**3GPP TSG-RAN WG2 #130*****R2-2504938***

**St Julian’s, Malta, May 19 – 23, 2025**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  |  | **CR** |  | **rev** | **3** | **Current version:** |  |  |
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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:***  | Miscellaneous non-controversial corrections Set XXV |
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| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | NR\_newRAT-Core, TEI18 |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***Release:*** |  |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***Reason for change:*** | Correction of miscellaneous non-controversial errors (typos etc). |
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| ***Summary of change:*** | 1. In 5.7.4.2 and 5.7.4.3, corrected “-“ in *musim-GapKeepPreference* to be aligned with ASN.1.
2. In *RRCRelease-IEs* field descriptions, corrected a reference to a sub-clause.
3. In IE PosSRS-TxFrequencyHoppingRRC-Inactive, dashes “-“ are removed from some field names in ASN.1, to align with 38.306.

**CR agreed to be merged at RAN2#129bis:**1. R2-2502987 Correction for UE capability on DMRS portDeleted "at least" in the definition of R1 40-4-1j (*mappingTypeA-1SymbolFL-DMRS-Addition2Symbol-r18* in *FeatureSetDownlink*).

**CR agreed to be merged at RAN2#130:**R2-2503976 Removal of editor’s note for nr-PDCCH-OverlapThe editor’s note on the use of value someOrAllSymOverlap for field overlapInRE-r18 in the capability nr-PDCCH-OverlapLTE-CRS-RE-r18 has been removed.R2-2503383 Corrections on Rel-18 Multi-carrier enhancementsChange#1: ‘DL scheduling’ or ‘UL scheduling’ is added in field descriptions (scheduledCellComboListDCI-1-3, scheduledCellComboListDCI-0-3 etc).Change#2: ‘DCI format 1-3’ is changed to ‘DCI format 1\_3’ in the field description for TDRA-FieldIndexDCI-1-3.Change#3: Redundant digit ‘1’ in ‘second smallest BWP-Id 1’ is removed in the field description for TDRA-FieldIndexDCI-0-3.Some other typos are also corrected.**Impact Analysis**Impacted 5G architecture options: NR SA, (NG)EN-DC, NE-DC,NR-DC Impacted functionality: MiscellaneousInter-operability:There are no interoperability issues. |
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| ***Consequences if not approved:*** | Miscellaneous typos and editorials will remain in the specification. |
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| ***Clauses affected:*** | 5.7.4.2, 5.7.4.3, 6.2.2, 6.3.1, 6.3.2, 6.3.3, 11.2.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **N** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **N** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **N** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | R2-2502574, R2-2503184, R2-2504254 |

#### 5.7.4.2 Initiation

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 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 capable of providing IDC assistance information in RRC\_CONNECTED may initiate the procedure if it was configured to do so, upon detecting IDC problem if the UE did not transmit an IDC assistance information since it was configured to provide IDC indications, or upon change of IDC problem information.

A UE capable of providing its preference on DRX parameters of a cell group for power saving in RRC\_CONNECTED may initiate the procedure in several cases, if it was configured to do so, including upon having a preference on DRX parameters and upon change of its preference on DRX parameters.

A UE capable of providing its preference on the maximum aggregated bandwidth of a cell group for power saving in RRC\_CONNECTED may initiate the procedure in several cases, if it was configured to do so, including upon having a maximum aggregated bandwidth preference and upon change of its maximum aggregated bandwidth preference.

A UE capable of providing its preference on the maximum number of secondary component carriers of a cell group for power saving in RRC\_CONNECTED may initiate the procedure in several cases, if it was configured to do so, including upon having a maximum number of secondary component carriers preference and upon change of its maximum number of secondary component carriers preference.

A UE capable of providing its preference on the maximum number of MIMO layers of a cell group for power saving in RRC\_CONNECTED may initiate the procedure in several cases, if it was configured to do so, including upon having a maximum number of MIMO layers preference and upon change of its maximum number of MIMO layers preference.

A UE capable of providing its preference on the minimum scheduling offset for cross-slot scheduling of a cell group for power saving in RRC\_CONNECTED may initiate the procedure in several cases, if it was configured to do so, including upon having a minimum scheduling offset preference and upon change of its minimum scheduling offset preference.

A UE capable of providing assistance information to transition out of RRC\_CONNECTED state may initiate the procedure if it was configured to do so, upon determining that it prefers to transition out of RRC\_CONNECTED state, or upon change of its preferred RRC state.

A UE capable of providing configured grant assistance information for NR sidelink communication in RRC\_CONNECTED may initiate the procedure in several cases, including upon being configured to provide traffic pattern information and upon change of traffic patterns.

A UE capable of providing an indication of its preference in being provisioned with reference time information may initiate the procedure upon being configured to provide this indication, or if it was configured to provide this indication and upon change of its preference.

A UE capable of providing an indication of its preference in FR2 UL gap may initiate the procedure if it was configured to do so, upon detecting the need of FR2 UL gap activation/deactivation.

A UE capable of providing MUSIM assistance information for gap preference may initiate the procedure if it was configured to do so, upon determining it needs the gaps, or upon change of the gap preference information.

A UE capable of providing MUSIM assistance information for gap priority preference and/or preference to keep the colliding MUSIM gaps may initiate the procedure if it was configured to do so, upon determining it has gap priority preference information and/or it has preference to keep the colliding MUSIM gaps.

A UE capable of providing MUSIM assistance information for leave indication may initiate the procedure if it was configured to do so upon determining that it needs to leave RRC\_CONNECTED state.

A UE capable of providing MUSIM assistance information for temporary capability restriction may initiate the procedure if it was configured to do so, upon determining it has temporary capability restriction or upon determining the removal of the capability restriction.

A UE capable of relaxing its RLM measurements of a cell group in RRC\_CONNECTED state shall initiate the procedure for providing an indication of its relaxation state for RLM measurements upon being configured to do so, and upon change of its relaxation state for RLM measurements in RRC\_CONNECTED state.

A UE capable of relaxing its BFD measurements in serving cells of a cell group in RRC\_CONNECTED shall initiate the procedure for providing an indication of its relaxation state for BFD measurements upon being configured to do so, and upon change of its relaxation state for BFD measurements in RRC\_CONNECTED state.

A UE capable of SDT initiates this procedure when data and/or signalling mapped to radio bearers that are not configured for SDT becomes available during SDT (i.e. while SDT procedure is ongoing).

A UE capable of providing its preference for SCG deactivation may initiate the procedure if it was configured to do so, upon determining that it prefers or does no more prefer the SCG to be deactivated.

A UE 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.

A UE capable of providing an indication of fulfilment of the RRM measurement relaxation criterion in connected mode may initiate the procedure if it was configured to do so, upon change of its fulfilment status for RRM measurement relaxation criterion for connected mode.

A UE capable of providing service link propagation delay difference between serving cell and neighbour cell(s) shall initiate the procedure upon being configured to do so, and upon determining that service link propagation delay difference between serving cell and a neighbour cell has changed more than *threshPropDelayDiff* compared with the last reported value.

A UE capable of providing an indication of its preference on multi-Rx operation for FR2 may initiate the procedure if it was configured to do so, upon detecting having a preference on multi-Rx operation for FR2 and upon change of its preference on multi-Rx operation for FR2.

A UE capable of indicating the availability of flight path information may initiate the procedure, if it was configured to do so, upon determining that an initial or updated flight path information is available.

A UE capable of providing UL traffic information shall initiate the procedure when this information is available upon being configured to do so, and upon change of UL traffic information.

A UE capable of N3C remote UE operation initiates the procedure upon being configured to report relay UE information on the available non-3GPP connection(s), and upon change of its available non-3GPP connection(s).

A UE capable of providing configured grant assistance information including SL-PRS transmission periodicity, priority, bandwidth and delay budget for NR sidelink positioning in RRC\_CONNECTED may initiate the procedure.

Upon initiating the procedure, the UE shall:

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 including *delayBudgetReport* 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 5.7.4.3 to provide a delay budget report;

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 including *overheatingAssistance* 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 5.7.4.3 to provide overheating assistance information;

1> if configured to provide IDC assistance information based on *candidateServingFreqListNR* included in *idc-AssistanceConfig* of a cell group:

2> if the UE did not transmit a *UEAssistanceInformation* message with *idc-Assistance* since it was configured to provide IDC assistance information:

3> if on one or more frequencies included in *candidateServingFreqListNR*, the UE is experiencing IDC problems that it cannot solve by itself; or

3> if on one or more supported UL CA or NR-DC combination comprising of carrier frequencies included in *candidateServingFreqListNR*, the UE is experiencing IDC problems that it cannot solve by itself:

4> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide FDM IDC assistance information including a list of affected frequencies and/or frequency combinations;

2> else if the current *idc-Assistance* information for the cell group is different from the one indicated in the last transmission of the *UEAssistanceInformation* message:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide IDC FDM assistance information including a list of affected frequencies and/or frequency combinations;

1> if configured to provide IDC assistance information based on *idc-FDM-AssistanceConfig* included in *idc-AssistanceConfig* of a cell group:

2> if the UE did not transmit a *UEAssistanceInformation* message with *idc-FDM-Assistance* since it was configured to provide IDC assistance information:

3> if on one or more frequency ranges included in *candidateServingFreqRangeListNR*, the UE is experiencing IDC problems that it cannot solve by itself; or

3> if on one or more supported UL CA or NR-DC combination comprising of frequency ranges included in *candidateServingFreqRangeListNR*, the UE is experiencing IDC problems that it cannot solve by itself:

4> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide IDC enhanced FDM assistance information including a list of affected frequency ranges and/or frequency range combinations;

2> else if the current *idc-FDM-Assistance* information for the cell group is different from the one indicated in the last transmission of the *UEAssistanceInformation* message:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide IDC enhanced FDM assistance information including a list of affected frequency ranges and/or frequency range combinations;

1> if configured to provide IDC assistance information based on *idc-TDM-AssistanceConfig* included in *idc-AssistanceConfig* of a cell group:

2> if the UE did not transmit a *UEAssistanceInformation* message with *idc-TDM-Assistance* since it was configured to provide IDC assistance information:

3> if on one or more frequencies included in *candidateServingFreqListNR* or frequency ranges included in *candidateServingFreqRangeListNR*, the UE is experiencing IDC problems that it cannot solve by itself; or

3> if on one or more supported UL CA or NR-DC combination comprising of carrier frequencies included in *candidateServingFreqListNR* or frequency ranges included in *candidateServingFreqRangeListNR*, the UE is experiencing IDC problems that it cannot solve by itself:

4> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide IDC TDM assistance information;

2> else if the current *idc-TDM-Assistance* information for the cell group is different from the one indicated in the last transmission of the *UEAssistanceInformation* message:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide IDC TDM assistance information;

NOTE 1: The term "IDC problems" refers to interference issues applicable across several subframes/slots where not necessarily all the subframes/slots are affected.

NOTE 2: For the frequencies or frequency range(s) on which a serving cell or serving cells is configured that is activated, IDC problems consist of interference issues that the UE cannot solve by itself, during either active data exchange or upcoming data activity which is expected in up to a few hundred milliseconds.
For frequencies or frequency range(s) on which a SCell or SCells is configured that is deactivated, reporting IDC problems indicates an anticipation that the activation of the SCell or SCells would result in interference issues that the UE would not be able to solve by itself.
For a non-serving frequency or frequency range(s), reporting IDC problems indicates an anticipation that if the non-serving frequency or frequencies or frequency range(s) became a serving frequency or serving frequencies or frequency range(s) then this would result in interference issues that the UE would not be able to solve by itself.

1> if configured to provide its preference on DRX parameters of a cell group for power saving:

2> if the UE has a preference on DRX parameters of the cell group and the UE did not transmit a *UEAssistanceInformation* message with *drx-Preference* for the cell group since it was configured to provide its preference on DRX parameters of the cell group for power saving; or

2> if the current *drx-Preference* information for the cell group is different from the one indicated in the last transmission of the *UEAssistanceInformation* message including *drx-Preference* for the cell group and timer T346a associated with the cell group is not running:

3> start the timer T346a with the timer value set to the *drx-PreferenceProhibitTimer* of the cell group;

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the current *drx-Preference*;

1> if configured to provide its preference on the maximum aggregated bandwidth of a cell group for power saving:

2> if the UE has a preference on the maximum aggregated bandwidth of the cell group and the UE did not transmit a *UEAssistanceInformation* message with *maxBW-Preference* and/or *maxBW-PreferenceFR2-2* for the cell group since it was configured to provide its preference on the maximum aggregated bandwidth of the cell group for power saving; or

2> if the current *maxBW-Preference* information for the cell group is different from the one indicated in the last transmission of the *UEAssistanceInformation* message including *maxBW-Preference* and/or *maxBW-PreferenceFR2-2*for the cell group and timer T346b associated with the cell group is not running:

3> start the timer T346b with the timer value set to the *maxBW-PreferenceProhibitTimer* of the cell group;

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the current *maxBW-Preference* and/or *maxBW-PreferenceFR2-2*;

1> if configured to provide its preference on the maximum number of secondary component carriers of a cell group for power saving:

2> if the UE has a preference on the maximum number of secondary component carriers of the cell group and the UE did not transmit a *UEAssistanceInformation* message with *maxCC-Preference* for the cell group since it was configured to provide its preference on the maximum number of secondary component carriers of the cell group for power saving; or

2> if the current *maxCC-Preference* information for the cell group is different from the one indicated in the last transmission of the *UEAssistanceInformation* message including *maxCC-Preference* for the cell group and timer T346c associated with the cell group is not running:

3> start the timer T346c with the timer value set to the *maxCC-PreferenceProhibitTimer* of the cell group;

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the current *maxCC-Preference*;

1> if configured to provide its preference on the maximum number of MIMO layers of a cell group for power saving:

2> if the UE has a preference on the maximum number of MIMO layers of the cell group and the UE did not transmit a *UEAssistanceInformation* message with *maxMIMO-LayerPreference* and/or *maxMIMO-LayerPreferenceFR2-2* for the cell group since it was configured to provide its preference on the maximum number of MIMO layers of the cell group for power saving; or

2> if the current *maxMIMO-LayerPreference* information for the cell group is different from the one indicated in the last transmission of the *UEAssistanceInformation* message including *maxMIMO-LayerPreference* and/or *maxMIMO-LayerPreferenceFR2-2* for the cell group and timer T346d associated with the cell group is not running:

3> start the timer T346d with the timer value set to the *maxMIMO-LayerPreferenceProhibitTimer* of the cell group;

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the current *maxMIMO-LayerPreference* and/or *maxMIMO-LayerPreferenceFR2-2*;

1> if configured to provide its preference on the minimum scheduling offset for cross-slot scheduling of a cell group for power saving:

2> if the UE has a preference on the minimum scheduling offset for cross-slot scheduling of the cell group and the UE did not transmit a *UEAssistanceInformation* message with *minSchedulingOffsetPreference* and/or *minSchedulingOffsetPreferenceExt* for the cell group since it was configured to provide its preference on the minimum scheduling offset for cross-slot scheduling of the cell group for power saving; or

2> if the current *minSchedulingOffsetPreference* and/or *minSchedulingOffsetPreferenceExt* information for the cell group is different from the one indicated in the last transmission of the *UEAssistanceInformation* message including *minSchedulingOffsetPreference* and/or *minSchedulingOffsetPreferenceExt* for the cell group and timer T346e associated with the cell group is not running:

3> start the timer T346e with the timer value set to the *minSchedulingOffsetPreferenceProhibitTimer* of the cell group;

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the current *minSchedulingOffsetPreference* and/or *minSchedulingOffsetPreferenceExt*;

1> if configured to provide its release preference and timer T346f is not running:

2> if the UE determines that it would prefer to transition out of RRC\_CONNECTED state; or

2> if the UE is configured with *connectedReporting* and the UE determines that it would prefer to revert an earlier indication to transition out of RRC\_CONNECTED state:

3> start timer T346f with the timer value set to the *releasePreferenceProhibitTimer*;

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the release preference;

1> if configured to provide configured grant assistance information for NR sidelink communication:

2> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide configured grant assistance information for NR sidelink communication;

1> if configured to provide preference in being provisioned with reference time information:

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

2> if the UE's preference changed from the last time UE initiated transmission of the *UEAssistanceInformation* message including *referenceTimeInfoPreference*:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide preference in being provisioned with reference time information.

1> if configured to provide its preference on FR2 UL gap:

2> if the UE did not transmit a *UEAssistanceInformation* message with *ul-GapFR2-Preference* since it was configured to provide its preference on FR2 UL gap information:

3> if the UE has a preference on FR2 UL gap activation/deactivation:

4> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide FR2 UL gap preference;

2> else if the current FR2 UL gap preference is different from the one indicated in the last transmission of the *UEAssistanceInformation* message:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide FR2 UL gap preference.

1> if configured to provide MUSIM assistance information for leaving RRC\_CONNECTED:

2> if the UE needs to leave RRC\_CONNECTED state and the timer T346g is not running:

3> initiate transmission of the UEAssistanceInformation message in accordance with 5.7.4.3 to provide MUSIM assistance information for leaving RRC\_CONNECTED;

3> start the timer T346g with the timer value set to the *musim-LeaveWithoutResponseTimer*;

1> if configured to provide MUSIM assistance information for gap preference:

2> if configured to provide MUSIM assistance information for gap priority preference:

3> if the UE has a preference on the MUSIM gap(s) and the UE did not transmit a *UEAssistanceInformation* message with *musim-GapPreferenceList* and/or *musim-GapPriorityPreferenceList* and/or *musim-GapKeepPreference* since it was configured to provide MUSIM assistance information for gap preference and gap priority preference and the timer T346h is not running; or

3> if the current *musim-GapPreferenceList* and/or *musim-GapPriorityPreferenceList* and/or *musim-GapKeepPreference* is different from the one indicated in the last transmission of the *UEAssistanceInformation* message including *musim-GapPreferenceList* and/or *musim-GapPriorityPreferenceList* and/or *musim-GapKeepPreference* and the timer T346h is not running:

4> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the current *musim-GapPreferenceList* and/or *musim-GapPriorityPreferenceList* and/or *musim-GapKeepPreference*;

4> start the timer T346h with the timer value set to the *musim-GapProhibitTimer*.

2> else:

3> if the UE has a preference on the MUSIM gap(s) and the UE did not transmit a *UEAssistanceInformation* message with *musim-GapPreferenceList* since it was configured to provide MUSIM assistance information for gap preference; or

3> if the current *musim-GapPreferenceList* is different from the one indicated in the last transmission of the *UEAssistanceInformation* message including *musim-GapPreferenceList* and the timer T346h is not running:

4> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the current *musim-GapPreferenceList*;

4> start the timer T346h with the timer value set to the *musim-GapProhibitTimer*.

NOTE 3: The UE does not need to initiate transmission of the *UEAssistanceInformation* message if the difference between the current *musim-GapPreferenceList* and the last transmission of the *UEAssistanceInformation* message including *musim-GapPreferenceList* is only due to removal of an ended aperiodic gap.

1> if configured to provide MUSIM assistance information for temporary capability restriction:

2> if the UE has temporary capability restriction on the current configuration and timer T348 is not running:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the current *musim-Cell-SCG-ToRelease and/or musim-CellToAffectList*;

3> start the timer T348 with the timer value set to the *musim-WaitTimer*.

2> if the UE has temporary capability restriction on the combination(s) of bands comprising of band(s) included in *musim-CandidateBandList* or if the UE has temporary capability restriction on the maximum CC number, and the UE did not transmit a *UEAssistanceInformation* message with *musim-AffectedBandsList* and/or *musim-AvoidedBandsList* and/or *musim-MaxCC* since it was configured to provide MUSIM assistance information for temporary capability restriction and timer T346n is not running; or

2> if the current *musim-AffectedBandsList* and/or *musim-AvoidedBandsList* and/or *musim-MaxCC* is different from the one indicated in the last transmission of the *UEAssistanceInformation* message including *musim-CapRestriction* and timer T346n is not running:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the current *musim-AffectedBandsList* and/or *musim-AvoidedBandsList* and/or *musim-MaxCC*;

3> start the timer T346n with the timer value set to the *musim-ProhibitTimer*.

2> if the UE is configured to provide the measurement gap requirement information of NR target bands and if the current measurement gap requirement information is different from the one indicated in the last transmission of the *UEAssistanceInformation* message including *musim-NeedForGapsInfoNR* or *RRCReconfigurationComplete* message or *RRCResumeComplete* message including *needForGapsInfoNR*:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the current *musim-NeedForGapsInfoNR*;

2> if the UE has included *musim-CapRestrictionInd* in the *RRCSetupComplete* message or *RRCResumeComplete* or *RRCReestablishmentComplete* message and the temporary capability restriction is not applicable when the UE is configured to provide MUSIM assistance information for temporary capability restriction:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to indicate that there is no temporary capability restriction;

1> if configured to provide the relaxation state of RLM measurements of a cell group and RLM measurement of the cell group is not stopped:

2> if the UE did not transmit a *UEAssistanceInformation* message with *rlm-MeasRelaxationState* since it was configured to provide the relaxation state of RLM measurements for the cell group; or

2> if the relaxation state of RLM measurements for the cell group is currently different from the relaxation state reported in the last transmission of the *UEAssistanceInformation* message including *rlm-MeasRelaxationState* of the cell group and timer T346j associated with the cell group is not running:

3> start timer T346j with the timer value set to the *rlm-RelaxtionReportingProhibitTimer*;

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the relaxation state of RLM measurements of the cell group;

1> if configured to provide the relaxation state of BFD measurements of serving cells of a cell group and BFD measurement of the cell group is not stopped:

2> if the UE did not transmit a *UEAssistanceInformation* message with *bfd-MeasRelaxationState* since it was configured to provide the relaxation state of BFD measurements for the cell group; or

2> if the relaxation state of BFD measurements in any serving cell of the cell group is currently different from the relaxation state reported in the last transmission of the *UEAssistanceInformation* message including *bfd-MeasRelaxationState* of the cell group and timer T346k associated with the cell group is not running:

3> start timer T346k with the timer value set to the *bfd-RelaxtionReportingProhibitTimer*;

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the relaxation state of BFD measurements of serving cells of the cell group.

1> if data and/or signalling mapped to radio bearers not configured for SDT becomes available during SDT (i.e. while SDT procedure is ongoing):

2> if the UE did not transmit a *UEAssistanceInformation* message with *nonSDT-DataIndication* since the initiation of the current resume procedure for SDT:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide *nonSDT-DataIndication*.

1> if configured to provide its preference for SCG deactivation and timer T346i is not running;

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

2> if the UE preference for SCG deactivation is different from the last indicated *scg-DeactivationPreference*:

3> start timer T346i with the timer value set to the *scg-DeactivationPreferenceProhibitTimer*;

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the UE preference for SCG deactivation;

1> if the SCG is deactivated, and,

1> the UE has uplink data to send for an SCG RLC entity while 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 5.7.4.3 to indicate that the UE has uplink data to send for a DRB whose *DRB-Identity* is not included in any *RLC-BearerConfig* in the *CellGroupConfig* associated with the MCG.

1> if configured to send indications of RRM measurement relaxation criterion fulfilment:

2> if the criterion in 5.7.4.4 is met for a period of TSearchDeltaP-StationaryConnected:

3> if the UE did not transmit a *UEAssistanceInformation* message with *rrm-MeasRelaxationFulfilment* as *true* since it was configured to provide indications of RRM measurement relaxation criterion fulfilment; or

3> the last *UEAssistanceInformation* message indicated the criterion in 5.7.4.4 is not fulfilled with *rrm-MeasRelaxationFulfilment* as *false*:

4> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to indicate that the criterion for RRM measurement relaxation for connected mode is fulfilled;

2> else:

3> if the last *UEAssistanceInformation* message indicated fulfilment of the criterion in 5.7.4.4 with *rrm-MeasRelaxationFulfilment* as *true*:

4> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to indicate that the criterion for RRM measurement relaxation for connected mode is not fulfilled.

