SCellToAddModList-v13c0 ::= SEQUENCE (SIZE (1..maxSCell-r10)) OF SCellToAddMod-v13c0

SCellToAddModListExt-r13 ::= SEQUENCE (SIZE (1..maxSCell-r13)) OF SCellToAddModExt-r13

SCellToAddModListExt-v1370 ::= SEQUENCE (SIZE (1..maxSCell-r13)) OF SCellToAddModExt-v1370

SCellToAddModListExt-v13c0 ::= SEQUENCE (SIZE (1..maxSCell-r13)) OF SCellToAddMod-v13c0

SCellToAddModListExt-v1430 ::= SEQUENCE (SIZE (1..maxSCell-r13)) OF SCellToAddModExt-v1430

SCellGroupToAddModList-r15 ::= SEQUENCE (SIZE (1..maxSCellGroups-r15)) OF SCellGroupToAddMod-r15

SCellToAddModList-r16 ::= SEQUENCE (SIZE (1..maxSCell-r13)) OF SCellToAddMod-r16

SCellToAddMod-r10 ::= SEQUENCE {

sCellIndex-r10 SCellIndex-r10,

cellIdentification-r10 SEQUENCE {

physCellId-r10 PhysCellId,

dl-CarrierFreq-r10 ARFCN-ValueEUTRA

} OPTIONAL, -- Cond SCellAdd

radioResourceConfigCommonSCell-r10 RadioResourceConfigCommonSCell-r10 OPTIONAL, -- Cond SCellAdd

radioResourceConfigDedicatedSCell-r10 RadioResourceConfigDedicatedSCell-r10 OPTIONAL, -- Cond SCellAdd2

...,

[[ dl-CarrierFreq-v1090 ARFCN-ValueEUTRA-v9e0 OPTIONAL -- Cond EARFCN-max

]],

[[ antennaInfoDedicatedSCell-v10i0 AntennaInfoDedicated-v10i0 OPTIONAL -- Need ON

]],

[[ srs-SwitchFromServCellIndex-r14 INTEGER (0.. 31) OPTIONAL -- Need ON

]],

[[ sCellState-r15 ENUMERATED {activated, dormant} OPTIONAL -- Need ON

]]

}

SCellToAddMod-v10l0 ::= SEQUENCE {

radioResourceConfigCommonSCell-v10l0 RadioResourceConfigCommonSCell-v10l0 OPTIONAL

}

SCellToAddMod-v13c0 ::= SEQUENCE {

radioResourceConfigDedicatedSCell-v13c0 RadioResourceConfigDedicatedSCell-v13c0 OPTIONAL

}

SCellToAddModExt-r13 ::= SEQUENCE {

sCellIndex-r13 SCellIndex-r13,

cellIdentification-r13 SEQUENCE {

physCellId-r13 PhysCellId,

dl-CarrierFreq-r13 ARFCN-ValueEUTRA-r9

} OPTIONAL, -- Cond SCellAdd

radioResourceConfigCommonSCell-r13 RadioResourceConfigCommonSCell-r10 OPTIONAL, -- Cond SCellAdd

radioResourceConfigDedicatedSCell-r13 RadioResourceConfigDedicatedSCell-r10 OPTIONAL, -- Cond SCellAdd2

antennaInfoDedicatedSCell-r13 AntennaInfoDedicated-v10i0 OPTIONAL -- Need ON

}

SCellToAddModExt-v1370 ::= SEQUENCE {

radioResourceConfigCommonSCell-v1370 RadioResourceConfigCommonSCell-v10l0 OPTIONAL

}

SCellToAddModExt-v1430 ::= SEQUENCE {

srs-SwitchFromServCellIndex-r14 INTEGER (0.. 31) OPTIONAL, -- Need ON

...,

[[ sCellState-r15 ENUMERATED {activated, dormant} OPTIONAL -- Need ON

]]

}

SCellToAddMod-r16 ::= SEQUENCE {

sCellIndex-r16 SCellIndex-r13,

cellIdentification-r16 SEQUENCE {

physCellId-r16 PhysCellId,

dl-CarrierFreq-r16 ARFCN-ValueEUTRA-r9

} OPTIONAL, -- Cond SCellAdd

radioResourceConfigCommonSCell-r16 RadioResourceConfigCommonSCell-r10 OPTIONAL, -- Cond SCellAdd

radioResourceConfigDedicatedSCell-r16 RadioResourceConfigDedicatedSCell-r10 OPTIONAL, -- Cond SCellAdd2

antennaInfoDedicatedSCell-r16 AntennaInfoDedicated-v10i0 OPTIONAL, -- Need ON

srs-SwitchFromServCellIndex-r16 INTEGER (0.. 31) OPTIONAL, -- Need ON

sCellState-r16 ENUMERATED {activated, dormant} OPTIONAL, -- Need ON

...

}

SCellGroupToAddMod-r15 ::= SEQUENCE {

sCellGroupIndex-r15 SCellGroupIndex-r15,

sCellConfigCommon-r15 SCellConfigCommon-r15 OPTIONAL, -- Need ON

sCellToReleaseList-r15 SCellToReleaseListExt-r13 OPTIONAL, -- Need ON

sCellToAddModList-r15 SCellToAddModListExt-r13 OPTIONAL -- Need ON

}

SCellToReleaseList-r10 ::= SEQUENCE (SIZE (1..maxSCell-r10)) OF SCellIndex-r10

SCellToReleaseListExt-r13 ::= SEQUENCE (SIZE (1..maxSCell-r13)) OF SCellIndex-r13

SCellGroupToReleaseList-r15 ::= SEQUENCE (SIZE (1..maxSCellGroups-r15)) OF SCellGroupIndex-r15

SCellGroupIndex-r15 ::= INTEGER (1..maxSCellGroups-r15)

SCellConfigCommon-r15 ::= SEQUENCE {

radioResourceConfigCommonSCell-r15 RadioResourceConfigCommonSCell-r10 OPTIONAL, -- Need ON

radioResourceConfigDedicatedSCell-r15 RadioResourceConfigDedicatedSCell-r10 OPTIONAL,-- Need ON

antennaInfoDedicatedSCell-r15 AntennaInfoDedicated-v10i0 OPTIONAL -- Need ON

}

SCG-Configuration-r12 ::= CHOICE {

release NULL,

setup SEQUENCE {

scg-ConfigPartMCG-r12 SEQUENCE {

scg-Counter-r12 INTEGER (0.. 65535) OPTIONAL, -- Need ON

powerCoordinationInfo-r12 PowerCoordinationInfo-r12 OPTIONAL, -- Need ON

...

} OPTIONAL, -- Need ON

scg-ConfigPartSCG-r12 SCG-ConfigPartSCG-r12 OPTIONAL -- Need ON

}

}

SCG-Configuration-v12f0 ::= CHOICE {

release NULL,

setup SEQUENCE {

scg-ConfigPartSCG-v12f0 SCG-ConfigPartSCG-v12f0 OPTIONAL -- Need ON

}

}

SCG-Configuration-v13c0 ::= CHOICE {

release NULL,

setup SEQUENCE {

scg-ConfigPartSCG-v13c0 SCG-ConfigPartSCG-v13c0 OPTIONAL -- Need ON

}

}

SCG-ConfigPartSCG-r12 ::= SEQUENCE {

radioResourceConfigDedicatedSCG-r12 RadioResourceConfigDedicatedSCG-r12 OPTIONAL, -- Need ON

sCellToReleaseListSCG-r12 SCellToReleaseList-r10 OPTIONAL, -- Need ON

pSCellToAddMod-r12 PSCellToAddMod-r12 OPTIONAL, -- Need ON

sCellToAddModListSCG-r12 SCellToAddModList-r10 OPTIONAL, -- Need ON

mobilityControlInfoSCG-r12 MobilityControlInfoSCG-r12 OPTIONAL, -- Need ON

...,

[[

sCellToReleaseListSCG-Ext-r13 SCellToReleaseListExt-r13 OPTIONAL, -- Need ON

sCellToAddModListSCG-Ext-r13 SCellToAddModListExt-r13 OPTIONAL -- Need ON

]],

[[

sCellToAddModListSCG-Ext-v1370 SCellToAddModListExt-v1370 OPTIONAL -- Need ON

]],

[[

pSCellToAddMod-v1440 PSCellToAddMod-v1440 OPTIONAL -- Need ON

]],

[[ sCellGroupToReleaseListSCG-r15 SCellGroupToReleaseList-r15 OPTIONAL, -- Need ON

sCellGroupToAddModListSCG-r15 SCellGroupToAddModList-r15 OPTIONAL -- Need ON

]],

[[ -- NE-DC addition for setup/ modification and release SN configured measurements

measConfigSN-r15 MeasConfig OPTIONAL, -- Need ON

-- NE-DC additions concerning DRBs/ SRBs are within RadioResourceConfigDedicatedSCG

tdm-PatternConfigNE-DC-r15 TDM-PatternConfig-r15 OPTIONAL -- Cond FDD-PSCell

]],

[[ p-MaxEUTRA-r15 P-Max OPTIONAL -- Need ON

]]

}

SCG-ConfigPartSCG-v12f0 ::= SEQUENCE {

pSCellToAddMod-v12f0 PSCellToAddMod-v12f0 OPTIONAL, -- Need ON

sCellToAddModListSCG-v12f0 SCellToAddModList-v10l0 OPTIONAL -- Need ON

}

SCG-ConfigPartSCG-v13c0 ::= SEQUENCE {

sCellToAddModListSCG-v13c0 SCellToAddModList-v13c0 OPTIONAL, -- Need ON

sCellToAddModListSCG-Ext-v13c0 SCellToAddModListExt-v13c0 OPTIONAL -- Need ON

}

SecurityConfigHO ::= SEQUENCE {

handoverType CHOICE {

intraLTE SEQUENCE {

securityAlgorithmConfig SecurityAlgorithmConfig OPTIONAL, -- Cond fullConfig

keyChangeIndicator BOOLEAN,

nextHopChainingCount NextHopChainingCount

},

interRAT SEQUENCE {

securityAlgorithmConfig SecurityAlgorithmConfig,

nas-SecurityParamToEUTRA OCTET STRING (SIZE(6))

}

},

...

}

SecurityConfigHO-v1530 ::= SEQUENCE {

handoverType-v1530 CHOICE {

intra5GC-r15 SEQUENCE {

securityAlgorithmConfig-r15 SecurityAlgorithmConfig OPTIONAL, -- Cond HO-toEUTRA

keyChangeIndicator-r15 BOOLEAN,

nextHopChainingCount-r15 NextHopChainingCount,

nas-Container-r15 OCTET STRING OPTIONAL -- Need ON

},

fivegc-ToEPC-r15 SEQUENCE {

securityAlgorithmConfig-r15 SecurityAlgorithmConfig,

nextHopChainingCount-r15 NextHopChainingCount

},

epc-To5GC-r15 SEQUENCE {

securityAlgorithmConfig-r15 SecurityAlgorithmConfig,

nas-Container-r15 OCTET STRING

}

},

...

