**3GPP TSG-RAN WG2 Meeting #119-e *R2-220xxxx***

**Online, 17 - 29 August 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **36.331** | **CR** | **4867** | **rev** | **3** | **Current version:** | **17.1.0** |  |
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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 | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** | Corrections for further MR-DC enhancements | | | | | | | | | |
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| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | RAN2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_NR\_DC\_enh2-Core, TEI7 | | | | |  | ***Date:*** | | | 2022-08-28 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | 1) In 5.3.3.4a: the resume procedure is handling *scg-State* but it is calling 5.3.5.3 in TS 38.331 to process the SN message, so 5.3.5.3 already handles *scg-State*  2) In 5.3.3.4a: the resume procedure indicates to resume SRB3 and all DRBs. If there is a deactivated SCG, it should not be misunderstood that SRB3 or SCG DRBs can be used (as it already captured for "resume SCG transmission")  3) In 5.6.10.2: the case of uplink data to transfer for a DRB without any MCG RLC bearer while the SCG is deactivated is not captured for initiation of the UE assistance information procedure.  4) In 6.3.2: in the *RRCConnectionReconfiguration* message, it is allowed to include the *scg-State* when the message is used for MCG link recovery via SRB3. However, the corresponding processing is only in place for the case when the SN message is absent, otherwise this will not work.  5) In 6.3.4: the field description of *condReconfigurationToApply* captures information on *scg-State* that is already in the field description of *scg-State*  6) In 5.5.3.1: the UE always performs conditional measurements for CHO, CPA and MN-initiated CPC whether or not they actually correspond to a conditional reconfiguration.  7) In 6.3.5, for CPA and MN-initiated CPC (i.e. based on MN-configured measurements), *ReportConfigInterRAT* contains mandatory fields that are irrelevant, so it is unclear what the UE shall do upon receiving them. | | | | | | | | |
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| ***Summary of change:*** | | 1) In 5.3.3.4a: remove handling of *scg-State* from the resume procedure  2) In 5.3.3.4a: add a note about resume of SRB3 and all DRBs  3) In 5.6.10.2: add a sentence for initiation of UE assistance information for uplink data to transfer for a DRB without any MCG RLC bearer while the SCG is deactivated  4) In 6.3.2: in the *RRCConnectionReconfiguration* message, add " if the message is contained in the dl-DCCH-MessageEUTRA in the NR DLInformationTransferMRDC message" for the cases where it must be absent.  5) In 6.3.4: remove statement on *scg-State* from the field description of *condReconfigurationToApply*  6) In 5.5.3.1: for conditional NR measurements, the UE is only required to perform conditional measurements if there is a conditional reconfiguration for CHO, CPA or MN-initiated CPC using it in its execution condition.  7) In 6.3.5: capture that the UE shall ignore the irrelevant mandatory fields when *condReconfigurationTriggerNR* is configured in *ReportConfigInterRAT*  **Impact analysis**  Impacted 5G architecture options:  (NG)EN-DC  Impacted functionality:  SCG activation/deactivation (1 to 4), CPA / inter-SN CPC (6, 7)  Inter-operability:  For 1) to 5) and 7): if the UE implements the CR but not the network, or vice-versa, there is no inter-operability issue.  For 6): if the UE implements the CE but not the network, there is no issue. If the network implements the CR but not the UE, the network may omit to delete conditional measurements when it releases CHO, CPA or MN-initiated CPC configurations, which can lead to unexpected UE behaviour.  **This CR is mandatory for UEs supporting CHO, CPA or MN-initiated CPC.**  only removes duplicate actions, that will not effectively change UE behaviour so there is no inter-operability issue. | | | | | | | | |
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| ***Consequences if not approved:*** | | For 1) to 5), redundant actions and inconsistent descriptions of SCG activation/deactivation and CPCremain in the specification.  For 6) is there any scenario with a problem?  For 7), the UE may take unexpected actions when configured with measurements for CPA or MN-initiated inter-SN CPC. | | | | | | | | |
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| ***Clauses affected:*** | | 5.3.3.4a, 5.3.5.4, 5.5.3.1, 5.6.10.2, 6.2.2, 6.3.4, 6.3.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 38.331 CR 3459 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

#### 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*;

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

3> instruct the associated MAC entity to start *timeAlignmentTimer*;

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;

4> release *tdm-PatternConfig* or *tdm-PatternConfig2*, if configured;

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 if resuming an RRC connection from RRC\_INACTIVE:

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 Inactive 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;

4> release *tdm-PatternConfig* or *tdm-PatternConfig2*, if configured;

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*;

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

3> restore the physical layer configuration, the MAC configuration, the RLC configuration and the PDCP configuration from the stored UE AS context;

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

1> perform the radio resource configuration procedure in accordance with the received *radioResourceConfigDedicated* and as specified in 5.3.10.0;

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;

NOTE: If the NR SCG is deactivated, resuming SRB3 and all DRBs does not imply that PDCP or RRC PDUs can be transmitted or received on SCG RLC bearers.

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

1> if stored, discard the *altFreqPriorities* provided by the *RRCConnectionRelease*;

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> stop timer T323, 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;

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*;

5> if Bluetooth measurement results are included in the logged measurements the UE has available:

6> include *logMeasAvailableBT*;

5> if WLAN measurement results are included in the logged measurements the UE has available:

6> 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> set the *measResultListIdle-r16* in the *RRCConnectionResumeComplete* message to the value of *measReportIdle-r15* in the *VarMeasIdleReport*;

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

5> 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*;

2> if the UE is connected to NTN:

3> include *gnss-validityDuration* in accordance with the remaining time of the GNSS validity duration;

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> for NB-IoT:

2> if the UE supports connected mode measurements and *connMeasConfig* is present in *SystemInformationBlockType3-NB*:

3> perform measurements as specified in 5.5.8.

1> the procedure ends.