1> if configured to provide service link propagation delay difference between serving cell and neighbour cell(s);

2> if the UE did not transmit a *UEAssistanceInformation* message with *propagationDelayDifference* since it was configured to provide service link propagation delay difference between serving cell and neighbour cell(s); or

2> for any neighbour cell in *neighCellInfoList*, if the service link propagation delay difference between serving cell and the neighbour cell has changed more than *threshPropDelayDiff* since the last transmission of the *UEAssistanceInformation* message including *propagationDelayDifference*:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide service link propagation delay difference between serving cell and each neighbour cell included in the *neighCellInfoList*;

1> if configured to provide its preference for multi-Rx operation and timer T346m is not running;

2> if the UE has a preference on multi-Rx operation for FR2 and did not transmit a *UEAssistanceInformation* message with *multiRx-PreferenceFR2* since it was configured to provide its preference on multi-Rx operation; or

2> if the UE has a different preference on multi-Rx operation for FR2 from the last indicated *multiRx-PreferenceFR2*:

3> start timer T346m with the timer value set to the *multiRx-PreferenceReportingConfigFR2ProhibitTimer*;

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the UE preference for multi-Rx operation for FR2.

1> if configured to indicate the availability of flight path information and the UE has (updated) flight path information available:

2> if the UE had neither provided a flight path information nor indicated the availability of flight path information since last entering RRC\_CONNECTED state; or

2> if at least one waypoint or a timestamp corresponding to a waypoint location that was not previously provided since last entering RRC\_CONNECTED state is available; or

2> if at least one upcoming waypoint or a timestamp corresponding to a waypoint location that was previously provided since last entering RRC\_CONNECTED state is to be removed; or

2> if *flightPathUpdateDistanceThr* is configured and, for at least one waypoint, the 3D distance between the previously provided location and the new location is more than the distance threshold configured by *flightPathUpdateDistanceThr*; or

2> if *flightPathUpdateTimeThr* is configured and, for at least one waypoint, the time difference between the previously provided timestamp and the new timestamp, if available, is more than the time threshold configured by *flightPathUpdateTimeThr*:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to indicate the availability of flight path information;

NOTE 4: If neither *flightPathUpdateDistanceThr* nor *flightPathUpdateTimeThr* is configured, it is up to UE implementation whether to initiate transmission of the *UEAssistanceInformation* message when updated flight path information is available.

1> if configured to provide UL traffic information:

2> if the UE did not transmit a *UEAssistanceInformation* message with *ul-TrafficInfo* since it was configured to provide UL traffic information; or

2> if UL traffic information included in the previous *UEAssistanceInformation* has changed since the last transmission of the *UEAssistanceInformation* message containing *ul-TrafficInfo* for at least one QoS flow for which timer T346l is not running:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide UL traffic information.

NOTE 5: The UE only considers *burstArrivalTime* to have changed when it changes relative to the periodicity of the Data Burst arrival.

1> if configured to report relay UE information with non-3GPP connection(s):

2> if the UE did not transmit a *UEAssistanceInformation* message with *n3c-relayUE-InfoList* since it was configured to report available relay UE information with non-3GPP connection(s); or

2> if the UE has new available non-3GPP connection(s); or

2> if the non-3GPP connection(s) with the reported relay UE(s) is not available:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to report relay UE information with non-3GPP connection(s) included in the *n3c-relayUE-InfoList*;

1> if configured to provide configured grant assistance information for NR sidelink positioning:

2> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide configured grant assistance information for NR sidelink positioning;

#### 5.7.4.3 Actions related to transmission of *UEAssistanceInformation* message

The UE shall set the contents of the *UEAssistanceInformation* message as follows:

1> if transmission of the *UEAssistanceInformation* message is initiated to provide a delay budget report according to 5.7.4.2 or 5.3.5.3;

2> set *delayBudgetReport* to *type1* according to a desired value;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide overheating assistance information according to 5.7.4.2 or 5.3.5.3;

2> if the UE experiences internal overheating:

3> if the UE prefers to temporarily reduce the number of maximum secondary component carriers:

4> include *reducedMaxCCs* in the *OverheatingAssistance* IE;

4> set *reducedCCsDL* to the number of maximum SCells the UE prefers to be temporarily configured in downlink;

4> set *reducedCCsUL* to the number of maximum SCells the UE prefers to be temporarily configured in uplink;

3> if the UE prefers to temporarily reduce maximum aggregated bandwidth of FR1:

4> include *reducedMaxBW-FR1* in the *OverheatingAssistance* IE;

4> set *reducedBW-DL* to the maximum aggregated bandwidth the UE prefers to be temporarily configured across all downlink carriers of FR1;

4> set *reducedBW-UL* to the maximum aggregated bandwidth the UE prefers to be temporarily configured across all uplink carriers of FR1;

3> if the UE prefers to temporarily reduce maximum aggregated bandwidth of FR2-1:

4> include *reducedMaxBW-FR2* in the *OverheatingAssistance* IE;

4> set *reducedBW-DL* to the maximum aggregated bandwidth the UE prefers to be temporarily configured across all downlink carriers of FR2-1;

4> set *reducedBW-UL* to the maximum aggregated bandwidth the UE prefers to be temporarily configured across all uplink carriers of FR2-1;

3> if the UE prefers to temporarily reduce maximum aggregated bandwidth of FR2-2:

4> include *reducedMaxBW-FR2-2* in the *OverheatingAssistance IE*;

4> set *reducedBW-FR2-2-DL* to the maximum aggregated bandwidth the UE prefers to be temporarily configured across all downlink carriers of FR2-2;

4> set *reducedBW-FR2-2-UL* to the maximum aggregated bandwidth the UE prefers to be temporarily configured across all uplink carriers of FR2-2;

3> if the UE prefers to temporarily reduce the number of maximum MIMO layers of each serving cell operating on FR1:

4> include *reducedMaxMIMO-LayersFR1* in the *OverheatingAssistance* IE;

4> set *reducedMIMO-LayersFR1-DL* to the number of maximum MIMO layers of each serving cell operating on FR1 the UE prefers to be temporarily configured in downlink;

4> set *reducedMIMO-LayersFR1-UL* to the number of maximum MIMO layers of each serving cell operating on FR1 the UE prefers to be temporarily configured in uplink;

3> if the UE prefers to temporarily reduce the number of maximum MIMO layers of each serving cell operating on FR2-1:

4> include *reducedMaxMIMO-LayersFR2* in the *OverheatingAssistance* IE;

4> set *reducedMIMO-LayersFR2-DL* to the number of maximum MIMO layers of each serving cell operating on FR2-1 the UE prefers to be temporarily configured in downlink;

4> set *reducedMIMO-LayersFR2-UL* to the number of maximum MIMO layers of each serving cell operating on FR2-1 the UE prefers to be temporarily configured in uplink;

3> if the UE prefers to temporarily reduce the number of maximum MIMO layers of each serving cell operating on FR2-2:

4> include *reducedMaxMIMO-LayersFR2-2* in the *OverheatingAssistance IE*;

4> set *reducedMIMO-LayersFR2-2-DL* to the number of maximum MIMO layers of each serving cell operating on FR2 the UE prefers to be temporarily configured in downlink;

4> set *reducedMIMO-LayersFR2-2-UL* to the number of maximum MIMO layers of each serving cell operating on FR2 the UE prefers to be temporarily configured in uplink;

2> else (if the UE no longer experiences an overheating condition):

3> do not include *reducedMaxCCs*, *reducedMaxBW-FR1*, *reducedMaxBW-FR2*, *reducedMaxBW-FR2-2*, *reducedMaxMIMO-LayersFR1,* *reducedMaxMIMO-LayersFR2* or *reducedMaxMIMO-LayersFR2-2* in *OverheatingAssistance* IE;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide IDC FDM assistance information according to 5.7.4.2 or 5.3.5.3:

2> if there is at least one carrier frequency included in *candidateServingFreqListNR*, the UE is experiencing IDC problems that it cannot solve by itself:

3> include the field *affectedCarrierFreqList* with an entry for each affected carrier frequency included in *candidateServingFreqListNR*;

3> for each carrier frequency included in the field *affectedCarrierFreqList*, include *interferenceDirection* and set it accordingly;

2> if there is at least one supported UL CA or NR-DC combination comprising of carrier frequencies included in *candidateServingFreqListNR*, the UE is experiencing IDC problems that it cannot solve by itself:

3> include *victimSystemType* for each UL CA or NR-DC combination included in *affectedCarrierFreqCombList*;

3> if the UE sets *victimSystemType* to *wlan* or *bluetooth*:

4> include *affectedCarrierFreqCombList* with an entry for each supported UL CA combination comprising of carrier frequencies included in *candidateServingFreqListNR*, that is affected by IDC problems;

3> else:

4> optionally include *affectedCarrierFreqCombList* with an entry for each supported UL CA or NR-DC combination comprising of carrier frequencies included in *candidateServingFreqListNR*, that is affected by IDC problems;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide IDC enhanced FDM assistance information according to 5.7.4.2 or 5.3.5.3:

2> if there is at least one affected frequency range overlapping with one candidate frequency range included in *candidateServingFreqRangeListNR*, and the center frequency of the affected frequency range is within the candidate frequency range included in *candidateServingFreqRangeListNR*, the UE is experiencing IDC problems that it cannot solve by itself:

3> include the field *affectedCarrierFreqRangeList* with an entry for each affected frequency range;

3> for each affected frequency range included in the field *affectedCarrierFreqRangeList*, include *centerFreq* and *affectedBandwidth*;

3> for each affected frequency range included in the field *affectedCarrierFreqRangeList*, include *interferenceDirection* and optionally *victimSystemType*, and set it accordingly;

2> if there is at least one supported UL CA or NR-DC combinations comprising of candidate frequency ranges included in *candidateServingFreqRangeListNR*, and each affected frequency range in the UL CA or NR-DC combination overlapping with one candidate frequency range included in *candidateServingFreqRangeListNR*, and the center frequency of the affected frequency range is within the candidate frequency range included in *candidateServingFreqRangeListNR*, the UE is experiencing IDC problems that it cannot solve by itself:

3> include the field *affectedCarrierFreqRangeCombList* with an entry for each supported UL CA or NR-DC combination comprising of frequency ranges that is affected by IDC problems;

3> for each affected frequency range included in the field *affectedCarrierFreqRangeCombList*, include *centerFreq* and *affectedBandwidth*;

3> for each UL CA or NR-DC combination included in the field *affectedCarrierFreqRangeCombList*, include *interferenceDirection* and optionally *victimSystemType*, and set it accordingly;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide IDC TDM assistance information according to 5.7.4.2 or 5.3.5.3:

2> if there is at least one candidate carrier frequency included in *candidateServingFreqListNR* or candidate frequency range included in *candidateServingFreqRangeListNR* or one supported UL CA or NR-DC combination comprising of candidate carrier frequencies included in *candidateServingFreqListNR* or candidate frequency ranges included in *candidateServingFreqRangeListNR*, the UE is experiencing IDC problems that it cannot solve by itself, and *affectedCarrierFreqList* or *affectedCarrierFreqCombList* or *affectedCarrierFreqRangeList* or *affectedCarrierFreqRangeCombList* is included, and *idc-TDM-AssistanceConfig* is set to *setup*:

3> include Time Domain Multiplexing (TDM) based assistance information as indicated by *idc-TDM-Assistance* that could be used to resolve the IDC problems;

NOTE 1: When sending an *UEAssistanceInformation* message to inform the IDC problems, the UE includes all IDC assistance information in the *idc-Assistance* (IDC FDM assistance information) or *idc-FDM-Assistance* (IDC enhanced FDM assistance information) or *idc-TDM-Assistance* (IDC TDM assistance information) fields respectively (rather than providing e.g. the changed part(s) of the IDC assistance information in respective fields).

NOTE 2: Upon not anymore experiencing a particular IDC problem that the UE previously reported, the UE provides an IDC indication with the modified contents of the *UEAssistanceInformation* message (e.g. by not including the IDC assistance information in the *idc-Assistance* or *idc-FDM-Assistance* or *idc-TDM-Assistance* fields).

1> if transmission of the *UEAssistanceInformation* message is initiated to provide *drx-Preference* of a cell group for power saving according to 5.7.4.2 or 5.3.5.3:

2> include *drx-Preference* in the *UEAssistanceInformation* message;

2> if the UE has a preference on DRX parameters for the cell group:

3> if the UE has a preference for the long DRX cycle:

4> include *preferredDRX-LongCycle* in the *DRX-Preference* IE andset it to the preferred value;

3> if the UE has a preference for the DRX inactivity timer:

4> include *preferredDRX-InactivityTimer* in the *DRX-Preference* IE and set it to the preferred value;

3> if the UE has a preference for the short DRX cycle:

4> include *preferredDRX-ShortCycle* in the *DRX-Preference* IE and set it to the preferred value;

3> if the UE has a preference for the short DRX timer:

4> include *preferredDRX-ShortCycleTimer* in the *DRX-Preference* IE and set it to the preferred value;

2> else (if the UE has no preference on DRX parameters for the cell group):

3> do not include *preferredDRX-LongCycle, preferredDRX-InactivityTimer, preferredDRX-ShortCycle* and *preferredDRX-ShortCycleTimer* in the *DRX-Preference* IE;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide *maxBW-Preference* of a cell group for power saving according to 5.7.4.2 or 5.3.5.3:

2> include *maxBW-Preference* in the *UEAssistanceInformation* message;

2> if the UE has a preference on the maximum aggregated bandwidth for the cell group:

3> if the UE prefers to reduce the maximum aggregated bandwidth of FR1:

4> include *reducedMaxBW-FR1* in the *MaxBW-Preference* IE;

4> set *reducedBW-DL* to the maximum aggregated bandwidth the UE desires to have configured across all downlink carriers of FR1in the cell group;

4> set *reducedBW-UL* to the maximum aggregated bandwidth the UE desires to have configured across all uplink carriers of FR1in the cell group;

3> if the UE prefers to reduce the maximum aggregated bandwidth of FR2-1:

4> include *reducedMaxBW-FR2* in the *MaxBW-Preference* IE;

4> set *reducedBW-DL* to the maximum aggregated bandwidth the UE desires to have configured across all downlink carriers of FR2-1in the cell group;

4> set *reducedBW-UL* to the maximum aggregated bandwidth the UE desires to have configured across all uplink carriers of FR2-1in the cell group;

2> else (if the UE has no preference on the maximum aggregated bandwidth for the cell group):

3> do not include *reducedMaxBW-FR1* and *reducedMaxBW-FR2* in the *MaxBW-Preference* IE;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide *maxBW-PreferenceFR2-2* of a cell group for power saving according to 5.7.4.2 or 5.3.5.3:

2> include *maxBW-PreferenceFR2-2* in the *UEAssistanceInformation* message;

3> if the UE prefers to reduce the maximum aggregated bandwidth of FR2-2:

4> include *reducedMaxBW-FR2-2* in the M*axBW-PreferenceFR2-2* IE;

4> set *reducedBW-FR2-2-DL* to the maximum aggregated bandwidth the UE desires to have configured across all downlink carriers of FR2-2 in the cell group;

4> set *reducedBW-FR2-2-UL* to the maximum aggregated bandwidth the UE desires to have configured across all uplink carriers of FR2-2 in the cell group;

2> else (if the UE has no preference on the maximum aggregated bandwidth for the cell group):

3> do not include *reducedMaxBW-FR2-2* in the *MaxBW-PreferenceFR2-2* IE;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide *maxCC-Preference* of a cell group for power saving according to 5.7.4.2 or 5.3.5.3:

2> include *maxCC-Preference* in the *UEAssistanceInformation* message;

2> if the UE has a preference on the maximum number of secondary component carriers for the cell group:

3> include *reducedMaxCCs* in the *MaxCC-Preference* IE;

3> set *reducedCCsDL* to the number of maximum SCells the UE desires to have configured in downlinkin the cell group;

3> set *reducedCCsUL* to the number of maximum SCells the UE desires to have configured in uplinkin the cell group;

2> else (if the UE has no preference on the maximum number of secondary component carriers for the cell group):

3> do not include *reducedMaxCCs* in the *MaxCC-Preference* IE;

NOTE 3: The UE can implicitly indicate a preference for NR SCG release by reporting the maximum aggregated bandwidth preference for power saving of the cell group, if configured, as zero for both FR1 and FR2, and by reporting the maximum number of secondary component carriers for power saving of the cell group, if configured, as zero for both uplink and downlink.

1> if transmission of the *UEAssistanceInformation* message is initiated to provide *maxMIMO-LayerPreference* of a cell group for power saving according to 5.7.4.2 or 5.3.5.3:

2> include *maxMIMO-LayerPreference* in the *UEAssistanceInformation* message;

2> if the UE has a preference on the maximum number of MIMO layers for the cell group:

3> if the UE prefers to reduce the number of maximum MIMO layers of each serving cell operating on FR1:

4> include *reducedMaxMIMO-LayersFR1* in the *MaxMIMO-LayerPreference* IE;

4> set *reducedMIMO-LayersFR1-DL* to the preferred maximum number of downlink MIMO layers of each BWP of each FR1 serving cell that the UE operates on in the cell group;

4> set *reducedMIMO-LayersFR1-UL* to the preferred maximum number of uplink MIMO layers of each FR1 serving cell that the UE operates on in the cell group;

3> if the UE prefers to reduce the number of maximum MIMO layers of each serving cell operating on FR2-1:

4> include *reducedMaxMIMO-LayersFR2* in the *MaxMIMO-LayerPreference* IE;

4> set *reducedMIMO-LayersFR2-DL* to the preferred maximum number of downlink MIMO layers of each BWP of each FR2-1 serving cell that the UE operates on in the cell group;

4> set *reducedMIMO-LayersFR2-UL* to the preferred maximum number of uplink MIMO layers of each FR2-1 serving cell that the UE operates on in the cell group;

2> else (if the UE has no preference on the maximum number of MIMO layers for the cell group):

3> do not include *reducedMaxMIMO-LayersFR1* and *reducedMaxMIMO-LayersFR2* in the *MaxMIMO-LayerPreference* IE;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide *maxMIMO LayerPreferenceFR2* 2 of a cell group for power saving according to 5.7.4.2 or 5.3.5.3:

2> include *maxMIMO-LayerPreferenceFR2-2* in the *UEAssistanceInformation* message;

2> if the UE has a preference on the maximum number of MIMO layers for the cell group for FR2-2:

3> if the UE prefers to reduce the number of maximum MIMO layers of each serving cell operating on FR2 2:

4> include *reducedMaxMIMO-LayersFR2-2* in the *MaxMIMO-LayerPreferenceFR2 2* IE;

4> set *reducedMIMO-LayersFR2-2-DL* to the preferred maximum number of downlink MIMO layers of each BWP of each FR2-2 serving cell that the UE operates on in the cell group;

4> set *reducedMIMO-LayersFR2-2-UL* to the preferred maximum number of uplink MIMO layers of each FR2-2 serving cell that the UE operates on in the cell group;

2> else (if the UE has no preference on the maximum number of MIMO layers for the cell group):

3> do not include reducedMaxMIMO-LayersFR2-2 in the *MaxMIMO-LayerPreferenceFR2-*2 IE;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide *minSchedulingOffsetPreference* of a cell group for power saving according to 5.7.4.2 or 5.3.5.3:

2> include *minSchedulingOffsetPreference* in the *UEAssistanceInformation* message;

2> if the UE has a preference on the minimum scheduling offset for cross-slot scheduling for the cell group:

3> if the UE has a preference for the value of K0 (TS 38.214 [19], clause 5.1.2.1) for cross-slot scheduling with 15 kHz SCS:

4> include *preferredK0-SCS-15kHz* in the *MinSchedulingOffsetPreference* IE and set it to the desired value of *K*0;

3> if the UE has a preference for the value of K0 for cross-slot scheduling with 30 kHz SCS:

4> include *preferredK0-SCS-30kHz* in the *MinSchedulingOffsetPreference* IE and set it to the desired value of *K*0;

3> if the UE has a preference for the value of K0 for cross-slot scheduling with 60 kHz SCS:

4> include *preferredK0-SCS-60kHz* in the *MinSchedulingOffsetPreference* IE and set it to the desired value of *K*0;

3> if the UE has a preference for the value of K0 for cross-slot scheduling with 120 kHz SCS:

4> include *preferredK0-SCS-120kHz* in the *MinSchedulingOffsetPreference* IE and set it to the desired value of *K*0;

3> if the UE has a preference for the value of K2 (TS 38.214 [19], clause 6.1.2.1) for cross-slot scheduling with 15 kHz SCS:

4> include *preferredK2-SCS-15kHz* in the *MinSchedulingOffsetPreference* IE and set it to the desired value of *K*2;

3> if the UE has a preference for the value of K2 for cross-slot scheduling with 30 kHz SCS:

4> include *preferredK2-SCS-30kHz* in the *MinSchedulingOffsetPreference* IE and set it to the desired value of *K*2;

3> if the UE has a preference for the value of K2 for cross-slot scheduling with 60 kHz SCS:

4> include *preferredK2-SCS-60kHz* in the *MinSchedulingOffsetPreference* IE and set it to the desired value of *K*2;

3> if the UE has a preference for the value of K2 for cross-slot scheduling with 120 kHz SCS:

4> include *preferredK2-SCS-120kHz* in the *MinSchedulingOffsetPreference* IE and set it to the desired value of *K*2;

2> else (if the UE has no preference on the minimum scheduling offset for cross-slot scheduling for the cell group):

3> do not include *preferredK0* and *preferredK2* in the *MinSchedulingOffsetPreference* IE;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide *minSchedulingOffsetPreferenceExt* of a cell group for power saving according to 5.7.4.2 or 5.3.5.3:

2> include *minSchedulingOffsetPreferenceExt* in the *UEAssistanceInformation* message;

2> if the UE has a preference on the minimum scheduling offset for cross-slot scheduling for the cell group for FR2-2:

3> include *minSchedulingOffsetPreferenceExt* in the *UEAssistanceInformation* message;

4> if the UE has a preference for the value of K0 (TS 38.214 [19], clause 5.1.2.1) for cross-slot scheduling with 480 kHz SCS:

5> include *preferredK0-SCS-480kHz* in the *minSchedulingOffsetPreferenceExt* IE and set it to the desired value of K0;

4> if the UE has a preference for the value of K0 for cross-slot scheduling with 960 kHz SCS:

5> include *preferredK0-SCS-960kHz* in the *minSchedulingOffsetPreferenceExt* IE and set it to the desired value of K0;

4> if the UE has a preference for the value of K2 for cross-slot scheduling with 480 kHz SCS:

5> include *preferredK2-SCS-480kHz* in the *minSchedulingOffsetPreferenceExt* IE and set it to the desired value of K2;

4> if the UE has a preference for the value of K2 for cross-slot scheduling with 960 kHz SCS:

5> include *preferredK2-SCS-960kHz* in the *minSchedulingOffsetPreferenceExt* IE and set it to the desired value of K2;

3> else (if the UE has no preference on the minimum scheduling offset for cross-slot scheduling for the cell group):

4> do not include *preferredK0* and *preferredK2* in the *minSchedulingOffsetPreferenceExt* IE;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide a release preference according to 5.7.4.2 or 5.3.5.3:

2> include *releasePreference* in the *UEAssistanceInformation* message;

2> set *preferredRRC-State* to the desired RRC state on transmission of the *UEAssistanceInformation* message;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide an indication of preference in being provisioned with reference time information according to 5.7.4.2 or 5.3.5.3:

2> if the UE has a preference in being provisioned with reference time information:

3> set *referenceTimeInfoPreference* to *true*;

2> else:

3> set *referenceTimeInfoPreference* to *false*.