}

-- ASN1STOP

| *RRCConnectionReconfiguration* field descriptions |
| --- |
| ***conditionalReconfiguration***  This field is used to configure the UE with a conditional reconfiguration. The reconfiguration is only applied when the execution condition(s) is fulfilled. |
| ***daps-SourceRelease***  Indicates that the UE shall release the resources associated with source PCell at a DAPS HO, including reconfiguration of the DAPS PDCP entity to normal PDCP. |
| ***dedicatedInfoNASList***  This field is used to transfer UE specific NAS layer information between the network and the UE. The RRC layer is transparent for each PDU in the list. If *dedicatedInfoNASList-r15* is present, UE shall ignore the *dedicatedInfoNASList* (without suffix). |
| ***endc-ReleaseAndAdd***  A one-shot field indicating whether the UE simultaneously releases and adds all the NR SCG related configuration within *nr-Config*, i.e. the configuration set by the NR *RRCReconfiguration* message (e.g. *secondaryCellGroup, SRB3* and *measConfig)*. |
| ***fullConfig***  Indicates the full configuration option is applicable for the RRC Connection Reconfiguration message for intra-system intra-RAT handover. For inter-RAT handover from NR to E-UTRA, *fullConfig* indicates whether or not delta signalling of SDAP/PDCP from source RAT is applicable. This field is absent when the *RRCConnectionReconfiguration* message is generated by the E-UTRA SCG. |
| ***harq-Offset-r15***  Indicates a HARQ subframe offset that is applied to the subframes designated as UL in the associated subrame assignment, see TS 36.213 [23]. When configured in EN-DC with LTE TDD PCell*,* the network ensures it does not violate the TDD configuration in SIB1, and the value range of this field is {0,1,2,5,6}. |
|  |
| ***keyChangeIndicator***  If UE is connected to EPC, true is used only in an intra-cell handover when a KeNB key is derived from a KASME key taken into use through the latest successful NAS SMC procedure, as described in TS 33.401 [32] for KeNB re-keying. false is used in an intra-LTE handover when the new KeNB key is obtained from the current KeNB key or from the NH as described in TS 33.401 [32].  If UE is connected to 5GC, with keyChangeIndicator-r15, true is used in an intra-cell handover when a KeNB key is derived from a KAMF key taken into use through the latest successful NAS SMC procedure, as described in TS 33.501 [86] for KeNB re-keying.  False is used for intra-system handover when the new KeNB key is obtained from the current KeNB key or from the NH as described in TS 33.501 [86]. True is also used in NG based handover procedure with KAMF change, when a KeNB key is derived from the new KAMF key as described in TS 33.501 [86]. |
| ***lwa-Configuration***  This field is used to provide parameters for LWA configuration. E-UTRAN does not simultaneously configure LWA with DC, LWIP or RCLWI for a UE. |
| ***lwip-Configuration***  This field is used to provide parameters for LWIP configuration. E-UTRAN does not simultaneously configure LWIP with DC, LWA or RCLWI for a UE. |
| ***measConfig***  Measurements that E-UTRAN may configure when the UE is not configured with NE-DC. |
| ***measConfigSN***  Measurements that E-UTRAN may configure when the UE is configured with NE-DC and for which reports are carried within an NR RRC message. |
| ***nas-Container***  This field is used to transfer UE specific NAS layer information between the network and the UE. The RRC layer is transparent for this field, although, if included, it affects activation of AS- security after handover within E-UTRA/5GC. The content is defined in TS 24.501 [95]. In case of NG based handover, the content of nas-Container is. the Intra N1 mode NAS transparent container IE. In case of inter-system handover to from 5GS to EPS, the content of NAS-Container is. the S1 mode to N1 mode NAS transparent container IE. |
| ***nas-securityParamToEUTRA***  This field is used to transfer UE specific NAS layer information between the network and the UE. The RRC layer is transparent for this field, although, if included, it affects activation of AS- security after inter-RAT handover to E-UTRA/EPC or inter-system handover to E-UTRA/EPC. The content is defined in TS 24.301 [35]. This field is not used for handover from 5GC. |
| ***networkControlledSyncTx***  This field indicates whether the UE shall transmit synchronisation information (i.e. become synchronisation source). Value *On* indicates the UE to transmit synchronisation information while value *Off* indicates the UE to not transmit such information. |
| ***nextHopChainingCount***  Parameter NCC: See TS 33.401 [32] if UE is connected to EPC, else see 33.501 [86] if UE is connected to 5GC. |
| ***nr-Config***  Includes the NR related configurations. This field is used to configure (NG)EN-DC configuration, possibly in conjunction with fields *sk-Counter* and *nr-RadioBearerConfig1/ 2*. NOTE 1. |
| ***nr-RadioBearerConfig1, nr-RadioBearerConfig2***  Includes the NR *RadioBearerConfig* IE as specified in TS 38.331 [82]. The field includes the configuration of RBs configured with NR PDCP. |
| ***nr-SecondaryCellGroupConfig***  Includes the NR *RRCReconfiguration* message as specified in TS 38.331 [82]. In this version of the specification, the NR RRC message only includes fields *iab-F1AP-TransferOverSRB-r16*, *secondaryCellGroup, conditionalReconfiguration* and/ or *measConfig*. If *nr-SecondaryCellGroupConfig* is configured, the network always includes this field upon MN handover to initiate an NR SCG reconfiguration with sync and key change. |
| ***perCC-GapIndicationRequest***  Indicates that UE shall include *perCC-GapIndicationList* and *numFreqEffective* in the *RRCConnectionReconfigurationComplete* message. *numFreqEffectiveReduced* may also be included if frequencies are configured for reduced measurement performance. |
| ***p-MaxEUTRA***  Indicates the maximum power available for LTE. |
| ***p-MaxUE-FR1***  The maximum total transmit power to be used by the UE across all serving cells in frequency range 1 (FR1) across all cell groups. The maximum transmit power that the UE may use may be additionally limited on cell- or cell-group level. The field is optionally present, if (NG)EN-DC (nr-Config-r15) has been configured. It is absent otherwise. |
| ***p-MeNB***  Indicates the guaranteed power for the MeNB, as specified in TS 36.213 [23]. The value N corresponds to N-1 in TS 36.213 [23]. |
| ***powerControlMode***  Indicates the power control mode used in DC. Value 1 corresponds to DC power control mode 1 and value 2 indicates DC power control mode 2, as specified in TS 36.213 [23]. |
| ***p-SeNB***  Indicates the guaranteed power for the SeNB as specified in TS 36.213 [23], Table 5.1.4.2-1. The value N corresponds to N-1 in TS 36.213 [23]. |
| ***rclwi-Configuration***  WLAN traffic steering command as specified in 5.6.16.2. E-UTRAN does not simultaneously configure RCLWI with DC, LWA or LWIP for a UE. |
| ***sCellConfigCommon***  Indicates the common configuration for the SCell group. |
| ***sCellGroupIndex***  Indicates the identity of SCell groups for which a common configuration is provided. |
| ***sCellIndex***  The *sCellIndex* is unique within the scope of the UE. In case of DC, an SCG cell can not use the same value as used for an MCG cell. For *pSCellToAddMod*, if *sCellIndex-r13* is present the UE shall ignore *sCellIndex-r12.* |
| ***sCellGroupToAddModList, sCellGroupToAddModListSCG***  Indicates the SCell group to be added or modified. E-UTRAN only configures at most 4 SCell groups per UE over all cell groups. SCell groups can only be configured for LTE SCells, and all SCells in an SCell group must belong to the same cell group. |
| ***sCellGroupToReleaseList***  Indicates the SCell group to be released. |
| ***sCellState***  A one-shot field that indicates whether the SCell shall be considered to be in activated or dormant state upon SCell configuration. |
| ***sCellToAddModList, sCellToAddModListExt***  Indicates the SCell to be added or modified. E-UTRAN uses field *sCellToAddModList-r10* to add or modify SCells (with *sCellIndex-r10*) for a UE that does not support carrier aggregation with more than 5 component carriers. If E-UTRAN includes *sCellToAddModListExt-v1430* it includes the same number of entries, and listed in the same order, as in *sCellToAddModListExt-r13*. If E-UTRAN includes *sCellToAddModList-v10l0* it includes the same number of entries, and listed in the same order, as in *sCellToAddModList-r10*. If E-UTRAN includes *sCellToAddModListExt-v1370* it includes the same number of entries, and listed in the same order, as in *sCellToAddModListExt-r13*. If E-UTRAN includes *sCellToAddModListExt-v13c0* it includes the same number of entries, and listed in the same order, as in *sCellToAddModListExt-r13.* |
| ***sCellToAddModListSCG, sCellToAddModListSCG-Ext***  Indicates the SCG cell to be added or modified. The field is used for SCG cells other than the PSCell (which is added/ modified by field *pSCellToAddMod*). E-UTRAN uses field *sCellToAddModListSCG-r12* to add or modify SCells (with *sCellIndex-r10*) for a UE that does not support carrier aggregation with more than 5 component carriers. If E-UTRAN includes *sCellToAddModListSCG-v10l0* it includes the same number of entries, and listed in the same order, as in *sCellToAddModListSCG-r12*. If E-UTRAN includes *sCellToAddModListSCG-Ext-v1370* it includes the same number of entries, and listed in the same order, as in *sCellToAddModListSCG-Ext-r13*. If E-UTRAN includes *sCellToAddModListSCG-Ext-v13c0* it includes the same number of entries, and listed in the same order, as in *sCellToAddModListSCG-Ext-r13.* |
| ***sCellToReleaseList, sCellToReleaseListExt***  Indicates the SCell to be released. E-UTRAN uses field *sCellToReleaseList-r10* to release SCells for a UE that does not support carrier aggregation with more than 5 component carriers. |
| ***sCellToReleaseListSCG, sCellToReleaseListSCG-Ext***  Indicates the SCG cell to be released. The field is also used to release the PSCell e.g. upon change of PSCell, upon system information change for the PSCell. E-UTRAN uses field *sCellToReleaseListSCG-r12* to release SCells for a UE that does not support carrier aggregation with more than 5 component carriers. |
| ***scg-Configuration***  Covers the SCG configuration as used in case of DC and NE-DC. When the UE is configured with NE-DC, E-UTRAN neither applies value release nor configures *scg-ConfigPartMCG*. When resuming a connection with NE-DC, this field is included, containing at least the *mobilityControlInfoSCG*. |
| ***scg-Counter***  A counter used upon initial configuration of SCG security as well as upon refresh of S-KeNB. E-UTRAN includes the field upon SCG change when one or more SCG DRBs are configured. Otherwise E-UTRAN does not include the field. |
| ***securityConfigHO***  This field contains the parameters required to update the security keys at handover. If E-UTRAN includes the *securityConfigHO* (i.e., without suffix), the choice *intraLTE* is used for handover within E-UTRA/EPC while the choice *interRAT* is used for handover from GERAN or UTRAN to E-UTRA/EPC. If E-UTRAN includes the *securityConfigHO-v1530* (i.e., with suffix), the choice *intra5GC* is used for handover from NR or E-UTRA/5GC to E-UTRA/5GC while the choice *fivegc-ToEPC* is used for inter-system handover from NR or E-UTRA/5GC to E-UTRA/EPC and the choice *epc-To5GC* is used for inter-system handover from E-UTRA/EPC to E-UTRA/5GC. |
| ***sk-Counter***  A one-shot counter used upon initial configuration of S-KgNB as well as upon refresh of S-KgNB. E-UTRAN always provides this field either upon initial configuration of an NR SCG, or upon configuration of the first (SN terminated) RB using S-KgNB, whichever happens first. |
| ***sl-ConfigDedicatedNR***  Container for providing the dedicated configurations for NR sidelink communication, the octet string contains the *SL-ConfigDedicatedNR* IE as specified in TS 38.331 [82]. If the UE is configured, by the current Pcell with *sl-ScheduledConfig* set to setup, ignore the IE *sl-RNTI, sl-BSR-Config*, *ul-PrioritizationThres* and *sl-DCI-ToSL-Trans*; the *SL-ConfiguredGrantConfig* in *SL-ConfigDedicatedNR* only includes the configurations of sidelink configured grant Type 1. |
| ***sl-SSB-PriorityEUTRA***  Indicates the priority of LTE PSSS/SSSS/PSBCH transmission and reception. |
| ***sl-V2X-ConfigDedicated***  Indicates sidelink configuration for non-P2X related V2X sidelink communication as well as P2X related V2X sidelink communication. |
| ***smtc***  The SSB periodicity/offset/duration configuration of target cell for NR PSCell addition and SN change. It is based on timing reference of EUTRA PCell. NOTE 2.  If the field is absent, the UE uses the SMTC in the *measObjectNR* having the same SSB frequency and subcarrier spacing, as configured before the reception of the RRC message. |
| ***srs-SwitchFromServCellIndex***  Indicates the serving cell whose UL transmission may be interrupted during SRS transmission on a PUSCH-less cell. During SRS transmission on a PUSCH-less cell, the UE may temporarily suspend the UL transmission on a serving cell with PUSCH in the same CG to allow the PUSCH-less cell to transmit SRS. The PUSCH-less cell is always a TDD cell but the serving cell with PUSCH may be either a FDD or TDD cell. |
|  |
|  |
| ***systemInformationBlockType1Dedicated***  This field is used to transfer *SystemInformationBlockType1* or *SystemInformationBlockType1-BR* to the UE. |
| ***systemInformationBlockType2Dedicated***  This field is used to transfer BR version of *SystemInformationBlockType2* to BL UEs or UEs in CE or *SystemInformationBlockType2* to non-BL UEs. |
| ***t350***  Timer T350 as described in clause 7.3. Value *minN* corresponds to N minutes. |
| ***tdm-PatternConfig***  This field is used when power control or IMD issues require single UL transmission in (NG)EN-DC as specified in TS 38.101-3 [101] and TS 38.213 [88]. |
| ***tdm-PatternConfig2***  This field is used for dual UL transmission in EN-DC with LTE FDD PCell and for single UL transmission in EN-DC with LTE FDD/TDD PCell, as specified in TS 38.101-3 [101] and TS 38.213 [88].  The network sets at most one of *tdm-PatternConfig* and *tdm-PatternConfig2* to setup.  When this field is configured in EN-DC with LTE TDD PCell, it is not applicable if TDD configuration is sa0 or sa6 in SIB1. |
| ***tdm-PatternConfigNE-DC***  This field is used when power control or IMD issues require single UL transmission in NE-DC as specified in TS 38.101-3 [101] and TS 38.213 [88]. |

| Conditional presence | Explanation |
| --- | --- |
| *EARFCN-max* | The field is mandatory present if *dl-CarrierFreq-r10* is included and set to *maxEARFCN*. Otherwise the field is not present. |
| *FDD-PCell* | This field is optionally present, need ON, for a FDD PCell if there is no SCell with configured uplink. Otherwise, the field is not present. |
| *FDD-PSCell* | This field is optionally present, need ON, for a FDD PSCell if there is no SCell with configured uplink. Otherwise, the field is not present. |
| *fullConfig* | This field is mandatory present for handover within E-UTRA when the *fullConfig* is included; otherwise it is optionally present, Need OP. |
| *HO* | The field is mandatory present in case of handover within E-UTRA or to E-UTRA; otherwise the field is not present. |
| *HO-Reestab* | The field is mandatory present in case of inter-system handover within E-UTRA or handover from NR to E-UTRA/EPC; it is optionally present, need ON, in case of intra-system handover within E-UTRA or upon the first reconfiguration after RRC connection re-establishment; or for intra-system handover from NR to E-UTRA, otherwise the field is not present. |
| *HO-5GC* | The field is mandatory present in case of handover within E-UTRA/5GC, handover to E-UTRA/5GC, handover from NR to E-UTRA/EPC, or handover from E-UTRA/5GC to E-UTRA/EPC, otherwise the field is not present. |
| *HO-toEPC* | The field is mandatory present in case of handover within E-UTRA/EPC or to E-UTRA/EPC, except handover from NR or E-UTRA/5GC, otherwise the field is not present. |
| *HO-toEUTRA* | The field is mandatory present in case of handover to E-UTRA or for reconfigurations when *fullConfig* is included; otherwise the field is optionally present, need ON. |
| *nonFullConfig* | The field is not present when the *fullConfig* is included or in case of handover to E-UTRA; otherwise it is optional present, need ON. |
| *nonHO* | The field is not present in case of handover within E-UTRA or to E-UTRA; otherwise it is optional present, need ON. |
| *SCellAdd* | The field is mandatory present upon SCell addition; otherwise it is not present. |
| *SCellAdd2* | The field is mandatory present upon SCell addition; otherwise it is optionally present, need ON. |

NOTE 1: Fields *sk-Counter* and *nr-RadioBearerConfig1/ 2* are placed outside *nr-Config*, as these may be configured while the UE is not configured with (NG)EN-DC.

NOTE 2: It is not specified whether the timing reference for the SMTC configuration is the source EUTRA PCell or the target EUTRA PCell in case the NR PSCell addition or SN change takes place simultaneously with handover. As a consequence, explicit SMTC configuration is only supported when the source EUTRA PCell and the target EUTRA PCell of the handover are SFN/subframe-synchronized.

*END OF CHANGES*

START OF CHANGES

#### – *RRCConnectionResume*

The *RRCConnectionResume* message is used to resume the suspended RRC connection.

Signalling radio bearer: SRB1

RLC-SAP: AM

Logical channel: DCCH

Direction: E‑UTRAN to UE

*RRCConnectionResume* message

-- ASN1START

RRCConnectionResume-r13 ::= SEQUENCE {

rrc-TransactionIdentifier RRC-TransactionIdentifier,

criticalExtensions CHOICE {

c1 CHOICE {

rrcConnectionResume-r13 RRCConnectionResume-r13-IEs,

spare3 NULL,

spare2 NULL,

spare1 NULL

},

criticalExtensionsFuture SEQUENCE {}

}

}

RRCConnectionResume-r13-IEs ::= SEQUENCE {

radioResourceConfigDedicated-r13 RadioResourceConfigDedicated OPTIONAL, -- Need ON

nextHopChainingCount-r13 NextHopChainingCount,

measConfig-r13 MeasConfig OPTIONAL, -- Need ON

antennaInfoDedicatedPCell-r13 AntennaInfoDedicated-v10i0 OPTIONAL, -- Need ON

drb-ContinueROHC-r13 ENUMERATED {true} OPTIONAL, -- Need OP

lateNonCriticalExtension OCTET STRING OPTIONAL,

rrcConnectionResume-v1430-IEs RRCConnectionResume-v1430-IEs OPTIONAL

}

RRCConnectionResume-v1430-IEs ::= SEQUENCE {

otherConfig-r14 OtherConfig-r9 OPTIONAL, -- Need ON

rrcConnectionResume-v1510-IEs RRCConnectionResume-v1510-IEs OPTIONAL

}

RRCConnectionResume-v1510-IEs ::= SEQUENCE {

sk-Counter-r15 INTEGER (0.. 65535) OPTIONAL, -- Need ON

nr-RadioBearerConfig1-r15 OCTET STRING OPTIONAL, -- Need ON

nr-RadioBearerConfig2-r15 OCTET STRING OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionResume-v1530-IEs OPTIONAL

}

RRCConnectionResume-v1530-IEs ::= SEQUENCE {

fullConfig-r15 ENUMERATED {true} OPTIONAL, -- Need ON

nonCriticalExtension RRCConnectionResume-v16xy-IEs OPTIONAL

}

RRCConnectionResume-v16xy-IEs ::= SEQUENCE {

newUE-Identity-r16 C-RNTI OPTIONAL, -- Cond PUR

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

restoreMCG-SCells ENUMERATED {true} OPTIONAL, -- Need ON

restoreSCG ENUMERATED {true} OPTIONAL, -- Cond EarlySec

sCellToAddModList-r16 SCellToAddModList-r16 OPTIONAL, -- Cond EarlySec

sCellToReleaseList-r16 SCellToReleaseListExt-r13 OPTIONAL, -- Need ON

sCellGroupToReleaseList-r16 SCellGroupToReleaseList-r15 OPTIONAL, -- Need ON

sCellGroupToAddModList-r16 SCellGroupToAddModList-r15 OPTIONAL, -- Cond EarlySec

nr-SecondaryCellGroupConfig OCTET STRING OPTIONAL, -- Cond RestoreSCG

p-MaxEUTRA-r16 P-Max OPTIONAL, -- Need OR

p-MaxUE-FR1-r16 P-Max OPTIONAL, -- Need OR

tdm-PatternConfig-r16 TDM-PatternConfig-r15 OPTIONAL, -- Cond FDD-PCell

tdm-PatternConfig2-r16 TDM-PatternConfig-r15 OPTIONAL, -- Need OR

nonCriticalExtension SEQUENCE {} OPTIONAL

}

-- ASN1STOP

| *RRCConnectionResume* field descriptions |
| --- |
| ***drb-ContinueROHC***  This field indicates whether to continue or reset the header compression protocol context for the DRBs configured with EUTRA PDCP and the header compression protocol. Presence of the field indicates that the header compression protocol context continues while absence indicates that the header compression protocol context is reset. |
| ***fullConfig***  Indicates that the full configuration option is applicable for the *RRCConnectionResume* message. |
| ***idleModeMeasurementReq***  This field indicates that the UE shall report the idle/inactive measurements to the network in the *RRCConnectionResumeComplete* message |
| ***p-MaxEUTRA***  Indicates the maximum power available for E-UTRA. |
| ***p-MaxUE-FR1***  The maximum total transmit power to be used by the UE across all serving cells in frequency range 1 (FR1) across all cell groups. The maximum transmit power that the UE may use may be additionally limited on cell- or cell-group level. The field is optionally present, if (NG)EN-DC (nr-Config-r15) has been configured. It is absent otherwise. |
| ***nr-RadioBearerConfig1, nr-RadioBearerConfig2***  Includes the NR *RadioBearerConfig* IE as specified in TS 38.331 [82]. The field includes the configuration of RBs configured with NR PDCP. |
| ***nr-SecondaryCellGroupConfig***  Includes the NR *RRCReconfiguration* message as specified in TS 38.331 [82]. In this version of the specification, the NR RRC message only includes fields *secondaryCellGroup*, with at least *reconfigurationWithSync,*and/ or *measConfig*. |
| ***restoreMCG-Scells***  Indicates that the UE shall restore the MCG Scell configurations from the UE AS Context or UE Inactive AS Context, if configured. |
| ***restoreSCG***  If included, the UE shall restore the SCG configurations from the UE AS Context or UE Inactive AS Context, if configured. |
| ***sCellGroupToAddModList***  Indicates the SCell group to be added or modified. |
| ***sCellGroupToReleaseList***  Indicates the SCell group to be released. |
| ***sCellToAddModList***  List of SCells to be added or modified. |
| ***sCellToReleaseList***  List of SCells to be released. |
| ***sk-Counter***  A one-shot counter used upon initial configuration of S-KgNB as well as upon refresh of S-KgNB. E-UTRAN provides this field when the UE is configured with an (SN-terminated) RB using S-KgNB. |
|  |
|  |

| Conditional presence | Explanation |
| --- | --- |
| *PUR* | The field is optionally present, Need OP, if the *RRCConnectionResume* is in response to transmission using PUR; otherwise the field is not present. |
| *EarlySec* | For EPC, the field is optionally present, Need ON, if the UE supports early security reactivation; otherwise the field is not present.  For 5GC, the field is optionally present, Need ON. |
| *RestoreSCG* | The field is mandatory present if *restoreSCG* is configured. It is optionally present, Need ON, otherwise.  For EPC, this field can be present only if the UE supports early security reactivation. |
| *FDD-PCell* | This field is optionally present, need ON, for an FDD PCell if there is no SCell with configured uplink. Otherwise, the field is not present, need OR. |

*END OF CHANGES*

START OF CHANGES

#### – *RRCConnectionResumeComplete*

The *RRCConnectionResumeComplete* message is used to confirm the successful completion of an RRC connection resumption.