#### 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 the UE is in (NG)EN-DC and;

1> if the *RRCConnectionReconfiguration* does not include the *nr-SecondaryCellGroupConfig*:

2> if the *RRCConnectionReconfiguration* includes the *scg-State*:

3> perform SCG deactivation as specified in TS 38.331 [82], clause 5.3.5.13b;

2> else:

3> perform SCG activation without SN message as specified in TS 38.331 [82], clause 5.3.5.13b1;

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

2> stop timer T310, if running;

2> if timer T316 is running:

3> stop timer T316;

3> clear the information included in *VarRLF-Report*, if any;

2> resume MCG transmission, if suspended;

1> stop timer T312, if running;

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 the RLC entity or entities and the associated DTCH logical channel for the target PCell, with the same configurations as for the source PCell;

3> reconfigure the PDCP entity to configure DAPS 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;

2> suspend the SRBs for the source PCell;

NOTE 1c: In order to understand if a *daps-HO* is configured, the UE needs to check the presence of the field *daps-HO* within the received *RadioResourceConfigDedicated* IE.

NOTE 1d: In DAPS handover, the UE may re-establish PDCP and RLC entity for a DRB not configured with *daps-HO* when MAC successfully completes the random access procedure. In this case, the UE suspends data transmission and reception for all DRBs not configured with *daps-HO* in the source PCell for the duration of the DAPS handover.

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> if UE supports timing advance reporting and the received *radioResourceConfigCommon* includes the *ta-Report*:

2> instruct the associated MAC entity to trigger Timing Advance reporting;

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 5.3.10.0;

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; or

3> if capable of user plane integrity protection:

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; or

3> if capable of user plane integrity protection:

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 5.3.5.9.5).

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

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*;

3> if Bluetooth measurement results are included in the logged measurements the UE has available:

4> include *logMeasAvailableBT*;

3> if WLAN measurement results are included in the logged measurements the UE has available:

4> 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;

2> if the UE is connected to NTN:

3> include *gnss-validityDuration* in accordance with the remaining time of the GNSS validity duration;

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 for the source PCell, if running;

3> for each DAPS bearer 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 initiated the transmission of an *InDeviceCoexIndication* message during the last 1 second preceding reception of the *RRCConnectionReconfiguration* message including *mobilityControlInfo*; or

3> if the *RRCConnectionReconfiguration* message is applied due to a conditional reconfiguration execution and the UE has initiated transmission of an *InDeviceCoexIndication* message since it was configured to do so in accordance with 5.6.9.2:

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 initiated the transmission of a *UEAssistanceInformation* message during the last 1 second preceding reception of the *RRCConnectionReconfiguration* message including *mobilityControlInfo*; or

3> if the *RRCConnectionReconfiguration* message is applied due to a conditional reconfiguration execution, and the UE has initiated transmission of a *UEAssistanceInformation* message for the corresponding cell group since it was configured to do so in accordance with 5.6.10.2:

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 initiated the transmission of a *MBMSInterestIndication* message during the last 1 second preceding reception of the *RRCConnectionReconfiguration* message including *mobilityControlInfo*; or

3> if the *RRCConnectionReconfiguration* message is applied due to a conditional reconfiguration execution and the UE supports MBMS reception and the UE has initiated transmission of an *MBMSInterestIndication* message since it was configured to do so in accordance with 5.8.5.2:

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 initiated the transmission of 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 initiated the transmission of 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 initiated the transmission of 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*; or

2> if the *RRCConnectionReconfiguration* message is applied due to a conditional reconfiguration execution, and at least one of *SystemInformationBlockType18*, *SystemInformationBlockType19*, and *SystemInformationBlockType21* is broadcast by the target PCell, and the UE has initiated transmission of a *SidelinkUEInformation* message since it was configured to do so in accordance with 5.10.2.2:

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

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

2> if the *RRCConnectionReconfiguration* message is applied due to a conditional reconfiguration execution:

3> perform VarConditionalReconfig removal as specified in TS 38.331 [82], clause 5.3.5.13.x;

2> for each *measId*, if the associated *reportConfig* is *condReconfigurationTriggerEUTRA*:

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*.

### 5.5.3 Performing measurements

#### 5.5.3.1 General

For all measurements, except for UE Rx–Tx time difference measurements, RSSI, UL PDCP Packet Delay per QCI measurement, UL PDCP Packet Delay Value per DRB measurement, channel occupancy measurements, CBR measurement, sensing measurement and except for WLAN measurements of Band, Carrier Info, Available Admission Capacity, Backhaul Bandwidth, Channel Utilization, and Station Count, the UE applies the layer 3 filtering as specified in 5.5.3.2, before using the measured results for evaluation of reporting criteria, for measurement reporting or for evaluation of fulfilment of the criteria to trigger conditional reconfiguration execution. When performing measurements on NR carriers, the UE derives the cell quality as specified in 5.5.3.3 and the beam quality as specified in 5.5.3.4.

The UE shall:

1> whenever the UE has a *measConfig*, perform RSRP and RSRQ measurements for each serving cell as follows:

2> for the PCell, apply the time domain measurement resource restriction in accordance with *measSubframePatternPCell,* if configured;

2> if the UE supports CRS based discovery signals measurement:

3> for each SCell in deactivated state, apply the discovery signals measurement timing configuration in accordance with *measDS-Config*, if configured within the *measObject* corresponding to the frequency of the SCell;

1> if the UE has a *measConfig* with *rs-sinr-Config* configured, perform RS-SINR (as indicated in the associated *reportConfig*) measurements as follows:

2> perform the corresponding measurements on the frequency indicated in the associated *measObject* using available idle periods or using autonomous gaps as necessary;

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *purpose* for the associated *reportConfig* is set to *reportCGI*:

3> if the RAT indicated in the associated *measObject* is not NR:

4> if *si-RequestForHO* is configured for the associated *reportConfig*:

5> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using autonomous gaps as necessary;

4> else:

5> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using available idle periods or using autonomous gaps as necessary;

3> else:

4> if *useAutonomousGapsNR* is configured for the associated *reportConfig*:

5> perform the corresponding measurements on the NR frequency indicated in the associated *measObject* using autonomous gaps as necessary;

4> else:

5> perform the corresponding measurements on the NR frequency indicated in the associated *measObject* using available idle periods;

NOTE 1: If autonomous gaps are used to perform measurements, the UE is allowed to temporarily abort communication with all serving cell(s), i.e. create autonomous gaps to perform the corresponding measurements within the limits specified in TS 36.133 [16]. Otherwise, the UE only supports the measurements with the purpose set to *reportCGI* only if E-UTRAN has provided sufficient idle periods.