1> if transmission of the *UEAssistanceInformation* message is initiated to provide preference on FR2 UL gap according to 5.7.4.2 or 5.3.5.3:

2> if the UE has a preference for FR2 UL gap configuration:

3> set *ul-GapFR2-PatternPreference* to the preferred FR2 UL gap pattern;

2> else (if the UE has no preference for the FR2 UL gap configuration):

3> do not include *ul-GapFR2-PatternPreference* in the *UL-GapFR2-Preference* IE.

1> if transmission of the *UEAssistanceInformation* message is initiated to provide *musim-GapPreferenceList* and/or *musim-GapPriorityPreferenceList* and/or *musim-GapKeepPreference*, or provide MUSIM assistance information for leaving RRC\_CONNECTED according to 5.7.4.2 or 5.3.5.3:

2> if the UE has a preference for MUSIM periodic gap(s):

3> include *musim-GapPreferenceList* with an entry for each periodic gap the UE prefers to be configured;

4> set *musim-GapLength* and *musim-GapRepetitionAndOffset* in the *musim-GapInfo* IEto the values of the length and the repetition/offset of the gap(s), respectively, the UE prefers to be configured with;

4> if UE has a preference for MUSIM gap priority;

5> include the *musim-GapPriorityPreferenceList* the UE prefers to be configured;

2> if the UE has a preference for MUSIM aperiodic gap:

3> include the field *musim-GapPreferenceList*, with one entry for the aperiodic gap the UE prefers to be configured;

4> include *musim-GapLength* in the *musim-GapInfo* IEand set it to the values of the length of the gap the UE prefers to be configured with;

4> optionally include *musim-Starting-SFN-AndSubframe* in the *musim-GapInfo* IE and set it to the starting SFN/subframe of the gap the UE prefers to be configured with;

2> if the UE has a preference to keep all colliding MUSIM gaps:

3> include the *musim-GapKeepPreference*;

2> if the UE has no longer preference for the periodic/aperiodic gaps and gap priority:

3> do not include *musim-GapPreferenceList*, *musim-GapPriorityPreferenceList* and *musim-GapKeepPreference* in the *musim-Assistance* IE;

2> if UE has a preference to leave RRC\_CONNECTED state:

3> set *musim-PreferredRRC-State* to the preferred RRC state.

1> if transmission of the *UEAssistanceInformation* message is initiated to provide *musim-CapRestriction* according to 5.7.4.2 or 5.3.5.3:

2> if UE has a preference for temporary capability restriction:

3> if UE has a preference for serving cell(s), except PCell, and/or SCG to be released:

4> include the *musim-Cell-SCG-ToRelease*;

5> set *musim-CellToRelease* to include the serving cell(s) the UE prefers to be released;

5> set scg-ReleasePreference to *scgReleasePreferred* if the UE prefers the SCG to be released;

3> if UE has a preference to indicate the serving cells with restricted capabilities:

4> include the *musim-CellToAffectList* the UE prefers to be configured;

5> include the *musim-ServCellIndex* and the *musim-MIMO-Layers-DL*/ *musim-MIMO-Layers-UL/ musim-SupportedBandwidth-DL/ musim-SupportedBandwidth-UL for* the corresponding serving cell;

3> if UE has a preference to indicate the maximum number of CCs:

4> include the *musim-CapRestriction* for the *musim-MaxCC* the UE prefers to be configured;

5> include the *musim-MaxCC-TotalDL/ musim-MaxCC-TotalUL/ musim-MaxCC-FR1-DL/ musim-MaxCC-FR1-UL/ musim-MaxCC-FR2-1-DL/ musim-MaxCC-FR2-2-UL/ musim-MaxCC-FR2-2-DL/ musim-MaxCC-FR2-2-UL* for the corresponding maximum number of CCs;

3> if UE has a preference to indicate band(s) and/or combination(s) of bands with capabilities restricted which comprise of the band(s) that is/are indicated in *musim-CandidateBandList*:

4> include the *musim-AffectededBandsList* the UE prefer to be configured with capabilities restricted;

5> include the *musim-bandEntryIndex* for each band or each band of the combination(s) for which capabilities are restricted;

5> include the *musim-CapabilityRestricted* for the corresponding band;

3> if UE has a preference to indicate band(s) and/or combination(s) of bands to be avoided which comprise of band(s) that is indicated in *musim-CandidateBandList*:

4> include the *musim-AvoidedBandsList* the UE prefers not to be configured;

5> include the *musim-bandEntryIndex* for each band or each band of the combination(s) to be avoided;

2> if UE has no longer preference for temporary capability restriction indicated by *musim-Cell-SCG-ToRelease*, *musim-CellToAffectList*, *musim-MaxCC*, *musim-AffectededBandsList* and/or *musim-AvoidedBandsList*:

3> do not include the corresponding temporary capability restriction preference in the *musim-CapRestriction*;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide *musim-NeedForGapsInfoNR* according to 5.7.4.2 or 5.3.5.3:

2> include *intraFreq-needForGap* and set the gap requirement information of intra-frequency measurement for each supported NR serving cell;

2> if the *requestedTargetBandFilterNR-r16* of *NeedForGapsConfigNR* is configured:

3> for each supported NR band included in *requestedTargetBandFilterNR-r16*, include an entry in *interFreq-needForGap* and set the measurement gap requirement information for that band;

2> else:

3> include an entry in *interFreq-needForGap* and set the measurement gap requirement information for each supported NR band;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide the relaxation state of RLM measurements of a cell group according to 5.7.4.2:

2> if the UE performs RLM measurement relaxation on the cell group according to TS 38.133 [14]:

3> set the *rlm-MeasRelaxationState* to *true*;

2> else:

3> set the *rlm-MeasRelaxationState* to *false*;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide the relaxation state of BFD measurements of a cell group:

2> for each serving cell of the cell group:

3> if the UE performs BFD measurement relaxation on this serving cell according to TS 38.133 [14]:

4> set the n-th bit of *bfd-MeasRelaxationState* to '1', where n is equal to the *servCellIndex* value + 1 of the serving cell;

3> else:

4> set the n-th bit of *bfd-MeasRelaxationState* to '0', where n is equal to the *servCellIndex* value + 1 of the serving cell.

1> if transmission of the *UEAssistanceInformation* message is initiated to indicate availability of data mapped to radio bearers not configured for SDT according to 5.7.4.2:

2> include the *nonSDT-DataIndication* in the *UEAssistanceInformation* message;

2> include and set the *resumeCause* according to the information received from the upper layers, if provided.

1> if transmission of the *UEAssistanceInformation* message is initiated to provide an indication of preference for SCG deactivation according to 5.7.4.2:

2> include *scg-DeactivationPreference* in the *UEAssistanceInformation* message;

2> set the *scg-DeactivationPreference* to *scg-DeactivationPreferred* if the UE prefers the SCG to be deactivated, otherwise set it to *noPreference*;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide an indication that the UE has uplink data related to a deactivated SCG according to 5.7.4.2:

2> include *uplinkData* in the *UEAssistanceInformation* message.

1> if transmission of the *UEAssistanceInformation* message is initiated to provide an indication about whether the criterion for RRM relaxation for connected mode is fulfilled or not fulfilled:

2> if the criterion for RRM measurement relaxation for connected mode is fulfilled:

3> set the *rrm-MeasRelaxationFulfilment* to *true*;

2> else:

3> set the *rrm-MeasRelaxationFulfilment* to *false*.

1> if transmission of the *UEAssistanceInformation* message is initiated to provide the service link propagation delay difference between serving cell and neighbour cell(s) according to 5.7.4.2;

2> include the *propagationDelayDifference* for each neighbour cell in the *neighCellInfoList*;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide preference on multi-Rx operation for FR2 according to 5.7.4.2:

2> if the UE has a preference for not operating on multi-Rx (i.e. not supporting simultaneous reception with different QCL-typeD) for FR2:

3> set *multiRx-PreferenceFR2* to *single*;

2> else (if the UE has the preference for operating on multi-Rx for FR2):

3> set *multiRx-PreferenceFR2* to *multiple*.

1> if transmission of the *UEAssistanceInformation* message is initiated to indicate the availability of flight path information according to 5.7.4.2 or 5.3.5.3;

2> include the *flightPathInfoAvailable*;

1> if transmission of the *UEAssistanceInformation* message is initiated to provide UL traffic information according to 5.7.4.2 or 5.3.5.3:

2> for each PDU session for which the UE intends to provide UL traffic information in this *UEAssistanceInformation* message:

3> set *pdu-SessionID* to the value of the concerned PDU session ID;

3> if transmission of the *UEAssistanceInformation* message is initiated to provide UL traffic information according to 5.3.5.3:

4> stop timer T346l for each QoS flow of this PDU session for which the UE intends to provide UL traffic information in this *UEAssistanceInformation* message;

3> for each QoS flow of this PDU session for which timer T346l is not running and for which the UE intends to provide UL traffic information in this *UEAssistanceInformation* message:

4> start timer T346l associated to this QoS flow with the timer value set to the value of *ul-TrafficInfoProhibitTimer*;

4> set *qfi* to the value of the concerned QFI;

4> if the jitter range measurement is available; and

4> if the UE did not provide jitter range since it was configured to provide UL traffic information, or if the measured jitter range has changed since the last transmission of the *UEAssistanceInformation* message containing *jitterRange*:

5> set *jitterRange* to the latest measured value of the jitter range;

4> if the burst arrival time measurement is available; and

4> if the UE did not provide burst arrival time since it was configured to provide UL traffic information, or if the measured burst arrival time has changed since the last transmission of the *UEAssistanceInformation* message containing *burstArrivalTime*:

5> set *burstArrivalTime* to the latest measured value of the burst arrival time;

4> if the traffic periodicity measurement is available; and

4> if the UE did not provide traffic periodicity since it was configured to provide UL traffic information, or if the measured traffic periodicity has changed since the last transmission of the *UEAssistanceInformation* message containing *trafficPeriodicity*:

5> set *trafficPeriodicity* to the latest measured value of the traffic periodicity;

4> if the UE did not provide *pdu-SetIdentification* since it was configured to provide UL traffic information, or if the information previously provided in *pdu-SetIdentification* has changed since the last transmission of the *UEAssistanceInformation* message containing *pdu-SetIdentification*:

5> if the UE is able to identify PDU Set(s) for the QoS flow:

6> set *pdu-SetIdentification* to *true*;

5> else:

6> set *pdu-SetIdentification* to *false*.

4> if the UE did not provide *psi-Identification* since it was configured to provide UL traffic information, or if the information previously provided in *psi-Identification* has changed since the last transmission of the *UEAssistanceInformation* message containing *psi-Identification*:

5> if the UE is able to identify PSI(s) for the QoS flow:

6> set *psi-Identification* to true;

5> else:

6> set *psi-Identification* to *false*.

1> if transmission of the *UEAssistanceInformation* message is initiated to report relay UE information with non-3GPP connection(s) according to 5.7.4.2:

2> include *n3c-relayUE-InfoList* in the *UEAssistanceInformation* message;

The UE shall set the contents of the *UEAssistanceInformation* message for configured grant assistance information for NR sidelink communication or NR sidelink positioning:

1> if configured to provide configured grant assistance information for NR sidelink:

2> include the *sl-UE-AssistanceInformationNR*;

1> if configured to provide configured grant assistance information for NR sidelink positioning:

2> include the *sl-PRS-UE-AssistanceInformationNR*;

NOTE 4: It is up to UE implementation when and how to trigger configured grant assistance information for NR sidelink communication or NR sidelink positioning.

The UE shall:

1> if the procedure was triggered to provide configured grant assistance information for NR sidelink communication by an NR *RRCReconfiguration* message that was embedded within an E-UTRA *RRCConnectionReconfiguration*:

2> submit the *UEAssistanceInformation* to lower layers via SRB1, embedded in E-UTRA RRC message *ULInformationTransferIRAT* as specified in TS 36.331 [10], clause 5.6.28;

1> else if the procedure was triggered to provide UE preference for SCG deactivation or to indicate that the UE with a deactivate SCG has uplink data to send on a DRB for which there is no MCG RLC bearer:

2> submit the *UEAssistanceInformation* via SRB1 to lower layers for transmission;

1> else if the UE is in (NG)EN-DC:

2> if SRB3 is configured and the SCG is not deactivated:

3> submit the *UEAssistanceInformation* message via SRB3 to lower layers for transmission;

2> else:

3> submit the *UEAssistanceInformation* message via the E-UTRA MCG embedded in E-UTRA RRC message *ULInformationTransferMRDC* as specified in TS 36.331 [10].

1> else if the UE is in NR-DC:

2> if the UE assistance configuration that triggered this UE assistance information is associated with the SCG:

3> if SRB3 is configured and the SCG is not deactivated:

4> submit the *UEAssistanceInformation* message via SRB3 to lower layers for transmission;

3> else:

4> submit the *UEAssistanceInformation* message via the NR MCG embedded in NR RRC message *ULInformationTransferMRDC* as specified in5.7.2a.3;

2> else:

3> submit the *UEAssistanceInformation* message via SRB1 to lower layers for transmission;

1> else:

2> submit the *UEAssistanceInformation* message to lower layers for transmission.

### 6.2.2 Message definitions

<cut>

#### – *RRCRelease*

The *RRCRelease* message is used to command the release of an RRC connection or the suspension of the RRC connection.

Signalling radio bearer: SRB1

RLC-SAP: AM

Logical channel: DCCH

Direction: Network to UE

*RRCRelease* message

-- ASN1START

-- TAG-RRCRELEASE-START

RRCRelease ::= SEQUENCE {

 rrc-TransactionIdentifier RRC-TransactionIdentifier,

 criticalExtensions CHOICE {

 rrcRelease RRCRelease-IEs,

 criticalExtensionsFuture SEQUENCE {}

 }

}

RRCRelease-IEs ::= SEQUENCE {

 redirectedCarrierInfo RedirectedCarrierInfo OPTIONAL, -- Need N

 cellReselectionPriorities CellReselectionPriorities OPTIONAL, -- Need R

 suspendConfig SuspendConfig OPTIONAL, -- Need R

 deprioritisationReq SEQUENCE {

 deprioritisationType ENUMERATED {frequency, nr},

 deprioritisationTimer ENUMERATED {min5, min10, min15, min30}

 } OPTIONAL, -- Need N

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 nonCriticalExtension RRCRelease-v1540-IEs OPTIONAL

}

RRCRelease-v1540-IEs ::= SEQUENCE {

 waitTime RejectWaitTime OPTIONAL, -- Need N

 nonCriticalExtension RRCRelease-v1610-IEs OPTIONAL

}

RRCRelease-v1610-IEs ::= SEQUENCE {

 voiceFallbackIndication-r16 ENUMERATED {true} OPTIONAL, -- Need N

 measIdleConfig-r16 SetupRelease {MeasIdleConfigDedicated-r16} OPTIONAL, -- Need M

 nonCriticalExtension RRCRelease-v1650-IEs OPTIONAL

}

RRCRelease-v1650-IEs ::= SEQUENCE {

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

 nonCriticalExtension RRCRelease-v1710-IEs OPTIONAL

}

RRCRelease-v1710-IEs ::= SEQUENCE {

 noLastCellUpdate-r17 ENUMERATED {true} OPTIONAL, -- Need S

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

RedirectedCarrierInfo ::= CHOICE {

 nr CarrierInfoNR,

 eutra RedirectedCarrierInfo-EUTRA,

 ...

}

RedirectedCarrierInfo-EUTRA ::= SEQUENCE {

 eutraFrequency ARFCN-ValueEUTRA,

 cnType ENUMERATED {epc,fiveGC} OPTIONAL -- Need N

}

CarrierInfoNR ::= SEQUENCE {

 carrierFreq ARFCN-ValueNR,

 ssbSubcarrierSpacing SubcarrierSpacing,

 smtc SSB-MTC OPTIONAL, -- Need S

 ...

}

SuspendConfig ::= SEQUENCE {

 fullI-RNTI I-RNTI-Value,

 shortI-RNTI ShortI-RNTI-Value,

 ran-PagingCycle PagingCycle,

 ran-NotificationAreaInfo RAN-NotificationAreaInfo OPTIONAL, -- Need M

 t380 PeriodicRNAU-TimerValue OPTIONAL, -- Need R

 nextHopChainingCount NextHopChainingCount,

 ...,

 [[

 sl-UEIdentityRemote-r17 RNTI-Value OPTIONAL, -- Cond L2RemoteUE

 sdt-Config-r17 SetupRelease { SDT-Config-r17 } OPTIONAL, -- Need M

 srs-PosRRC-Inactive-r17 SetupRelease { SRS-PosRRC-Inactive-r17 } OPTIONAL, -- Need M

 ran-ExtendedPagingCycle-r17 ExtendedPagingCycle-r17 OPTIONAL -- Cond RANPaging

 ]],

 [[

 ncd-SSB-RedCapInitialBWP-SDT-r17 SetupRelease {NonCellDefiningSSB-r17} OPTIONAL -- Need M

 ]],

 [[

 resumeIndication-r18 ENUMERATED {true} OPTIONAL, -- Need N

 srs-PosRRC-InactiveEnhanced-r18 SetupRelease { SRS-PosRRC-InactiveEnhanced-r18 } OPTIONAL, -- Need M

 ran-ExtendedPagingCycleConfig-r18 ExtendedPagingCycleConfig-r18 OPTIONAL, -- Cond RANPaging

 multicastConfigInactive-r18 SetupRelease { MulticastConfigInactive-r18 } OPTIONAL -- Need M

 ]]

}

PeriodicRNAU-TimerValue ::= ENUMERATED { min5, min10, min20, min30, min60, min120, min360, min720}

CellReselectionPriorities ::= SEQUENCE {

 freqPriorityListEUTRA FreqPriorityListEUTRA OPTIONAL, -- Need M

 freqPriorityListNR FreqPriorityListNR OPTIONAL, -- Need M

 t320 ENUMERATED {min5, min10, min20, min30, min60, min120, min180, spare1} OPTIONAL, -- Need R

 ...,

 [[

 freqPriorityListDedicatedSlicing-r17 FreqPriorityListDedicatedSlicing-r17 OPTIONAL -- Need M

 ]]

}

PagingCycle ::= ENUMERATED {rf32, rf64, rf128, rf256}

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

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

FreqPriorityEUTRA ::= SEQUENCE {

 carrierFreq ARFCN-ValueEUTRA,

 cellReselectionPriority CellReselectionPriority,

 cellReselectionSubPriority CellReselectionSubPriority OPTIONAL -- Need R

}

FreqPriorityNR ::= SEQUENCE {

 carrierFreq ARFCN-ValueNR,

 cellReselectionPriority CellReselectionPriority,

 cellReselectionSubPriority CellReselectionSubPriority OPTIONAL -- Need R

}

RAN-NotificationAreaInfo ::= CHOICE {

 cellList PLMN-RAN-AreaCellList,

 ran-AreaConfigList PLMN-RAN-AreaConfigList,

 ...

}

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

PLMN-RAN-AreaCell ::= SEQUENCE {

 plmn-Identity PLMN-Identity OPTIONAL, -- Need S

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

}

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

PLMN-RAN-AreaConfig ::= SEQUENCE {

 plmn-Identity PLMN-Identity OPTIONAL, -- Need S

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

}

RAN-AreaConfig ::= SEQUENCE {

 trackingAreaCode TrackingAreaCode,

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

}

SDT-Config-r17 ::= SEQUENCE {

 sdt-DRB-List-r17 SEQUENCE (SIZE (0..maxDRB)) OF DRB-Identity OPTIONAL, -- Need M

 sdt-SRB2-Indication-r17 ENUMERATED {allowed} OPTIONAL, -- Need R

 sdt-MAC-PHY-CG-Config-r17 SetupRelease {SDT-CG-Config-r17} OPTIONAL, -- Need M

 sdt-DRB-ContinueROHC-r17 ENUMERATED { cell, rna } OPTIONAL -- Need S

}

SDT-CG-Config-r17 ::= OCTET STRING (CONTAINING SDT-MAC-PHY-CG-Config-r17)

SDT-MAC-PHY-CG-Config-r17 ::= SEQUENCE {

 -- CG-SDT specific configuration

 cg-SDT-ConfigLCH-RestrictionToAddModList-r17 SEQUENCE (SIZE(1..maxLC-ID)) OF CG-SDT-ConfigLCH-Restriction-r17 OPTIONAL, -- Need N

 cg-SDT-ConfigLCH-RestrictionToReleaseList-r17 SEQUENCE (SIZE(1..maxLC-ID)) OF LogicalChannelIdentity OPTIONAL, -- Need N

 cg-SDT-ConfigInitialBWP-NUL-r17 SetupRelease {BWP-UplinkDedicatedSDT-r17} OPTIONAL, -- Need M

 cg-SDT-ConfigInitialBWP-SUL-r17 SetupRelease {BWP-UplinkDedicatedSDT-r17} OPTIONAL, -- Need M

 cg-SDT-ConfigInitialBWP-DL-r17 BWP-DownlinkDedicatedSDT-r17 OPTIONAL, -- Need M

 cg-SDT-TimeAlignmentTimer-r17 TimeAlignmentTimer OPTIONAL, -- Need M

 cg-SDT-RSRP-ThresholdSSB-r17 RSRP-Range OPTIONAL, -- Need M

 cg-SDT-TA-ValidationConfig-r17 SetupRelease { CG-SDT-TA-ValidationConfig-r17 } OPTIONAL, -- Need M

 cg-SDT-CS-RNTI-r17 RNTI-Value OPTIONAL, -- Need M

 ...,

 [[

 cg-SDT-ConfigLCH-RestrictionToAddModListExt-v1800 SEQUENCE (SIZE(1..maxLC-ID)) OF CG-SDT-ConfigLCH-RestrictionExt-v1800

 OPTIONAL, -- Need N

 cg-MT-SDT-MaxDurationToNextCG-Occasion-r18 ENUMERATED {

 ms10, ms100, sec1, sec10, sec60, sec100, sec300, sec600,

 sec1200, sec1800, sec3600,

 spare5, spare4, spare3, spare2, spare1} OPTIONAL -- Need R

 ]]

}

CG-SDT-TA-ValidationConfig-r17 ::= SEQUENCE {

 cg-SDT-RSRP-ChangeThreshold-r17 ENUMERATED { dB2, dB4, dB6, dB8, dB10, dB14, dB18, dB22,

 dB26, dB30, dB34, spare5, spare4, spare3, spare2, spare1}

}

BWP-DownlinkDedicatedSDT-r17 ::= SEQUENCE {

 pdcch-Config-r17 SetupRelease { PDCCH-Config } OPTIONAL, -- Need M

 pdsch-Config-r17 SetupRelease { PDSCH-Config } OPTIONAL, -- Need M

 ...

}

BWP-UplinkDedicatedSDT-r17 ::= SEQUENCE {

 pusch-Config-r17 SetupRelease { PUSCH-Config } OPTIONAL, -- Need M

 configuredGrantConfigToAddModList-r17 ConfiguredGrantConfigToAddModList-r16 OPTIONAL, -- Need N

 configuredGrantConfigToReleaseList-r17 ConfiguredGrantConfigToReleaseList-r16 OPTIONAL, -- Need N

 ...