Signalling radio bearer: SRB1

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to E‑UTRAN

*RRCConnectionResumeComplete* message

-- ASN1START

RRCConnectionResumeComplete-r13 ::= SEQUENCE {

rrc-TransactionIdentifier RRC-TransactionIdentifier,

criticalExtensions CHOICE {

rrcConnectionResumeComplete-r13 RRCConnectionResumeComplete-r13-IEs,

criticalExtensionsFuture SEQUENCE {}

}

}

RRCConnectionResumeComplete-r13-IEs ::= SEQUENCE {

selectedPLMN-Identity-r13 INTEGER (1..maxPLMN-r11) OPTIONAL,

dedicatedInfoNAS-r13 DedicatedInfoNAS OPTIONAL,

rlf-InfoAvailable-r13 ENUMERATED {true} OPTIONAL,

logMeasAvailable-r13 ENUMERATED {true} OPTIONAL,

connEstFailInfoAvailable-r13 ENUMERATED {true} OPTIONAL,

mobilityState-r13 ENUMERATED {normal, medium, high, spare} OPTIONAL,

mobilityHistoryAvail-r13 ENUMERATED {true} OPTIONAL,

logMeasAvailableMBSFN-r13 ENUMERATED {true} OPTIONAL,

lateNonCriticalExtension OCTET STRING OPTIONAL,

nonCriticalExtension RRCConnectionResumeComplete-v1530-IEs OPTIONAL

}

RRCConnectionResumeComplete-v1530-IEs ::= SEQUENCE {

logMeasAvailableBT-r15 ENUMERATED {true} OPTIONAL,

logMeasAvailableWLAN-r15 ENUMERATED {true} OPTIONAL,

idleMeasAvailable-r15 ENUMERATED {true} OPTIONAL,

flightPathInfoAvailable-r15 ENUMERATED {true} OPTIONAL,

nonCriticalExtension RRCConnectionResumeComplete-v16xy-IEs OPTIONAL

}

RRCConnectionResumeComplete-v16xy-IEs ::= SEQUENCE {

measResultListIdle-r15 MeasResultListIdle-r15 OPTIONAL,

measResultListIdle-r16 MeasResultListIdle-r16 OPTIONAL,

measResultListIdleNR-r16 MeasResultListIdleNR-r16 OPTIONAL,

scg-ConfigResponseNR-r16 OCTET STRING OPTIONAL,

nonCriticalExtension SEQUENCE{} OPTIONAL

}

-- Editors Note: FFS whether to have a separate availability indicator for rel-16 idle/inactive measurements.

-- ASN1STOP

| *RRCConnectionResumeComplete* field descriptions |
| --- |
| ***idleMeasAvailable***  Indication that the UE has idle/inactive measurement report available. |
| ***selectedPLMN-Identity***  Index of the PLMN selected by the UE from the *plmn-IdentityList* fields included in SIB1. 1 if the 1st PLMN is selected from the 1st *plmn-IdentityList* included in SIB1, 2 if the 2nd PLMN is selected from the same *plmn-IdentityList*, or when no more PLMN are present within the same *plmn-IdentityList,* then the PLMN listed 1st in the subsequent *plmn-IdentityList* within the same SIB1 and so on. The *selectedPLMN-Identity* is referred to the PLMN list for 5GC if the UE is in RRC\_INACTIVE state. |

*END OF CHANGES*

START OF CHANGES

#### – *UEInformationResponse*

The *UEInformationResponse* message is used by the UE to transfer the information requested by the E-UTRAN.

Signalling radio bearer: SRB1 or SRB2 (when logged measurement information is included)

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to E-UTRAN

*UEInformationResponse message*

-- ASN1START

UEInformationResponse-r9 ::= SEQUENCE {

rrc-TransactionIdentifier RRC-TransactionIdentifier,

criticalExtensions CHOICE {

c1 CHOICE {

ueInformationResponse-r9 UEInformationResponse-r9-IEs,

spare3 NULL, spare2 NULL, spare1 NULL

},

criticalExtensionsFuture SEQUENCE {}

}

}

UEInformationResponse-r9-IEs ::= SEQUENCE {

rach-Report-r9 RACH-Report-r9 OPTIONAL,

rlf-Report-r9 RLF-Report-r9 OPTIONAL,

nonCriticalExtension UEInformationResponse-v930-IEs OPTIONAL

}

-- Late non critical extensions

UEInformationResponse-v9e0-IEs ::= SEQUENCE {

rlf-Report-v9e0 RLF-Report-v9e0 OPTIONAL,

nonCriticalExtension SEQUENCE {} OPTIONAL

}

-- Regular non critical extensions

UEInformationResponse-v930-IEs ::= SEQUENCE {

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

nonCriticalExtension UEInformationResponse-v1020-IEs OPTIONAL

}

UEInformationResponse-v1020-IEs ::= SEQUENCE {

logMeasReport-r10 LogMeasReport-r10 OPTIONAL,

nonCriticalExtension UEInformationResponse-v1130-IEs OPTIONAL

}

UEInformationResponse-v1130-IEs ::= SEQUENCE {

connEstFailReport-r11 ConnEstFailReport-r11 OPTIONAL,

nonCriticalExtension UEInformationResponse-v1250-IEs OPTIONAL

}

UEInformationResponse-v1250-IEs ::= SEQUENCE {

mobilityHistoryReport-r12 MobilityHistoryReport-r12 OPTIONAL,

nonCriticalExtension UEInformationResponse-v1530-IEs OPTIONAL

}

UEInformationResponse-v1530-IEs ::= SEQUENCE {

measResultListIdle-r15 MeasResultListIdle-r15 OPTIONAL,

flightPathInfoReport-r15 FlightPathInfoReport-r15 OPTIONAL,

nonCriticalExtension UEInformationResponse-v16xy-IEs OPTIONAL

}

UEInformationResponse-v16xy-IEs ::= SEQUENCE {

rach-Report-v16xy RACH-Report-v16xy OPTIONAL,

measResultListIdle-r16 MeasResultListIdle-r16 OPTIONAL,

measResultListIdleNR-r16 MeasResultListIdleNR-r16 OPTIONAL,

nonCriticalExtension SEQUENCE {} OPTIONAL

}

RACH-Report-r9 ::= SEQUENCE {

numberOfPreamblesSent-r9 NumberOfPreamblesSent-r11,

contentionDetected-r9 BOOLEAN

}

RACH-Report-v16xy ::= SEQUENCE {

initialCEL-r16 INTEGER (0..3),

edt-Fallback-r16 BOOLEAN

}

RLF-Report-r9 ::= SEQUENCE {

measResultLastServCell-r9 SEQUENCE {

rsrpResult-r9 RSRP-Range,

rsrqResult-r9 RSRQ-Range OPTIONAL

},

measResultNeighCells-r9 SEQUENCE {

measResultListEUTRA-r9 MeasResultList2EUTRA-r9 OPTIONAL,

measResultListUTRA-r9 MeasResultList2UTRA-r9 OPTIONAL,

measResultListGERAN-r9 MeasResultListGERAN OPTIONAL,

measResultsCDMA2000-r9 MeasResultList2CDMA2000-r9 OPTIONAL

} OPTIONAL,

...,

[[ locationInfo-r10 LocationInfo-r10 OPTIONAL,

failedPCellId-r10 CHOICE {

cellGlobalId-r10 CellGlobalIdEUTRA,

pci-arfcn-r10 SEQUENCE {

physCellId-r10 PhysCellId,

carrierFreq-r10 ARFCN-ValueEUTRA

}

} OPTIONAL,

reestablishmentCellId-r10 CellGlobalIdEUTRA OPTIONAL,

timeConnFailure-r10 INTEGER (0..1023) OPTIONAL,

connectionFailureType-r10 ENUMERATED {rlf, hof} OPTIONAL,

previousPCellId-r10 CellGlobalIdEUTRA OPTIONAL

]],

[[ failedPCellId-v1090 SEQUENCE {

carrierFreq-v1090 ARFCN-ValueEUTRA-v9e0

} OPTIONAL

]],

[[ basicFields-r11 SEQUENCE {

c-RNTI-r11 C-RNTI,

rlf-Cause-r11 ENUMERATED {

t310-Expiry, randomAccessProblem,

rlc-MaxNumRetx, t312-Expiry-r12},

timeSinceFailure-r11 TimeSinceFailure-r11

} OPTIONAL,

previousUTRA-CellId-r11 SEQUENCE {

carrierFreq-r11 ARFCN-ValueUTRA,

physCellId-r11 CHOICE {

fdd-r11 PhysCellIdUTRA-FDD,

tdd-r11 PhysCellIdUTRA-TDD

},

cellGlobalId-r11 CellGlobalIdUTRA OPTIONAL

} OPTIONAL,

selectedUTRA-CellId-r11 SEQUENCE {

carrierFreq-r11 ARFCN-ValueUTRA,

physCellId-r11 CHOICE {

fdd-r11 PhysCellIdUTRA-FDD,

tdd-r11 PhysCellIdUTRA-TDD

}

} OPTIONAL

]],

[[ failedPCellId-v1250 SEQUENCE {

tac-FailedPCell-r12 TrackingAreaCode

} OPTIONAL,

measResultLastServCell-v1250 RSRQ-Range-v1250 OPTIONAL,

lastServCellRSRQ-Type-r12 RSRQ-Type-r12 OPTIONAL,

measResultListEUTRA-v1250 MeasResultList2EUTRA-v1250 OPTIONAL

]],

[[ drb-EstablishedWithQCI-1-r13 ENUMERATED {qci1} OPTIONAL

]],

[[ measResultLastServCell-v1360 RSRP-Range-v1360 OPTIONAL

]],

[[ logMeasResultListBT-r15 LogMeasResultListBT-r15 OPTIONAL,

logMeasResultListWLAN-r15 LogMeasResultListWLAN-r15 OPTIONAL

]],

[[ measResultListNR-r16 MeasResultCellListNR-r15 OPTIONAL

]]

}

RLF-Report-v9e0 ::= SEQUENCE {

measResultListEUTRA-v9e0 MeasResultList2EUTRA-v9e0

}

MeasResultList2EUTRA-r9 ::= SEQUENCE (SIZE (1..maxFreq)) OF MeasResult2EUTRA-r9

MeasResultList2EUTRA-v9e0 ::= SEQUENCE (SIZE (1..maxFreq)) OF MeasResult2EUTRA-v9e0

MeasResultList2EUTRA-v1250 ::= SEQUENCE (SIZE (1..maxFreq)) OF MeasResult2EUTRA-v1250

MeasResult2EUTRA-r9 ::= SEQUENCE {

carrierFreq-r9 ARFCN-ValueEUTRA,

measResultList-r9 MeasResultListEUTRA

}

MeasResult2EUTRA-v9e0 ::= SEQUENCE {

carrierFreq-v9e0 ARFCN-ValueEUTRA-v9e0 OPTIONAL

}

MeasResult2EUTRA-v1250 ::= SEQUENCE {

rsrq-Type-r12 RSRQ-Type-r12 OPTIONAL

}

MeasResultList2UTRA-r9 ::= SEQUENCE (SIZE (1..maxFreq)) OF MeasResult2UTRA-r9

MeasResult2UTRA-r9 ::= SEQUENCE {

carrierFreq-r9 ARFCN-ValueUTRA,

measResultList-r9 MeasResultListUTRA

}

MeasResultList2CDMA2000-r9 ::= SEQUENCE (SIZE (1..maxFreq)) OF MeasResult2CDMA2000-r9

MeasResult2CDMA2000-r9 ::= SEQUENCE {

carrierFreq-r9 CarrierFreqCDMA2000,

measResultList-r9 MeasResultsCDMA2000

}

LogMeasReport-r10 ::= SEQUENCE {

absoluteTimeStamp-r10 AbsoluteTimeInfo-r10,

traceReference-r10 TraceReference-r10,

traceRecordingSessionRef-r10 OCTET STRING (SIZE (2)),

tce-Id-r10 OCTET STRING (SIZE (1)),

logMeasInfoList-r10 LogMeasInfoList-r10,

logMeasAvailable-r10 ENUMERATED {true} OPTIONAL,

...,

[[ logMeasAvailableBT-r15 ENUMERATED {true} OPTIONAL,

logMeasAvailableWLAN-r15 ENUMERATED {true} OPTIONAL

]]

}

LogMeasInfoList-r10 ::= SEQUENCE (SIZE (1..maxLogMeasReport-r10)) OF LogMeasInfo-r10

LogMeasInfo-r10 ::= SEQUENCE {

locationInfo-r10 LocationInfo-r10 OPTIONAL,

relativeTimeStamp-r10 INTEGER (0..7200),

servCellIdentity-r10 CellGlobalIdEUTRA,

measResultServCell-r10 SEQUENCE {

rsrpResult-r10 RSRP-Range,

rsrqResult-r10 RSRQ-Range

},

measResultNeighCells-r10 SEQUENCE {

measResultListEUTRA-r10 MeasResultList2EUTRA-r9 OPTIONAL,

measResultListUTRA-r10 MeasResultList2UTRA-r9 OPTIONAL,

measResultListGERAN-r10 MeasResultList2GERAN-r10 OPTIONAL,

measResultListCDMA2000-r10 MeasResultList2CDMA2000-r9 OPTIONAL

} OPTIONAL,

...,

[[ measResultListEUTRA-v1090 MeasResultList2EUTRA-v9e0 OPTIONAL

]],

[[ measResultListMBSFN-r12 MeasResultListMBSFN-r12 OPTIONAL,

measResultServCell-v1250 RSRQ-Range-v1250 OPTIONAL,

servCellRSRQ-Type-r12 RSRQ-Type-r12 OPTIONAL,

measResultListEUTRA-v1250 MeasResultList2EUTRA-v1250 OPTIONAL

]],

[[ inDeviceCoexDetected-r13 ENUMERATED {true} OPTIONAL

]],

[[ measResultServCell-v1360 RSRP-Range-v1360 OPTIONAL

]],

[[ logMeasResultListBT-r15 LogMeasResultListBT-r15 OPTIONAL,

logMeasResultListWLAN-r15 LogMeasResultListWLAN-r15 OPTIONAL

]],

[[ anyCellSelectionDetected-r15 ENUMERATED {true} OPTIONAL

]],

[[ measResultListNR-r16 MeasResultCellListNR-r15 OPTIONAL

]]

}

MeasResultListMBSFN-r12 ::= SEQUENCE (SIZE (1..maxMBSFN-Area)) OF MeasResultMBSFN-r12

MeasResultMBSFN-r12 ::= SEQUENCE {

mbsfn-Area-r12 SEQUENCE {

mbsfn-AreaId-r12 MBSFN-AreaId-r12,

carrierFreq-r12 ARFCN-ValueEUTRA-r9

},

rsrpResultMBSFN-r12 RSRP-Range,

rsrqResultMBSFN-r12 MBSFN-RSRQ-Range-r12,

signallingBLER-Result-r12 BLER-Result-r12 OPTIONAL,

dataBLER-MCH-ResultList-r12 DataBLER-MCH-ResultList-r12 OPTIONAL,

...