3> try to acquire the global cell identity of the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* by acquiring the relevant system information from the concerned cell;

3> if an entry in the *cellAccessRelatedInfoList* includes the selected PLMN, acquire the relevant system information from the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is an E-UTRAN cell:

4> try to acquire the CSG identity, if the CSG identity is broadcast in the concerned cell;

4> try to acquire the *trackingAreaCode* in the concerned cell;

4> try to acquire the list of additional PLMN Identities, as included in the *plmn-IdentityList*, if multiple PLMN identities are broadcast in the concerned cell;

4> if *cellAccessRelatedInfoList* is included, use *trackingAreaCode* and *plmn-IdentityList* from the entry of *cellAccessRelatedInfoList* containing the selected PLMN;

4> if the *includeMultiBandInfo* is configured:

5> try to acquire the *freqBandIndicator* in the *SystemInformationBlockType1*of the concerned cell;

5> try to acquire the list of additional frequency band indicators, as included in the *multiBandInfoList*, if multiple frequency band indicators are included in the *SystemInformationBlockType1*of the concerned cell;

5> try to acquire the *freqBandIndicatorPriority*, if the *freqBandIndicatorPriority* is included in the *SystemInformationBlockType1*of the concerned cell;

4> if *cellAccessRelatedInfoList-5GC* is broadcast in the concerned cell and the UE is E-UTRA/5GC capable:

5> try to acquire the *cellAccessRelatedInfoList-5GC*;

NOTE 2: The 'primary' PLMN is part of the global cell identity.

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a UTRAN cell:

4> try to acquire the LAC, the RAC and the list of additional PLMN Identities, if multiple PLMN identities are broadcast in the concerned cell;

4> try to acquire the CSG identity, if the CSG identity is broadcast in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a GERAN cell:

4> try to acquire the RAC in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a CDMA2000 cell and the *cdma2000-Type* included in the *measObject* is *typeHRPD*:

4> try to acquire the Sector ID in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a CDMA2000 cell and the *cdma2000-Type* included in the *measObject* is *type1XRTT*:

4> try to acquire the BASE ID, SID and NID in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *MeasObject* is an NR cell:

4> if the indicated cell is broadcasting *SIB1* (see TS 38.213 [88], clause 13):

5> try to acquire the plmn-IdentityInfoList including plmn-IdentityList, trackingAreaCode (if available), ran-AreaCode (if available) and cellIdentity for each entry of the plmn-IdentityInfoList;

5> try to acquire the frequencyBandList, if multiple frequency bands are broadcasted in the concerned cell;

2> if the *ul-DelayConfig* is configured for the associated *reportConfig*:

3> ignore the *measObject*;

3> configure the PDCP layer to perform UL PDCP Packet Delay per QCI measurement;

2> if the *ul-DelayValueConfig* is configured for the associated *reportConfig*:

3> ignore the *measObject*;

3> configure the PDCP layer to perform UL PDCP Packet Delay value per DRB measurement;

2> if the *condReconfigurationTriggerEUTRA* is configured for the associated *reportConfig* and the *measId* is not indicated in the *triggerCondition* of any entry in the *condReconfigurationList* in the *VarConditionalReconfiguration*:

3> ignore the *measId*;

2> if the *condReconfigurationTriggerNR* is configured for the associated *reportConfig* and the *measId* is not indicated in the *triggerConditionSN* of any entry in the *condReconfigurationList* in the *VarConditionalReconfiguration*:

3> ignore the *measId*;

2> else:

3> if a measurement gap configuration is setup; or

3> if the UE does not require measurement gaps to perform the concerned measurements:

4> if *s-Measure* is not configured; or

4> if the UE is not in NE-DC and the PCell RSRP, after layer 3 filtering, is lower than *s-Measure*; or

4> if the UE is in NE-DC and the PSCell RSRP, after layer 3 filtering, is lower than *s-Measure*; or

4> if the associated *measObject* concerns NR; or

4> if *measDS-Config* is configured in the associated *measObject*:

5> if the UE supports CSI-RS based discovery signals measurement; and

5> if the *eventId* in the associated *reportConfig* is set to *eventC1* or *eventC2*, or if *reportStrongestCSI-RSs* is set to *true* in the associated *reportConfig*:

6> perform the corresponding measurements of CSI-RS resources on the frequency indicated in the concerned *measObject*, applying the discovery signals measurement timing configuration in accordance with *measDS-Config* in the concerned *measObject*;

6> if *reportCRS-Meas* is set to *true* in the associated *reportConfig,* perform the corresponding measurements of neighbouring cells on the frequencies indicated in the concerned *measObject* as follows:

7> for neighbouring cells on the primary frequency, apply the time domain measurement resource restriction in accordance with *measSubframePatternConfigNeigh,* if configured in the concerned *measObject*;

7> apply the discovery signals measurement timing configuration in accordance with *measDS-Config* in the concerned *measObject*;

5> else:

6> perform the corresponding measurements of neighbouring cells on the frequencies and RATs indicated in the concerned *measObject* as follows:

7> for neighbouring cells on the primary frequency, apply the time domain measurement resource restriction in accordance with *measSubframePatternConfigNeigh,* if configured in the concerned *measObject*;

7> if the UE supports CRS based discovery signals measurement, apply the discovery signals measurement timing configuration in accordance with *measDS-Config*, if configured in the concerned *measObject*;

4> if the *ue-RxTxTimeDiffPeriodical* is configured in the associated *reportConfig*:

5> perform the UE Rx–Tx time difference measurements on the PCell;

4> if the *reportSSTD-Meas* is set to *true* or *pSCell* in the associated *reportConfig*:

5> perform SSTD measurements between the PCell and the PSCell;

4> if the *reportSFTD-Meas* is set to *pSCell* in the associated *reportConfig*:

5> perform SFTD measurements between the PCell and the NR PSCell;

4> if the *reportSFTD-Meas* is set to *neighborCells* in the associated *reportConfig*:

5> perform SFTD measurements between the PCell and NR cell(s) on the frequency indicated in the associated *measObject*;

4> if the *measRSSI-ReportConfig* is configured in the associated *reportConfig*:

5> perform the RSSI and channel occupancy measurements on the frequency indicated in the associated *measObject*;

2> perform the evaluation of reporting criteria as specified in 5.5.4, except if *reportConfig* is *condReconfigurationTriggerEUTRA* or *condReconfigurationTriggerNR*;

NOTE 2c: The evaluation of conditional reconfiguration execution criteria is specified in 5.3.5.9.4.