}

CG-SDT-ConfigLCH-Restriction-r17 ::= SEQUENCE {

 logicalChannelIdentity-r17 LogicalChannelIdentity,

 configuredGrantType1Allowed-r17 ENUMERATED {true} OPTIONAL, -- Need R

 allowedCG-List-r17 SEQUENCE (SIZE (0.. maxNrofConfiguredGrantConfigMAC-1-r16)) OF ConfiguredGrantConfigIndexMAC-r16

 OPTIONAL -- Need R

}

CG-SDT-ConfigLCH-RestrictionExt-v1800 ::= SEQUENCE {

 cg-SDT-MaxDurationToNextCG-Occasion-r18 ENUMERATED {

 ms10, ms100, sec1, sec10, sec60, sec100, sec300, sec600,

 sec1200, sec1800, sec3600,

 spare5, spare4, spare3, spare2, spare1} OPTIONAL -- Need R

}

SRS-PosRRC-Inactive-r17 ::= OCTET STRING (CONTAINING SRS-PosRRC-InactiveConfig-r17)

SRS-PosRRC-InactiveConfig-r17 ::= SEQUENCE {

 srs-PosConfigNUL-r17 SRS-PosConfig-r17 OPTIONAL, -- Need R

 srs-PosConfigSUL-r17 SRS-PosConfig-r17 OPTIONAL, -- Need R

 bwp-NUL-r17 BWP OPTIONAL, -- Need S

 bwp-SUL-r17 BWP OPTIONAL, -- Need S

 inactivePosSRS-TimeAlignmentTimer-r17 TimeAlignmentTimer OPTIONAL, -- Need M

 inactivePosSRS-RSRP-ChangeThreshold-r17 RSRP-ChangeThreshold-r17 OPTIONAL -- Need M

}

RSRP-ChangeThreshold-r17 ::= ENUMERATED {dB4, dB6, dB8, dB10, dB14, dB18, dB22, dB26, dB30, dB34, spare6, spare5, spare4, spare3, spare2, spare1}

SRS-PosConfig-r17 ::= SEQUENCE {

 srs-PosResourceSetToReleaseList-r17 SEQUENCE (SIZE(1..maxNrofSRS-PosResourceSets-r16)) OF SRS-PosResourceSetId-r16 OPTIONAL,-- Need N

 srs-PosResourceSetToAddModList-r17 SEQUENCE (SIZE(1..maxNrofSRS-PosResourceSets-r16)) OF SRS-PosResourceSet-r16 OPTIONAL,-- Need N

 srs-PosResourceToReleaseList-r17 SEQUENCE (SIZE(1..maxNrofSRS-PosResources-r16)) OF SRS-PosResourceId-r16 OPTIONAL,-- Need N

 srs-PosResourceToAddModList-r17 SEQUENCE (SIZE(1..maxNrofSRS-PosResources-r16)) OF SRS-PosResource-r16 OPTIONAL -- Need N

}

SRS-PosRRC-InactiveEnhanced-r18 ::= OCTET STRING (CONTAINING SRS-PosRRC-InactiveEnhancedConfig-r18)

SRS-PosRRC-InactiveEnhancedConfig-r18 ::= SEQUENCE {

 srs-PosRRC-InactiveAggBW-ConfigList-r18 SetupRelease { SRS-PosRRC-InactiveAggBW-ConfigList-r18 } OPTIONAL, -- Need M

 srs-PosTx-Hopping-r18 SetupRelease { SRS-PosTx-Hopping-r18 } OPTIONAL, -- Need M

 srs-PosRRC-InactiveValidityAreaPreConfigList-r18 SetupRelease { SRS-PosRRC-InactiveValidityAreaPreConfigList-r18 } OPTIONAL, -- Need M

 srs-PosRRC-InactiveValidityAreaNonPreConfig-r18 SetupRelease { SRS-PosRRC-InactiveValidityAreaConfig-r18 } OPTIONAL, -- Need M

 ...,

 [[

 srs-PosRRC-InactiveAggBW-AdditionalCarriers-r18 SetupRelease {SRS-PosRRC-InactiveAggBW-AdditionalCarriers-r18 } OPTIONAL -- Need M

 ]]

}

SRS-PosRRC-InactiveAggBW-AdditionalCarriers-r18 ::= SEQUENCE{

 aggregatedPosSRS-CarrierList-r18 SEQUENCE (SIZE(1..maxNrOfLinkedSRS-CarriersInactive-1-r18)) OF SRS-PosConfigPerULCarrier-r18 OPTIONAL, -- Need R

 ...

}

SRS-PosConfigPerULCarrier-r18 ::= SEQUENCE{

 freqInfo-r18 ARFCN-ValueNR,

 srs-PosConfig-r18 SRS-PosConfig-r17,

 scs-SpecificCarrier-r18 SCS-SpecificCarrier OPTIONAL, -- Need R

 bwp-r18 BWP OPTIONAL, -- Need R

 ...

}

SRS-PosRRC-InactiveValidityAreaPreConfigList-r18 ::= SEQUENCE (SIZE(1..maxNrOfVA-r18)) OF SRS-PosRRC-InactiveValidityAreaConfig-r18

SRS-PosRRC-InactiveValidityAreaConfig-r18 ::= SEQUENCE {

 srs-PosConfigValidityArea-r18 SEQUENCE (SIZE(1..maxNrOfCellsInVA-r18)) OF CellIdentity,

 srs-PosConfigNUL-r18 SRS-PosConfig-r17 OPTIONAL, -- Need R

 srs-PosConfigSUL-r18 SRS-PosConfig-r17 OPTIONAL, -- Need R

 bwp-NUL-r18 BWP OPTIONAL, -- Need S

 bwp-SUL-r18 BWP OPTIONAL, -- Need S

 areaValidityTA-Config-r18 AreaValidityTA-Config-r18 OPTIONAL, -- Need R

 ...,

 [[

 srs-PosConfigValidityAreaExt-v1830 SEQUENCE (SIZE(1..maxNrOfCellsInVA-Ext-r18)) OF CellIdentity OPTIONAL -- Need R

 ]],

 [[

 srs-PosRRC-InactiveAggBW-AdditionalCarriersPerVA-r18 SetupRelease {SRS-PosRRC-InactiveAggBW-AdditionalCarriers-r18 }

 OPTIONAL, -- Need M

 srs-PosRRC-InactiveAggBW-ConfigListPerVA-r18 SetupRelease {SRS-PosRRC-InactiveAggBW-ConfigList-r18 } OPTIONAL -- Need M

 ]]

}

AreaValidityTA-Config-r18 ::= SEQUENCE {

 inactivePosSRS-ValidityAreaTAT-r18 ENUMERATED {ms1280, ms1920, ms2560, ms5120, ms10240, ms20480, ms40960, infinity},

 inactivePosSRS-ValidityAreaRSRP-r18 RSRP-ChangeThreshold-r17 OPTIONAL, -- Need R

 autonomousTA-AdjustmentEnabled-r18 ENUMERATED {true} OPTIONAL -- Need R

}

SRS-PosRRC-InactiveAggBW-ConfigList-r18 ::= SEQUENCE (SIZE(1..maxNrOfLinkedSRS-PosResSetCombInactive-r18)) OF

 SRS-InactivePosResourceSetLinkedForAggBW-List-r18

SRS-InactivePosResourceSetLinkedForAggBW-List-r18 ::= SEQUENCE (SIZE (2..maxNrOfLinkedSRS-PosResourceSet-r18)) OF

 SRS-PosResourceSetLinkedForAggBW-r18

ExtendedPagingCycle-r17 ::= ENUMERATED {rf256, rf512, rf1024, spare1}

ExtendedPagingCycleConfig-r18 ::= SEQUENCE {

 extendedPagingCycle-r18 ENUMERATED {hf2, hf4, hf8, hf16, hf32, hf64, hf128,hf256, hf512, hf1024,

 spare6, spare5, spare4, spare3, spare2, spare1},

 pagingPTWLength-r18 ENUMERATED {ms1280, ms2560, ms3840, ms5120, ms6400, ms7680, ms8960, ms10240, ms11520,

 ms12800, ms14080, ms15360, ms16640, ms17920, ms19200, ms20480, ms21760,

 ms23040, ms24320, ms25600, ms26880, ms28160, ms29440, ms30720, ms32000,

 ms33280, ms34560, ms35840, ms37120, ms38400, ms39680, ms40960}

}

MulticastConfigInactive-r18::= SEQUENCE {

 inactivePTM-Config-r18 OCTET STRING (CONTAINING MBSMulticastConfiguration-r18) OPTIONAL, -- Need S

 inactiveMCCH-Config-r18 OCTET STRING (CONTAINING SystemInformation) OPTIONAL -- Need N

}

-- TAG-RRCRELEASE-STOP

-- ASN1STOP

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| *RRCRelease-IEs* field descriptions |
| ***cellReselectionPriorities***Dedicated priorities to be used for cell reselection as specified in TS 38.304 [20]*.* The maximum number of NR carrier frequencies that the network can configure through *FreqPriorityListNR* and *FreqPriorityListDedicatedSlicing* together is eight. If the same frequency is configured in both *FreqPriorityListNR* and *FreqPriorityListDedicatedSlicing*, the frequency is only counted once. |
| ***cnType***Indicate that the UE is redirected to EPC or 5GC. |
| ***deprioritisationReq***Indicates whether the current frequency or RAT is to be de-prioritised. |
| ***deprioritisationTimer***Indicates the value for timer T325 (see clause 5.3.8.3 and TS 38.304 [20]). Value *minN* corresponds to N minutes. |
| ***srs-PosRRC-InactiveEnhanced***Contains the SRS for positioning configuration in RRC\_INACTIVE state that is applicable for a validity area. The field also contains bandwidth aggregation (see TS 38.214 [19], clause 6.2.1.4.2) and frequency hopping configurations (see TS 38.214 [19], clause 6.2.1.4.1) for SRS for positioning in RRC\_INACTIVE state. |
| ***measIdleConfig***Indicates measurement configuration to be stored and used by the UE while in RRC\_IDLE or RRC\_INACTIVE. |
| ***mpsPriorityIndication***Indicates the UE can set the establishment cause to *mps-PriorityAccess* for a new connection following a redirect to NR or set the resume cause to *mps-PriorityAccess* for a resume following a redirect to NR. If the target RAT is E-UTRA, see TS 36.331 [10]. The gNB sets the indication only for UEs authorized to receive MPS treatment as indicated by ARP and/or QoS characteristics at the gNB, and it is applicable only for this instance of release with redirection to carrier/RAT included in the *redirectedCarrierInfo* field in the *RRCRelease* message. |
| ***multicastConfigInactive***Indicates whether the UE is configured to receive MBS multicast in RRC\_INACTIVE. The presence of this field indicates the UE is configured to receive MBS multicast in RRC\_INACTIVE; otherwise, the UE is not configured to receive MBS multicast in RRC\_INACTIVE. |
| ***noLastCellUpdate***Presence of the field indicates that the last used cell for PEI shall not be updated. When the field is absent, the PEI-capable UE shall update its last used cell with the current cell. The UE shall not update its last used cell with the current cell if the AS security is not activated. |
| ***redirectedCarrierInfo***Indicates a carrier frequency (downlink for FDD) and is used to redirect the UE to an NR or an inter-RAT carrier frequency, by means of cell selection at transition to RRC\_IDLE or RRC\_INACTIVE as specified in TS 38.304 [20]. Based on UE capability, the network may include *redirectedCarrierInfo* in *RRCRelease* message with *suspendConfig* if this message is sent in response to an *RRCResumeRequest* or an *RRCResumeRequest1* which is triggered by the NAS layer (see 5.3.1.4 in TS 24.501 [23]). |
| ***srs-PosRRC-Inactive***Contains the SRS for positioning configuration in RRC\_INACTIVE state. |
| ***suspendConfig***Indicates configuration for the RRC\_INACTIVE state. The network does not configure *suspendConfig* when the network redirect the UE to an inter-RAT carrier frequency or if the UE is configured with a DAPS bearer. |
| ***voiceFallbackIndication***Indicates the RRC release is triggered by EPS fallback for IMS voice as specified in TS 23.502 [43]. |

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| *CarrierInfoNR* field descriptions |
| ***carrierFreq***Indicates the redirected NR frequency. |
| ***ssbSubcarrierSpacing***Subcarrier spacing of SSB in the redirected SSB frequency.Only the following values are applicable depending on the used frequency:FR1: 15 or 30 kHzFR2-1/FR2-NTN: 120 or 240 kHzFR2-2: 120, 480, or 960 kHz |
| ***smtc***The SSB periodicity/offset/duration configuration for the redirected SSB frequency. It is based on timing reference of PCell. If the field is absent, the UE uses the SMTC configured in the measObjectNR having the same SSB frequency and subcarrier spacing. |

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| *RAN-NotificationAreaInfo* field descriptions |
| ***cellList***A list of cells configured as RAN area. |
| ***ran-AreaConfigList***A list of RAN area codes or RA code(s) as RAN area. |

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| *PLMN-RAN-AreaConfig* field descriptions |
| ***plmn-Identity***PLMN Identity to which the cells in *ran-Area* belong. If the field is absent the UE not in SNPN access mode uses the ID of the registered PLMN. This field is not included for UE in SNPN access mode (for UE in SNPN access mode the *ran-Area* always belongs to the registered SNPN). |
| ***ran-AreaCodeList***The total number of RAN-AreaCodes of all PLMNs does not exceed 32. |
| ***ran-Area***Indicates whether TA code(s) or RAN area code(s) are used for the RAN notification area. The network uses only TA code(s) or both TA code(s) and RAN area code(s) to configure a UE. The total number of TACs across all PLMNs does not exceed 16. |

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| *PLMN-RAN-AreaCell* field descriptions |
| ***plmn-Identity***PLMN Identity to which the cells in *ran-AreaCells* belong. If the field is absent the UE not in SNPN access mode uses the ID of the registered PLMN. This field is not included for UE in SNPN access mode (for UE in SNPN access mode the *ran-AreaCells* always belongs to the registered SNPN). |
| ***ran-AreaCells***The total number of cells of all PLMNs does not exceed 32. |

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| *SDT-Config* field descriptions |
| ***sdt-DRB-ContinueROHC***Indicates whether the PDCP entity of the radio bearers configured for SDT continues or resets the ROHC header compression protocol during PDCP re-establishment during SDT procedure, as specified in TS 38.323 [5]. Value *cell* indicates that ROHC header compression continues when the UE resumes for SDT in the same cell as the PCell when the RRCRelease message was received. Value *rna* indicates that ROHC header compression continues when the UE resumes for SDT in a cell belonging to the same RNA as the PCell where the RRCRelease message was received. If the field is absent, the UE releases any stored value for this field and the PDCP entity of the radio bearers configured for SDT always resets the ROHC header compression protocol during PDCP re-establishment when SDT procedure is initiated, as specified in TS 38.323 [5]. |
| ***sdt-DRB-List***Indicates the ID(s) of the DRB(s) that are configured for SDT. If size of the sequence is zero, then the UE assumes that none of the DRBs are configured for SDT. The network only configures MN terminated MCG bearers for SDT. |
| ***sdt-SRB2-Indication***Indicates whether SRB2 is configured for SDT or not. |

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| *SDT-MAC-PHY-CG-Config* field descriptions |
| ***cg-MT-SDT-MaxDurationToNextCG-Occasion***The maximum duration until the next CG-SDT occasion as specified in TS 38.321 [3] for MT-SDT. If configured, the CG-SDT resource can only be used for the initial CG-SDT transmission if the duration between the initiation of the CG-SDT procedure and the next CG-SDT occasion is less than the value configured by this field. |
| ***cg-SDT-ConfigInitialBWP-DL***Downlink BWP configuration for CG-SDT. If a UE is an (e)RedCap UE and if the *initialDownlinkBWP-RedCap* is configured in *downlinkConfigCommon* in *SIB1*, this field is configured for *initialDownlinkBWP-RedCap*, otherwise it is configured for *initialDownlinkBWP*. |
| ***cg-SDT-ConfigInitialBWP-NUL***UL BWP configuration for CG-SDT on NUL carrier. If a UE is an (e)RedCap UE and if the *initialUplinkBWP-RedCap* is configured in *uplinkConfigCommon* in *SIB1*, this field is configured for *initialUplinkBWP-RedCap*, otherwise it is configured for *initialUplinkBWP* for NUL. |
| ***cg-SDT-ConfigInitialBWP-SUL***UL BWP configuration for CG-SDT on SUL carrier configured for the *initialUplinkBWP* for SUL. |
| ***cg-SDT-ConfigLCH-RestrictionToAddModList, cg-SDT-ConfigLCH-RestrictionToAddModListExt, cg-SDT-ConfigLCH-RestrictionToReleaseList***Lists for adding and releasing logical channel mapping restrictions for CG-SDT. If the network includes *cg-SDT-ConfigLCH-RestrictionToAddModListExt*, it includes the same number of entries, and listed in the same order, as in *cg-SDT-ConfigLCH-RestrictionToAddModList*. |
| ***cg-SDT-CS-RNTI***The CS-RNTI value for CG-SDT as specified in TS 38.321 [3]. |
| ***cg-SDT-RSRP-ThresholdSSB***An RSRP threshold configured for SSB selection for CG-SDT as specified in TS 38.321 [3]. |
| ***cg-SDT-TA-ValidationConfig***Configuration for the RSRP based TA validation. If this field is not configured, then the UE does not perform RSRP based TA validation. |
| ***cg-SDT-timeAlignmentTimer***TAT value for CG-SDT as specified in TS 38.321 [3]. The network always configures this field when *sdt-MAC-PHY-CG-Config* is configured. This field is associated with the PTAG indicated by *tag-Id.* |

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| *CG-SDT-ConfigLCH-Restriction* field descriptions |
| ***allowedCG-List***This restriction applies only when the UL grant is a configured grant for CG-SDT. If present, UL MAC SDUs from this logical channel can only be mapped to the indicated CG-SDT configured grant configuration. If the size of the sequence is zero, then UL MAC SDUs from this logical channel cannot be mapped to any CG-SDT configured grant configurations. If the field is not present, UL MAC SDUs from this logical channel can be mapped to any CG-SDT configured grant configurations. If the field *configuredGrantType1Allowed* is present, only those CG-SDT configured grant type 1 configurations indicated in this sequence are allowed for use by this logical channel; otherwise, this sequence shall not include any CG-SDT configured grant type 1 configuration. Corresponds to "*allowedCG*-*List*" as specified in TS 38.321 [3]. |
| ***cg-SDT-MaxDurationToNextCG-Occasion***The maximum duration until the next CG-SDT occasion for the logical channel identified by the *logicalChannelIdentity* as specified in TS 38.321 [3]. If configured, the CG-SDT resource can only be used for the initial CG-SDT transmission if the duration between the initiation of the CG-SDT procedure and the next CG-SDT occasion is less than the value configured by this field as specified in TS 38.321 [3]. |
| ***configuredGrantType1Allowed***If present, or if the capability *lcp-Restriction* as specified in TS 38.306 [26] is not supported, UL MAC SDUs from this logical channel can be transmitted on a configured grant type 1 for CG-SDT. Otherwise, UL MAC SDUs from this logical channel cannot be transmitted on a configured grant type 1 for CG-SDT. Corresponds to "*configuredGrantType1Allowed*" in TS 38.321 [3]. |
| ***logicalChannelIdentity***ID used commonly for the MAC logical channel and for the RLC bearer associated with a *servedRadioBearer* configured for SDT. |

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| *CG-SDT-TA-ValidationConfig* field descriptions |
| ***cg-SDT-RSRP-ChangeThreshold***The RSRP threshold for TA validation for CG-SDT as specified in TS 38.321 [3]. Value *dB2* corresponds to 2 dB, value *dB4* corresponds to 4 dB and so on. |

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| *SRS-PosRRC-InactiveConfig* field descriptions |
| ***bwp-NUL***BWP configuration for SRS for Positioning during the RRC\_INACTIVE state in Normal Uplink Carrier. If the field is absent UE is configured with an SRS for Positioning associated with the initial UL BWP and transmitted, during the RRC\_INACTIVE state, inside the initial UL BWP with the same CP and SCS as configured for initial UL BWP. |
| ***bwp-SUL***BWP configuration for SRS for Positioning during the RRC\_INACTIVE state in Supplementary Uplink Carrier. If the field is absent UE is configured with an SRS for Positioning associated with the initial UL BWP and transmitted, during the RRC\_INACTIVE state, inside the initial UL BWP with the same CP and SCS as configured for initial UL BWP. |
| ***inactivePosSRS-RSRP-ChangeThreshold***RSRP threshold for the increase/decrease of RSRP for time alignment validation as specified in TS 38.321 [3]. |
| ***inactivePosSRS-TimeAlignmentTimer***TAT value for SRS for positioning transmission during RRC\_INACTIVE state as specified in TS 38.321 [3]. The network always configures this field when *srs-PosRRC-Inactive* is configured. |
| ***srs-PosConfigNUL***SRS for Positioning configuration in RRC\_INACTIVE state in Normal Uplink Carrier. |
| ***srs-PosConfigSUL***SRS for Positioning configuration in RRC\_INACTIVE state in Supplementary Uplink Carrier. |

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| *SRS-PosRRC-InactiveEnhancedConfig* field descriptions |
| ***srs-PosRRC-InactiveAggBW-ConfigList***SRS for positioning configuration with additional one or two carrier(s) configuration where the primary carrier is provided by *srs-PosRRC-Inactive-r17* for bandwidth aggregation and additional carriers are provided by *srs-PosRRC-InactiveAggBW-AdditionalCarriers-r18* and to be used in RRC\_INACTIVE state (see TS 38.214 [19], clause 6.2.1.4.2). This field is included only if *srs-PosRRC-Inactive-r17* and *srs-PosRRC-InactiveAggBW-AdditionalCarriers-r18* are configured. |
| ***srs-PosRRC-InactiveValidityAreaNonPreConfig***Contains the SRS for positioning configuration to be applied immediately upon reception. The configuration is valid across a number of cells as indicated in *srs-PosConfigValidityArea* in RRC\_INACTIVE state. |
| ***srs-PosRRC-InactiveValidityAreaPreConfigList***Contains the SRS for positioning configurations to be applied when a trigger for an event is met and which is valid across a number of cells comprising a validity area during RRC\_INACTIVE state. For each validity area, the UE is preconfigured with only one SRS for positioning configuration. |
| ***srs-PosTx-Hopping***Contains configuration related to the SRS for Positioning with frequency hopping for RRC\_INACTIVE state (see TS 38.214 [19], clause 6.2.1.4.1). |
| ***srs-PosRRC-InactiveAggBW-AdditionalCarriers***Additional carriers of Positioning SRS resource for carrier agregation for positioning SRS transmission without validity area in RRC\_INACTIVE. |