}

DataBLER-MCH-ResultList-r12 ::= SEQUENCE (SIZE (1.. maxPMCH-PerMBSFN)) OF DataBLER-MCH-Result-r12

DataBLER-MCH-Result-r12 ::= SEQUENCE {

mch-Index-r12 INTEGER (1..maxPMCH-PerMBSFN),

dataBLER-Result-r12 BLER-Result-r12

}

BLER-Result-r12 ::= SEQUENCE {

bler-r12 BLER-Range-r12,

blocksReceived-r12 SEQUENCE {

n-r12 BIT STRING (SIZE (3)),

m-r12 BIT STRING (SIZE (8))

}

}

BLER-Range-r12 ::= INTEGER(0..31)

MeasResultList2GERAN-r10 ::= SEQUENCE (SIZE (1..maxCellListGERAN)) OF MeasResultListGERAN

ConnEstFailReport-r11 ::= SEQUENCE {

failedCellId-r11 CellGlobalIdEUTRA,

locationInfo-r11 LocationInfo-r10 OPTIONAL,

measResultFailedCell-r11 SEQUENCE {

rsrpResult-r11 RSRP-Range,

rsrqResult-r11 RSRQ-Range OPTIONAL

},

measResultNeighCells-r11 SEQUENCE {

measResultListEUTRA-r11 MeasResultList2EUTRA-r9 OPTIONAL,

measResultListUTRA-r11 MeasResultList2UTRA-r9 OPTIONAL,

measResultListGERAN-r11 MeasResultListGERAN OPTIONAL,

measResultsCDMA2000-r11 MeasResultList2CDMA2000-r9 OPTIONAL

} OPTIONAL,

numberOfPreamblesSent-r11 NumberOfPreamblesSent-r11,

contentionDetected-r11 BOOLEAN,

maxTxPowerReached-r11 BOOLEAN,

timeSinceFailure-r11 TimeSinceFailure-r11,

measResultListEUTRA-v1130 MeasResultList2EUTRA-v9e0 OPTIONAL,

...,

[[ measResultFailedCell-v1250 RSRQ-Range-v1250 OPTIONAL,

failedCellRSRQ-Type-r12 RSRQ-Type-r12 OPTIONAL,

measResultListEUTRA-v1250 MeasResultList2EUTRA-v1250 OPTIONAL

]],

[[ measResultFailedCell-v1360 RSRP-Range-v1360 OPTIONAL

]],

[[ logMeasResultListBT-r15 LogMeasResultListBT-r15 OPTIONAL,

logMeasResultListWLAN-r15 LogMeasResultListWLAN-r15 OPTIONAL

]],

[[ measResultListNR-r16 MeasResultCellListNR-r15 OPTIONAL

]]

}

NumberOfPreamblesSent-r11::= INTEGER (1..200)

TimeSinceFailure-r11 ::= INTEGER (0..172800)

MobilityHistoryReport-r12 ::= VisitedCellInfoList-r12

FlightPathInfoReport-r15 ::= SEQUENCE {

flightPath-r15 SEQUENCE (SIZE (1..maxWayPoint-r15)) OF WayPointLocation-r15 OPTIONAL,

nonCriticalExtension SEQUENCE {} OPTIONAL

}

WayPointLocation-r15 ::= SEQUENCE {

wayPointLocation-r15 LocationInfo-r10,

timeStamp-r15 AbsoluteTimeInfo-r10 OPTIONAL

}

-- ASN1STOP

| *UEInformationResponse* field descriptions |
| --- |
| ***absoluteTimeStamp***  Indicates the absolute time when the logged measurement configuration logging is provided, as indicated by E-UTRAN within *absoluteTimeInfo*. |
| ***anyCellSelectionDetected***  This field is used to indicate the detection of *any cell selection* state, as defined in TS 36.304 [4]. The UE sets this field when performing the logging of measurement results in RRC\_IDLE and there is no suitable cell or no acceptable cell. |
| ***bler***  Indicates the measured BLER value. The coding of BLER value is defined in TS 36.133 [16]. |
| ***blocksReceived***  Indicates total number of MCH blocks, which were received by the UE and used for the corresponding BLER calculation, within the measurement period as defined in TS 36.133 [16]. |
| ***carrierFreq***  In case the UE includes *carrierFreq-v9e0* and/ or *carrierFreq-v1090*, the UE shall set the corresponding entry of *carrierFreq-r9* and/ or *carrierFreq-r10* respectively to *maxEARFCN*. For E-UTRA and UTRA frequencies, the UE sets the ARFCN according to the band used when obtaining the concerned measurement results. |
| ***connectionFailureType***  This field is used to indicate whether the connection failure is due to radio link failure or handover failure. |
| ***contentionDetected***  This field is used to indicate that contention was detected for at least one of the transmitted preambles, see TS 36.321 [6]. |
| ***c-RNTI***  This field indicates the C-RNTI used in the PCell upon detecting radio link failure or the C-RNTI used in the source PCell upon handover failure. |
| ***dataBLER-MCH-ResultList***  Includes a BLER result per MCH on subframes using *dataMCS*, with the applicable MCH(s) listed in the same order as in *pmch-InfoList* within *MBSFNAreaConfiguration*. |
| ***drb-EstablishedWithQCI-1***  This field is used to indicate the radio link failure occurred while a bearer with QCI value equal to 1 was configured, see TS 24.301 [35]. |
| ***edt-Fallback***  Value TRUE indicates the last successfully completed random access procedure was initiated with EDT PRACH resource and succeeded after receiving EDT fallback indication from lower layers. |
| ***failedCellId***  This field is used to indicate the cell in which connection establishment failed. |
| ***failedPCellId***  This field is used to indicate the PCell in which RLF is detected or the target PCell of the failed handover. The UE sets the EARFCN according to the band used for transmission/ reception when the failure occurred. |
| ***inDeviceCoexDetected***  Indicates that measurement logging is suspended due to IDC problem detection. |
| ***initialCEL***  Indicates the initial CE level used for the last successfully completed random access procedure for BL UEs and UEs in CE. |
| ***logMeasResultListBT***  This field refers to the Bluetooth measurement results. |
| ***logMeasResultListWLAN***  This field refers to the WLAN measurement results. |
| ***maxTxPowerReached***  This field is used to indicate whether or not the maximum power level was used for the last transmitted preamble, see TS 36.321 [6]. |
| ***mch-Index***  Indicates the MCH by referring to the entry as listed in *pmch-InfoList* within *MBSFNAreaConfiguration*. |
| ***measResultFailedCell***  This field refers to the last measurement results taken in the cell, where connection establishment failure happened. For UE supporting CE Mode B, when CE mode B is not restricted by upper layers, *measResultFailedCell-v1360* is reported if the measured RSRP is less than -140 dBm. |
| ***measResultLastServCell***  This field refers to the last measurement results taken in the PCell, where radio link failure or handover failure happened. For BL UEs or UEs in CE, when operating in CE Mode B, *measResultLastServCell-v1360* is reported if the measured RSRP is less than -140 dBm. |
| ***measResultListEUTRA***  If *measResultListEUTRA-v9e0*, *measResultListEUTRA-v1090* or *measResultListEUTRA-v1130* is included, the UE shall include the same number of entries, and listed in the same order, as in *measResultListEUTRA-r9*, *measResultListEUTRA-r10* and/ or *measResultListEUTRA-r11* respectively. |
| ***measResultListEUTRA-v1250***  If included in *RLF-Report-r9* the UE shall include the same number of entries, and listed in the same order, as in *measResultListEUTRA-r9*;  If included in *LogMeasInfo-r10* the UE shall include the same number of entries, and listed in the same order, as in *measResultListEUTRA-r10*;  If included in *ConnEstFailReport-r11* the UE shall include the same number of entries, and listed in the same order, as in *measResultListEUTRA-r11*; |
| ***measResultListIdle***  This field indicates the E-UTRA measurement results done during RRC\_IDLE and RRC\_INACTIVE at network request. |
| ***measResultIdleListNR***  This field indicates the NR measurement results done during RRC\_IDLE and RRC\_INACTIVE at network request. |
| ***measResultServCell***  This field refers to the log measurement results taken in the Serving cell. For UE supporting CE Mode B, when CE mode B is not restricted by upper layers, *measResultServCell-v1360* is reported if the measured RSRP is less than -140 dBm. |
| ***mobilityHistoryReport***  This field is used to indicate the time of stay in 16 most recently visited E-UTRA cells or of stay out of E-UTRA. |
| ***numberOfPreamblesSent***  This field is used to indicate the number of RACH preambles that were transmitted. Corresponds to parameter PREAMBLE\_TRANSMISSION\_COUNTER in TS 36.321 [6]. |
| ***previousPCellId***  This field is used to indicate the source PCell of the last handover (source PCell when the last *RRC-Connection-Reconfiguration* message including *mobilityControlInfo*was received). |
| ***previousUTRA-CellId***  This field is used to indicate the source UTRA cell of the last successful handover to E-UTRAN, when RLF occurred at the target PCell. The UE sets the ARFCN according to the band used for transmission/ reception on the concerned cell. |
| ***reestablishmentCellId***  This field is used to indicate the cell in which the re-establishment attempt was made after connection failure. |
| ***relativeTimeStamp***  Indicates the time of logging measurement results, measured relative to the *absoluteTimeStamp*. Value in seconds. |
| ***rlf-Cause***  This field is used to indicate the cause of the last radio link failure that was detected. In case of handover failure information reporting (i.e., the *connectionFailureType* is set to '*hof*'), the UE is allowed to set this field to any value. |
| ***selectedUTRA-CellId***  This field is used to indicate the UTRA cell that the UE selects after RLF is detected, while T311 is running. The UE sets the ARFCN according to the band selected for transmission/ reception on the concerned cell. |
| ***signallingBLER-Result***  Includes a BLER result of MBSFN subframes using *signallingMCS*. |
| ***tac-FailedPCell***  This field is used to indicate the Tracking Area Code of the PCell in which RLF is detected. |
| ***tce-Id***  Parameter Trace Collection Entity Id: See TS 32.422 [58]. |
| ***timeConnFailure***  This field is used to indicate the time elapsed since the last HO initialization until connection failure. Actual value = field value \* 100ms. The maximum value 1023 means 102.3s or longer. |
| ***timeSinceFailure***  This field is used to indicate the time that elapsed since the connection (establishment) failure. Value in seconds. The maximum value 172800 means 172800s or longer. |
| ***timeStamp***  Includes time stamps for the waypoints that describe planned locations for the UE. |
| ***traceRecordingSessionRef***  Parameter Trace Recording Session Reference: See TS 32.422 [58]. |
| ***wayPointLocation***  Includes location coordinates for a UE for Aerial UE operation. The waypoints describe planned locations for the UE. |

*END OF CHANGES*

START OF CHANGES

## 6.3 RRC information elements

### 6.3.1 System information blocks

#### – *SystemInformationBlockType2*

The IE *SystemInformationBlockType2* contains radio resource configuration information that is common for all UEs.

NOTE: UE timers and constants related to functionality for which parameters are provided in another SIB are included in the corresponding SIB.

*SystemInformationBlockType2* information element

-- ASN1START

SystemInformationBlockType2 ::= SEQUENCE {

ac-BarringInfo SEQUENCE {

ac-BarringForEmergency BOOLEAN,

ac-BarringForMO-Signalling AC-BarringConfig OPTIONAL, -- Need OP

ac-BarringForMO-Data AC-BarringConfig OPTIONAL -- Need OP

} OPTIONAL, -- Need OP

radioResourceConfigCommon RadioResourceConfigCommonSIB,

ue-TimersAndConstants UE-TimersAndConstants,

freqInfo SEQUENCE {

ul-CarrierFreq ARFCN-ValueEUTRA OPTIONAL, -- Need OP

ul-Bandwidth ENUMERATED {n6, n15, n25, n50, n75, n100}

OPTIONAL, -- Need OP

additionalSpectrumEmission AdditionalSpectrumEmission

},

mbsfn-SubframeConfigList MBSFN-SubframeConfigList OPTIONAL, -- Need OR

timeAlignmentTimerCommon TimeAlignmentTimer,

...,

lateNonCriticalExtension OCTET STRING (CONTAINING SystemInformationBlockType2-v8h0-IEs) OPTIONAL,

[[ ssac-BarringForMMTEL-Voice-r9 AC-BarringConfig OPTIONAL, -- Need OP

ssac-BarringForMMTEL-Video-r9 AC-BarringConfig OPTIONAL -- Need OP

]],

[[ ac-BarringForCSFB-r10 AC-BarringConfig OPTIONAL -- Need OP

]],

[[ ac-BarringSkipForMMTELVoice-r12 ENUMERATED {true} OPTIONAL, -- Need OP

ac-BarringSkipForMMTELVideo-r12 ENUMERATED {true} OPTIONAL, -- Need OP

ac-BarringSkipForSMS-r12 ENUMERATED {true} OPTIONAL, -- Need OP

ac-BarringPerPLMN-List-r12 AC-BarringPerPLMN-List-r12 OPTIONAL -- Need OP

]],

[[ voiceServiceCauseIndication-r12 ENUMERATED {true} OPTIONAL -- Need OP

]],

[[ acdc-BarringForCommon-r13 ACDC-BarringForCommon-r13 OPTIONAL, -- Need OP

acdc-BarringPerPLMN-List-r13 ACDC-BarringPerPLMN-List-r13 OPTIONAL -- Need OP

]],

[[

udt-RestrictingForCommon-r13 UDT-Restricting-r13 OPTIONAL, -- Need OR

udt-RestrictingPerPLMN-List-r13 UDT-RestrictingPerPLMN-List-r13 OPTIONAL, -- Need OR

cIoT-EPS-OptimisationInfo-r13 CIOT-EPS-OptimisationInfo-r13 OPTIONAL, -- Need OP

useFullResumeID-r13 ENUMERATED {true} OPTIONAL -- Need OP

]],

[[ unicastFreqHoppingInd-r13 ENUMERATED {true} OPTIONAL -- Need OP

]],

[[ mbsfn-SubframeConfigList-v1430 MBSFN-SubframeConfigList-v1430 OPTIONAL, -- Need OP

videoServiceCauseIndication-r14 ENUMERATED {true} OPTIONAL -- Need OP

]],

[[ plmn-InfoList-r15 PLMN-InfoList-r15 OPTIONAL -- Need OP

]],

[[ cp-EDT-r15 ENUMERATED {true} OPTIONAL, -- Need OR

up-EDT-r15 ENUMERATED {true} OPTIONAL, -- Need OR

idleModeMeasurements-r15 ENUMERATED {true} OPTIONAL, -- Need OR

reducedCP-LatencyEnabled-r15 ENUMERATED {true} OPTIONAL -- Need OR

]],

[[ mbms-ROM-ServiceIndication-r15 ENUMERATED {true} OPTIONAL -- Need OR

]],

[[ rlos-Enabled-r16 ENUMERATED {true} OPTIONAL, -- Need OR

earlySecurityReactivation-r16 ENUMERATED {true} OPTIONAL, -- Need OR

cp-EDT-5GC-r16 ENUMERATED {true} OPTIONAL, -- Need OR

up-EDT-5GC-r16 ENUMERATED {true} OPTIONAL, -- Need OR

cp-PUR-EPC-r16 ENUMERATED {true} OPTIONAL, -- Need OR

up-PUR-EPC-r16 ENUMERATED {true} OPTIONAL, -- Need OR

cp-PUR-5GC-r16 ENUMERATED {true} OPTIONAL, -- Need OR

up-PUR-5GC-r16 ENUMERATED {true} OPTIONAL, -- Need OR

mpdcch-CQI-Reporting-r16 ENUMERATED {fourBits, both} OPTIONAL, -- Need OR

rai-ActivationEnh-r16 ENUMERATED {true} OPTIONAL, -- Need OR

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

]]

}

SystemInformationBlockType2-v8h0-IEs ::= SEQUENCE {

multiBandInfoList SEQUENCE (SIZE (1..maxMultiBands)) OF AdditionalSpectrumEmission OPTIONAL, -- Need OR

nonCriticalExtension SystemInformationBlockType2-v9e0-IEs OPTIONAL

}

SystemInformationBlockType2-v9e0-IEs ::= SEQUENCE {

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

nonCriticalExtension SystemInformationBlockType2-v9i0-IEs OPTIONAL

}

SystemInformationBlockType2-v9i0-IEs ::= SEQUENCE {

-- Following field is for any non-critical extensions from REL-9

nonCriticalExtension OCTET STRING (CONTAINING SystemInformationBlockType2-v10m0-IEs) OPTIONAL,

dummy SEQUENCE {} OPTIONAL

}

SystemInformationBlockType2-v10m0-IEs ::= SEQUENCE {

freqInfo-v10l0 SEQUENCE {

additionalSpectrumEmission-v10l0 AdditionalSpectrumEmission-v10l0

} OPTIONAL,

multiBandInfoList-v10l0 SEQUENCE (SIZE (1..maxMultiBands)) OF

AdditionalSpectrumEmission-v10l0 OPTIONAL,

nonCriticalExtension SystemInformationBlockType2-v10n0-IEs OPTIONAL

}

SystemInformationBlockType2-v10n0-IEs ::= SEQUENCE {

-- Following field is for non-critical extensions up-to REL-12

lateNonCriticalExtension OCTET STRING OPTIONAL,

nonCriticalExtension SystemInformationBlockType2-v13c0-IEs OPTIONAL

}

SystemInformationBlockType2-v13c0-IEs ::= SEQUENCE {

uplinkPowerControlCommon-v13c0 UplinkPowerControlCommon-v1310 OPTIONAL, -- Need OR

-- Following field is for non-critical extensions from REL-13

nonCriticalExtension SEQUENCE {} OPTIONAL

}

AC-BarringConfig ::= SEQUENCE {

ac-BarringFactor ENUMERATED {

p00, p05, p10, p15, p20, p25, p30, p40,

p50, p60, p70, p75, p80, p85, p90, p95},

ac-BarringTime ENUMERATED {s4, s8, s16, s32, s64, s128, s256, s512},

ac-BarringForSpecialAC BIT STRING (SIZE(5))

}

MBSFN-SubframeConfigList ::= SEQUENCE (SIZE (1..maxMBSFN-Allocations)) OF MBSFN-SubframeConfig

MBSFN-SubframeConfigList-v1430 ::= SEQUENCE (SIZE (1..maxMBSFN-Allocations)) OF MBSFN-SubframeConfig-v1430

AC-BarringPerPLMN-List-r12 ::= SEQUENCE (SIZE (1.. maxPLMN-r11)) OF AC-BarringPerPLMN-r12

AC-BarringPerPLMN-r12 ::= SEQUENCE {

plmn-IdentityIndex-r12 INTEGER (1..maxPLMN-r11),

ac-BarringInfo-r12 SEQUENCE {

ac-BarringForEmergency-r12 BOOLEAN,

ac-BarringForMO-Signalling-r12 AC-BarringConfig OPTIONAL, -- Need OP

ac-BarringForMO-Data-r12 AC-BarringConfig OPTIONAL -- Need OP

} OPTIONAL, -- Need OP

ac-BarringSkipForMMTELVoice-r12 ENUMERATED {true} OPTIONAL, -- Need OP

ac-BarringSkipForMMTELVideo-r12 ENUMERATED {true} OPTIONAL, -- Need OP

ac-BarringSkipForSMS-r12 ENUMERATED {true} OPTIONAL, -- Need OP

ac-BarringForCSFB-r12 AC-BarringConfig OPTIONAL, -- Need OP

ssac-BarringForMMTEL-Voice-r12 AC-BarringConfig OPTIONAL, -- Need OP

ssac-BarringForMMTEL-Video-r12 AC-BarringConfig OPTIONAL -- Need OP

}

ACDC-BarringForCommon-r13 ::= SEQUENCE {

acdc-HPLMNonly-r13 BOOLEAN,

barringPerACDC-CategoryList-r13 BarringPerACDC-CategoryList-r13

}

ACDC-BarringPerPLMN-List-r13 ::= SEQUENCE (SIZE (1.. maxPLMN-r11)) OF ACDC-BarringPerPLMN-r13