The UE capable of CBR measurement when configured to transmit non-P2X related V2X sidelink communication shall:

1> if in coverage on the frequency used for V2X sidelink communication transmission as defined in TS 36.304 [4], clause 11.4; or

1> if the concerned frequency is included in *v2x-InterFreqInfoList* in *RRCConnectionReconfiguration* or in *v2x-InterFreqInfoList* within *SystemInformationBlockType21* or *SystemInformationBlockType26*:

2> if the UE is in RRC\_IDLE:

3> if the concerned frequency is the camped frequency:

4> perform CBR measurement on the pools in *v2x-CommTxPoolNormalCommon* and *v2x-CommTxPoolExceptional* if included in *SystemInformationBlockType21*;

3> else if *v2x-CommTxPoolNormal* or *v2x-CommTxPoolExceptional* is included in *v2x-InterFreqInfoList* forthe concerned frequency within *SystemInformationBlockType21* or *SystemInformationBlockType26*:

4> perform CBR measurement on pools in *v2x-CommTxPoolNormal* and *v2x-CommTxPoolExceptional* in *v2x-InterFreqInfoList* for the concerned frequency in *SystemInformationBlockType21* or *SystemInformationBlockType26*;

3> else if the concerned frequency broadcasts *SystemInformationBlockType21*:

4> perform CBR measurement on pools in *v2x-CommTxPoolNormalCommon* and *v2x-CommTxPoolExceptional* if included in *SystemInformationBlockType21* broadcast on the concerned frequency;

2> if the UE is in RRC\_CONNECTED:

3> if *tx-ResourcePoolToAddList* is included in *VarMeasConfig*:

4> perform CBR measurements on each resource pool indicated in *tx-ResourcePoolToAddList*;

3> if the concerned frequency is the PCell's frequency:

4> perform CBR measurement on the pools in *v2x-CommTxPoolNormalDedicated* or *v2x-SchedulingPool* if included in *RRCConnectionReconfiguration*, *v2x-CommTxPoolExceptional* if included in *SystemInformationBlockType21* for the concerned frequency and *v2x-CommTxPoolExceptional* if included in *mobilityControlInfoV2X*;

3> else if *v2x-CommTxPoolNormal*, *v2x-SchedulingPool* or *v2x-CommTxPoolExceptional* is included in *v2x-InterFreqInfoList* forthe concerned frequency within *RRCConnectionReconfiguration*:

4> perform CBR measurement on pools in *v2x-CommTxPoolNormal, v2x-SchedulingPool,* and *v2x-CommTxPoolExceptional* if included in *v2x-InterFreqInfoList* for the concerned frequency in *RRCConnectionReconfiguration*;

3> else if the concerned frequency broadcasts *SystemInformationBlockType21*:

4> perform CBR measurement on pools in *v2x-CommTxPoolNormalCommon* and *v2x-CommTxPoolExceptional* if included in *SystemInformationBlockType21* for the concerned frequency;

1> else:

2> perform CBR measurement on pools in *v2x-CommTxPoolList* in *SL-V2X-Preconfiguration* for the concerned frequency;

The UE capable of sensing measurement, with *commTxResources* set to *scheduled*, shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if *measSensing-Config* is configured in the associated *measObject*

3> perform the sensing measurement in accordance with TS 36.213 [23] on the pools of *v2x-SchedulingPool* and also indicated in *tx-ResourcePoolToAddList* in the associated *measObject*, using *sensingSubchannelNumber*, *sensingPeriodicity*, *sensingReselectionCounter* and *sensingPriority*.

If a UE that is configured by upper layers to transmit NR sidelink communication is configured by EUTRA with transmission resource pool(s) in *SystemInformationBlockType28* or by *sl-ConfigDedicatedForNR* and the measurements concerning NR sidelink communication (i.e. by *sl-ConfigDedicatedForNR*), it shall perform CBR measurement as specified in clause 5.5.3 of TS 38.331 [82], based on the transmission resource pool(s) in *SystemInformationBlockType28* or *sl-ConfigDedicatedForNR*.

NOTE 2a: *SIB12* specified in clause 5.5.3 of TS 38.331 is provided in *SystemInformationBlockType28*.

NOTE 2b: For NR sidelink communication, each of the CBR measurement results is associated with a resource pool, as indicated by the *sl-poolReportIdentity* (see TS 38.331 [82]), that refers to a pool as included in *sl-ConfigDedicatedForNR* or *SystemInformationBlockType28*.

NOTE 3: The *s-Measure* defines when the UE is required to perform measurements. The UE is however allowed to perform measurements also when the PCell RSRP (or PSCell RSRP, if the UE is in NE-DC) exceeds *s-Measure*, e.g., to measure cells broadcasting a CSG identity following use of the autonomous search function as defined in TS 36.304 [4].

NOTE 4: The UE may not perform the WLAN measurements it is configured with e.g. due to connection to another WLAN based on user preferences as specified in TS 23.402 [75] or due to turning off WLAN.

NOTE 5: In case the configurations for V2X sidelink communication are acquired from NR, the configurations for V2X sidelink communication in *SystemInformationBlockType21,* *SystemInformationBlockType26, SL-V2X-ConfigDedicated* within *RRCConnectionReconfiguration* used in this clause can be provided by *SIB13*, *SIB14,* *sl-ConfigDedicatedEUTRA* within *RRCReconfiguration* as specified in TS 38.331 [82], respectively.