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| *SRS-PosRRC-InactiveValidityAreaConfig* field descriptions |
| ***autonomousTA-AdjustmentEnabled***This field indicates that UE may adjust the TA value and stored RSRP autonomously after cell reselection within a validity area, if configured. |
| ***bwp-NUL***BWP configuration for SRS for Positioning during the RRC\_INACTIVE state in Normal Uplink Carrier. If the field is absent UE is configured with an SRS for Positioning associated with the initial UL BWP and transmitted, during the RRC\_INACTIVE state, inside the initial UL BWP with the same CP and SCS as configured for initial UL BWP. |
| ***bwp-SUL***BWP configuration for SRS for Positioning during the RRC\_INACTIVE state in Supplementary Uplink Carrier. If the field is absent UE is configured with an SRS for Positioning associated with the initial UL BWP and transmitted, during the RRC\_INACTIVE state, inside the initial UL BWP with the same CP and SCS as configured for initial UL BWP. |
| ***inactivePosSRS-ValidityAreaRSRP***RSRP threshold for the increase/decrease of RSRP for validity area time alignment validation as specified in TS 38.321 [3]. |
| ***inactivePosSRS-ValidityAreaTAT***Time alignment timer value for SRS for positioning transmission during RRC\_INACTIVE state which is applicable in a validity area. |
| ***srs-PosConfigValidityArea, srs-PosConfigValidityAreaExt***This field provides list of cells present in the validity area. The maximum number of cells in a validity area is 32 which can be provided by using these two fields *srs-PosConfigValidityArea* and *srs-PosConfigValidityAreaExt*. |
| ***srs-PosRRC-InactiveAggBW-AdditionalCarriersPerVA***SRS resource configuration on additional one or two carriers in each validity area for positioning SRS transmission for carrier aggregation in RRC\_INACTIVE. |
| ***srs-PosRRC-InactiveAggBW-ConfigListPerVA***Linkage for positioning SRS transmission in RRC\_INACTIVE in each validity area. The field is included only if *srs-PosRRC-InactiveAggBW-AdditionalCarriersPerVA-r18* is configured. |
| ***srs-PosRRC-InactiveValidityArea***Provides a list of cells where SRS Positioning Configuration in RRC\_INACTIVE state is valid. |

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| *SuspendConfig* field descriptions |
| ***ncd-SSB-RedCapInitialBWP-SDT***Indicates that the UE uses the RedCap-specific initial DL BWP associated with the NCD-SSB for SDT. The network configures this field if an (e)RedCap UE is configured with SDT in the RedCap-specific initial DL BWP not associated with CD-SSB. If configured, the NCD-SSB indicated by this field can only be used during the SDT procedure for CG-SDT or RA-SDT. In the MIB associated with this NCD-SSB, the *systemFrameNumber* field indicates the frame boundary and frame number of the NCD-SSB. The *subCarrierSpacingCommon* and *dmrs-TypeA-Position* field in the MIBs associated with CD-SSB and NCD-SSB in the same cell are configured with the same values, respectively. |
| ***ran-ExtendedPagingCycle***The extended DRX (eDRX) cycle for RAN-initiated paging to be applied by the UE as defined in TS 38.304 [20]. Value *rf256* corresponds to 256 radio frames, value *rf512* corresponds to 512 radio frames and so on. Value of the field indicates an eDRX cycle which is shorter or equal to the IDLE mode eDRX cycle configured for the UE. |
| ***ran-ExtendedPagingCycleConfig***The extended DRX (eDRX) configuraiton for RAN-initiated paging to be applied by the UE when the eDRX cycle for RAN-initiated paging is longer than 10.24s. |
| ***ran-NotificationAreaInfo***Network ensures that the UE in RRC\_INACTIVE always has a valid *ran-NotificationAreaInfo*. |
| ***ran-PagingCycle***Refers to the UE specific cycle for RAN-initiated paging. Value *rf32* corresponds to 32 radio frames, value *rf64* corresponds to 64 radio frames and so on. |
| ***resumeIndication***Indicates that the UE shall trigger the RRC connection resume procedure after receiving this *RRCRelease* message, as specified in clause 5.3.8.3. The network only includes this field in the *RRCRelease* message used to terminate an ongoing SDT procedure. |
| ***sl-UEIdentityRemote***Indicates the C-RNTI to the L2 U2N Remote UE. |
| ***t380***Refers to the timer that triggers the periodic RNAU procedure in UE. Value *min5* corresponds to 5 minutes, value *min10* corresponds to 10 minutes and so on. |

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| *MulticastConfigInactive* field descriptions |
| ***inactivePTM-Config***Indicates the multicast session(s) that can be received in RRC\_INACTIVE and optionally the corresponding PTM configuration (which includes *mrb-ListMulticast*, *pdsch-ConfigIndex*, *mtch-SSB-MappingWindowIndex*, etc.) for the cell where the multicast session(s) was configured in RRC\_CONNECTED. If absent, UE considers that all joined multicast sessions can be received in RRC\_INACTIVE. |
| ***inactiveMCCH-Config***Indicates multicast MCCH/MTCH configuration for MBS multicast reception in RRC\_INACTIVE in the cell where the multicast session(s) was configured in RRC\_CONNECTED. Only *SIB24* is allowed to be included. |

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| *ExtendedPagingCycleConfig* field descriptions |
| ***extendedPagingCycle***The eDRX cycle longer than 10.24 s for RAN-initiated paging to be applied by the UE. Value hf2 corresponds to 2 hyper frames, value hf4 corresponds to 4 hyper frames and so on. Value of the field is shorter than or equal to the IDLE mode eDRX cycle configured for the UE. |
| ***pagingPTWLength***The length of paging transmission window for RAN-initiated paging to be applied by the UE as defined in TS 38.304 [20]. Value ms1280 corresponds to 1280 milliseconds, value ms2560 corresponds to 2560 milliseconds and so on. |

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| Conditional Presence | Explanation |
| *L2RemoteUE* | The field is mandatory present for L2 U2N Remote UE's RNAU; otherwise it is absent. |
| *RANPaging* | This field is optionally present, Need R, if the UE is configured with IDLE eDRX, see TS 24.501 [23]; otherwise the field is not present. |
| *Redirection2* | The field is optionally present, Need R, if *redirectedCarrierInfo* is included; otherwise the field is not present. |

#### – *UEAssistanceInformation*

The *UEAssistanceInformation* message is used for the indication of UE assistance information to the network.

Signalling radio bearer: SRB1, SRB3

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to Network

*UEAssistanceInformation message*

-- ASN1START

-- TAG-UEASSISTANCEINFORMATION-START

UEAssistanceInformation ::= SEQUENCE {

 criticalExtensions CHOICE {

 ueAssistanceInformation UEAssistanceInformation-IEs,

 criticalExtensionsFuture SEQUENCE {}

 }

}

UEAssistanceInformation-IEs ::= SEQUENCE {

 delayBudgetReport DelayBudgetReport OPTIONAL,

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 nonCriticalExtension UEAssistanceInformation-v1540-IEs OPTIONAL

}

DelayBudgetReport::= CHOICE {

 type1 ENUMERATED {

 msMinus1280, msMinus640, msMinus320, msMinus160,msMinus80, msMinus60, msMinus40,

 msMinus20, ms0, ms20,ms40, ms60, ms80, ms160, ms320, ms640, ms1280},

 ...

}

UEAssistanceInformation-v1540-IEs ::= SEQUENCE {

 overheatingAssistance OverheatingAssistance OPTIONAL,

 nonCriticalExtension UEAssistanceInformation-v1610-IEs OPTIONAL

}

OverheatingAssistance ::= SEQUENCE {

 reducedMaxCCs ReducedMaxCCs-r16 OPTIONAL,

 reducedMaxBW-FR1 ReducedMaxBW-FRx-r16 OPTIONAL,

 reducedMaxBW-FR2 ReducedMaxBW-FRx-r16 OPTIONAL,

 reducedMaxMIMO-LayersFR1 SEQUENCE {

 reducedMIMO-LayersFR1-DL MIMO-LayersDL,

 reducedMIMO-LayersFR1-UL MIMO-LayersUL

 } OPTIONAL,

 reducedMaxMIMO-LayersFR2 SEQUENCE {

 reducedMIMO-LayersFR2-DL MIMO-LayersDL,

 reducedMIMO-LayersFR2-UL MIMO-LayersUL

 } OPTIONAL

}

OverheatingAssistance-r17 ::= SEQUENCE {

 reducedMaxBW-FR2-2-r17 SEQUENCE {

 reducedBW-FR2-2-DL-r17 ReducedAggregatedBandwidth-r17,

 reducedBW-FR2-2-UL-r17 ReducedAggregatedBandwidth-r17

 } OPTIONAL,

 reducedMaxMIMO-LayersFR2-2 SEQUENCE {

 reducedMIMO-LayersFR2-2-DL MIMO-LayersDL,

 reducedMIMO-LayersFR2-2-UL MIMO-LayersUL

 } OPTIONAL

}

ReducedAggregatedBandwidth ::= ENUMERATED {mhz0, mhz10, mhz20, mhz30, mhz40, mhz50, mhz60, mhz80, mhz100, mhz200, mhz300, mhz400}

ReducedAggregatedBandwidth-r17 ::= ENUMERATED {mhz0, mhz100, mhz200, mhz400, mhz800, mhz1200, mhz1600, mhz2000}

UEAssistanceInformation-v1610-IEs ::= SEQUENCE {

 idc-Assistance-r16 IDC-Assistance-r16 OPTIONAL,

 drx-Preference-r16 DRX-Preference-r16 OPTIONAL,

 maxBW-Preference-r16 MaxBW-Preference-r16 OPTIONAL,

 maxCC-Preference-r16 MaxCC-Preference-r16 OPTIONAL,

 maxMIMO-LayerPreference-r16 MaxMIMO-LayerPreference-r16 OPTIONAL,

 minSchedulingOffsetPreference-r16 MinSchedulingOffsetPreference-r16 OPTIONAL,

 releasePreference-r16 ReleasePreference-r16 OPTIONAL,

 sl-UE-AssistanceInformationNR-r16 SL-UE-AssistanceInformationNR-r16 OPTIONAL,

 referenceTimeInfoPreference-r16 BOOLEAN OPTIONAL,

 nonCriticalExtension UEAssistanceInformation-v1700-IEs OPTIONAL

}

UEAssistanceInformation-v1700-IEs ::= SEQUENCE {

 ul-GapFR2-Preference-r17 UL-GapFR2-Preference-r17 OPTIONAL,

 musim-Assistance-r17 MUSIM-Assistance-r17 OPTIONAL,

 overheatingAssistance-r17 OverheatingAssistance-r17 OPTIONAL,

 maxBW-PreferenceFR2-2-r17 MaxBW-PreferenceFR2-2-r17 OPTIONAL,

 maxMIMO-LayerPreferenceFR2-2-r17 MaxMIMO-LayerPreferenceFR2-2-r17 OPTIONAL,

 minSchedulingOffsetPreferenceExt-r17 MinSchedulingOffsetPreferenceExt-r17 OPTIONAL,

 rlm-MeasRelaxationState-r17 BOOLEAN OPTIONAL,

 bfd-MeasRelaxationState-r17 BIT STRING (SIZE (1..maxNrofServingCells)) OPTIONAL,

 nonSDT-DataIndication-r17 SEQUENCE {

 resumeCause-r17 ResumeCause OPTIONAL

 } OPTIONAL,

 scg-DeactivationPreference-r17 ENUMERATED { scg-DeactivationPreferred, noPreference } OPTIONAL,

 uplinkData-r17 ENUMERATED { true } OPTIONAL,

 rrm-MeasRelaxationFulfilment-r17 BOOLEAN OPTIONAL,

 propagationDelayDifference-r17 PropagationDelayDifference-r17 OPTIONAL,

 nonCriticalExtension UEAssistanceInformation-v1800-IEs OPTIONAL

}

UEAssistanceInformation-v1800-IEs ::= SEQUENCE {

 idc-FDM-Assistance-r18 IDC-FDM-Assistance-r18 OPTIONAL,

 idc-TDM-Assistance-r18 IDC-TDM-Assistance-r18 OPTIONAL,

 multiRx-PreferenceFR2-r18 ENUMERATED {single, multiple } OPTIONAL,

 musim-Assistance-v1800 MUSIM-Assistance-v1800 OPTIONAL,

 flightPathInfoAvailable-r18 ENUMERATED {true} OPTIONAL,

 ul-TrafficInfo-r18 UL-TrafficInfo-r18 OPTIONAL,

 n3c-RelayUE-InfoList-r18 SEQUENCE (SIZE (0..8)) OF N3C-RelayUE-Info-r18 OPTIONAL,

 sl-PRS-UE-AssistanceInformationNR-r18 SL-PRS-UE-AssistanceInformationNR-r18 OPTIONAL,

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

IDC-Assistance-r16 ::= SEQUENCE {

 affectedCarrierFreqList-r16 AffectedCarrierFreqList-r16 OPTIONAL,

 affectedCarrierFreqCombList-r16 AffectedCarrierFreqCombList-r16 OPTIONAL,

 ...

}

AffectedCarrierFreqList-r16 ::= SEQUENCE (SIZE (1.. maxFreqIDC-r16)) OF AffectedCarrierFreq-r16

AffectedCarrierFreq-r16 ::= SEQUENCE {

 carrierFreq-r16 ARFCN-ValueNR,

 interferenceDirection-r16 ENUMERATED {nr, other, both, spare}

}

AffectedCarrierFreqCombList-r16 ::= SEQUENCE (SIZE (1..maxCombIDC-r16)) OF AffectedCarrierFreqComb-r16

AffectedCarrierFreqComb-r16 ::= SEQUENCE {

 affectedCarrierFreqComb-r16 SEQUENCE (SIZE (2..maxNrofServingCells)) OF ARFCN-ValueNR OPTIONAL,

 victimSystemType-r16 VictimSystemType-r16

}

VictimSystemType-r16 ::= SEQUENCE {

 gps-r16 ENUMERATED {true} OPTIONAL,

 glonass-r16 ENUMERATED {true} OPTIONAL,

 bds-r16 ENUMERATED {true} OPTIONAL,

 galileo-r16 ENUMERATED {true} OPTIONAL,

 navIC-r16 ENUMERATED {true} OPTIONAL,

 wlan-r16 ENUMERATED {true} OPTIONAL,

 bluetooth-r16 ENUMERATED {true} OPTIONAL,

 ...,

 [[

 uwb-r18 ENUMERATED {true} OPTIONAL

 ]]

}

DRX-Preference-r16 ::= SEQUENCE {

 preferredDRX-InactivityTimer-r16 ENUMERATED {

 ms0, ms1, ms2, ms3, ms4, ms5, ms6, ms8, ms10, ms20, ms30, ms40, ms50, ms60, ms80,

 ms100, ms200, ms300, ms500, ms750, ms1280, ms1920, ms2560, spare9, spare8,

 spare7, spare6, spare5, spare4, spare3, spare2, spare1} OPTIONAL,

 preferredDRX-LongCycle-r16 ENUMERATED {

 ms10, ms20, ms32, ms40, ms60, ms64, ms70, ms80, ms128, ms160, ms256, ms320, ms512,

 ms640, ms1024, ms1280, ms2048, ms2560, ms5120, ms10240, spare12, spare11, spare10,

 spare9, spare8, spare7, spare6, spare5, spare4, spare3, spare2, spare1 } OPTIONAL,

 preferredDRX-ShortCycle-r16 ENUMERATED {

 ms2, ms3, ms4, ms5, ms6, ms7, ms8, ms10, ms14, ms16, ms20, ms30, ms32,

 ms35, ms40, ms64, ms80, ms128, ms160, ms256, ms320, ms512, ms640, spare9,

 spare8, spare7, spare6, spare5, spare4, spare3, spare2, spare1 } OPTIONAL,

 preferredDRX-ShortCycleTimer-r16 INTEGER (1..16) OPTIONAL

}

MaxBW-Preference-r16 ::= SEQUENCE {

 reducedMaxBW-FR1-r16 ReducedMaxBW-FRx-r16 OPTIONAL,

 reducedMaxBW-FR2-r16 ReducedMaxBW-FRx-r16 OPTIONAL

}

MaxBW-PreferenceFR2-2-r17 ::= SEQUENCE {

 reducedMaxBW-FR2-2-r17 SEQUENCE {

 reducedBW-FR2-2-DL-r17 ReducedAggregatedBandwidth-r17 OPTIONAL,

 reducedBW-FR2-2-UL-r17 ReducedAggregatedBandwidth-r17 OPTIONAL

 } OPTIONAL

}

MaxCC-Preference-r16 ::= SEQUENCE {

 reducedMaxCCs-r16 ReducedMaxCCs-r16 OPTIONAL

}

MaxMIMO-LayerPreference-r16 ::= SEQUENCE {

 reducedMaxMIMO-LayersFR1-r16 SEQUENCE {

 reducedMIMO-LayersFR1-DL-r16 INTEGER (1..8),

 reducedMIMO-LayersFR1-UL-r16 INTEGER (1..4)

 } OPTIONAL,

 reducedMaxMIMO-LayersFR2-r16 SEQUENCE {

 reducedMIMO-LayersFR2-DL-r16 INTEGER (1..8),

 reducedMIMO-LayersFR2-UL-r16 INTEGER (1..4)

 } OPTIONAL

}

MaxMIMO-LayerPreferenceFR2-2-r17 ::= SEQUENCE {

 reducedMaxMIMO-LayersFR2-2-r17 SEQUENCE {

 reducedMIMO-LayersFR2-2-DL-r17 INTEGER (1..8),

 reducedMIMO-LayersFR2-2-UL-r17 INTEGER (1..4)

 } OPTIONAL

}

MinSchedulingOffsetPreference-r16 ::= SEQUENCE {

 preferredK0-r16 SEQUENCE {

 preferredK0-SCS-15kHz-r16 ENUMERATED {sl1, sl2, sl4, sl6} OPTIONAL,

 preferredK0-SCS-30kHz-r16 ENUMERATED {sl1, sl2, sl4, sl6} OPTIONAL,

 preferredK0-SCS-60kHz-r16 ENUMERATED {sl2, sl4, sl8, sl12} OPTIONAL,

 preferredK0-SCS-120kHz-r16 ENUMERATED {sl2, sl4, sl8, sl12} OPTIONAL

 } OPTIONAL,

 preferredK2-r16 SEQUENCE {

 preferredK2-SCS-15kHz-r16 ENUMERATED {sl1, sl2, sl4, sl6} OPTIONAL,

 preferredK2-SCS-30kHz-r16 ENUMERATED {sl1, sl2, sl4, sl6} OPTIONAL,

 preferredK2-SCS-60kHz-r16 ENUMERATED {sl2, sl4, sl8, sl12} OPTIONAL,

 preferredK2-SCS-120kHz-r16 ENUMERATED {sl2, sl4, sl8, sl12} OPTIONAL

 } OPTIONAL

}

MinSchedulingOffsetPreferenceExt-r17 ::= SEQUENCE {

 preferredK0-r17 SEQUENCE {

 preferredK0-SCS-480kHz-r17 ENUMERATED {sl8, sl16, sl32, sl48} OPTIONAL,

 preferredK0-SCS-960kHz-r17 ENUMERATED {sl8, sl16, sl32, sl48} OPTIONAL

 } OPTIONAL,

 preferredK2-r17 SEQUENCE {

 preferredK2-SCS-480kHz-r17 ENUMERATED {sl8, sl16, sl32, sl48} OPTIONAL,

 preferredK2-SCS-960kHz-r17 ENUMERATED {sl8, sl16, sl32, sl48} OPTIONAL

 } OPTIONAL

}

MUSIM-Assistance-r17 ::= SEQUENCE {

 musim-PreferredRRC-State-r17 ENUMERATED {idle, inactive, outOfConnected} OPTIONAL,

 musim-GapPreferenceList-r17 MUSIM-GapPreferenceList-r17 OPTIONAL

}

MUSIM-GapPreferenceList-r17 ::= SEQUENCE (SIZE (1..4)) OF MUSIM-GapInfo-r17

MUSIM-Assistance-v1800 ::= SEQUENCE {

 musim-GapPriorityPreferenceList-r18 MUSIM-GapPriorityPreferenceList-r18 OPTIONAL,

 musim-GapKeepPreference-r18 ENUMERATED {true} OPTIONAL,

 musim-CapRestriction-r18 MUSIM-CapRestriction-r18 OPTIONAL,

 musim-NeedForGapsInfoNR-r18 NeedForGapsInfoNR-r16 OPTIONAL,

 ...

}

MUSIM-GapPriorityPreferenceList-r18 ::= SEQUENCE (SIZE (1..3)) OF GapPriority-r17

MUSIM-CapRestriction-r18 ::= SEQUENCE {

 musim-Cell-SCG-ToRelease-r18 MUSIM-Cell-SCG-ToRelease-r18 OPTIONAL,

 musim-CellToAffectList-r18 MUSIM-CellToAffectList-r18 OPTIONAL,

 musim-AffectedBandsList-r18 MUSIM-AffectedBandsList-r18 OPTIONAL,

 musim-AvoidedBandsList-r18 MUSIM-AvoidedBandsList-r18 OPTIONAL,

 musim-MaxCC-r18 MUSIM-MaxCC-r18 OPTIONAL

}

MUSIM-Cell-SCG-ToRelease-r18 ::= SEQUENCE {

 musim-CellToRelease-r18 MUSIM-CellToRelease-r18 OPTIONAL,

 scg-ReleasePreference-r18 ENUMERATED {true} OPTIONAL

}

MUSIM-CellToRelease-r18 ::= SEQUENCE (SIZE (1..maxNrofServingCells)) OF ServCellIndex

MUSIM-CellToAffectList-r18::= SEQUENCE (SIZE (1..maxNrofServingCells)) OF MUSIM-CellToAffect-r18

MUSIM-CellToAffect-r18 ::= SEQUENCE {

 musim-ServCellIndex-r18 ServCellIndex,

 musim-MIMO-Layers-DL-r18 INTEGER (1..8) OPTIONAL,

 musim-MIMO-Layers-UL-r18 INTEGER (1..4) OPTIONAL,

 musim-SupportedBandwidth-DL-r18 SupportedBandwidth-v1700 OPTIONAL,

 musim-SupportedBandwidth-UL-r18 SupportedBandwidth-v1700 OPTIONAL

}

MUSIM-AffectedBandsList-r18 ::= SEQUENCE (SIZE (1..maxBandComb-MUSIM-r18)) OF MUSIM-AffectedBands-r18

MUSIM-AffectedBands-r18 ::= SEQUENCE (SIZE (1..maxCandidateBandIndex-r18)) OF MUSIM-CapabilityRestrictedBandParameters-r18

MUSIM-CapabilityRestrictedBandParameters-r18 ::= SEQUENCE {

 musim-bandEntryIndex-r18 MUSIM-BandEntryIndex-r18,

 musim-CapabilityRestricted-r18 SEQUENCE {

 musim-MIMO-Layers-DL-r18 INTEGER (1..8) OPTIONAL,

 musim-MIMO-Layers-UL-r18 INTEGER (1..4) OPTIONAL,

 musim-SupportedBandwidth-DL-r18 SupportedBandwidth-v1700 OPTIONAL,

 musim-SupportedBandwidth-UL-r18 SupportedBandwidth-v1700 OPTIONAL

 }

}

MUSIM-AvoidedBandsList-r18 ::= SEQUENCE (SIZE (1..maxBandComb-MUSIM-r18)) OF MUSIM-AvoidedBands-r18

MUSIM-AvoidedBands-r18 ::= SEQUENCE (SIZE (1..maxCandidateBandIndex-r18)) OF MUSIM-BandEntryIndex-r18

MUSIM-BandEntryIndex-r18 ::= INTEGER(1.. maxCandidateBandIndex-r18)

MUSIM-MaxCC-r18 ::= SEQUENCE {

 musim-MaxCC-TotalDL-r18 INTEGER (1..32) OPTIONAL,

 musim-MaxCC-TotalUL-r18 INTEGER (1..32) OPTIONAL,

 musim-MaxCC-FR1-DL-r18 INTEGER (1..32) OPTIONAL,

 musim-MaxCC-FR1-UL-r18 INTEGER (1..32) OPTIONAL,

 musim-MaxCC-FR2-1-DL-r18 INTEGER (1..32) OPTIONAL,

 musim-MaxCC-FR2-1-UL-r18 INTEGER (1..32) OPTIONAL,

 musim-MaxCC-FR2-2-DL-r18 INTEGER (1..32) OPTIONAL,

 musim-MaxCC-FR2-2-UL-r18 INTEGER (1..32) OPTIONAL

}

ReleasePreference-r16 ::= SEQUENCE {

 preferredRRC-State-r16 ENUMERATED {idle, inactive, connected, outOfConnected}

}

ReducedMaxBW-FRx-r16 ::= SEQUENCE {

 reducedBW-DL-r16 ReducedAggregatedBandwidth,

 reducedBW-UL-r16 ReducedAggregatedBandwidth

}

ReducedMaxCCs-r16 ::= SEQUENCE {

 reducedCCsDL-r16 INTEGER (0..31),

 reducedCCsUL-r16 INTEGER (0..31)

}

SL-UE-AssistanceInformationNR-r16 ::= SEQUENCE (SIZE (1..maxNrofTrafficPattern-r16)) OF SL-TrafficPatternInfo-r16

SL-TrafficPatternInfo-r16::= SEQUENCE {

 trafficPeriodicity-r16 ENUMERATED {ms20, ms50, ms100, ms200, ms300, ms400, ms500, ms600, ms700, ms800, ms900, ms1000},

 timingOffset-r16 INTEGER (0..10239),

 messageSize-r16 BIT STRING (SIZE (8)),

 sl-QoS-FlowIdentity-r16 SL-QoS-FlowIdentity-r16

}

UL-GapFR2-Preference-r17::= SEQUENCE {

 ul-GapFR2-PatternPreference-r17 INTEGER (0..3) OPTIONAL

}

PropagationDelayDifference-r17 ::= SEQUENCE (SIZE (1..4)) OF INTEGER (-270..270)

IDC-FDM-Assistance-r18 ::= SEQUENCE {

 affectedCarrierFreqRangeList-r18 AffectedCarrierFreqRangeList-r18 OPTIONAL,

 affectedCarrierFreqRangeCombList-r18 AffectedCarrierFreqRangeCombList-r18 OPTIONAL,

 ...