ACDC-BarringPerPLMN-r13 ::= SEQUENCE {

plmn-IdentityIndex-r13 INTEGER (1..maxPLMN-r11),

acdc-OnlyForHPLMN-r13 BOOLEAN,

barringPerACDC-CategoryList-r13 BarringPerACDC-CategoryList-r13

}

BarringPerACDC-CategoryList-r13 ::= SEQUENCE (SIZE (1..maxACDC-Cat-r13)) OF BarringPerACDC-Category-r13

BarringPerACDC-Category-r13 ::= SEQUENCE {

acdc-Category-r13 INTEGER (1..maxACDC-Cat-r13),

acdc-BarringConfig-r13 SEQUENCE {

ac-BarringFactor-r13 ENUMERATED {

p00, p05, p10, p15, p20, p25, p30, p40,

p50, p60, p70, p75, p80, p85, p90, p95},

ac-BarringTime-r13 ENUMERATED {s4, s8, s16, s32, s64, s128, s256, s512}

} OPTIONAL -- Need OP

}

UDT-Restricting-r13 ::= SEQUENCE {

udt-Restricting-r13 ENUMERATED {true} OPTIONAL, --Need OR

udt-RestrictingTime-r13 ENUMERATED {s4, s8, s16, s32, s64, s128, s256, s512} OPTIONAL --Need OR

}

UDT-RestrictingPerPLMN-List-r13 ::= SEQUENCE (SIZE (1..maxPLMN-r11)) OF UDT-RestrictingPerPLMN-r13

UDT-RestrictingPerPLMN-r13 ::= SEQUENCE {

plmn-IdentityIndex-r13 INTEGER (1..maxPLMN-r11),

udt-Restricting-r13 UDT-Restricting-r13 OPTIONAL --Need OR

}

CIOT-EPS-OptimisationInfo-r13 ::= SEQUENCE (SIZE (1.. maxPLMN-r11)) OF CIOT-OptimisationPLMN-r13

CIOT-OptimisationPLMN-r13::= SEQUENCE {

up-CIoT-EPS-Optimisation-r13 ENUMERATED {true} OPTIONAL, -- Need OP

cp-CIoT-EPS-Optimisation-r13 ENUMERATED {true} OPTIONAL, -- Need OP

attachWithoutPDN-Connectivity-r13 ENUMERATED {true} OPTIONAL -- Need OP

}

PLMN-InfoList-r15 ::= SEQUENCE (SIZE (1..maxPLMN-r11)) OF PLMN-Info-r15

PLMN-Info-r15 ::= SEQUENCE {

upperLayerIndication-r15 ENUMERATED {true} OPTIONAL -- Need OR

}

-- ASN1STOP

| *SystemInformationBlockType2* field descriptions |
| --- |
| ***ac-BarringFactor***  If the random number drawn by the UE is lower than this value, access is allowed. Otherwise the access is barred. The values are interpreted in the range [0,1): p00 = 0, p05 = 0.05, p10 = 0.10,…, p95 = 0.95. Values other than p00 can only be set if all bits of the corresponding *ac-BarringForSpecialAC* are set to 0. |
| ***ac-BarringForCSFB***  Access class barring for mobile originating CS fallback. |
| ***ac-BarringForEmergency***  Access class barring for AC 10. |
| ***ac-BarringForMO-Data***  Access class barring for mobile originating calls. |
| ***ac-BarringForMO-Signalling***  Access class barring formobile originating signalling. |
| ***ac-BarringForSpecialAC***  Access class barring for AC 11-15. The first/ leftmost bit is for AC 11, the second bit is for AC 12, and so on. |
| ***ac-BarringTime***  Mean access barring time value in seconds. |
| ***acdc-BarringConfig***  Barring configuration for an ACDC category. If the field is absent, access to the cell is considered as not barred for the ACDC category in accordance with clause 5.3.3.13. |
| ***acdc-Category***  Indicates the ACDC category as defined in TS 24.105 [72]. |
| ***acdc-OnlyForHPLMN***  Indicates whether ACDC is applicable for UEs not in their HPLMN for the corresponding PLMN. *TRUE* indicates that ACDC is applicable only for UEs in their HPLMN for the corresponding PLMN. *FALSE* indicates that ACDC is applicable for both UEs in their HPLMN and UEs not in their HPLMN for the corresponding PLMN. |
| ***additionalSpectrumEmission***  The UE requirements related to IE *AdditionalSpectrumEmission* are defined in TS 36.101 [42], table 6.2.4-1, for UEs neither in CE nor BL UEs and TS 36.101 [42], table 6.2.4E-1, for UEs in CE or BL UEs. NOTE 1. |
| ***attachWithoutPDN-Connectivity***  If present, the field indicates that attach without PDN connectivity as specified in TS 24.301 [35] is supported for this PLMN. |
| ***barringPerACDC-CategoryList***  A list of barring information per ACDC category according to the order defined in TS 22.011 [10]. The first entry in the list corresponds to the highest ACDC category of which applications are the least restricted in access attempts at a cell, the second entry in the list corresponds to the ACDC category of which applications are restricted more than applications of the highest ACDC category in access attempts at a cell, and so on. The last entry in the list corresponds to the lowest ACDC category of which applications are the most restricted in access attempts at a cell. |
| ***cIoT-EPS-OptimisationInfo***  A list of CIoT EPS related parameters. Value 1 indicates parameters for the PLMN listed 1st in the 1st *plmn-IdentityList* included in SIB1. Value 2 indicates parameters for the PLMN listed 2nd in the same *plmn-IdentityList,* or when no more PLMN are present within the same *plmn-IdentityList,* then the value indicates paramters for PLMN listed 1st in the subsequent *plmn-IdentityList* within the same SIB1 and so on.NOTE 1. |
| ***cp-CIoT-EPS-Optimisation***  This field indicates if the UE is allowed to establish the connection with Control plane CIoT EPS Optimisation, see TS 24.301 [35]. |
| ***cp-EDT***  This field indicates whether the UE is allowed to initiate CP-EDT when connected to EPC, see 5.3.3.1b. |
| ***cp-EDT-5GC***  This field indicates whether the UE is allowed to initiate CP-EDT when connected to 5GC, see 5.3.3.1b. |
| ***cp-PUR-5GC***  This field indicates whether CP transmission using PUR is supported in the cell when connected to 5GC, see 5.3.3.1c. |
| ***cp-PUR-EPC***  This field indicates whether CP transmission using PUR is supported in the cell when connected to EPC, see 5.3.3.1c. |
| ***dummy***  This field is not used in the specification. If received it shall be ignored by the UE. |
| ***earlySecurityReactivation***  If present, this field indicates that early security reactivation when resuming a suspended RRC connection as specified in 5.3.3.18 is supported. |
| ***idleModeMeasurements***  This field indicates that a UE that is configured for EUTRA idle/inactive measurements shall perform the measurements while camping in this cell and report availability of these measurements when establishing or resuming a connection in this cell. If absent, a UE is not required to perform EUTRA idle/inactive measurements. |
| ***idleModeMeasurementsNR***  This field indicates that a UE that is configured for NR idle/inactive measurements shall perform the measurements while camping in this cell and report availability of these measurements when establishing or resuming a connection in this cell. If absent, a UE is not required to perform NR idle/inactive measurements. | |
| ***mbms-ROM-ServiceIndication***  This field indicates whether the UE is allowed to send*MBMSInterestIndication* message for the purpose of indicating receive only mode MBMS service parameters. | |
| ***mbsfn-SubframeConfigList***  Defines the subframes that are reserved for MBSFN in downlink.  NOTE 1. If the cell is a FeMBMS/Unicast mixed cell, EUTRAN includes *mbsfn-SubframeConfigList-v1430*. If a FeMBMS/Unicast mixed cell does not use sub-frames #4 or #9 as MBSFN sub-frames, *mbsfn-SubframeConfigList-v1430* is still included and indicates all sub-frames as non-MBSFN sub-frames. |
| ***mpdcch-CQI-Reporting***  This field indicates if downlink channel quality reporting during random access procedureis allowed, see TS 36.321 [6]. Value 'fourBits' indicates 4-bit CQI reporting is allowed and value 'both' indicates both 2-bit and 4-bit reporting are allowed. |
| ***multiBandInfoList***  A list of *AdditionalSpectrumEmission* i.e. one for each additional frequency band included in *multiBandInfoList* in *SystemInformationBlockType1,* listed in the same order. If E-UTRAN includes *multiBandInfoList-v10l0* it includes the same number of entries, and listed in the same order, as in *multiBandInfoList*. |
| ***plmn-IdentityIndex***  Index of the PLMN across the *plmn-IdentityList* fields included in SIB1. Value 1 indicates the PLMN listed 1st in the 1st *plmn-IdentityList* included in SIB1. Value 2 indicates the PLMN listed 2nd in the same *plmn-IdentityList*, or when no more PLMN are present within the same *plmn-IdentityList*, then the PLMN listed 1st in the subsequent *plmn-IdentityList* within the same SIB1 and so on.NOTE 1. |
| ***plmn-InfoList***  If E-UTRAN includes this field, it includes the same number of entries, and listed in the same order as PLMNs across the plmn-IdentityList fields included in SIB1. I.e. the first entry corresponds to the first entry of the combined list that results from concatenating the entries included in the second to the original plmn-IdentityList field. |
| ***rai-ActivationEnh***  This field indicates whether UE connected to EPC is allowed to indicate 2-bit RAI in the cell as specified in TS 36.321 [6]. | |
| ***reducedCP-LatencyEnabled***  If present, reduced control plane latency is enabled. UEs supporting reduced CP latency transmit Msg3 according to timing as specified in TS 36.213 [23] when transmitting *RRCConnectionResumeRequest* in Msg3. | |
| ***rlos-Enabled***  Indicates whether access to RLOS is allowed as specified in TS 23.401 [41]. | |
| ***ssac-BarringForMMTEL-Video***  Service specific access class barring for MMTEL video originating calls. |
| ***ssac-BarringForMMTEL-Voice***  Service specific access class barring for MMTEL voice originating calls. |
| ***udt-Restricting***  Value TRUE indicates that the UE should indicate to the higher layers to restrict unattended data traffic TS 22.101 [77] irrespective of the UE being in RRC\_IDLE or RRC\_CONNECTED. The UE shall not indicate to the higher layers if the UE has one or more Access Classes, as stored on the USIM, with a value in the range 11..15, which is valid for the UE to use according to TS 22.011 [10] and TS 23.122 [11]. |
| ***udt-RestrictingTime***  If present and when the *udt-Restricting* changes from TRUE, the UE runs a timer for a period equal to rand \* *udt-RestrictingTime*, where rand is a random number drawn that is uniformly distributed in the range 0 ≤ rand < 1 value in seconds. The timer stops if *udt-Restricting* changes to TRUE. Upon timer expiry, the UE indicates to the higher layers that the restriction is alleviated. |
| ***unicastFreqHoppingInd***  This field indicates if the UE is allowed to indicate support of frequency hopping for unicast MPDCCH/PDSCH/PUSCH as described in TS 36.321 [6]. This field is included only in the BR version of SI message carrying *SystemInformationBlockType2.* |
| ***ul-Bandwidth***  Parameter: transmission bandwidth configuration, NRB, in uplink, see TS 36.101 [42], table 5.6-1. Value n6 corresponds to 6 resource blocks, n15 to 15 resource blocks and so on. If for FDD this parameter is absent, the uplink bandwidth is equal to the downlink bandwidth. For TDD this parameter is absent and it is equal to the downlink bandwidth. NOTE 1. |
| ***ul-CarrierFreq***  For FDD: If absent, the (default) value determined from the default TX-RX frequency separation defined in TS 36.101 [42], table 5.7.3-1, applies.  For TDD: This parameter is absent and it is equal to the downlink frequency. NOTE 1. |
| ***up-CIoT-EPS-Optimisation***  This field indicates if the UE is allowed to resume the connection with User plane CIoT EPS Optimisation, see TS 24.301 [35]. |
| ***up-EDT***  This field indicates whether the UE is allowed to initiate UP-EDT when connected to EPC, see 5.3.3.1b. |
| ***up-EDT-5GC***  This field indicates whether the UE is allowed to initiate UP-EDT when connected to 5GC, see 5.3.3.1b. |
| ***up-PUR-5GC***  This field indicates whether UP transmission using PUR is supported in the cell when connected to 5GC, see 5.3.3.1c. |
| ***up-PUR-EPC***  This field indicates whether UP transmission using PUR is supported in the cell when connected to EPC, see 5.3.3.1c. |
| ***upperLayerIndication***  Indication to be provided to upper layers. |
| ***useFullResumeID***  This field indicates if the UE indicates full resume ID of 40 bits in *RRCConnectionResumeRequest*. |
| ***videoServiceCauseIndication***  Indicates whether the UE is requested to use the establishment cause *mo-VoiceCall* for mobile originating MMTEL video calls. |
| ***voiceServiceCauseIndication***  Indicates whether UE is requested to use the establishment cause *mo-VoiceCall* for mobile originating MMTEL voice calls. |

| Conditional presence | Explanation |
| --- | --- |
| *ul-FreqMax* | The field is mandatory present if *ul-CarrierFreq* (i.e. without suffix) is present and set to *maxEARFCN*. Otherwise the field is not present. |

NOTE 1: E-UTRAN sets this field to the same value for all instances of SI message that are broadcasted within the same cell.

*END OF CHANGES*

START OF CHANGES

#### – *SystemInformationBlockType5*

The IE *SystemInformationBlockType5* contains information relevant only for inter-frequency cell re-selection i.e. information about other E‑UTRA frequencies and inter-frequency neighbouring cells relevant for cell re-selection. 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

]] ,

[[

measIdleConfigSIB-NR-r16 MeasIdleConfigSIB-NR-r16 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