### 5.6.10 UE Assistance Information

#### 5.6.10.2 Initiation

A UE capable of providing power preference indications in RRC\_CONNECTED may initiate the procedure in several cases including upon being configured to provide power preference indications and upon change of power preference.

A UE capable of providing SPS assistance information in RRC\_CONNECTED may initiate the procedure in several cases including upon being configured to provide SPS assistance information and upon change of SPS assistance information.

A UE capable of providing delay budget report in RRC\_CONNECTED may initiate the procedure in several cases, including upon being configured to provide delay budget report and upon change of delay budget preference.

A UE capable of CE mode and providing maximum PDSCH/PUSCH bandwidth preference in RRC\_CONNECTED may initiate the procedure upon being configured to provide maximum PDSCH/PUSCH bandwidth preference and/or upon change of maximum PDSCH/PUSCH bandwidth preference.

A UE capable of providing overheating assistance information in RRC\_CONNECTED may initiate the procedure if it was configured to do so, upon detecting internal overheating, or upon detecting that it is no longer experiencing an overheating condition.

A UE supporting NR SCG deactivation may intiate the procedure in several cases including upon being configured to provide its preference for NR SCG deactivation and upon change of its preference for NR SCG deactivation.

A UE in EN-DC that has uplink data to transmit for a DRB for which there is no MCG RLC bearer while the SCG is deactivated shall initiate the procedure.

Upon initiating the procedure, the UE shall:

1> if configured to provide power preference indications:

2> if the UE did not transmit a *UEAssistanceInformation* message with *powerPrefIndication* since it was configured to provide power preference indications; or

2> if the current power preference is different from the one indicated in the last transmission of the *UEAssistanceInformation* message and timer T340 is not running:

3> start or restart timer T340 with the timer value set to the *powerPrefIndicationTimer*, if the UE does not prefer a configuration primarily optimised for power saving;

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

1> if configured to provide maximum PDSCH/PUSCH bandwidth preference:

2> if the UE did not transmit a *UEAssistanceInformation* message with *bw-Preference* since it was configured to provide maximum PDSCH/PUSCH bandwidth preference; or

2> if the current maximum PDSCH/PUSCH bandwidth preference is different from the one indicated in the last transmission of the *UEAssistanceInformation* message and timer T341 is not running;

3> start timer T341 with the timer value set to the *bw-PreferenceIndicationTimer*;

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

1> if configured to provide SPS assistance information:

2> if the UE did not transmit a *UEAssistanceInformation* message with *sps-AssistanceInformation* since it was configured to provide SPS assistance information; or

2> if the current SPS assistance information is different from the one indicated in the last transmission of the *UEAssistanceInformation* message:

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

1> if configured to report RLM events:

2> if "early-out-of-sync" event has been detected (T314 has expired) and T343 is not running:

3> start timer T343 with the timer value set to the *rlmReportTimer*:

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

2> if "early-in-sync" event has been detected (T315 has expired) and T344 is not running:

3> start timer T344 with the timer value set to the *rlmReportTimer*:

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

1> if configured to provide delay budget report:

2> if the UE did not transmit a *UEAssistanceInformation* message with *delayBudgetReport* since it was configured to provide delay budget report; or

2> if the current delay budget is different from the one indicated in the last transmission of the *UEAssistanceInformation* message and timer T342 is not running:

3> start or restart timer T342 with the timer value set to the *delayBudgetReportingProhibitTimer*;

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

1> if configured to provide overheating assistance information:

2> if the overheating condition has been detected and T345 is not running; or

2> if the current overheating assistance information is different from the one indicated in the last transmission of the *UEAssistanceInformation* message and timer T345 is not running:

3> start timer T345 with the timer value set to the *overheatingIndicationProhibitTimer*;

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

NOTE: In case overheating assistance for NR SCG is released while the regular overheating assistance remains configured, a UE that included SCG overheating parameters in the last reported overheating assistance considers overheating assistance information to be different regardless whether or not its preferences for the regular overheating assistance changed.

1> if configured to provide its preference for NR SCG deactivation:

2> if the UE did not transmit a *UEAssistanceInformation* message with *scg-DeactivationPreference* since it was configured to provide its preference for NR SCG deactivation and the UE prefers the NR SCG to be deactivated; or

2> if the UE preference for NR SCG deactivation is different from the one indicated in the last transmission of the *UEAssistanceInformation* message and timer T346 is not running:

3> start or restart timer T346 with the timer value set to the *scg-DeactivationPreferenceProhibitTimer*;

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

1> if the UE is configured with a deactivated NR SCG and there are uplink data to send on a DRB for which *rlc-Config* is not configured in *drb-ToAddModList*; and

1> if the UE previously did not have any uplink data to send for any SCG RLC entity:

2> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.6.10.3.

### 6.2.2 Message definitions

#### – *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, conditional PSCell addition or inter-SN conditional PSCell change), 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-v1610-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1610-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-ConfigDedicatedForNR-r16 OCTET STRING OPTIONAL, -- Need OR

sl-SSB-PriorityEUTRA-r16 INTEGER (1..8) OPTIONAL, -- Need OR

nonCriticalExtension RRCConnectionReconfiguration-v1700-IEs OPTIONAL

}

RRCConnectionReconfiguration-v1700-IEs ::= SEQUENCE {

systemInformationBlockType31Dedicated-r17 OCTET STRING (CONTAINING SystemInformationBlockType31-r17) OPTIONAL, -- Cond NTN

scg-State-r17 ENUMERATED{deactivated} OPTIONAL, -- Need OP

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

SCellToAddModList-r16 ::= SEQUENCE (SIZE (1..maxSCell-r13)) OF SCellToAddMod-r16

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

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

}

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

...