}

IDC-TDM-Assistance-r18 ::= SEQUENCE {

 cycleLength-r18 ENUMERATED {ms2, ms3, ms4, ms5, ms6, ms7, ms8, ms10, ms14, ms16, ms20, ms30,

 ms32, ms35, ms40, ms60, ms64, ms70, ms80, ms96, ms100, ms128, ms160,

 ms256, ms320, ms512, ms640, ms1024, ms1280, ms2048, ms2560, ms5120, ms10240},

 startOffset-r18 INTEGER (0..10239),

 slotOffset-r18 INTEGER (0..31),

 activeDuration-r18 CHOICE {

 subMilliSeconds-r18 INTEGER (1..31),

 milliSeconds-r18 ENUMERATED {

 ms1, ms2, ms3, ms4, ms5, ms6, ms8, ms10, ms20, ms30, ms40, ms50, ms60,

 ms80, ms100, ms200, ms300, ms400, ms500, ms600, ms800, ms1000, ms1200,

 ms1600, spare8, spare7, spare6, spare5, spare4, spare3, spare2, spare1 }

 },

 ...

}

AffectedCarrierFreqRangeList-r18 ::= SEQUENCE (SIZE (1..maxFreqIDC-r16)) OF AffectedCarrierFreqRange-r18

AffectedCarrierFreqRange-r18 ::= SEQUENCE {

 affectedFreqRange-r18 AffectedFreqRange-r18,

 interferenceDirection-r18 ENUMERATED {nr, other, both, spare},

 victimSystemType-r18 VictimSystemType-r16 OPTIONAL

}

AffectedCarrierFreqRangeCombList-r18 ::= SEQUENCE (SIZE (1..maxCombIDC-r16)) OF AffectedCarrierFreqRangeComb-r18

AffectedCarrierFreqRangeComb-r18 ::= SEQUENCE {

 affectedCarrierFreqRangeComb-r18 SEQUENCE (SIZE (2..maxNrofServingCells)) OF AffectedFreqRange-r18,

 interferenceDirection-r18 ENUMERATED {nr, other, both, spare},

 victimSystemType-r18 VictimSystemType-r16 OPTIONAL

}

AffectedFreqRange-r18 ::= SEQUENCE {

 centerFreq-r18 ARFCN-ValueNR,

 affectedBandwidth-r18 ENUMERATED {khz200, khz400, khz600, khz800, mhz1, mhz2, mhz3, mhz4, mhz5, mhz6,

 mhz8, mhz10, mhz20, mhz30, mhz40, mhz50, mhz60, mhz80, mhz100, mhz200,

 mhz300, mhz400, spare10, spare9, spare8, spare7, spare6, spare5, spare4,

 spare3, spare2, spare1}

}

UL-TrafficInfo-r18 ::= SEQUENCE (SIZE (1..maxNrofPDU-Sessions-r17)) OF PDU-SessionUL-TrafficInfo-r18

PDU-SessionUL-TrafficInfo-r18 ::= SEQUENCE {

 pdu-SessionID-r18 PDU-SessionID,

 qos-FlowUL-TrafficInfoList-r18 SEQUENCE (SIZE (1..maxNrofQFIs)) OF QOS-FlowUL-TrafficInfo-r18

}

QOS-FlowUL-TrafficInfo-r18 ::= SEQUENCE {

 qfi-r18 QFI,

 jitterRange-r18 SEQUENCE {

 lowerBound-r18 JitterBound-r18,

 upperBound-r18 JitterBound-r18

 } OPTIONAL,

 burstArrivalTime-r18 CHOICE {

 referenceTime ReferenceTime-r16,

 referenceSFN-AndSlot ReferenceSFN-AndSlot-r18

 } OPTIONAL,

 trafficPeriodicity-r18 INTEGER (1..640000) OPTIONAL,

 pdu-SetIdentification-r18 BOOLEAN OPTIONAL,

 psi-Identification-r18 BOOLEAN OPTIONAL,

 ...

}

ReferenceSFN-AndSlot-r18 ::= SEQUENCE {

 referenceSFN-r18 INTEGER (0..1023),

 referenceSlot-r18 INTEGER (0..639)

}

JitterBound-r18 ::= ENUMERATED {ms0, ms0dot5, ms1, ms1dot5, ms2, ms2dot5, ms3, ms3dot5, ms4, ms4dot5, ms5, ms5dot5, ms6, ms6dot5, ms7, beyondMs7}

SL-PRS-UE-AssistanceInformationNR-r18 ::= SEQUENCE (SIZE (1..maxNrofSL-PRS-TxConfig-r18)) OF SL-PRS-TxInfo-r18

SL-PRS-TxInfo-r18 ::= SEQUENCE {

 sl-PRS-Periodicity-r18 ENUMERATED {ms100, ms200, ms300, ms400, ms500, ms600, ms700, ms800, ms900, ms1000, spare6,

 spare5, spare4, spare3, spare2, spare1},

 sl-PRS-Priority-r18 INTEGER (1..8) OPTIONAL,

 sl-PRS-DelayBudget-r18 INTEGER (0..1023) OPTIONAL,

 sl-PRS-Bandwidth-r18 ENUMERATED {mhz5, mhz10, mhz15, mhz20, mhz25, mhz30, mhz35, mhz40,

 mhz45, mhz50, mhz60, mhz70, mhz80, mhz90, mhz100, mhz200, mhz400,

 spare15, spare14, spare13, spare12, spare11, spare10, spare9, spare8,

 spare7, spare6, spare5, spare4, spare3, spare2, spare1} OPTIONAL,

 ...

}

-- TAG-UEASSISTANCEINFORMATION-STOP

-- ASN1STOP

|  |
| --- |
| *UEAssistanceInformation* field descriptions |
| ***activeDuration***Indicates the UE's preferred active duration to resolve the IDC problem. Value in multiples of 1/32 ms (subMilliSeconds) or in ms (milliSecond). For the latter, value ms1 corresponds to 1 ms, value ms2 corresponds to 2 ms, and so on. |
| ***affectedBandwidth***Indicates the bandwidth around the center frequency of the carrier frequency range which is affected by the IDC problem. Value mhz5 corresponds to 5 MHz, value mhz10 corresponds to 10 MHz and so on. If *candidateBandwidth* is not configured, the UE is allowed to report the frequency range for any bandwidth as indicated by *affectedBandwidth*, within the frequency band limitation as defined in TS 38.101-1 [15], TS 38.101-2 [39], TS 38.101-3 [34] and TS 38.101-5 [75]. |
| ***affectedCarrierFreqList***Indicates a list of NR carrier frequencies that are affected by IDC problem. |
| ***affectedCarrierFreqRangeList***Indicates a list of NR carrier frequency ranges that are affected by IDC problem. |
| ***affectedCarrierFreqCombList***Indicates a list of NR carrier frequency combinations that are affected by IDC problems due to Inter-Modulation Distortion and harmonics from NR when configured with UL CA or NR-DC. |
| ***affectedCarrierFreqRangeCombList***Indicates a list of NR carrier frequency range combinations that are affected by IDC problems due to Inter-Modulation Distortion and harmonics from NR when configured with UL CA or NR-DC |
| ***bfd-MeasRelaxationState***Indicates the relaxation state of BFD measurements. Each bit corresponds to a serving cell of the cell group. A serving cell is mapped to the (*servCellIndex*+1)-th bit, starting from MSB. A bit that is set to 1 indicates that the UE is performing BFD measurements relaxation on the serving cell mapped on the bit. A bit that is set to 0 indicates that the UE is not performing BFD measurements relaxation on the serving cell mapped on the bit. If a serving cell is not configured to the UE, the corresponding bit is set to 0. |
| ***centerFreq***Indicates the center frequency of the carrier frequency range which is affected by the IDC problem. |
| ***cycleLength***Indicates the UE's preferred cycle length to resolve the IDC problem. Value in ms. Value *ms2* corresponds to 2 ms, value *ms3* corresponds to 3 ms, and so on. |
| ***delayBudgetReport***Indicates the UE-preferred adjustment to connected mode DRX. |
| ***interferenceDirection***Indicates the direction of IDC interference. Value *nr* indicates that only NR is victim of IDC interference, value *other* indicates that only another radio is victim of IDC interference and value *both* indicates that both NR and another radio are victims of IDC interference. The other radio refers to either the ISM radio or GNSS (see TR 36.816 [44]). |
| ***minSchedulingOffsetPreference***Indicates the UE's preferences on *minimumSchedulingOffset* of cross-slot scheduling for power saving. |
| ***minSchedulingOffsetPreferenceExt***Indicates the UE's preferences on *minimumSchedulingOffset* of cross-slot scheduling for power saving for SCS 480 kHz and/or 960 kHz. |
| ***multiRx-PreferenceFR2***Indicates the UE's preference on single FR2 Rx operation to address overheating or power saving. This field is allowed to be reported only when UE is configured with serving cells operating on FR2. |
| ***musim-AffectedBandsList***Indicates the UE's preference on the band(s) and/or combination(s) of bands with restricted capability for MUSIM operation. If the *MUSIM-CapabilityRestrictedBandParameters-r18* with same *musim-bandEntryIndex* appears more than once in the list of bands in a *MUSIM-AffectedBands* entry, the UE supports intra-band non-contiguous CA with restricted capability for MUSIM operation for this band. UE explicitly indicates each band and each combination of bands that are affected. The Network should respect these capability restrictions when configuring the UE with bands or band combinations that contain these bands and/or combination of bands. Fields *musim-MIMO-Layers-DL/UL* and *musim-SupportedBandwidth-DL/UL* indicate the max number of MIMO layers and max bandwidth on each CC of the band, respectively. The band(s) and/or combination(s) of bands are supported in UE capability, and the *musim-MIMO-Layers-DL/UL* and *musim-SupportedBandwidth-DL/UL* range up to the concerned capability of band(s) and/or combination(s) of bands in UE capability. |
| ***musim-AvoidedBandsList***Indicates the UE's preference on band(s) and/or combination(s) of bands to be avoided for MUSIM purpose. UE explicitly indicates each band and each combination of bands to be avoided. The list may include the band of the PCell. The Network should respect these capability restrictions for the band combinations that contain these bands and/or combination of bands. The band(s) and/or combination(s) of bands is a subset of the band combination(s) in UE capability. |
| ***musim-bandEntryIndex***Indicates an NR band by referring to the position of a band entry in *musim-CandidateBandList* IE. Value 1 identifies the first band in the *musim-CandidateBandList* IE, value 2 identifies the second band in the *musim-CandidateBandList* IE, and so on. |
| ***musim-CapabilityRestricted***Indicates the UE's preference on the temporary capability restriction on the band for MUSIM operation. |
| ***musim-CapRestriction***Indicates the UE's preference on SCell(s) or PSCell to be released, serving cell(s) with restricted capability, band(s) or combination(s) of bands with restricted capability, or band(s) or band combination(s) to be avoided for UE temporary capabilities restriction. |
| ***musim-Cell-SCG-ToRelease***Indicates the UE's preference on any serving cell(s), except for Pcell, and/or SCG to be releasedfor MUSIM operation. |
| ***musim-CellToAffectList***Indicates the UE's preference on the temporary capability restriction on the serving cell(s) for MUSIM operation. |
| ***musim-CellToRelease***Indicates the UE's preference on the temporary capability restriction on the serving cell(s) to release, except PCell, for MUSIM operation. |
| ***musim-GapKeepPreference***Indicates the UE's preference to keep all colliding gaps for requested MUSIM gap(s). If the field is absent, the colliding MUSIM gaps with lower priority shall be dropped as specified in TS 38.133 [14]. |
| ***musim-GapPreferenceList***Indicates the UE's MUSIM gap preference and related MUSIM gap configuration, as defined in TS 38.133 [14] clause 9.1.10. |
| ***musim-GapPriorityPreferenceList***Indicates the UE's MUSIM gap priority preference for periodic MUSIM gaps as specified in TS 38.133[14].If the UE includes *musim-GapPriorityPreferenceList-r18*, it includes the same number of entries, and listed in the same order for periodic gaps, as in *musim-GapPreferenceList-r17*. |
| ***musim-MaxCC***Indicates the UE's preference on the temporary capability restriction on maximum number of CCs per DL/UL in total, and per FR1/FR2-1/F2-2. |
| ***musim-NeedForGapsInfoNR***This field is used to indicate the measurement gap requirement information of the UE for NR target bands when in MUSIM operation while NR-DC or NE-DC is not configured.  |
| ***musim-PreferredRRC-State***Indicates the UE's preferred RRC state when leaving RRC\_CONNECTED. |
| ***n3c-RelayUE-InfoList***Information of available N3C relay UE(s). |
| ***nonSDT-DataIndication***Informs the network about the arrival of data and/or signaling mapped to radio bearers not configured for SDT while SDT procedure is ongoing. |
| ***preferredDRX-InactivityTimer***Indicates the UE's preferred DRX inactivity timer length for power saving. Value in ms (milliSecond). *ms0* corresponds to 0, *ms1* corresponds to 1 ms, *ms2* corresponds to 2 ms, and so on. If the field is absent from the *DRX-Preference* IE, it is interpreted as the UE having no preference for the DRX inactivity timer. If secondary DRX group is configured, the *preferredDRX-InactivityTimer* only applies to the default DRX group. |
| ***preferredDRX-LongCycle***Indicates the UE's preferred long DRX cycle length for power saving. Value in ms. *ms10* corresponds to 10ms, *ms20* corresponds to 20 ms, *ms32* corresponds to 32 ms, and so on. If *preferredDRX-ShortCycle* is provided, the value of *preferredDRX-LongCycle* shall be a multiple of the *preferredDRX-ShortCycle* value. If the field is absent from the *DRX-Preference* IE, it is interpreted as the UE having no preference for the long DRX cycle. |
| ***preferredDRX-ShortCycle***Indicates the UE's preferred short DRX cycle length for power saving. Value in ms. *ms2* corresponds to 2ms, *ms3* corresponds to 3 ms, *ms4* corresponds to 4 ms, and so on. If the field is absent from the *DRX-Preference* IE, it is interpreted as the UE having no preference for the short DRX cycle. |
| ***preferredDRX-ShortCycleTimer***Indicates the UE's preferred short DRX cycle timer for power saving. Value in multiples of *preferredDRX-ShortCycle*. A value of 1 corresponds to *preferredDRX-ShortCycle*, a value of 2 corresponds to 2 \* *preferredDRX-ShortCycle* and so on. If the field is absent from the *DRX-Preference* IE, it is interpreted as the UE having no preference for the short DRX cycle timer. A preference for the short DRX cycle is indicated when a preference for the short DRX cycle timer is indicated. |
| ***preferredK0***Indicates the UE's preferred value of *k0* (slot offset between DCI and its scheduled PDSCH - see TS 38.214 [19], clause 5.1.2.1) for cross-slot scheduling for power saving. Value is defined for each subcarrier spacing (numerology) in units of slots. *sl1* corresponds to 1 slot, *sl2* corresponds to 2 slots, *sl4* corresponds to 4 slots, and so on. If a value for a subcarrier spacing is absent, it is interpreted as the UE having no preference on *k0* for cross-slot scheduling for that subcarrier spacing. If the field is absent from the *MinSchedulingOffsetPreference* IE, it is interpreted as the UE having no preference on *k0* for cross-slot scheduling. |
| ***preferredK2***Indicates the UE's preferred value of *k2* (slot offset between DCI and its scheduled PUSCH - see TS 38.214 [19], clause 6.1.2.1) for cross-slot scheduling for power saving. Value is defined for each subcarrier spacing (numerology) in units of slots. *sl1* corresponds to 1 slot, *sl2* corresponds to 2 slots, *sl4* corresponds to 4 slots, and so on. If a value for a subcarrier spacing is absent, it is interpreted as the UE having no preference on *k2* for cross-slot scheduling for that subcarrier spacing. If the field is absent from the *MinSchedulingOffsetPreference* IE, it is interpreted as the UE having no preference on *k2* for cross-slot scheduling. |
| ***preferredRRC-State***Indicates the UE's preferred RRC state. The value *idle* is indicated if the UE prefers to be released from RRC\_CONNECTED and transition to RRC\_IDLE. The value *inactive* is indicated if the UE prefers to be released from RRC\_CONNECTED and transition to RRC\_INACTIVE. The value *connected* is indicated if the UE prefers to revert an earlier indication to leave RRC\_CONNECTED state. The value *outOfConnected* is indicated if the UE prefers to be released from RRC\_CONNECTED and has no preferred RRC state to transition to. The value *connected* can only be indicated if the UE is configured with *connectedReporting*. |
| ***propagationDelayDifference***Indicates the one-way service link propagation delay difference between serving cell and each neighbour cell included in *neighCellInfoList,* defined as neighbour cell's service link propagation delay minus serving cell's service link propagation delay, in number of ms. First entry in *propagationDelayDifference* corresponds to first entry in *neighCellInfoList*, second entry in *propagationDelayDifference* corresponds to second entry in *neighCellInfoList*, and so on. |
| ***reducedCCsDL***Indicates the UE's preference on reduced configuration corresponding to the maximum number of downlink SCells indicated by the field, to address overheating or power saving.When indicated to address overheating, this maximum number includes SCells of the NR MCG, PSCell and SCells of the SCG. This maximum number only includes PSCell and SCells of the SCG in (NG)EN-DC.When indicated to address power saving, this maximum number includes PSCell and SCells of the cell group that this UE assistance information is associated with. The maximum number of downlink SCells can only range up to the current active configuration when indicated to address power savings. |
| ***reducedCCsUL***Indicates the UE's preference on reduced configuration corresponding to the maximum number of uplink SCells indicated by the field, to address overheating or power saving.When indicated to address overheating, this maximum number includes SCells of the NR MCG, PSCell and SCells of the SCG. This maximum number only includes PSCell and SCells of the SCG in (NG)EN-DC.When indicated to address power saving, this maximum number includes PSCell and SCells of the cell group that this UE assistance information is associated with. The maximum number of uplink SCells can only range up to the current active configuration when indicated to address power savings. |
| ***reducedMaxBW-FR1***Indicates the UE's preference on reduced configuration corresponding to the maximum aggregated bandwidth across all downlink carrier(s) and across all uplink carrier(s) of FR1, to address overheating or power saving. This field is allowed to be reported only when UE is configured with serving cell(s) operating on FR1. The aggregated bandwidth across all downlink carrier(s) of FR1 is the sum of bandwidth of active downlink BWP(s) across all activated downlink carrier(s) of FR1. The aggregated bandwidth across all uplink carrier(s) of FR1 is the sum of bandwidth of active uplink BWP(s) across all activated uplink carrier(s) of FR1. If the field is absent from the *MaxBW-Preference* IE or the *OverheatingAssistance* IE, it is interpreted as the UE having no preference on the maximum aggregated bandwidth of FR1.When indicated to address overheating, this maximum aggregated bandwidth includes carrier(s) of FR1 of both the NR MCG and the SCG. This maximum aggregated bandwidth only includes carriers of FR1 of the SCG in (NG)EN-DC. Value *mhz0* is not used when indicated to address overheating.When indicated to address power saving, this maximum aggregated bandwidth includes carrier(s) of FR1 of the cell group that this UE assistance information is associated with. The aggregated bandwidth can only range up to the current active configuration when indicated to address power savings. |
| ***reducedMaxBW-FR2***Indicates the UE's preference on reduced configuration corresponding to the maximum aggregated bandwidth across all downlink carrier(s) and across all uplink carrier(s) of FR2-1, to address overheating or power saving. This field is allowed to be reported only when UE is configured with serving cell(s) operating on FR2-1. The aggregated bandwidth across all downlink carrier(s) of FR2-1 is the sum of bandwidth of active downlink BWP(s) across all activated downlink carrier(s) of FR2-1. The aggregated bandwidth across all uplink carrier(s) of FR2-1 is the sum of bandwidth of active uplink BWP(s) across all activated uplink carrier(s) of FR2-1. If the field is absent from the *MaxBW-Preference* IE or the *OverheatingAssistance* IE, it is interpreted as the UE having no preference on the maximum aggregated bandwidth of FR2-1.When indicated to address overheating, this maximum aggregated bandwidth includes carrier(s) of FR2-1 of both the NR MCG and the NR SCG. This maximum aggregated bandwidth only includes carriers of FR2-1 of the SCG in (NG)EN-DC.When indicated to address power saving, this maximum aggregated bandwidth includes carrier(s) of FR2-1 of the cell group that this UE assistance information is associated with. The aggregated bandwidth can only range up to the current active configuration when indicated to address power savings. |
| ***reducedMaxBW-FR2-2***Indicates the UE's preference on reduced configuration corresponding to the maximum aggregated bandwidth across all downlink carrier(s) and across all uplink carrier(s) of FR2-2, to address overheating or power saving. This field is allowed to be reported only when UE is configured with serving cell(s) operating on FR2-2. The aggregated bandwidth across all downlink carrier(s) of FR2-2 is the sum of bandwidth of active downlink BWP(s) across all activated downlink carrier(s) of FR2-2. The aggregated bandwidth across all uplink carrier(s) of FR2-2 is the sum of bandwidth of active uplink BWP(s) across all activated uplink carrier(s) of FR2-2. If the field is absent from the *MaxBW-PreferenceFR2-2* IE or the *OverheatingAssistance* IE, it is interpreted as the UE having no preference on the maximum aggregated bandwidth of FR2-2.When indicated to address overheating, this maximum aggregated bandwidth includes carrier(s) of FR2-2 of both the NR MCG and the NR SCG. This maximum aggregated bandwidth only includes carriers of FR2-2 of the SCG in (NG)EN-DC.When indicated to address power saving, this maximum aggregated bandwidth includes carrier(s) of FR2-2 of the cell group that this UE assistance information is associated with. The aggregated bandwidth can only range up to the current active configuration when indicated to address power savings. |
| ***reducedMIMO-LayersFR1-DL***Indicates the UE's preference on reduced configuration corresponding to the maximum number of downlink MIMO layers of each serving cell operating on FR1 indicated by the field, to address overheating or power saving. This field is allowed to be reported only when UE is configured with serving cells operating on FR1. The maximum number of downlink MIMO layers can only range up to the maximum number of MIMO layers configured across all activated downlink carrier(s) of FR1 in the cell group when indicated to address power savings. |
| ***reducedMIMO-LayersFR1-UL***Indicates the UE's preference on reduced configuration corresponding to the maximum number of uplink MIMO layers of each serving cell operating on FR1 indicated by the field, to address overheating or power saving (see NOTE 1). This field is allowed to be reported only when UE is configured with serving cells operating on FR1. The maximum number of uplink MIMO layers can only range up to the maximum number of MIMO layers configured across all activated uplink carrier(s) of FR1 in the cell group when indicated to address power savings. |
| ***reducedMIMO-LayersFR2-DL***Indicates the UE's preference on reduced configuration corresponding to the maximum number of downlink MIMO layers of each serving cell operating on FR2-1 indicated by the field, to address overheating or power saving. This field is allowed to be reported only when UE is configured with serving cells operating on FR2-1. The maximum number of downlink MIMO layers can only range up to the maximum number of MIMO layers configured across all activated downlink carrier(s) of FR2-1 in the cell group when indicated to address power savings. |
| ***reducedMIMO-LayersFR2-UL***Indicates the UE's preference on reduced configuration corresponding to the maximum number of uplink MIMO layers of each serving cell operating on FR2-1 indicated by the field, to address overheating or power saving (see NOTE 1). This field is allowed to be reported only when UE is configured with serving cells operating on FR2-1. The maximum number of uplink MIMO layers can only range up to the maximum number of MIMO layers configured across all activated uplink carrier(s) of FR2-1 in the cell group when indicated to address power savings. |
| ***reducedMIMO-LayersFR2-2-DL***Indicates the UE's preference on reduced configuration corresponding to the maximum number of downlink MIMO layers of each serving cell operating on FR2-2 indicated by the field, to address overheating or power saving. This field is allowed to be reported only when UE is configured with serving cells operating on FR2-2. The maximum number of downlink MIMO layers can only range up to the maximum number of MIMO layers configured across all activated downlink carrier(s) of FR2-2 in the cell group when indicated to address power savings. |
| ***reducedMIMO-LayersFR2-2-UL***Indicates the UE's preference on reduced configuration corresponding to the maximum number of uplink MIMO layers of each serving cell operating on FR2-2 indicated by the field, to address overheating or power saving (see NOTE 1). This field is allowed to be reported only when UE is configured with serving cells operating on FR2-2. The maximum number of uplink MIMO layers can only range up to the maximum number of MIMO layers configured across all activated uplink carrier(s) of FR2-2 in the cell group when indicated to address power savings. |
| ***referenceTimeInfoPreference***Indicates whether the UE prefers being provisioned with the timing information specified in the IE *ReferenceTimeInfo*. |
| ***resumeCause***Provides the resume cause based on the information received from the upper layers. |
| ***rlm-MeasRelaxationState***Indicates the relaxation state of RLM measurements. Value *true* indicates that the UE is performing relaxation of RLM measurements, and value *false* indicates that the UE is not performing relaxation of RLM measurements. |
| ***rrm-MeasRelaxationFulfilment***Indicates whether the UE fulfils the relaxed measurement criterion for stationary UE in 5.7.4.4. Value true indicates that the UE fulfils the criterion, and value false indicates that the UE does not fulfil the criterion. |
| ***sl-QoS-FlowIdentity***This identity uniquely identifies one sidelink QoS flow between the UE and the network in the scope of UE, which is unique for different destination and cast type. |
| ***sl-PRS-Bandwidth***Indicates the desired bandwidth of the requested SL-PRS resources provided by upper layers (see TS 38.355 [77]) in the unit of MHz. |
| ***sl-PRS-DelayBudget***Indicates the SL-PRS delay budget provided by upper layers (see TS 38.355 [77]). |
| ***sl-PRS-Periodicity***Indicates the periodicity of SL-PRS transmission. |
| ***sl-PRS-Priority***Indicates the priority of SL-PRS provided by upper layers (see TS 38.355 [77]). Value 1 is the highest priority whereas value 8 is the lowest priority. |
| ***sl-UE-AssistanceInformationNR***Indicates the traffic characteristic of sidelink logical channel(s), specified in the IE *SL-TrafficPatternInfo,* that are setup for NR sidelink communication. |
| ***slotOffset***Indicates the UE's preferred slot offset to resolve the IDC problem, in multiples of 1/32 ms. |
| ***startOffset***Indicates the UE's preferred start offset to resolve the IDC problem, in multiples of 1 ms. |
| ***type1***Indicates the preferred amount of increment/decrement to the long DRX cycle length with respect to the current configuration. Value in number of milliseconds. Value *ms40* corresponds to 40 milliseconds, *msMinus40* corresponds to -40 milliseconds and so on. |
| ***ul-GapFR2-PatternPreference***Indicates the UE's preference on FR2 UL gap pattern as defined in TS 38.133 [14]. |
| ***victimSystemType***Indicate the list of victim system types to which IDC interference is caused from NR. Value *gps*, *glonass*, *bds*, *galileo* and *navIC* indicates the type of GNSS. Value *wlan* indicates WLAN and value *bluetooth* indicates Bluetooth. Value *uwb* indicates Ultra Wide Band. |