| *SystemInformationBlockType5* field descriptions |
| --- |
| ***cellSelectionInfoCE***  Parameters included in coverage enhancement S criteria for BL UEs and UEs in CE, applicable for inter-frequency neighbour cells. If absent, coverage enhancement S criteria is not applicable. |
| ***cellSelectionInfoCE1***  Parameters included in coverage enhancement S criteria for BL UEs and UEs in CE supporting CE Mode B. E-UTRAN includes this IE only in an entry of *InterFreqCarrierFreqList-v1350* or *InterFreqCarrierFreqListExt-v1350* if *cellSelectionInfoCE* is present in the corresponding entry of *InterFreqCarrierFreqList-v1310* or *InterFreqCarrierFreqListExt-v1310* is present. | |
| ***freqBandInfo***  A list of *additionalPmax* and *additionalSpectrumEmission* values, as defined in TS 36.101 [42], table 6.2.4-1, for UEs neither in CE nor BL UEs and TS 36.101 [42], table 6.2.4E-1, for UEs in CE or BL UEs, for the frequency band represented by *dl-CarrierFreq* for which cell reselection parameters are common. If E-UTRAN includes *freqBandInfo-v10l0* it includes the same number of entries, and listed in the same order, as in *freqBandInfo-r10*. |
| ***hsdn-Indication***  Indicates whether there are deployed HSDN cells or not on the the DL carrier frequency indicated by *dl-CarrierFreq-r12*. |
| ***interFreqBlackCellList***  List of blacklisted inter-frequency neighbouring cells. |
| ***interFreqCarrierFreqList***  List of neighbouring inter-frequencies. E-UTRAN does not configure more than one entry for the same physical frequency regardless of the E-ARFCN used to indicate this. If E-UTRAN includes *interFreqCarrierFreqList-v8h0*, *interFreqCarrierFreqList-v9e0*, *InterFreqCarrierFreqList-v1250, InterFreqCarrierFreqList-v1310, InterFreqCarrierFreqList-v1350,* *InterFreqCarrierFreqList-v13a0* and/or *InterFreqCarrierFreqList-v1530*, it includes the same number of entries, and listed in the same order, as in *interFreqCarrierFreqList* (i.e. without suffix). See Annex D for more descriptions. |
| ***interFreqCarrierFreqListExt***  List of additional neighbouring inter-frequencies, i.e. extending the size of the inter-frequency carrier list using the general principles specified in 5.1.2. E-UTRAN does not configure more than one entry for the same physical frequency regardless of the E-ARFCN used to indicate this. EUTRAN may include *interFreqCarrierFreqListExt* even if *interFreqCarrierFreqList* (i.e without suffix) does not include *maxFreq* entries. If E-UTRAN includes *InterFreqCarrierFreqListExt-v1310, InterFreqCarrierFreqListExt-v1350,* *InterFreqCarrierFreqListExt-v1360* and/or *InterFreqCarrierFreqListExt-v1530,* it includes the same number of entries, and listed in the same order, as in *interFreqCarrierFreqListExt-r12.* |
| ***interFreqNeighCellList***  List of inter-frequency neighbouring cells with specific cell re-selection parameters. |
| ***interFreqNeighHSDN-CellList***  List of inter-frequency neighbouring HSDN cells as specified in TS 36.304 [4]. |
| ***measIdleConfigSIB***  Indicates E-UTRA measurement configuration to be stored and used by the UE while in RRC\_IDLE or RRC\_INACTIVE. |
| ***measIdleConfigSIB-NR***  Indicates the NR measurement configuration to be stored and used by the UE while in RRC\_IDLE or RRC\_INACTIVE. |
| ***multiBandInfoList***  Indicates the list of frequency bands in addition to the band represented by dl-CarrierFreq for which cell reselection parameters are common. E-UTRAN indicates at most *maxMultiBands* frequency bands (i.e. the total number of entries across both *multiBandInfoList* and *multiBandInfoList-v9e0* is below this limit). |
| ***multiBandInfoList-v10j0***  A list of *additionalPmax* and *additionalSpectrumEmission* values, as defined in TS 36.101 [42], table 6.2.4-1, for UEs neither in CE nor BL UEs and TS 36.101 [42], table 6.2.4E-1, for UEs in CE or BL UEs, for the frequency bands in *multiBandInfoList* (i.e. without suffix) and *multiBandInfoList-v9e0*. If E-UTRAN includes *multiBandInfoList-v10j0*, it includes the same number of entries, and listed in the same order, as in *multiBandInfoList* (i.e. without suffix). If E-UTRAN includes *multiBandInfoList-v10l0* it includes the same number of entries, and listed in the same order, as in *multiBandInfoList-v10j0.* |
| ***p-Max***  Value applicable for the neighbouring E-UTRA cells on this carrier frequency. If absent the UE applies the maximum power according to its capability as specified in TS 36.101 [42], clause 6.2.2. |
| ***q-OffsetCell***  Parameter "Qoffsets,n" in TS 36.304 [4]. |
| ***q-OffsetFreq***  Parameter "Qoffsetfrequency" in TS 36.304 [4]. |
| ***q-QualMin***  Parameter "Qqualmin" in TS 36.304 [4]. If the field is not present, the UE applies the (default) value of negative infinity for Qqualmin. NOTE 1. |
| ***q-QualMinRSRQ-OnAllSymbols***  If this field is present and supported by the UE, the UE shall, when performing RSRQ measurements, perform RSRQ measurement on all OFDM symbols in accordance with TS 36.214 [48]. NOTE 1. |
| ***q-QualMinWB***  If this field is present and supported by the UE, the UE shall, when performing RSRQ measurements, use a wider bandwidth in accordance with TS 36.133 [16]. NOTE 1. |
| ***redistributionFactorFreq***  Parameter *redistributionFactorFreq* in TS 36.304 [4]. |
| ***redistributionFactorCell***  Parameter *redistributionFactorCell* in TS 36.304 [4]. |
| ***reducedMeasPerformance***  Value *TRUE* indicates that the neighbouring inter-frequency is configured for reduced measurement performance, see TS 36.133 [16]. If the field is not included, the neighbouring inter-frequency is configured for normal measurement performance, see TS 36.133 [16]. |
| ***scptm-FreqOffset***  Parameter QoffsetSCPTM in TS 36.304 [4]. Actual value QoffsetSCPTM = field value \* 2 [dB]. If the field is not present, the UE uses infinite dBs for the SC-PTM frequency offset with cell ranking as specified in TS 36.304 [4]. |
| ***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-ReselectionEUTRA***  Parameter "TreselectionEUTRA" in TS 36.304 [4]. |
| ***t-ReselectionEUTRA-SF***  Parameter "Speed dependent ScalingFactor for TreselectionEUTRA" in TS 36.304 [4]. If the field is not present, the UE behaviour is specified in TS 36.304 [4]. |

NOTE 1: The value the UE applies for parameter "Qqualmin" in TS 36.304 [4] depends on the *q-QualMin* fields signalled by E-UTRAN and supported by the UE. In case multiple candidate options are available, the UE shall select the highest priority candidate option according to the priority order indicated by the following table (top row is highest priority).

|  |  |  |
| --- | --- | --- |
| q-QualMinRSRQ-OnAllSymbols | q-QualMinWB | Value of parameter "Qqualmin" in TS 36.304 [4] |
| Included | Included | *q-QualMinRSRQ-OnAllSymbols* – (*q-QualMin* – *q-QualMinWB*) |
| Included | Not included | *q-QualMinRSRQ-OnAllSymbols* |
| Not included | Included | *q-QualMinWB* |
| Not included | Not included | *q-QualMin* |

| Conditional presence | Explanation |
| --- | --- |
| *dl-FreqMax* | The field is mandatory present if, for the corresponding entry in *InterFreqCarrierFreqList* (i.e. without suffix), *dl-CarrierFreq* (i.e. without suffix) is set to *maxEARFCN*. Otherwise the field is not present. |
| *QrxlevminCE1* | The field is optionally present, Need OR, if *q-RxLevMinCE1-r13* is set below -140 dBm. Otherwise the field is not present. |
| *RSRQ* | The field is mandatory present if *threshServingLowQ* is present in *systemInformationBlockType3*; otherwise it is not present. |
| *RSRQ2* | The field is mandatory present for all EUTRA carriers listed in SIB5 if *q-QualMinRSRQ-OnAllSymbols* is present in SIB3; otherwise it is not present and the UE shall delete any existing value for this field. |
| *WB-RSRQ* | The field is optionally present, need OP if the measurement bandwidth indicated by *allowedMeasBandwidth* is 50 resource blocks or larger; otherwise it is not present. |

*END OF CHANGES*

START OF CHANGES

### 6.3.2 Radio resource control information elements

#### – *RLF-TimersAndConstants*

The IE *RLF-TimersAndConstants* contains UE specific timers and constants applicable for UEs in RRC\_CONNECTED.

*RLF-TimersAndConstants* information element

-- ASN1START

RLF-TimersAndConstants-r9 ::= CHOICE {

release NULL,

setup SEQUENCE {

t301-r9 ENUMERATED {

ms100, ms200, ms300, ms400, ms600, ms1000, ms1500,

ms2000},

t310-r9 ENUMERATED {

ms0, ms50, ms100, ms200, ms500, ms1000, ms2000},

n310-r9 ENUMERATED {

n1, n2, n3, n4, n6, n8, n10, n20},

t311-r9 ENUMERATED {

ms1000, ms3000, ms5000, ms10000, ms15000,

ms20000, ms30000},

n311-r9 ENUMERATED {

n1, n2, n3, n4, n5, n6, n8, n10},

...

}

}

RLF-TimersAndConstants-r13 ::= CHOICE {

release NULL,

setup SEQUENCE {

t301-v1310 ENUMERATED {

ms2500, ms3000, ms3500, ms4000, ms5000,

ms6000, ms8000, ms10000},

...,

[[ t310-v1330 ENUMERATED {ms4000, ms6000} OPTIONAL -- Need ON

]]

}

}

RLF-TimersAndConstantsSCG-r12 ::= CHOICE {

release NULL,

setup SEQUENCE {

t313-r12 ENUMERATED {

ms0, ms50, ms100, ms200, ms500, ms1000, ms2000},

n313-r12 ENUMERATED {

n1, n2, n3, n4, n6, n8, n10, n20},

n314-r12 ENUMERATED {

n1, n2, n3, n4, n5, n6, n8, n10},

...

}

}

RLF-TimersAndConstantsMCG-Failure-r16 ::= CHOICE {

release NULL,

setup SEQUENCE {

t316-r16 ENUMERATED {ms50, ms100, ms200, ms300, ms400,

ms500, ms600, ms1000, ms1500, ms2000},

...

}

}

-- ASN1STOP

| *RLF-TimersAndConstants* field descriptions |
| --- |
| ***n3xy***  Constants are described in clause 7.4. n1 corresponds with 1, n2 corresponds with 2 and so on. |
| ***t3xy***  Timers are described in clause 7.3. Value ms0 corresponds with 0 ms, ms50 corresponds with 50 ms and so on.  E-UTRAN configures *RLF-TimersAndConstants-r13* only if UE supports *ce-ModeB*. UE shall use the extended values *t3xy-v1310* and *t3xy-v1330*, if present, and ignore the values signaled by *t3xy-r9*. |

*END OF CHANGES*

*START OF CHANGES*

#### – *TDD-Config*

The IE *TDD-Config* is used to specify the TDD specific physical channel configuration.

*TDD-Config* information element

-- ASN1START

TDD-Config ::= SEQUENCE {

subframeAssignment ENUMERATED {

sa0, sa1, sa2, sa3, sa4, sa5, sa6},

specialSubframePatterns ENUMERATED {

ssp0, ssp1, ssp2, ssp3, ssp4,ssp5, ssp6, ssp7,

ssp8}

}

TDD-Config-v1130 ::= SEQUENCE {

specialSubframePatterns-v1130 ENUMERATED {ssp7,ssp9}

}

TDD-Config-v1430 ::= SEQUENCE {

specialSubframePatterns-v1430 ENUMERATED {ssp10}

}

TDD-Config-v1450 ::= SEQUENCE {

specialSubframePatterns-v1450 ENUMERATED {ssp10-CRS-LessDwPTS}

}

TDD-ConfigSL-r12 ::= SEQUENCE {

subframeAssignmentSL-r12 ENUMERATED {

none, sa0, sa1, sa2, sa3, sa4, sa5, sa6}

}

-- ASN1STOP

| *TDD-Config* field descriptions |
| --- |
| ***specialSubframePatterns***  Indicates Configuration as in TS 36.211 [21], table 4.2-1, where *ssp0* points to Configuration 0, *ssp1* to Configuration 1 etc. Value *ssp7* points to Configuration 7 for extended cyclic prefix, value *ssp9* points to Configuration 9 for normal cyclic prefix and value *ssp10* points to Configration 10 for normal cyclic prefix. Value *ssp10-CRS-LessDwPTS* corresponds to *ssp10* without CRS transmission on the 5th symbol of DwPTS. E-UTRAN signals *ssp7* only when setting *specialSubframePatterns* (without suffix i.e. the version defined in REL-8) to *ssp4*. E-UTRAN signals value *ssp9* only when setting *specialSubframePatterns* (without suffix) to *ssp5*. E-UTRAN signals value *ssp10* or *ssp10-CRS-LessDwPTS* only when setting *specialSubframePatterns* (without suffix) to *ssp0* or *ssp5*. If *specialSubframePatterns-v1130*, *specialSubframePatterns-v1430,* or *specialSubframePatterns-v1450* is present, the UE shall ignore *specialSubframePatterns* (without suffix). If *specialSubframePatterns-v1430* or *specialSubframePatterns-v1450* is present, the UE shall ignore *specialSubframePatterns-v1130.* E-UTRAN does not simultanuosly configure *TDD-Config-v1430* and *TDD-Config-v1450.* |
| ***subframeAssignment***  Indicates DL/UL subframe configuration where sa0 points to Configuration 0, sa1 to Configuration 1 etc. as specified in TS 36.211 [21], table 4.2-2. E-UTRAN configures the same value for serving cells residing on same frequency band. |
| ***subframeAssignmentSL***  Indicates UL/ DL subframe configuration where sa0 points to Configuration 0, sa1 to Configuration 1 etc. as specified in TS 36.211 [21], table 4.2-2. The value *none* means that no TDD specific physical channel configuration is applicable (i.e. the carrier on which *MasterInformationBlock-SL* is transmitted is an FDD UL carrier or the carrier on which *MasterInformationBlock-SL-V2X* is transmitted is a carrier for V2X sidelink communication). |

*END OF CHANGES*

*START OF CHANGES*

– *TDM-PatternConfig*

The IE *TDM-PatternConfig* is used to specify the UL/DL reference configuration indicating the time during which a UE configured with (NG)EN-DC or NE-DC is allowed to transmit, as specified in TS 38.101-3 [101] and TS 38.213 [88].

***TDM-PatternConfig* information element**

-- ASN1START

TDM-PatternConfig-r15 ::= CHOICE {

release NULL,

setup SEQUENCE {

subframeAssignment-r15 SubframeAssignment-r15,

harq-Offset-r15 INTEGER (0.. 9)

}

}

SubframeAssignment-r15 ::= ENUMERATED {sa0, sa1, sa2, sa3, sa4, sa5, sa6}

-- ASN1STOP

| ***TDM-PatternConfig* field descriptions** |
| --- |
| ***subframeAssignment***  Indicates DL/UL subframe configuration where sa0 points to Configuration 0, sa1 to Configuration 1 etc. as specified in TS 36.211 [21], table 4.2-2. When configured in EN-DC with LTE TDD PCell, the value range of this field is {sa2, sa4, sa5}. |
| ***harq-Offset***  Indicates a HARQ subframe offset that is applied to the subframes designated as UL in the associated subrame assignment, see TS 36.213 [23]. When configured in EN-DC with LTE TDD PCell, the network ensures it does not violate the TDD configuration in SIB1, and the value range of this field is {0,1,2,5,6}. |

START OF CHANGES

### 6.3.5 Measurement information elements

#### – *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

...

}

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. |
| ***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. |

*END OF CHANGES*

START OF CHANGES

#### – *MeasResults*

The IE *MeasResults* covers measured results for intra-frequency, inter-frequency and inter- RAT mobility.

*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

]],

[[ ul-PDCP-DelayValueResultList-r16 UL-PDCP-DelayValueResultList-r16 OPTIONAL,

measResultListNR-SL-r16 MeasResultListNR-SL-r16 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

},

...

}

MeasResultListIdle-r16 ::= SEQUENCE(SIZE (1..maxIdleMeasCarriersExt-r16)) OF MeasResultIdleListEUTRA-r15

MeasResultListIdleNR-r16 ::= SEQUENCE(SIZE (1..maxIdleMeasCarriers-r16)) OF MeasResultIdleNR-r16

MeasResultIdleNR-r16 ::= SEQUENCE {

carrierFreqNR-r16 ARFCN-ValueNR-r15,

measResultsPerCellListIdleNR-r16 SEQUENCE (SIZE (1..maxCellMeasIdle-r15)) OF MeasResultsPerCellIdleNR-r16,

...

}

MeasResultsPerCellIdleNR-r16 ::= SEQUENCE {

physCellIdNR-r16 PhysCellIdNR-r15,

measIdleResultNR-r16 SEQUENCE {

rsrpResultNR-r16 RSRP-RangeNR-r15 OPTIONAL,

rsrqResultNR-r16 RSRQ-RangeNR-r15 OPTIONAL,

resultRS-IndexList-r16 ResultsPerSSB-IndexList-r16 OPTIONAL

},

...

}

ResultsPerSSB-IndexList-r16 ::= SEQUENCE (SIZE (1..maxRS-IndexReport-r15)) OF ResultsPerSSB-IndexIdle-r16

ResultsPerSSB-IndexIdle-r16 ::= SEQUENCE {

ssb-Index-r16 RS-IndexNR-r15,

ssb-Results-r16 SEQUENCE {

ssb-RSRP-Result-r16 RSRP-RangeNR-r15 OPTIONAL,

ssb-RSRQ-Result-r16 RSRQ-RangeNR-r15 OPTIONAL

} OPTIONAL

}

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

}

MeasResultListNR-SL-r16 ::= SEQUENCE (SIZE (1..maxCBR-ReportNR-r16)) OF MeasResultCBR-NR-r16

MeasResultCBR-NR-r16 ::= SEQUENCE {

poolIdentityNR-r16 SL-ResourcePoolID-NR-r16,

cbr-ResultsNR-r16 OCTET STRING

}

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),

...

}

UL-PDCP-DelayValueResultList-r16 ::= SEQUENCE (SIZE (1..maxDRB)) OF UL-PDCP-DelayValueResult-r16

UL-PDCP-DelayValueResult-r16 ::= SEQUENCE {

drb-Id-r16 DRB-Identity,

averageDelay-r16 INTEGER (0..10000),

...