}

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

]]

}

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 applied when the execution condition(s) is fulfilled. The field is absent if *daps-HO* is configured for any DRB or if *MobilityControlInfo* is included in the *RRCConnectionReconfiguration* message. The *conditionalReconfiguration* is not configured in the *RRCConnectionReconfiguration* message included in a *conditionalReconfiguration.* |
| ***daps-SourceRelease***  A one-shot field that indicates that the UE shall release the resources associated with source PCell at a DAPS HO, including reconfiguration of the PDCP entity to release DAPS. |
| ***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. |
| ***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 *secondaryCellGroup, conditionalReconfiguration, otherConfig, bap-Config, iab-IP-AddressConfigurationList* 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. |
| ***scg-State***  Indicates that the NR SCG is deactivated. The field is absent if the message is contained in the *dl-DCCH-MessageEUTRA* in the NR *DLInformationTransferMRDC* message as specified in TS38.331 [82], if CPA or CPC is configured for the UE, or if the *RRCConnectionReconfiguration* message is contained in *condReconfigurationToApply*. |
| ***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-ConfigDedicatedForNR***  Container for providing the dedicated configurations for NR sidelink communication, the octet string contains the NR *RRCReconfiguration* message as specified in TS 38.331 [82]. In this version of the specification, the NR RRC message only includes fields related to NR sidelink communication, i.e. *sl-ConfigDedicatedNR*, *measConfig* and/or *otherConfig*. If the UE is configured by the current Pcell with *sl-ScheduledConfig* set to setup (i.e., NR sidelink communication mode 1), the network only includes *sl-PrioritizationThres* and *sl-ConfiguredGrantConfig* that only includes the configurations of configured sidelink grant Type 1 in the field *sl-ScheduledConfig*. |
| ***sl-SSB-PriorityEUTRA***  Indicates the priority of LTE PSSS/SSSS/PSBCH transmission and reception. NOTE 3. |
| ***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. |
| ***systemInformationBlockType31Dedicated***  This field is used to transfer *SystemInformationBlockType31* to BL UEs or UEs in CE in a NTN cell. |
| ***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 and in a message contained in a NR *DLInformationTransferMRDC* message; otherwise the field is not present. The field is not present if source PCell resources after a DAPS handover have not been released. |
| *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. |
| *NTN* | The field is mandatory present in case of handover to a NTN cell. Otherwise the field is optionally present, Need ON, in a NTN cell. |
| *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.

NOTE 3: For UEs in RRC\_IDLE, RRC\_INACTIVE or out-of coverage, and for the case that *sl-SSB-PriorityEUTRA* is absent, it is up to UE implementation to decide the priority of LTE PSSS/SSSS/PSBCH transmission and reception.

### 6.3.4 Mobility control information elements

#### – *CondReconfigurationToAddModList*

The IE *CondReconfigurationToAddModList* concerns a list of conditional reconfigurations (i.e. conditional handover, conditional PSCell addition or inter-SN conditional PSCell change) to add or modify, for each entry the *measId* (associated to the triggering condition configuration) and the associated *RRCConnectionReconfiguration*.

*CondReconfigurationToAddModList* information element

-- ASN1START

CondReconfigurationToAddModList-r16 ::= SEQUENCE (SIZE (1.. maxCondConfig-r16)) OF CondReconfigurationAddMod-r16

CondReconfigurationAddMod-r16 ::= SEQUENCE {

condReconfigurationId-r16 CondReconfigurationId-r16,

triggerCondition-r16 SEQUENCE (SIZE (1..2)) OF MeasId

OPTIONAL, -- Need ON

condReconfigurationToApply-r16 OCTET STRING (CONTAINING RRCConnectionReconfiguration)

OPTIONAL,-- Cond CondReconfigurationAdd

...,

[[

triggerConditionSN-r17 OCTET STRING OPTIONAL -- Need ON

]]

}

-- ASN1STOP

| *CondReconfigurationToAddMod* field descriptions |
| --- |
| ***condReconfigurationToApply***  The RRCConnectionReconfiguration message to be applied when the condition(s) are fulfilled. |
| ***triggerCondition***  The condition that needs to be fulfilled in order to trigger the execution of a conditional reconfiguration for CHO, CPA or MN initiated inter-SN CPC. When configuring two triggering events (MeasIds) for a candidate cell, the network ensures that both refer to the same *measObject*. For each *condReconfigurationId*, the network always configures either *triggerCondition* or *triggerConditionSN* (not both). |
| ***triggerConditionSN***  Includes the NR *CondReconfigExecCondSCG* as specified in TS 38.331 [82]. For each *condReconfigurationId*, the network always configures either *triggerCondition* or *triggerConditionSN* (not both). The field is applied to the case of SN initiated inter-SN CPC. |

| Conditional presence | Explanation |
| --- | --- |
| *CondReconfigurationAdd* | The field is mandatory present if a *condReconfigurationId* is being added. Otherwise it is optional, need ON. |

### 6.3.5 Measurement information elements

#### – *ReportConfigInterRAT*

The IE *ReportConfigInterRAT* specifies criteria for triggering of an inter-RAT measurement reporting event or of a CPA or MN initiated inter-SN CPC event. The inter-RAT measurement reporting events for NR, UTRAN, GERAN and CDMA2000 are labelled B*N* with *N* equal to 1, 2 and so on. The inter-RAT measurement reporting events for WLAN are labelled W*N* with *N* equal to 1, 2 and so on.

Event B1: Neighbour becomes better than absolute threshold;

Event B2: PCell becomes worse than absolute threshold1 AND Neighbour becomes better than another absolute threshold2.

Event W1: WLAN becomes better than a threshold;

Event W2: All WLAN inside WLAN mobility set become worse than a threshold1 and a WLAN outside WLAN mobility set becomes better than a threshold2;

Event W3: All WLAN inside WLAN mobility set become worse than a threshold.

CondEvent B1: Conditional reconfiguration candidate becomes better than absolute threshold.

The b1 and b2 event thresholds for CDMA2000 are the CDMA2000 pilot detection thresholds are expressed as an unsigned binary number equal to [-2 x 10 log 10 Ec/Io] in units of 0.5dB, see C.S0005 [25] for details.