NOTE 1: The field may also indicate the UE's preference on reduced configuration corresponding to the maximum number of SRS ports (i.e. *nrofSRS-Ports*) of each serving cell operating on the associated frequency range.

|  |
| --- |
| *SL-TrafficPatternInfo field descriptions* |
| ***messageSize***Indicates the maximum TB size based on the observed traffic pattern. The value refers to the index of TS 38.321 [3], table 6.1.3.1-2. |
| ***timingOffset***This field indicates the estimated timing for a packet arrival in a sidelink logical channel. Specifically, the value indicates the timing offset with respect to subframe#0 of SFN#0 in milliseconds. |
| ***trafficPeriodicity***This field indicates the estimated data arrival periodicity in a sidelink logical channel. Value ms20 corresponds to 20 ms, ms50 corresponds to 50 ms and so on. |

|  |
| --- |
| *UL-TrafficInfo field descriptions* |
| ***burstArrivalTime***Indicates the expected arrival time of the first packet of the Data Burst for the concerned QoS flow. If the UE provides both *burstArrivalTime* and *jitterRange, burstArrivalTime* is used as a reference time for the indicated jitter range.If *burstArrivalTime* is indicated as *referenceTime*, the indicated time in 10ns unit from the origin is *refDays*\*86400\*1000\*100000 + *refSeconds*\*1000\*100000 + *refMilliSeconds*\*100000 + *refTenNanoSeconds*. The *refDays* field specifies the sequential number of days (with day count starting at 0) from 00:00:00 on Gregorian calendar date 6 January, 1980 (start of GPS time).If *burstArrivalTime* is indicated as *referenceSFN-AndSlot*, it refers to the UL timing of the closest SFN and slot of the PCell with the indicated number. |
| ***jitterRange***Indicates the maximum deviation of the arrival time of the first packet of a Data Burst compared to the time indicated with *burstArrivalTime* and the periodicity of the Data Bursts. *lowerBound* indicates the negative deviation while *upperBound* indicates the positive deviation. This field shall only be reported together with the *burstArrivalTime* or after the *burstArrivalTime* has been already reported. Value ms0 corresponds to 0 ms, value 0dot5 to 0.5 ms, value ms1 to 1 ms and so on. Value *beyondMs7* indicates the jitter bound is higher than 7 ms. Value 0 ms means there is no Data Burst arrival time deviation from the indicated *burstArrivalTime*. |
| ***pdu-SetIdentification***Indicates whether the UE is able to identify PDU Set(s) for the QoS flow. If set to *true*, the UE is able to identify PDU Set(s) for the associated QoS flow, otherwise, the UE is not able to do so. Before receiving this indication, the network assumes the value is set to *false*. |
| ***psi-Identification***Indicates whether the UE is able to identify PSI(s) for the QoS flow. This field shall only be set to *true* if *pdu-SetIdentification* is also set to *true* (or was set to *true* previously for the same QoS flow). If set to *true*, the UE is able to identify PSI(s) for the associated QoS flow, otherwise, the UE is not able to do so. Before receiving this indication, the network assumes the value is set to *false*. |
| ***qfi***Identity of the QoS flow to which this UL traffic information refers. |
| ***trafficPeriodicity***Indicates the average time period between the start times of two data bursts, expressed in the number of microseconds. |

### 6.3.1 System information blocks

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#### *– SIB19*

*SIB19* contains satellite assistance information for NTN access.

***SIB19* information element**

-- ASN1START

-- TAG-SIB19-START

SIB19-r17 ::= SEQUENCE {

 ntn-Config-r17 NTN-Config-r17 OPTIONAL, -- Need R

 t-Service-r17 INTEGER (0..549755813887) OPTIONAL, -- Need R

 referenceLocation-r17 ReferenceLocation-r17 OPTIONAL, -- Need R

 distanceThresh-r17 INTEGER(0..65525) OPTIONAL, -- Need R

 ntn-NeighCellConfigList-r17 NTN-NeighCellConfigList-r17 OPTIONAL, -- Need R

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 ...,

 [[

 ntn-NeighCellConfigListExt-v1720 NTN-NeighCellConfigList-r17 OPTIONAL -- Need R

 ]],

 [[

 movingReferenceLocation-r18 ReferenceLocation-r17 OPTIONAL, -- Need R

 ntn-CovEnh-r18 NTN-CovEnh-r18 OPTIONAL, -- Need R

 satSwitchWithReSync-r18 SatSwitchWithReSync-r18 OPTIONAL -- Need R

 ]]

}

NTN-NeighCellConfigList-r17 ::= SEQUENCE (SIZE(1..maxCellNTN-r17)) OF NTN-NeighCellConfig-r17

NTN-NeighCellConfig-r17 ::= SEQUENCE {

 ntn-Config-r17 NTN-Config-r17 OPTIONAL, -- Need R

 carrierFreq-r17 ARFCN-ValueNR OPTIONAL, -- Need R

 physCellId-r17 PhysCellId OPTIONAL -- Need R

}

NTN-CovEnh-r18 ::= SEQUENCE {

 numberOfMsg4HARQ-ACK-Repetitions-r18 BIT STRING (SIZE(4)),

 rsrp-ThresholdMsg4HARQ-ACK-r18 RSRP-Range OPTIONAL -- Need R

}

SatSwitchWithReSync-r18 ::= SEQUENCE {

 ntn-Config-r18 NTN-Config-r17,

 t-ServiceStart-r18 INTEGER (0..549755813887) OPTIONAL, -- Need R

 ssb-TimeOffset-r18 INTEGER (0..159) OPTIONAL -- Need R

}

-- TAG-SIB19-STOP

-- ASN1STOP

| ***SIB19* field descriptions** |
| --- |
| ***distanceThresh***Distance from the serving cell reference location and is used in location-based measurement initiation in RRC\_IDLE and RRC\_INACTIVE, as defined in TS 38.304 [20]. Each step represents 50m. This field is only present in an NTN cell. |
| ***movingReferenceLocation***Reference location of the serving cell of an NTN Earth-moving cell at a time reference. It is used in the evaluation of *eventD2* and *condEventD2* criteria for the serving cell in RRC\_CONNECTED, and location-based measurement initiation in RRC\_IDLE and RRC\_INACTIVE when *distanceThresh* is also configured, as defined in TS 38.304 [20]. The time reference of this field is indicated by *epochTime* in *ntn-Config* of the serving cell. This field is excluded when determining changes in system information, i.e., changes to *movingReferenceLocation* should neither result in system information change notifications nor in a modification of *valueTag* in *SIB1*. This field is only present in an NTN cell. |
| ***ntn-Config***Provides parameters needed for the UE to access NR via NTN access such as Ephemeris data, common TA parameters, k\_offset, validity duration for UL sync information and epoch time. In a TN cell, this field is only present in *ntn-NeighCellConfigList* and *ntn-NeighCellConfigListExt*. |
| ***ntn-NeighCellConfigList, ntn-NeighCellConfigListExt***Provides a list of NTN neighbour cells including their *ntn-Config*, carrier frequency and *PhysCellId*. This set includes all elements of *ntn-NeighCellConfigList* and all elements of *ntn-NeighCellConfigListExt*. If *ntn-Config* is absent for an entry in *ntn-NeighCellConfigListExt*, the *ntn-Config* provided in the entry at the same position in *ntn-NeighCellConfigList* applies. Network provides *ntn-Config* for the first entry of *ntn-NeighCellConfigList.* If the *ntn-Config* is absent for any other entry in *ntn-NeighCellConfigList*, the *ntn-Config* provided in the previous entry in *ntn-NeighCellConfigList* applies. |
| ***referenceLocation***Reference location of the serving cell provided via NTN (quasi-)Earth fixed cell and is used in location-based measurement initiation in RRC\_IDLE and RRC\_INACTIVE, as defined in TS 38.304 [20]. This field is only present in an NTN cell. |
| ***satSwitchWithReSync***Provides parameters for the target satellite required to perform satellite switch with resynchronization. This field is only present in an NTN cell and its presence indicates that satellite switch without PCI change is supported in the cell. |
| ***t-Service***Indicates the time information on when a cell provided via NTN is going to stop serving the area it is currently covering. This field applies for both service link switches in NTN quasi-Earth fixed cell and feeder link switches for both NTN quasi-Earth fixed and Earth-moving cell. The field indicates a time in multiples of 10 ms after 00:00:00 on Gregorian calendar date 1 January, 1900 (midnight between Sunday, December 31, 1899 and Monday, January 1, 1900). The exact stop time is between the time indicated by the value of this field minus 1 and the time indicated by the value of this field. The reference point for *t-Service* is the uplink time synchronization reference point of the cell. This field is only present in an NTN cell. |

|  |
| --- |
| *NTN-CovEnh* field descriptions |
| ***numberOfMsg4HARQ-ACK-Repetitions***The number of repetition slots for PUCCH transmission with HARQ-ACK information for Msg4, see clause 9.2.6 in TS 38.213 [13]. The first/leftmost bit corresponds to the repetition factor 1, the second bit corresponds to the repetition factor 2, the third bit corresponds to the repetition factor 4, and the last/rightmost bit corresponds to the repetition factor 8. The repetition factor 1 shall be indicated together with at least one other repetition factor. |
| ***rsrp-ThresholdMsg4HARQ-ACK***This threshold is used by the UE for determining the configuration of the MAC entity for PUCCH repetition for Msg4 HARQ-ACK, as specified in clause 6.2.1 in TS 38.321 [3]. |

| *SatSwitchWithReSync* field descriptions |
| --- |
| ***ssb-TimeOffset***Indicates the time offset of the SSB from target satellite at its uplink time synchronization reference point with respect to the SSB from source satellite at its uplink time synchronization reference point. It is given in number of subframes. |
| ***t-ServiceStart***Indicates the time information on when the target satellite is going to start serving the area currently covered by the serving satellite. The field indicates a time in multiples of 10 ms after 00:00:00 on Gregorian calendar date 1st January 1900 (midnight between Sunday, December 31, 1899, and Monday, January 1, 1900). The exact start time is between the time indicated by the value of this field minus 1 and the time indicated by the value of this field. The reference point for *t-ServiceStart* is the uplink time synchronization reference point of the serving satellite. |

### 6.3.2 Radio resource control information elements

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#### – *PDSCH-Config*

The *PDSCH-Config* IE is used to configure the UE specific PDSCH parameters. If this IE is used for MBS CFR, the following fields shall be absent: *tci-StatesToAddModList*, *tci-StatesToReleaseList*, *zp-CSI-RS-ResourceToAddModList*, *minimumSchedulingOffsetK0*, *antennaPortsFieldPresenceDCI-1-2*, *aperiodicZP-CSI-RS-ResourceSetsToAddModListDCI-1-2*, *aperiodicZP-CSI-RS-ResourceSetsToReleaseListDCI-1-2*, *dmrs-DownlinkForPDSCH-MappingTypeA-DCI-1-2*, *dmrs-DownlinkForPDSCH-MappingTypeB-DCI-1-2*, *dmrs-SequenceInitializationDCI-1-2*, *harq-ProcessNumberSizeDCI-1-2*, *mcs-TableDCI-1-2*, *numberOfBitsForRV-DCI-1-2*, *pdsch-AggregationFactor*, *pdsch-TimeDomainAllocationListDCI-1-2*, *prb-BundlingTypeDCI-1-2*, *priorityIndicatorDCI-1-2*, *rateMatchPatternGroup1DCI-1-2*, *rateMatchPatternGroup2DCI-1-2*, *resourceAllocationType1GranularityDCI-1-2*, *vrb-ToPRB-InterleaverDCI-1-2*, *referenceOfSLIVDCI-1-2*, *resourceAllocationDCI-1-2*, *dataScramblingIdentityPDSCH2-r16*, *repetitionSchemeConfig*, *pdsch-ConfigDCI-1-3*.

*PDSCH-Config* information element

-- ASN1START

-- TAG-PDSCH-CONFIG-START

PDSCH-Config ::= SEQUENCE {

 dataScramblingIdentityPDSCH INTEGER (0..1023) OPTIONAL, -- Need S

 dmrs-DownlinkForPDSCH-MappingTypeA SetupRelease { DMRS-DownlinkConfig } OPTIONAL, -- Need M

 dmrs-DownlinkForPDSCH-MappingTypeB SetupRelease { DMRS-DownlinkConfig } OPTIONAL, -- Need M

 tci-StatesToAddModList SEQUENCE (SIZE(1..maxNrofTCI-States)) OF TCI-State OPTIONAL, -- Need N

 tci-StatesToReleaseList SEQUENCE (SIZE(1..maxNrofTCI-States)) OF TCI-StateId OPTIONAL, -- Need N

 vrb-ToPRB-Interleaver ENUMERATED {n2, n4} OPTIONAL, -- Need S

 resourceAllocation ENUMERATED { resourceAllocationType0, resourceAllocationType1, dynamicSwitch},

 pdsch-TimeDomainAllocationList SetupRelease { PDSCH-TimeDomainResourceAllocationList } OPTIONAL, -- Need M

 pdsch-AggregationFactor ENUMERATED { n2, n4, n8 } OPTIONAL, -- Need S

 rateMatchPatternToAddModList SEQUENCE (SIZE (1..maxNrofRateMatchPatterns)) OF RateMatchPattern OPTIONAL, -- Need N

 rateMatchPatternToReleaseList SEQUENCE (SIZE (1..maxNrofRateMatchPatterns)) OF RateMatchPatternId OPTIONAL, -- Need N

 rateMatchPatternGroup1 RateMatchPatternGroup OPTIONAL, -- Need R

 rateMatchPatternGroup2 RateMatchPatternGroup OPTIONAL, -- Need R

 rbg-Size ENUMERATED {config1, config2},

 mcs-Table ENUMERATED {qam256, qam64LowSE} OPTIONAL, -- Need S

 maxNrofCodeWordsScheduledByDCI ENUMERATED {n1, n2} OPTIONAL, -- Need R

 prb-BundlingType CHOICE {

 staticBundling SEQUENCE {

 bundleSize ENUMERATED { n4, wideband } OPTIONAL -- Need S

 },

 dynamicBundling SEQUENCE {

 bundleSizeSet1 ENUMERATED { n4, wideband, n2-wideband, n4-wideband } OPTIONAL, -- Need S

 bundleSizeSet2 ENUMERATED { n4, wideband } OPTIONAL -- Need S

 }

 },

 zp-CSI-RS-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofZP-CSI-RS-Resources)) OF ZP-CSI-RS-Resource

 OPTIONAL, -- Need N

 zp-CSI-RS-ResourceToReleaseList SEQUENCE (SIZE (1..maxNrofZP-CSI-RS-Resources)) OF ZP-CSI-RS-ResourceId

 OPTIONAL, -- Need N

 aperiodic-ZP-CSI-RS-ResourceSetsToAddModList SEQUENCE (SIZE (1..maxNrofZP-CSI-RS-ResourceSets)) OF ZP-CSI-RS-ResourceSet

 OPTIONAL, -- Need N

 aperiodic-ZP-CSI-RS-ResourceSetsToReleaseList SEQUENCE (SIZE (1..maxNrofZP-CSI-RS-ResourceSets)) OF ZP-CSI-RS-ResourceSetId

 OPTIONAL, -- Need N

 sp-ZP-CSI-RS-ResourceSetsToAddModList SEQUENCE (SIZE (1..maxNrofZP-CSI-RS-ResourceSets)) OF ZP-CSI-RS-ResourceSet

 OPTIONAL, -- Need N

 sp-ZP-CSI-RS-ResourceSetsToReleaseList SEQUENCE (SIZE (1..maxNrofZP-CSI-RS-ResourceSets)) OF ZP-CSI-RS-ResourceSetId

 OPTIONAL, -- Need N

 p-ZP-CSI-RS-ResourceSet SetupRelease { ZP-CSI-RS-ResourceSet }

 OPTIONAL, -- Need M

 ...,

 [[

 maxMIMO-Layers-r16 SetupRelease { MaxMIMO-LayersDL-r16 } OPTIONAL, -- Need M

 minimumSchedulingOffsetK0-r16 SetupRelease { MinSchedulingOffsetK0-Values-r16 } OPTIONAL, -- Need M

 -- Start of the parameters for DCI format 1\_2 introduced in V16.1.0

 antennaPortsFieldPresenceDCI-1-2-r16 ENUMERATED {enabled} OPTIONAL, -- Need S

 aperiodicZP-CSI-RS-ResourceSetsToAddModListDCI-1-2-r16 SEQUENCE (SIZE (1..maxNrofZP-CSI-RS-ResourceSets)) OF ZP-CSI-RS-ResourceSet

 OPTIONAL, -- Need N

 aperiodicZP-CSI-RS-ResourceSetsToReleaseListDCI-1-2-r16 SEQUENCE (SIZE (1..maxNrofZP-CSI-RS-ResourceSets)) OF ZP-CSI-RS-ResourceSetId

 OPTIONAL, -- Need N

 dmrs-DownlinkForPDSCH-MappingTypeA-DCI-1-2-r16 SetupRelease { DMRS-DownlinkConfig } OPTIONAL, -- Need M

 dmrs-DownlinkForPDSCH-MappingTypeB-DCI-1-2-r16 SetupRelease { DMRS-DownlinkConfig } OPTIONAL, -- Need M

 dmrs-SequenceInitializationDCI-1-2-r16 ENUMERATED {enabled} OPTIONAL, -- Need S

 harq-ProcessNumberSizeDCI-1-2-r16 INTEGER (0..4) OPTIONAL, -- Need R

 mcs-TableDCI-1-2-r16 ENUMERATED {qam256, qam64LowSE} OPTIONAL, -- Need S

 numberOfBitsForRV-DCI-1-2-r16 INTEGER (0..2) OPTIONAL, -- Need R

 pdsch-TimeDomainAllocationListDCI-1-2-r16 SetupRelease { PDSCH-TimeDomainResourceAllocationList-r16 }