}

CGI-InfoNR-r15 ::= SEQUENCE {

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

frequencyBandList-15 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]. |
| ***averageDelay***  Indicates average delay for the packets during the reporting period, as specified in TS 38.314 [103]. Value 0 corresponds to 0 millisecond, value 1 corresponds to 0.1 millisecond, value 2 corresponds to 0.2 millisecond, and so on. |
| ***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 E-UTRA carrier frequency. Within *MeasResultIdleListEUTRA-r15*, UE only includes measurements with the same carrier frequency. |
| ***carrierFreqNR***  Indicates the NR 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*. |
| ***cbr-ResultsNR***  Container for the CBR measurement results measured on the the pool indicated by *poolIdentityNR*, this fieild includes the *sl-CBR-ResultsNR* IE as specified in TS 38.331 [82]. |
| ***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. |
| ***drb-Id***  Indicates the identity of DRB for which UL PDCP Packet Delay value is provided, according to TS 38.314 [103]. |
| ***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. |
| ***measIdleResultNR***  Idle/inactive measurement results for an NR cell (optionally including beam level measurements). |
| ***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; or  Measured result of RSSI and channel occupancy. |
| ***MeasResultCBR-NR***  List of measurement results for the transmission resource pool(s) for which CBR measurement is performed for NR sidelink communication. |
| ***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/inactive measurements. |
| ***measResultsPerCellListIdleNR***  List of idle/inactive measured results for the maximum number of reported best cells for a given NR carrier. |
| ***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. |
| ***poolIdentityNR***  The identity of the transmission resource pool which is corresponding to the *sl-TxPoolReportID* configured for the resource pools for CBR measurement and reporting for NR 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. |
| ***resultRS-IndexList***  Beam level measurement results (indexes and optionally, beam measurements). |
| ***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. |
| ***rsrpResultNR***  Measured RSRP result of an NR cell.  The *rsrpResultNR* 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. |
| ***rsrqResultNR***  Measured RSRQ result of an NR cell.  The *rsrqResultNR* 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 CHANGES*

START OF CHANGES

## 6.4 RRC multiplicity and type constraint values

### – Multiplicity and type constraint definitions

-- ASN1START

ffsValue INTEGER ::= 65536 -- Placeholder for all FFS value

hiFFS INTEGER ::= 64 -- Highest value of a range that still is FFS. To be removed.

maxAccessCat-1-r15 INTEGER ::= 63 -- Maximum number of Access Categories - 1

maxACDC-Cat-r13 INTEGER ::= 16 -- Maximum number of ACDC categories (per PLMN)

maxAvailNarrowBands-r13 INTEGER ::= 16 -- Maximum number of narrowbands

maxBandComb-r10 INTEGER ::= 128 -- Maximum number of band combinations.

maxBandComb-r11 INTEGER ::= 256 -- Maximum number of additional band combinations.

maxBandComb-r13 INTEGER ::= 384 -- Maximum number of band combinations in Rel-13

maxBands INTEGER ::= 64 -- Maximum number of bands listed in EUTRA UE caps

maxBandsNR-r15 INTEGER ::= 1024 -- Maximum number of NR bands listed in EUTRA UE caps

maxBandwidthClass-r10 INTEGER ::= 16 -- Maximum number of supported CA BW classes per band

maxBandwidthCombSet-r10 INTEGER ::= 32 -- Maximum number of bandwidth combination sets per

-- supported band combination

maxBarringInfoSet-r15 INTEGER ::= 8 -- Maximum number of UAC barring information sets

maxBT-IdReport-r15 INTEGER ::= 32 -- Maximum number of Bluetooth IDs to report

maxBT-Name-r15 INTEGER ::= 4 -- Maximum number of Bluetooth name

maxCBR-Level-r14 INTEGER ::= 16 -- Maximum number of CBR levels

maxCBR-Level-1-r14 INTEGER ::= 15

maxCBR-Report-r14 INTEGER ::= 72 -- Maximum number of CBR results in a report

maxCBR-ReportNR-r16 INTEGER ::= 72 -- Maximum number of CBR results in a report for NR

-- sidelink communication

maxCDMA-BandClass INTEGER ::= 32 -- Maximum value of the CDMA band classes

maxCE-Level-r13 INTEGER ::= 4 -- Maximum number of CE levels

maxCellBlack INTEGER ::= 16 -- Maximum number of blacklisted physical cell identity

-- ranges listed in SIB type 4 and 5

maxCellHistory-r12 INTEGER ::= 16 -- Maximum number of visited EUTRA cells reported

maxCellInfoGERAN-r9 INTEGER ::= 32 -- Maximum number of GERAN cells for which system in-

-- formation can be provided as redirection assistance

maxCellInfoUTRA-r9 INTEGER ::= 16 -- Maximum number of UTRA cells for which system

-- information can be provided as redirection

-- assistance

maxCellMeasIdle-r15 INTEGER ::= 8 -- Maximum number of neighbouring inter-frequency

-- cells per carrier measured in RRC\_IDLE and RRC\_INACTIVE

maxCombIDC-r11 INTEGER ::= 128 -- Maximum number of reported UL CA or

-- MR-DC combinations

maxCSI-IM-r11 INTEGER ::= 3 -- Maximum number of CSI-IM configurations

-- (per carrier frequency)

maxCSI-IM-r12 INTEGER ::= 4 -- Maximum number of CSI-IM configurations

-- (per carrier frequency)

minCSI-IM-r13 INTEGER ::= 5 -- Minimum number of CSI IM configurations from which

-- REL-13 extension is used

maxCSI-IM-r13 INTEGER ::= 24 -- Maximum number of CSI-IM configurations

-- (per carrier frequency)

maxCSI-IM-v1310 INTEGER ::= 20 -- Maximum number of additional CSI-IM configurations

-- (per carrier frequency)

maxCSI-Proc-r11 INTEGER ::= 4 -- Maximum number of CSI processes (per carrier

-- frequency)

maxCSI-RS-NZP-r11 INTEGER ::= 3 -- Maximum number of CSI RS resource

-- configurations using non-zero Tx power

-- (per carrier frequency)

minCSI-RS-NZP-r13 INTEGER ::= 4 -- Minimum number of CSI RS resource from which

-- REL-13 extension is used

maxCSI-RS-NZP-r13 INTEGER ::= 24 -- Maximum number of CSI RS resource

-- configurations using non-zero Tx power

-- (per carrier frequency)

maxCSI-RS-NZP-v1310 INTEGER ::= 21 -- Maximum number of additional CSI RS resource

-- configurations using non-zero Tx power

-- (per carrier frequency)

maxCSI-RS-ZP-r11 INTEGER ::= 4 -- Maximum number of CSI RS resource

-- configurations using zero Tx power(per carrier

-- frequency)

maxCQI-ProcExt-r11 INTEGER ::= 3 -- Maximum number of additional periodic CQI

-- configurations (per carrier frequency)

maxFreqUTRA-TDD-r10 INTEGER ::= 6 -- Maximum number of UTRA TDD carrier frequencies for

-- which system information can be provided as

-- redirection assistance

maxCellInter INTEGER ::= 16 -- Maximum number of neighbouring inter-frequency

-- cells listed in SIB type 5

maxCellIntra INTEGER ::= 16 -- Maximum number of neighbouring intra-frequency

-- cells listed in SIB type 4

maxCellListGERAN INTEGER ::= 3 -- Maximum number of lists of GERAN cells

maxCellMeas INTEGER ::= 32 -- Maximum number of entries in each of the

-- cell lists in a measurement object

maxCellReport INTEGER ::= 8 -- Maximum number of reported cells/CSI-RS resources

maxCellSFTD INTEGER ::= 3 -- Maximum number of cells for SFTD reporting

maxCondConfig-r16 INTEGER ::= 8 -- Maximum number of conditional configurations

maxConfigSPS-r14 INTEGER ::= 8 -- Maximum number of simultaneous SPS configurations

maxConfigSPS-r15 INTEGER ::= 6 -- Maximum number of simultaneous SPS configurations

-- configured with SPS C-RNTI

maxCSI-RS-Meas-r12 INTEGER ::= 96 -- Maximum number of entries in the CSI-RS list

-- in a measurement object

maxDRB INTEGER ::= 11 -- Maximum number of Data Radio Bearers

maxDRBExt-r15 INTEGER ::= 4 -- Maximum number of additional DRBs

maxDRB-r15 INTEGER ::= 15 -- Highest value of extended maximum number of DRBs

maxDS-Duration-r12 INTEGER ::= 5 -- Maximum number of subframes in a discovery signals

-- occasion

maxDS-ZTP-CSI-RS-r12 INTEGER ::= 5 -- Maximum number of zero transmission power CSI-RS for

-- a serving cell concerning discovery signals

maxEARFCN INTEGER ::= 65535 -- Maximum value of EUTRA carrier frequency

maxEARFCN-Plus1 INTEGER ::= 65536 -- Lowest value extended EARFCN range

maxEARFCN2 INTEGER ::= 262143 -- Highest value extended EARFCN range

maxEPDCCH-Set-r11 INTEGER ::= 2 -- Maximum number of EPDCCH sets

maxFBI INTEGER ::= 64 -- Maximum value of fequency band indicator

maxFBI-NR-r15 INTEGER ::= 1024 -- Highest value FBI range for NR.

maxFBI-Plus1 INTEGER ::= 65 -- Lowest value extended FBI range

maxFBI2 INTEGER ::= 256 -- Highest value extended FBI range

maxFeatureSets-r15 INTEGER ::= 256 -- Total number of feature sets (size of pool)

maxPerCC-FeatureSets-r15 INTEGER ::= 32 -- Total number of CC-specific feature sets

-- (size of the pool)

maxFFS INTEGER ::= 8 -- Maximum number value FFS

maxFreq INTEGER ::= 8 -- Maximum number of carrier frequencies

maxFreqIDC-r11 INTEGER ::= 32 -- Maximum number of carrier frequencies that are

-- affected by the IDC problems

maxFreqIdle-r15 INTEGER ::= 8 -- Maximum number of carrier frequencies for

-- IDLE mode measurements configured by eNB

maxFreqMBMS-r11 INTEGER ::= 5 -- Maximum number of carrier frequencies for which an

-- MBMS capable UE may indicate an interest

maxFreqNBIOT-r16 INTEGER ::= 8 -- Maximum number of NB-IoT carrier frequencies that can

-- be provided as assistance information for inter-RAT

-- cell selection

maxFreqNR-r15 INTEGER ::= 5 -- Maximum number of NR carrier frequencies for

-- which a UE may provide measurement results upon

-- NR SCG failure

maxFreqSL-NR-r16 INTEGER ::= 8 -- Maximum number of NR anchor carrier frequencies on

-- which configurations for V2X sidelink communication

-- are provided

maxFreqV2X-r14 INTEGER ::= 8 -- Maximum number of carrier frequencies for which V2X

-- sidelink communication can be configured

maxFreqV2X-1-r14 INTEGER ::= 7 -- Highest index of frequencies

maxGERAN-SI INTEGER ::= 10 -- Maximum number of GERAN SI blocks that can be

-- provided as part of NACC information

maxGNFG INTEGER ::= 16 -- Maximum number of GERAN neighbour freq groups

maxGWUS-Groups-1-r16 INTEGER ::= 31 -- Maximum number of groups minus one for each

-- probability group

maxGWUS-Resources-r16 INTEGER ::= 4 -- Maximum number of GWUS resources for each group

maxGWUS-ProbThresholds-r16 INTEGER ::= 3 -- Maximum number of paging probability thresholds

maxIdleMeasCarriers-r15 INTEGER ::= 3 -- Maximum number of neighbouring inter-

-- frequency carriers measured in RRC\_IDLE and RRC\_INACTIVE

maxIdleMeasCarriersExt-r16 INTEGER ::= 5 --Additional number of neighbouring inter-

-- frequency carriers measured in RRC\_IDLE and RRC\_INACTIVE

maxIdleMeasCarriers-r16 INTEGER ::= 8 -- Maximum number of neighbouring inter-

-- frequency/inter-RAT carriers measured in RRC\_IDLE and RRC\_INACTIVE

maxLCG-r13 INTEGER ::= 4 -- Maximum number of logical channel groups

maxLogMeasReport-r10 INTEGER ::= 520 -- Maximum number of logged measurement entries

-- that can be reported by the UE in one message

maxMBSFN-Allocations INTEGER ::= 8 -- Maximum number of MBSFN frame allocations with

-- different offset

maxMBSFN-Area INTEGER ::= 8

maxMBSFN-Area-1 INTEGER ::= 7

maxMBMS-ServiceListPerUE-r13 INTEGER ::= 15 -- Maximum number of services which the UE can

-- include in the MBMS interest indication

maxMeasId INTEGER ::= 32

maxMeasId-Plus1 INTEGER ::= 33

maxMeasId-r12 INTEGER ::= 64

maxMultiBands INTEGER ::= 8 -- Maximum number of additional frequency bands

-- that a cell belongs to

maxMultiBandsNR-r15 INTEGER ::= 32 -- Maximum number of additional NR frequency bands

-- that a cell belongs to

maxMultiBandsNR-1-r15 INTEGER ::= 31

maxNS-Pmax-r10 INTEGER ::= 8 -- Maximum number of NS and P-Max values per band

maxNAICS-Entries-r12 INTEGER ::= 8 -- Maximum number of supported NAICS combination(s)

maxNeighCell-r12 INTEGER ::= 8 -- Maximum number of neighbouring cells in NAICS

-- configuration (per carrier frequency)

maxNeighCell-SCPTM-r13 INTEGER ::= 8 -- Maximum number of SCPTM neighbour cells

maxNrofPCI-PerSMTC-r16 INTEGER ::= 64 -- Maximum number of PCIs per SMTC

maxNrofS-NSSAI-r15 INTEGER ::= 8 -- Maximum number of S-NSSAI

maxObjectId INTEGER ::= 32

maxObjectId-Plus1-r13 INTEGER ::= 33

maxObjectId-r13 INTEGER ::= 64

maxP-a-PerNeighCell-r12 INTEGER ::= 3 -- Maximum number of power offsets for a neighbour cell

-- in NAICS configuration

maxPageRec INTEGER ::= 16 --

maxPhysCellIdRange-r9 INTEGER ::= 4 -- Maximum number of physical cell identity ranges

maxPLMN-r11 INTEGER ::= 6 -- Maximum number of PLMNs

maxPLMN-1-r14 INTEGER ::= 5 -- Maximum number of PLMNs minus one

maxPLMN-r15 INTEGER ::= 8 -- Maximum number of PLMNs for RNA configuration

maxPLMN-NR-r15 INTEGER ::= 12 -- Maximum number of NR PLMNs

maxPNOffset INTEGER ::= 511 -- Maximum number of CDMA2000 PNOffsets

maxPMCH-PerMBSFN INTEGER ::= 15

maxPSSCH-TxConfig-r14 INTEGER ::= 16 -- Maximum number of PSSCH TX configurations

maxQuantSetsNR-r15 INTEGER ::= 2 -- Maximum number of NR quantity configuration sets

maxQCI-r13 INTEGER ::= 6 -- Maximum number of QCIs

maxRAT-Capabilities INTEGER ::= 8 -- Maximum number of interworking RATs (incl EUTRA)

maxRE-MapQCL-r11 INTEGER ::= 4 -- Maximum number of PDSCH RE Mapping configurations

-- (per carrier frequency)

maxReportConfigId INTEGER ::= 32

maxReservationPeriod-r14 INTEGER ::= 16 -- Maximum number of resource reservation periodicities

-- for sidelink V2X communication

maxRS-Index-r15 INTEGER ::= 64 -- Maximum number of RS indices

maxRS-Index-1-r15 INTEGER ::= 63 -- Highest value of RS index as used to identify

-- RS index in RRM reports.

maxRS-IndexCellQual-r15 INTEGER ::= 16 -- Maximum number of RS indices averaged to derive

-- cell quality for RRM.

maxRS-IndexReport-r15 INTEGER ::= 32 -- Maximum number of RS indices for RRM.

maxRSTD-Freq-r10 INTEGER ::= 3 -- Maximum number of frequency layers for RSTD

-- measurement

maxSAI-MBMS-r11 INTEGER ::= 64 -- Maximum number of MBMS service area identities

-- broadcast per carrier frequency

maxSCell-r10 INTEGER ::= 4 -- Maximum number of SCells

maxSCell-r13 INTEGER ::= 31 -- Highest value of extended number range of SCells

maxSCellGroups-r15 INTEGER ::= 4 -- Maximum number of SCell common parameter groups

maxSC-MTCH-r13 INTEGER ::= 1023 -- Maximum number of SC-MTCHs in one cell

maxSC-MTCH-BR-r14 INTEGER ::= 128 -- Maximum number of SC-MTCHs in one cell for feMTC

maxSL-CommRxPoolNFreq-r13 INTEGER ::= 32 -- Maximum number of individual sidelink communication

-- Rx resource pools on neighbouring freq

maxSL-CommRxPoolPreconf-v1310 INTEGER ::= 12 -- Maximum number of additional preconfigured

-- sidelink communication Rx resource pool entries

maxSL-TxPool-r12Plus1-r13 INTEGER ::= 5 -- First additional individual sidelink

-- Tx resource pool

maxSL-TxPool-v1310 INTEGER ::= 4 -- Maximum number of additional sidelink

-- Tx resource pool entries

maxSL-TxPool-r13 INTEGER ::= 8 -- Maximum number of individual sidelink

-- Tx resource pools

maxSL-CommTxPoolPreconf-v1310 INTEGER ::= 7 -- Maximum number of additional preconfigured

-- sidelink Tx resource pool entries

maxSL-Dest-r12 INTEGER ::= 16 -- Maximum number of sidelink destinations

maxSL-DiscCells-r13 INTEGER ::= 16 -- Maximum number of cells with similar sidelink

-- configurations

maxSL-DiscPowerClass-r12 INTEGER ::= 3 -- Maximum number of sidelink power classes

maxSL-DiscRxPoolPreconf-r13 INTEGER ::= 16 -- Maximum number of preconfigured sidelink

-- discovery Rx resource pool entries

maxSL-DiscSysInfoReportFreq-r13 INTEGER ::= 8 -- Maximum number of frequencies to include in a

-- SidelinkUEInformation for SI reporting

maxSL-DiscTxPoolPreconf-r13 INTEGER ::= 4 -- Maximum number of preconfigured sidelink

-- discovery Tx resource pool entries

maxSL-GP-r13 INTEGER ::= 8 -- Maximum number of gap patterns that can be requested

-- for a frequency or assigned

maxSL-PoolToMeasure-r14 INTEGER ::= 72 -- Maximum number of TX resource pools for CBR

-- measurement and report

maxSL-PoolToMeasureNR-r16 INTEGER ::= 8 -- Maximum number of resource pool for NR sidelink