*ReportConfigInterRAT* information element

-- ASN1START

ReportConfigInterRAT ::= SEQUENCE {

triggerType CHOICE {

event SEQUENCE {

eventId CHOICE {

eventB1 SEQUENCE {

b1-Threshold CHOICE {

b1-ThresholdUTRA ThresholdUTRA,

b1-ThresholdGERAN ThresholdGERAN,

b1-ThresholdCDMA2000 ThresholdCDMA2000

}

},

eventB2 SEQUENCE {

b2-Threshold1 ThresholdEUTRA,

b2-Threshold2 CHOICE {

b2-Threshold2UTRA ThresholdUTRA,

b2-Threshold2GERAN ThresholdGERAN,

b2-Threshold2CDMA2000 ThresholdCDMA2000

}

},

...,

eventW1-r13 SEQUENCE {

w1-Threshold-r13 WLAN-RSSI-Range-r13

},

eventW2-r13 SEQUENCE {

w2-Threshold1-r13 WLAN-RSSI-Range-r13,

w2-Threshold2-r13 WLAN-RSSI-Range-r13

},

eventW3-r13 SEQUENCE {

w3-Threshold-r13 WLAN-RSSI-Range-r13

},

eventB1-NR-r15 SEQUENCE {

b1-ThresholdNR-r15 ThresholdNR-r15,

reportOnLeave-r15 BOOLEAN

},

eventB2-NR-r15 SEQUENCE {

b2-Threshold1-r15 ThresholdEUTRA,

b2-Threshold2NR-r15 ThresholdNR-r15,

reportOnLeave-r15 BOOLEAN

}

},

hysteresis Hysteresis,

timeToTrigger TimeToTrigger

},

periodical SEQUENCE {

purpose ENUMERATED {

reportStrongestCells,

reportStrongestCellsForSON,

reportCGI}

}

},

maxReportCells INTEGER (1..maxCellReport),

reportInterval ReportInterval,

reportAmount ENUMERATED {r1, r2, r4, r8, r16, r32, r64, infinity},

...,

[[ si-RequestForHO-r9 ENUMERATED {setup} OPTIONAL -- Cond reportCGI

]],

[[ reportQuantityUTRA-FDD-r10 ENUMERATED {both} OPTIONAL -- Need OR

]],

[[ includeLocationInfo-r11 BOOLEAN OPTIONAL -- Need ON

]],

[[ b2-Threshold1-v1250 CHOICE {

release NULL,

setup RSRQ-Range-v1250

} OPTIONAL -- Need ON

]],

[[ reportQuantityWLAN-r13 ReportQuantityWLAN-r13 OPTIONAL -- Need ON

]],

[[ reportAnyWLAN-r14 BOOLEAN OPTIONAL -- Need ON

]],

[[ reportQuantityCellNR-r15 ReportQuantityNR-r15 OPTIONAL, -- Need ON

maxReportRS-Index-r15 INTEGER (0..maxRS-IndexReport-r15) OPTIONAL, -- Need ON

reportQuantityRS-IndexNR-r15 ReportQuantityNR-r15 OPTIONAL, -- Need ON

reportRS-IndexResultsNR BOOLEAN OPTIONAL, -- Need ON

reportSFTD-Meas-r15 ENUMERATED {pSCell, neighborCells } OPTIONAL -- Need ON

]],

[[

useAutonomousGapsNR-r16 ENUMERATED {setup} OPTIONAL, -- Cond reportCGI-NR

measRSSI-ReportConfigNR-r16 MeasRSSI-ReportConfig-r13 OPTIONAL -- Need ON

]],

[[condReconfigurationTriggerNR-r17 CondReconfigurationTriggerNR-r17 OPTIONAL-- Need ON

]]

}

CondReconfigurationTriggerNR-r17 ::= SEQUENCE {

condEventId-r17 CHOICE {

condEventB1-NR-r17 SEQUENCE {

b1-ThresholdNR-r17 ThresholdNR-r15,

hysteresis-r17 Hysteresis,

timeToTrigger-r17 TimeToTrigger

},

...

}

}

ThresholdUTRA ::= CHOICE{

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

utra-EcN0 INTEGER (0..49)

}

ThresholdGERAN ::= INTEGER (0..63)

ThresholdCDMA2000 ::= INTEGER (0..63)

ReportQuantityNR-r15::= SEQUENCE {

ss-rsrp BOOLEAN,

ss-rsrq BOOLEAN,

ss-sinr BOOLEAN

}

ReportQuantityWLAN-r13 ::= SEQUENCE {

bandRequestWLAN-r13 ENUMERATED {true} OPTIONAL, -- Need OR

carrierInfoRequestWLAN-r13 ENUMERATED {true} OPTIONAL, -- Need OR

availableAdmissionCapacityRequestWLAN-r13 ENUMERATED {true} OPTIONAL, -- Need OR

backhaulDL-BandwidthRequestWLAN-r13 ENUMERATED {true} OPTIONAL, -- Need OR

backhaulUL-BandwidthRequestWLAN-r13 ENUMERATED {true} OPTIONAL, -- Need OR

channelUtilizationRequestWLAN-r13 ENUMERATED {true} OPTIONAL, -- Need OR

stationCountRequestWLAN-r13 ENUMERATED {true} OPTIONAL, -- Need OR

...