-- measurement to measure for each measurement object

maxSL-Prio-r13 INTEGER ::= 8 -- Maximum number of entries in sidelink priority list

maxSL-RxPool-r12 INTEGER ::= 16 -- Maximum number of individual sidelink Rx resource pools

maxSL-Reliability-r15 INTEGER ::= 8 -- Maximum number of entries in sidelink reliability list

maxSL-SyncConfig-r12 INTEGER ::= 16 -- Maximum number of sidelink Sync configurations

maxSL-TF-IndexPair-r12 INTEGER ::= 64 -- Maximum number of sidelink Time Freq resource index

-- pairs

maxSL-TxPool-r12 INTEGER ::= 4 -- Maximum number of individual sidelink Tx resource pools

maxSL-V2X-RxPool-r14 INTEGER ::= 16 -- Maximum number of RX resource pools for

-- V2X sidelink communication

maxSL-V2X-RxPoolPreconf-r14 INTEGER ::= 16 -- Maximum number of RX resource pools for

-- V2X sidelink communication

maxSL-V2X-TxPool-r14 INTEGER ::= 8 -- Maximum number of TX resource pools for

-- V2X sidelink communication

maxSL-V2X-TxPoolPreconf-r14 INTEGER ::= 8 -- Maximum number of TX resource pools for

-- V2X sidelink communication

maxSL-V2X-SyncConfig-r14 INTEGER ::= 16 -- Maximum number of sidelink Sync configurations

-- for V2X sidelink communication

maxSL-V2X-CBRConfig-r14 INTEGER ::= 4 -- Maximum number of CBR range configurations

-- for V2X sidelink communication congestion

-- control

maxSL-V2X-CBRConfig-1-r14 INTEGER ::= 3

maxSL-V2X-TxConfig-r14 INTEGER ::= 64 -- Maximum number of TX parameter configurations

-- for V2X sidelink communication congestion

-- control

maxSL-V2X-TxConfig-1-r14 INTEGER ::= 63

maxSL-V2X-CBRConfig2-r14 INTEGER ::= 8 -- Maximum number of CBR range configurations in

-- pre-configuration for V2X sidelink

-- communication congestion control

maxSL-V2X-CBRConfig2-1-r14 INTEGER ::= 7

maxSL-V2X-TxConfig2-r14 INTEGER ::= 128 -- Maximum number of TX parameter

-- configurations in pre-configuration for V2X

-- sidelink communication congestion control

maxSL-V2X-TxConfig2-1-r14 INTEGER ::= 127

maxSTAG-r11 INTEGER ::= 3 -- Maximum number of STAGs

maxServCell-r10 INTEGER ::= 5 -- Maximum number of Serving cells

maxServCell-r13 INTEGER ::= 32 -- Highest value of extended number range of Serving cells

maxServCellNR-r15 INTEGER ::= 16 -- Maximum number of NR serving cells

maxServiceCount INTEGER ::= 16 -- Maximum number of MBMS services that can be included

-- in an MBMS counting request and response

maxServiceCount-1 INTEGER ::= 15

maxSessionPerPMCH INTEGER ::= 29

maxSessionPerPMCH-1 INTEGER ::= 28

maxSIB INTEGER ::= 32 -- Maximum number of SIBs

maxSIB-1 INTEGER ::= 31

maxSI-Message INTEGER ::= 32 -- Maximum number of SI messages

maxSimultaneousBands-r10 INTEGER ::= 64 -- Maximum number of simultaneously aggregated bands

maxSubframePatternIDC-r11 INTEGER ::= 8 -- Maximum number of subframe reservation patterns

-- that the UE can simultaneously recommend to the

-- E-UTRAN for use.

maxTrafficPattern-r14 INTEGER ::= 8 -- Maximum number of periodical traffic patterns

-- that the UE can simultaneously report to the

-- E-UTRAN.

maxUTRA-FDD-Carrier INTEGER ::= 16 -- Maximum number of UTRA FDD carrier frequencies

maxUTRA-TDD-Carrier INTEGER ::= 16 -- Maximum number of UTRA TDD carrier frequencies

maxWayPoint-r15 INTEGER ::= 20 -- Maximum number of flight path information waypoints

maxWLAN-Id-r12 INTEGER ::= 16 -- Maximum number of WLAN identifiers

maxWLAN-Bands-r13 INTEGER ::= 8 -- Maximum number of WLAN bands

maxWLAN-Id-r13 INTEGER ::= 32 -- Maximum number of WLAN identifiers

maxWLAN-Channels-r13 INTEGER ::= 16 -- maximum number of WLAN channels used in

-- WLAN-CarrierInfo

maxWLAN-CarrierInfo-r13 INTEGER ::= 8 -- Maximum number of WLAN Carrier Information

maxWLAN-Id-Report-r14 INTEGER ::= 32 -- Maximum number of WLAN IDs to report

maxWLAN-Name-r15 INTEGER ::= 4 -- Maximum number of WLAN name

-- ASN1STOP

NOTE: The value of maxDRB aligns with SA2.

Editor's Note: The value of maxFreqNBIOT-r16 is FFS.

*END OF CHANGES*

START OF CHANGES

# 7 Variables and constants

## 7.1 UE variables

#### – *VarMeasIdleReport*

The UE variable *VarMeasIdleReport* includes the logged measurements information.

*VarMeasIdleReport* UE variable

-- ASN1START

VarMeasIdleReport-r15 ::= SEQUENCE {

measReportIdle-r15 MeasResultListIdle-r15

}

VarMeasIdleReport-r16 ::= SEQUENCE {

measReportIdle-r16 MeasResultListIdle-r16 OPTIONAL,

measReportIdleNR-r16 MeasResultListIdleNR-r16 OPTIONAL

}

-- ASN1STOP

*END OF CHANGES*

START OF CHANGES

## 7.3 Timers

### 7.3.1 Timers (Informative)

| Timer | Start | Stop | At expiry |
| --- | --- | --- | --- |
| T300  NOTE1 | Transmission of *RRCConnectionRequest* or *RRCConnectionResumeRequest* or *RRCEarlyDataRequest* | Reception of *RRCConnectionSetup*, *RRCConnectionReject* or *RRCConnectionResume* or *RRCEarlyDataComplete* or *RRCConnectionRelease* for UP-EDT, cell re-selection and upon abortion of connection establishment by upper layers | Perform the actions as specified in 5.3.3.6 |
| T301  NOTE1 | Transmission of *RRCConnectionReestabilshmentRequest* | Reception of *RRCConnectionReestablishment* or *RRCConnectionReestablishmentReject* message as well as when the selected cell becomes unsuitable | Go to RRC\_IDLE |
| T302 | Reception of *RRCConnectionReject* while performing RRC connection establishment or reception of *RRCConnectionRelease* including *waitTime* | Upon entering RRC\_CONNECTED and upon cell re-selection, or upon reception of *RRCEarlyDataComplete* or *RRCConnectionRelease* for UP-EDT or upon reception of *RRCConnectionReject* message for E-UTRA/5GC. | Inform upper layers about barring alleviation as specified in 5.3.3.7 |
| T303 | Access barred while performing RRC connection establishment for mobile originating calls | Upon entering RRC\_CONNECTED and upon cell re-selection, or upon reception of *RRCEarlyDataComplete* or *RRCConnectionRelease* for UP-EDT | Inform upper layers about barring alleviation as specified in 5.3.3.7 |
| T304 | Reception of *RRCConnectionReconfiguration* message including the *MobilityControl Info* or  reception of *MobilityFromEUTRACommand* message including *CellChangeOrder* | Criterion for successful completion of handover within E-UTRA, handover to E-UTRA or cell change order is met (the criterion is specified in the target RAT in case of inter-RAT) | In case of cell change order from E-UTRA or intra E-UTRA handover, initiate the RRC connection re-establishment procedure; In case of handover to E-UTRA, perform the actions defined in the specifications applicable for the source RAT. |
| T305 | Access barred while performing RRC connection establishment for mobile originating signalling | Upon entering RRC\_CONNECTED and upon cell re-selection, or upon reception of *RRCEarlyDataComplete* or *RRCConnectionRelease* for UP-EDT | Inform upper layers about barring alleviation as specified in 5.3.3.7 |
| T306 | Access barred while performing RRC connection establishment for mobile originating CS fallback. | Upon entering RRC\_CONNECTED and upon cell re-selection, or upon reception of *RRCEarlyDataComplete* or *RRCConnectionRelease* for UP-EDT | Inform upper layers about barring alleviation as specified in 5.3.3.7 |
| T307 | Reception of *RRCConnectionReconfiguration* message including *MobilityControlInfoSCG* | Successful completion of random access on the PSCell, upon initiating re-establishment and upon SCG release | Initiate the SCG failure information procedure as specified in 5.6.13. |
| T308 | Access barred due to ACDC while performing RRC connection establishment subject to ACDC | Upon entering RRC\_CONNECTED and upon cell re-selection, or upon reception of *RRCEarlyDataComplete* or *RRCConnectionRelease* for UP-EDT | Inform upper layers about barring alleviation for ACDC as specified in 5.3.3.7 |
| T309  NOTE1 | When access attempt is barred at access barring check for an Access Category. The UE shall maintain one instance of this timer per Access Category. | Upon entering RRC\_CONNECTED, upon cell (re)selection, upon reception of *RRCConnectionRelease,* upon change of PCell while in RRC\_CONNECTED, or upon reception of *MobilityFromEUTRACommand*. | Perform the actions as specified in 5.3.16.4. |
| T310  NOTE1  NOTE2 | Upon detecting physical layer problems for the PCell i.e. upon receiving N310 consecutive out-of-sync indications from lower layers | Upon receiving N311 consecutive in-sync indications from lower layers for the PCell, upon triggering the handover procedure, upon initiating the connection re-establishment procedure, and upon initiating the MCG failure information procedure. | If security is not activated and the UE is not a NB-IoT UE that supports RRC connection re-establishment for the Control Plane CIoT EPS optimisation: go to RRC\_IDLE else: initiate the MCG failure information procedure as specified in 5.6.26 or the connection re-establishment procedure as specified in 5.3.7. |
| T311  NOTE1 | Upon initiating the RRC connection re-establishment procedure | Selection of a suitable E-UTRA cell or a cell using another RAT. | Enter RRC\_IDLE |
| T312  NOTE2 | Upon triggering a measurement report for a measurement identity for which T312 has been configured, while T310 is running | Upon receiving N311 consecutive in-sync indications from lower layers, upon triggering the handover procedure, upon initiating the connection re-establishment procedure, upon initiating the MCG failure information procedure, and upon the expiry of T310 | If security is not activated: go to RRC\_IDLE else: initiate the MCG failure information procedure as specified in 5.6.26 or the connection re-establishment procedure as specified in 5.3.7. |
| T313  NOTE2 | Upon detecting physical layer problems for the PSCell i.e. upon receiving N313 consecutive out-of-sync indications from lower layers | Upon receiving N314 consecutive in-sync indications from lower layers for the PSCell, upon initiating the connection re-establishment procedure, upon SCG release and upon receiving *RRCConnectionReconfiguration* including *MobilityControlInfoSCG* | Inform E-UTRAN about the SCG radio link failure by initiating the SCG failure information procedure as specified in 5.6.13. |
| T316 | Upon transmission of the *MCGFailureInformation* message | Upon receiving *RRCConnectionRelease*, *RRCConnectionReconfiguration* with *mobilityControlInfo, MobilityFromEUTRACommand*, or upon initiaitng the re-establishment procedure, | Perform the actions as specified in 5.6.26.5. |
| T320 | Upon receiving *t320* or upon cell (re)selection to E-UTRA from another RAT with validity time configured for dedicated priorities (in which case the remaining validity time is applied). | Upon entering RRC\_CONNECTED, when PLMN selection is performed on request by NAS, when the UE enters RRC\_IDLE from RRC\_INACTIVE, or upon cell (re)selection to another RAT (in which case the timer is carried on to the other RAT) , or upon reception of *RRCEarlyDataComplete* or *RRCConnectionRelease* for UP-EDT | Discard the cell reselection priority information provided by dedicated signalling. |
| T321 | Upon receiving *measConfig* including a *reportConfig* with the *purpose* set to *reportCGI* | Upon acquiring the information needed to set all fields of *cellGlobalId* for the requested cell, upon receiving *measConfig* that includes removal of the *reportConfig* with the *purpose* set to *reportCGI* and upon detecting that a cell is not broadcasting SIB1. | Initiate the measurement reporting procedure, stop performing the related measurements and remove the corresponding *measId* |
| T322  NOTE1 | Upon receiving *redirectedCarrierOffsetDedicated* included in *RedirectedCarrierInfo* | Upon entering RRC\_CONNECTED, when PLMN selection is performed on request by NAS, or upon cell (re)selection to another frequency or RAT, or upon reception of *RRCEarlyDataComplete* or *RRCConnectionRelease* for UP-EDT | Release *redirectedCarrierOffsetDedicated*. |
| T325 | Timer (re)started upon receiving *RRCConnectionReject* message with *deprioritisationTimer*. |  | Stop deprioritisation of all frequencies or E-UTRA signalled by *RRCConnectionReject.* |
| T330 | Upon receiving *LoggedMeasurementConfiguration* message | Upon log volume exceeding the suitable UE memory, upon initiating the release of *LoggedMeasurementConfiguration* procedure | Perform the actions specified in 5.6.6.4 |
| T331 | Upon receiving *RRCConnectionRelease* message including *measIdleConfig.* | Upon receiving *RRCConnectionSetup, RRCConnectionResume, RRCConnectionRelease* with an idle/inactive measurement configuration or indication to release the configuration, if *validityArea* is configured, upon cell selection/reselection to a cell that does not belong to the *validityArea* (if configured)*,* or upon reselecting to an inter-RAT cell.. | Perform the actions specified in 5.6.20.3*.* |
| T340  NOTE2 | Upon transmitting *UEAssistanceInformation* message with *powerPrefIndication* set to *normal* | Upon initiating the connection re-establishment procedure | No action. |
| T341  NOTE2 | Upon transmitting *UEAssistanceInformation* message with *bw-Preference.* | Upon resuming an RRC connection or upon initiating the connection re-establishment procedure | No action. |
| T342  NOTE2 | Upon transmitting *DelayBudgetReport* message. | Upon initiating the connection re-establishment and connection resume procedures | No action. |
| T350 | Upon entering RRC\_IDLE if *t350* has been received in wlan-OffloadInfo. | Upon entering RRC\_CONNECTED, or upon cell reselection. | Perform the actions specified in 5.6.12.4. |
| T351 | Reception of *RRCConnectionReconfiguration* message including the association*Timer* in *WLAN-MobilityConfig*. | Upon successful connection to WLAN, upon WLAN connection failure, upon leaving RRC\_CONNECTED, upon triggering the handover procedure, or upon initiating the connection re-establishment procedure. | Perform WLAN Connection Status Reporting specified in 5.6.15.2. |
| T360 | Upon performing the redistribution target selection as specified in TS 36.304 [4]. | Upon entering RRC\_CONNECTED, upon receiving a Paging message including *redistributionIndication*; upon reselecting a cell not belonging to the redistribution target. | Stop considering a frequency or cell to be redistribution target, and perform the redistribution target selection if the condition specified in TS 36.304 [4] is met. |
| T370 | Upon receiving *SL-DiscConfig* including a *discSysInfoToReportConfig* set to *setup.* | Upon initiating the transmission of *SidelinkUEInformation* including *discSysInfoReportFreqList*, upon receiving *SL-DiscConfig* including *discSysInfoToReportConfig* set to *release*, upon handover and re-establishment*.* | Release *discSysInfoToReportConfig*. |
| T314  NOTE2 | Upon early detecting physical layer problems for the PCell i.e. upon receiving N310 consecutive "early-out-of-sync" indications from lower layers. | Upon receiving N311 consecutive in-sync indications from lower layers for the PCell, upon triggering the handover procedure and upon initiating the connection re-establishment procedure | Initiate the UE Assistance Information procedure to report early detection of physical layer problems in accordance with 5.6.10. |
| T315  NOTE2 | Upon detecting physical layer improvements of the PCell i.e. upon receiving N311 consecutive "early-in-sync" indications from lower layers. | Upon receiving N310 consecutive "early-out-of-sync" indications from lower layers for the PCell. | Initiate the UE Assistance Information procedure to report detection of physical layer improvements in accordance with 5.6.10. |
| T343  NOTE2 | Upon transmitting *UEAssistanceInformation* message with *RLM-Report* including *earlyOutOfSync*. | Upon initiating the connection re-establishment procedure | No action. |
| T344  NOTE2 | Upon transmitting *UEAssistanceInformation* message with *RLM-Report* including *earlyInSync*. | Upon initiating the connection re-establishment procedure | No action. |
| T345 | Upon transmitting *UEAssistanceInformation* message with *overheatingAssistance* | Upon initiating the connection re-establishment procedure | No action. |
| T380 | Upon reception of *periodic-RNAU-timer* in RRCConnectionRelease. | Upon reception of *RRCConnectionResume*, *RRCConnectionRelease* or *RRCConnectionSetup*. | Initiate the RAN notification area update procedure |
| NOTE1: Only the timers marked with "NOTE1" are applicable to NB-IoT.  NOTE2: The behaviour as specified in 7.3.2 applies. | | | |

*END OF CHANGES*