}

-- ASN1STOP

| *ReportConfigInterRAT* field descriptions |
| --- |
| ***availableAdmissionCapacityRequestWLAN***  The value true indicates that the UE shall include, if available, WLAN Available Admission Capacity in measurement reports. |
| ***backhaulDL-BandwidthRequestWLAN***  The value true indicates that the UE shall include, if available, WLAN Backhaul Downlink Bandwidth in measurement reports. |
| ***backhaulUL-BandwidthRequestWLAN***  The value true indicates that the UE shall include, if available, WLAN Backhaul Uplink Bandwidth in measurement reports. |
| ***bandRequestWLAN***  The value true indicates that the UE shall include WLAN band in measurement reports. |
| ***bN-ThresholdM***  Threshold to be used in inter RAT measurement report triggering condition for event number bN. If multiple thresholds are defined for event number bN, the thresholds are differentiated by M. |
| ***carrierInfoRequestWLAN***  The value true indicates that the UE shall include, if available, WLAN Carrier Information in measurement reports. |
| ***channelUtilizationRequest-WLAN***  The value true indicates that the UE shall include, if available, WLAN Channel Utilization in measurement reports. |
| ***condReconfigurationTriggerNR***  The conditional reconfiguration trigger event that is used for CPA or MN initiated inter-SN CPC. If this field is configured, the UE shall ignore the configuration of *triggerType, maxReportCells, reportInterval,* and *reportAmount.* |
| ***condEventId***  Choice of conditional reconfiguration event triggered criteria. |
| ***eventId***  Choice of inter-RAT event triggered reporting criteria. |
| ***maxReportCells***  Max number of cells, excluding the serving cell, to include in the measurement report. In case *purpose* is set to *reportStrongestCellsForSON* only value 1 applies. For inter-RAT WLAN, it is the maximum number of WLANs to include in the measurement report. |
| ***maxReportRS-Index***  Max number of RS indices to include in the measurement report. E-UTRAN configures value 0 only if it sets *reportRS-IndexResultsNR* to *FALSE*. |
| ***measRSSI-ReportConfigNR***  If this field is present, the UE shall perform measurement reporting for RSSI and channel occupancy and ignore the *triggerQuantity*, *reportQuantity* and *maxReportCells* fields. E-UTRAN sets this field to *true* only when setting *triggerType* to *periodical* and *purpose* to *reportStrongestCells*. |
| ***Purpose***  *reportStrongestCellsForSON* applies only in case *reportConfig* is linked to a *measObject* set to *measObjectUTRA* or *measObjectCDMA2000*. |
| ***reportAmount***  Number of measurement reports applicable for *triggerType* *event* as well as for *triggerType* *periodical*. In case *purpose* is set to *reportCGI* or reportStrongestCellsForSON only value 1 applies. In case *reportSFTD-Meas* is configured, only value 1 applies. |
| ***reportAnyWLAN***  Indicates UE to report any WLAN AP meeting the triggering requirements, even if it is not included in the corresponding *MeasObjectWLAN*. |
| ***reportOnLeave***  Indicates whether or not the UE shall initiate the measurement reporting procedure when the leaving condition is met for a cell in *cellsTriggeredList*, as specified in 5.5.4.1. |
| ***reportQuantityUTRA-FDD***  The quantities to be included in the UTRA measurement report***.*** The value *both* means that both the cpich RSCP and cpich EcN0 quantities are to be included in the measurement report. |
| ***reportRS-IndexResultsNR***  Indicates whether or not the UE shall report beam measurement result of NR in the measurement report. |
| ***reportSFTD-Meas***  If this field is set to *pSCell*, the UE shall measure SFTD between the PCell and the PSCell as specified in TS 38.215 [89], in this case, the frequency of PSCell is configured in the corresponding *measObjectNR*. If the field is set to *neighborCells*, the UE shall measure SFTD between the PCell and the NR cells included in *cellsForWhichToReportSFTD* (if configured in the corresponding *measObjectNR*) or between the PCell and up to 3 strongest detected NR cells (if *cellsForWhichToReportSFTD* is not configured in the corresponding *measObjectNR*), as specified in TS 38.215 [89]. E-UTRAN only includes this field when setting *triggerType* to *periodical* and *purpose* to *reportStrongestCells*. If included, the UE shall ignore the *maxReportCells* field. |
| ***si-RequestForHO***  The field applies to the *reportCGI* functionality, and when the field is included, the UE is allowed to use autonomous gaps in acquiring system information from the neighbour cell, applies a different value for T321, and includes different fields in the measurement report. EUTRAN does not configure the field if *reportConfig* is linked to a *measObject* set to *measObjectNR*. |
| ***ss-rsrp***  Indicates whether or not the UE shall report SS-RSRP quantity of NR. |
| ***ss-rsrq***  Indicates whether or not the UE shall report SS-RSRQ quantity of NR. |
| ***ss-sinr***  Indicates whether or not the UE shall report SS-SINR quantity of NR. |
| ***stationCountRequestWLAN***  The value true indicates that the UE shall include, if available, WLAN Station Count in measurement reports. |
| ***b1-ThresholdGERAN, b2-Threshold2GERAN***  The actual value is field value – 110 dBm. |
| ***b1-ThresholdUTRA, b2-Threshold2UTRA***  *utra-RSCP* corresponds to CPICH\_RSCP in TS 25.133 [29] for FDD and P-CCPCH\_RSCP in TS 25.123 [30] for TDD. *utra-EcN0* corresponds to CPICH\_Ec/No in TS 25.133 [29] for FDD, and is not applicable for TDD.  For *utra-RSCP*: The actual value is field value – 115 dBm.  For *utra-EcN0*: The actual value is (field value – 49)/2 dB. |
| ***timeToTrigger***  Time during which specific criteria for the event needs to be met in order to trigger a measurement report or to execute the conditional reconfiguration evaluation. |
| ***triggerType***  E-UTRAN does not configure the value *periodical* in case *reportConfig* is linked to a *measObject* set to *measObjectWLAN*. |
| ***useAutonomousGapsNR***  The field applies to the *reportCGI* functionality, and when the field is included, the UE is allowed to use autonomous gaps in acquiring system information from the NR neighbour cell, applies the corresponding value for T321, EUTRAN can configure the field only if *reportConfig* is linked to a *measObject* set to *measObjectNR*. | |

| Conditional presence | Explanation |
| --- | --- |
| *reportCGI* | The field is optional, need OR, in case *purpose* is included and set to *reportCGI*; otherwise the field is not present and the UE shall delete any existing value for this field. |
| *reportCGI-NR* | The field is optional, need OR, in case *purpose* is included and set to *reportCGI,* and *reportConfig* is linked to a *measObject* set to *measObjectNR*, otherwise the field is not present and the UE shall delete any existing value for this field. | |