 OPTIONAL, -- Need M

 prb-BundlingTypeDCI-1-2-r16 CHOICE {

 staticBundling-r16 SEQUENCE {

 bundleSize-r16 ENUMERATED { n4, wideband } OPTIONAL -- Need S

 },

 dynamicBundling-r16 SEQUENCE {

 bundleSizeSet1-r16 ENUMERATED { n4, wideband, n2-wideband, n4-wideband } OPTIONAL, -- Need S

 bundleSizeSet2-r16 ENUMERATED { n4, wideband } OPTIONAL -- Need S

 }

 } OPTIONAL, -- Need R

 priorityIndicatorDCI-1-2-r16 ENUMERATED {enabled} OPTIONAL, -- Need S

 rateMatchPatternGroup1DCI-1-2-r16 RateMatchPatternGroup OPTIONAL, -- Need R

 rateMatchPatternGroup2DCI-1-2-r16 RateMatchPatternGroup OPTIONAL, -- Need R

 resourceAllocationType1GranularityDCI-1-2-r16 ENUMERATED {n2,n4,n8,n16} OPTIONAL, -- Need S

 vrb-ToPRB-InterleaverDCI-1-2-r16 ENUMERATED {n2, n4} OPTIONAL, -- Need S

 referenceOfSLIVDCI-1-2-r16 ENUMERATED {enabled} OPTIONAL, -- Need S

 resourceAllocationDCI-1-2-r16 ENUMERATED { resourceAllocationType0, resourceAllocationType1, dynamicSwitch}

 OPTIONAL, -- Need M

 -- End of the parameters for DCI format 1\_2 introduced in V16.1.0

 priorityIndicatorDCI-1-1-r16 ENUMERATED {enabled} OPTIONAL, -- Need S

 dataScramblingIdentityPDSCH2-r16 INTEGER (0..1023) OPTIONAL, -- Need R

 pdsch-TimeDomainAllocationList-r16 SetupRelease { PDSCH-TimeDomainResourceAllocationList-r16 } OPTIONAL, -- Need M

 repetitionSchemeConfig-r16 SetupRelease { RepetitionSchemeConfig-r16} OPTIONAL -- Need M

 ]],

 [[

 repetitionSchemeConfig-v1630 SetupRelease { RepetitionSchemeConfig-v1630} OPTIONAL -- Need M

 ]],

 [[

 pdsch-HARQ-ACK-OneShotFeedbackDCI-1-2-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 pdsch-HARQ-ACK-EnhType3DCI-1-2-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 pdsch-HARQ-ACK-EnhType3DCI-Field-1-2-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 pdsch-HARQ-ACK-RetxDCI-1-2-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 pucch-sSCellDynDCI-1-2-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 dl-OrJointTCI-StateList-r17 CHOICE {

 explicitlist SEQUENCE {

 dl-OrJointTCI-StateToAddModList-r17 SEQUENCE (SIZE (1..maxNrofTCI-States)) OF TCI-State

 OPTIONAL, -- Need N

 dl-OrJointTCI-StateToReleaseList-r17 SEQUENCE (SIZE (1..maxNrofTCI-States)) OF TCI-StateId

 OPTIONAL -- Need N

 },

 unifiedTCI-StateRef-r17 ServingCellAndBWP-Id-r17

 } OPTIONAL, -- Need R

 beamAppTime-r17 ENUMERATED {n1, n2, n4, n7, n14, n28, n42, n56, n70, n84, n98, n112, n224, n336, spare2,

 spare1} OPTIONAL, -- Need R

 dummy SetupRelease { Dummy-TDRA-List } OPTIONAL, -- Need M

 dmrs-FD-OCC-DisabledForRank1-PDSCH-r17 ENUMERATED {true} OPTIONAL, -- Need R

 minimumSchedulingOffsetK0-r17 SetupRelease { MinSchedulingOffsetK0-Values-r17 } OPTIONAL, -- Need M

 harq-ProcessNumberSizeDCI-1-2-v1700 INTEGER (0..5) OPTIONAL, -- Need R

 harq-ProcessNumberSizeDCI-1-1-r17 INTEGER (5) OPTIONAL, -- Need R

 mcs-Table-r17 ENUMERATED {qam1024} OPTIONAL, -- Need R

 mcs-TableDCI-1-2-r17 ENUMERATED {qam1024} OPTIONAL, -- Need R

 xOverheadMulticast-r17 ENUMERATED {xOh6, xOh12, xOh18} OPTIONAL, -- Need S

 priorityIndicatorDCI-4-2-r17 ENUMERATED {enabled} OPTIONAL, -- Need S

 sizeDCI-4-2-r17 INTEGER (20..maxDCI-4-2-Size-r17) OPTIONAL -- Need R

 ]],

 [[

 pdsch-TimeDomainAllocationListForMultiPDSCH-r17 SetupRelease { MultiPDSCH-TDRA-List-r17 } OPTIONAL -- Need M

 ]],

 [[

 advancedReceiver-MU-MIMO-r18 SetupRelease { AdvancedReceiver-MU-MIMO-r18 } OPTIONAL, -- Need M

 pdsch-ConfigDCI-1-3-r18 SetupRelease { PDSCH-ConfigDCI-1-3-r18 } OPTIONAL -- Need M

 ]]

}

RateMatchPatternGroup ::= SEQUENCE (SIZE (1..maxNrofRateMatchPatternsPerGroup)) OF CHOICE {

 cellLevel RateMatchPatternId,

 bwpLevel RateMatchPatternId

}

MinSchedulingOffsetK0-Values-r16 ::= SEQUENCE (SIZE (1..maxNrOfMinSchedulingOffsetValues-r16)) OF INTEGER (0..maxK0-SchedulingOffset-r16)

MinSchedulingOffsetK0-Values-r17 ::= SEQUENCE (SIZE (1..maxNrOfMinSchedulingOffsetValues-r16)) OF INTEGER (0..maxK0-SchedulingOffset-r17)

MaxMIMO-LayersDL-r16 ::= INTEGER (1..8)

PDSCH-ConfigDCI-1-3-r18 ::= SEQUENCE {

 resourceAllocationDCI-1-3-r18 ENUMERATED {resourceAllocationType0, resourceAllocationType1, dynamicSwitch}

 OPTIONAL, -- Need M

 rbg-SizeDCI-1-3-r18 ENUMERATED {config1, config2, config3, spare1} OPTIONAL, -- Cond DCI-1-3

 resourceAllocationType1GranularityDCI-1-3-r18 ENUMERATED {n2,n4,n8,n16} OPTIONAL, -- Need S

 numberOfBitsForRV-DCI-1-3-r18 INTEGER (0..2) OPTIONAL, -- Need R

 harq-ProcessNumberSizeDCI-1-3-r18 INTEGER (0..5) OPTIONAL -- Need R

}

-- TAG-PDSCH-CONFIG-STOP

-- ASN1STOP

|  |
| --- |
| *PDSCH-Config* field descriptions |
| ***advancedReceiver-MU-MIMO***A set of assistance information for R-ML (reduced complexity ML) receivers with enhanced inter-user interference suppression for MU-MIMO transmissions. |
| ***antennaPortsFieldPresenceDCI-1-2***Configure the presence of "Antenna ports" field in DCI format 1\_2. When the field is configured, then the "Antenna ports" field is present in DCI format 1\_2. Otherwise, the field size is set to 0 for DCI format 1\_2 (See TS 38.212 [17], clause 7.3.1.1.3). If neither *dmrs-DownlinkForPDSCH-MappingTypeA-DCI-1-2* nor *dmrs-DownlinkForPDSCH-MappingTypeB-DCI-1-2* is configured, this field is absent. |
| ***aperiodic-ZP-CSI-RS-ResourceSetsToAddModList, aperiodic-ZP-CSI-RS-ResourceSetsToAddModListDCI-1-2***AddMod/Release lists for configuring aperiodically triggered zero-power CSI-RS resource sets. Each set contains a *ZP-CSI-RS-ResourceSetId* and the IDs of one or more *ZP-CSI-RS-Resources* (the actual resources are defined in the *zp-CSI-RS-ResourceToAddModList*). The network configures the UE with at most 3 aperiodic *ZP-CSI-RS-ResourceSets* and it uses only the *ZP-CSI-RS-ResourceSetId* 1 to 3. The network triggers a set by indicating its *ZP-CSI-RS-ResourceSetId* in the DCI payload. The DCI codepoint '01' triggers the resource set with *ZP-CSI-RS-ResourceSetId* 1, the DCI codepoint '10' triggers the resource set with *ZP-CSI-RS-ResourceSetId 2*, and the DCI codepoint '11' triggers the resource set with *ZP-CSI-RS-ResourceSetId* 3 (see TS 38.214 [19], clause 5.1.4.2). The field *aperiodic-ZP-CSI-RS-ResourceSetsToAddModList* applies to DCI format 1\_1 and the field *aperiodic-ZP-CSI-RS-ResourceSetsToAddModListDCI-1-2* applies to DCI format 1\_2 (see TS 38.214 [19], clause 5.1.4.2 and TS 38.212 [17] clause 7.3.1). |
| ***beamAppTime***Indicates the first slot to apply the unified TCI indicated by DCI as specified in TS 38.214 Clause 5.1.5. The value n1 means 1 symbol, n2 two symbols and so on. The first slot is at least Y symbols indicated by beamAppTime parameter after the last symbol of the acknowledgment of the joint or separate DL/UL beam indication. The same value shall be configured for all serving cells in any one of the *simultaneousU-TCI-UpdateListN* configured in IE *CellGroupConfig* based on the smallest SCS of the active BWP. |
| ***dataScramblingIdentityPDSCH, dataScramblingIdentityPDSCH2***Identifier(s) used to initialize data scrambling (c\_init) for PDSCH as specified in TS 38.211 [16], clause 7.3.1.1. The *dataScramblingIdentityPDSCH2* is configured if *coresetPoolIndex* is configured with 1 for at least one CORESET in the same BWP. |
| ***dl-OrJointTCI-StateToAddModList***A list of Transmission Configuration Indicator (TCI) states indicating a transmission configuration which includes QCL-relationships between the DL RSs in one RS set and the PDSCH DMRS ports, PDCCH DMRS ports, and CSI-RS, and in case of joint mode, also the PUSCH, PUCCH and SRS (see TS 38.214 [19], clause 5.1.5). |
| ***dmrs-DownlinkForPDSCH-MappingTypeA, dmrs-DownlinkForPDSCH-MappingTypeA-DCI-1-2***DMRS configuration for PDSCH transmissions using PDSCH mapping type A (chosen dynamically via *PDSCH-TimeDomainResourceAllocation*). Only the fields *dmrs-Type*, *dmrs-AdditionalPosition* and *maxLength* may be set differently for mapping type A and B. The field *dmrs-DownlinkForPDSCH-MappingTypeA* applies to DCI formats 1\_1 and 1\_3, and the field *dmrs-DownlinkForPDSCH-MappingTypeA-DCI-1-2* applies to DCI format 1\_2 (see TS 38.212 [17], clause 7.3.1). |
| ***dmrs-DownlinkForPDSCH-MappingTypeB, dmrs-DownlinkForPDSCH-MappingTypeB-DCI-1-2***DMRS configuration for PDSCH transmissions using PDSCH mapping type B (chosen dynamically via *PDSCH-TimeDomainResourceAllocation*). Only the fields *dmrs-Type*, *dmrs-AdditionalPosition* and *maxLength* may be set differently for mapping type A and B. The field *dmrs-DownlinkForPDSCH-MappingTypeB* applies to DCI formats 1\_1 and 1\_3, and the field *dmrs-DownlinkForPDSCH-MappingTypeB-DCI-1-2* applies to DCI format 1\_2 (see TS 38.212 [17], clause 7.3.1). |
| ***dmrs-FD-OCC-DisabledForRank1-PDSCH***If configured, the UE may assume that the set of remaining orthogonal antenna ports, which are within the same code division multiplexing (CDM) group and have different frequency domain orthogonal cover codes (FD-OCC), are not associated with the PDSCH of another UE (see TS 38.214 [19], clause 5.1.6.2). It is applicable for PDSCH SCS of 480 and 960 kHz when rank 1 PDSCH with type-1 or type-2 DMRS is scheduled. If *dmrs-TypeEnh-r18* is configured, this field is not configured. |
| ***dmrs-SequenceInitializationDCI-1\_2***Configure whether the field "DMRS Sequence Initialization" is present or not in DCI format 1\_2 If the field is absent, then the UE applies the value of 0 bit for the field "DMRS Sequence Initialization" in DCI format 1\_2. If the field is present, then the UE applies the value of 1 bit as in DCI format 1\_2 (see TS 38.212 [17], clause 7.3.1). |
| ***dummy***This field is not used in the specification. If received it shall be ignored by the UE. |
| ***harq-ProcessNumberSizeDCI-1-2***Configure the number of bits for the field "HARQ process number" in DCI format 1\_2 (see TS 38.212 [17], clause 7.3.1). |
| ***maxMIMO-Layers***Indicates the maximum number of MIMO layers to be used for PDSCH in this DL BWP. If not configured, the UE uses the *maxMIMO-Layers* configuration in IE *PDSCH-ServingCellConfig* of the serving cell to which this BWP belongs, when the UE operates in this BWP. The value of *maxMIMO-Layers* for a DL BWP shall be smaller than or equal to the value of *maxMIMO-Layers* configured in IE *PDSCH-ServingCellConfig* of the serving cell to which this BWP belongs.For MBS multicast, indicates the maximum number of MIMO layers to be used for group-common PDSCH of MBS multicast in this CFR. If not configured for CFR, the UE applies value 1. The value of *maxMIMO-Layers* for a CFR shall be smaller than or equal to the value of *maxMIMO-Layers* configured in *PDSCH-ServingCellConfig* IE of the serving cell to which this CFR belongs. |
| ***maxNrofCodeWordsScheduledByDCI***Maximum number of code words that a single DCI may schedule. This changes the number of MCS/RV/NDI bits in the DCI message from 1 to 2. |
| ***mcs-Table***Indicates which MCS table the UE shall use for PDSCH for DCI formats 1\_0, 1\_1 and 1\_3 (see TS 38.214 [19], clause 5.1.3.1). If all fields are absent the UE applies the value 64QAM. If the field *mcs-Table-r17* is present for DCI formats 1\_1 and 1\_3, the network does not configure the field *mcs-Table* (without suffix). For an (e)RedCap UE, the 256QAM MCS table for PDSCH is only supported if the UE indicates support of 256QAM for PDSCH. |
| ***mcs-TableDCI-1-2***Indicates which MCS table the UE shall use for PDSCH for DCI format 1\_2 (see TS 38.214 [19], clause 5.1.3.1). If all fields are absent the UE applies the value 64QAM. If the field *mcs-TableDCI-1-2-r17* is present, the network does not configure the field *mcs-TableDCI-1-2-r16*. For an (e)RedCap UE, the 256QAM MCS table for PDSCH is only supported if the UE indicates support of 256QAM for PDSCH. |
| ***minimumSchedulingOffsetK0***List of minimum K0 values. Minimum K0 parameter denotes minimum applicable value(s) for the TDRA table for PDSCH and for A-CSI RS triggering Offset(s) (see TS 38.214 [19], clause 5.3.1). |
| ***numberOfBitsForRV-DCI-1-2***Configures the number of bits for "Redundancy version" in the DCI format 1\_2 (see TS 38.212 [17], clause 7.3.1 and TS 38.214 [19], clause 5.1.2.1). |
| ***pdsch-AggregationFactor***Number of repetitions for data (see TS 38.214 [19], clause 5.1.2.1). When the field is absent in *PDSCH-Config* which is not used for MBS CFR, the UE applies the value 1. |
| ***pdsch-HARQ-ACK-EnhType3DCI-1-2***When configured, enhanced Type 3 HARQ-ACK codebook triggering by DCI format 1\_2 is enabled. |
| ***pdsch-HARQ-ACK-EnhType3DCI-Field-1-2***Enables the enhanced Type 3 codebook through a new DCI field to indicate the enhanced Type 3 HARQ-ACK codebook in DCI format 1\_2 if the more than one enhanced Type 3 HARQ-ACK codebook is configured for the primary PUCCH cell group. |
| ***pdsch-HARQ-ACK-OneShotFeedbackDCI-1-2***When configured, DCI format 1\_2 can request the UE to report A/N for all HARQ processes and all component carriers configured in the PUCCH group (see TS 38.212 [17], clause 7.3.1). |
| ***pdsch-HARQ-ACK-RetxDCI-1-2***When configured, DCI format 1\_2 can request the UE to perform a HARQ-ACK re-transmission on a PUCCH resource (see TS 38.213 [13], clause 9.1.5). |
| ***pdsch-TimeDomainAllocationList, pdsch-TimeDomainAllocationListDCI-1-2, pdsch-TimeDomainAllocationListForMultiPDSCH***List of time-domain configurations for timing of DL assignment to DL data.The field *pdsch-TimeDomainAllocationList* (with or without suffix) applies to DCI format 1\_0, DCI format 1\_1 and DCI format 1\_3 (see table 5.1.2.1.1-1 in TS 38.214 [19]), and if the field *pdsch-TimeDomainAllocationListDCI-1-2* is not configured, to DCI format 1\_2. If the field *pdsch-TimeDomainAllocationListDCI-1-2* is configured, it applies to DCI format 1\_2 (see table 5.1.2.1.1-1A in TS 38.214 [19]). The field *pdsch-TimeDomainAllocationListForMultiPDSCH* applies to DCI format 1\_1.The network does not configure the *pdsch-TimeDomainAllocationList-r16* simultaneously with the *pdsch-TimeDomainAllocationList* (without suffix) in the same *PDSCH-Config*. |
| ***prb-BundlingType,*** ***prb-BundlingTypeDCI-1-2***Indicates the PRB bundle type and bundle size(s) (see TS 38.214 [19], clause 5.1.2.3). If *dynamic* is chosen, the actual *bundleSizeSet1 or bundleSizeSet2* to use is indicated via DCI. Constraints on *bundleSize(Set)* setting depending on *vrb-ToPRB-Interleaver* and *rbg-Size* settings are described in TS 38.214 [19], clause 5.1.2.3. If a *bundleSize(Set)* value is absent, the UE applies the value *n2*. The field *prb-BundlingType* applies to DCI formats 1\_1 and 1\_3, and the field *prb-BundlingTypeDCI-1-2* applies to DCI format 1\_2 (see TS 38.212 [17], clause 7.3.1 and TS 38.214 [19], clause 5.1.2.3). |
| ***priorityIndicatorDCI-1-1, priorityIndicatorDCI-1-2, priorityIndicatorDCI-4-2***Configure the presence of "priority indicator" in DCI format 1\_1/1\_2/4\_2. When the field is absent in the IE, then 0 bit for "priority indicator" in DCI format 1\_1/1\_2/4\_2. The field *priorityIndicatorDCI-1-1* applies to DCI format 1\_1, the field *priorityIndicatorDCI-1-2* applies to DCI format 1\_2 and the field *priorityIndicatorDCI-4-2* applies to DCI format 4\_2, respectively (see TS 38.212 [17], clause 7.3.1 and TS 38.213 [13] clause 9). |
| ***pucch-sSCellDynDCI-1-2***When configured, PUCCH cell switching based on dynamic indication in DCI format 1\_2 is enabled (see TS 38.213 [13], clause 9.A). |
| ***p-ZP-CSI-RS-ResourceSet***A set of periodically occurring ZP-CSI-RS-Resources (the actual resources are defined in the zp-CSI-RS-ResourceToAddModList). The network uses the ZP-CSI-RS-ResourceSetId=0 for this set.If *p-ZP-CSI-RS-ResourceSet* is configured in both *PDSCH-Config* for MBS CFR and *PDSCH-Config* for the assoicated BWP, it is subject to UE capability whether the *p-ZP-CSI-RS-ResourceSet* configured in *PDSCH-Config* for MBS CFR can be different from the *p-ZP-CSI-RS-ResourceSet* configured in *PDSCH-Config* for the assoicated BWP. |
| ***rateMatchPatternGroup1, rateMatchPatternGroup1DCI-1-2***The IDs of a first group of *RateMatchPatterns* defined in *PDSCH-Config*->*rateMatchPatternToAddModList* (BWP level) or in *ServingCellConfig* ->*rateMatchPatternToAddModLis*t (cell level). These patterns can be activated dynamically by DCI (see TS 38.214 [19], clause 5.1.4.1). The field *rateMatchPatternGroup1* applies to DCI formats 1\_1 and 1\_3, and the field *rateMatchPatternGroup1DCI-1-2* applies to DCI format 1\_2 (see TS 38.214 [19], clause 5.1.4.1). |
| ***rateMatchPatternGroup2, rateMatchPatternGroup2DCI-1-2***The IDs of a second group of *RateMatchPatterns* defined in *PDSCH-Config*->*rateMatchPatternToAddModList* (BWP level) or in *ServingCellConfig* ->*rateMatchPatternToAddModLis*t (cell level). These patterns can be activated dynamically by DCI (see TS 38.214 [19], clause 5.1.4.1). The field *rateMatchPatternGroup2* applies to DCI formats 1\_1 and 1\_3, and the field *rateMatchPatternGroup2DCI-1-2* applies to DCI format 1\_2 (see TS 38.214 [19], clause 5.1.4.1). |
| ***rateMatchPatternToAddModList***Resources patterns which the UE should rate match PDSCH around. The UE rate matches around the union of all resources indicated in the rate match patterns (see TS 38.214 [19], clause 5.1.4.1). If a *RateMatchPattern* with the same *RateMatchPatternId* is configured in both MBS CFR and its associated BWP, the entire *RateMatchPattern* configuration, including the set of RBs/REs indicated by the patterns for the rate matching around, shall be the same and they are counted as a single rate match pattern in the total configured rate match patterns as defined in TS 38.214 [19]. |
| ***rbg-Size***Selection between config 1 and config 2 for RBG size for PDSCH except PDSCH scheduled by DCI format 1\_3. The UE ignores this field if *resourceAllocation* is set to *resourceAllocationType1* (see TS 38.214 [19], clause 5.1.2.2.1). |
| ***referenceOfSLIVDCI-1-2***Enable using the starting symbol of the PDCCH monitoring occasion in which the DL assignment is detected as the reference of the SLIV for DCI format 1\_2. When the RRC parameter enables the utilization of the new reference, the new reference is applied for TDRA entries with K0=0. For other entries (if any) in the same TDRA table, the reference is slot boundary as in Rel-15. PDSCH mapping type A is not supported with the new reference. The new reference of SLIV is not configured for a serving cell configured to be scheduled by cross-carrier scheduling on a scheduling cell with different numerology (see TS 38.212 [17] clause 7.3.1 and TS 38.214 [19] clause 5.1.2.1). |
| ***repetitionSchemeConfig***Configure the UE with repetition schemes. The network does not configure *repetitionSchemeConfig-r16* and *repetitionSchemeConfig-v1630* simultaneously to *setup* in the same *PDSCH-Config*. The network does not configure this parameter and *sfnSchemePDSCH* in *MIMOParam-r17* simultaneously in the same serving cell. |
| ***resourceAllocation, resourceAllocationDCI-1-2***Configuration of resource allocation type 0 and resource allocation type 1 for non-fallback DCI (see TS 38.214 [19], clause 5.1.2.2). The field *resourceAllocation* applies to DCI format 1\_1, and the field *resourceAllocationDCI-1-2* applies to DCI format 1\_2 (see TS 38.214 [19], clause 5.1.2.2). |
| ***resourceAllocationType1GranularityDCI-1-2***Configure the scheduling granularity applicable for both the starting point and length indication for resource allocation type 1 in DCI format 1\_2. If this field is absent, the granularity is 1 PRB (see TS 38.214 [19], clause 5.1.2.2.2). |
| ***sizeDCI-4-2***Indicates the size of DCI format 4-2 (see TS 38.213 [13], clause 10.1). |
| ***sp-ZP-CSI-RS-ResourceSetsToAddModList***AddMod/Release lists for configuring semi-persistent zero-power CSI-RS resource sets. Each set contains a *ZP-CSI-RS-ResourceSetId* and the IDs of one or more *ZP-CSI-RS-Resources* (the actual resources are defined in the *zp-CSI-RS-ResourceToAddModList*) (see TS 38.214 [19], clause 5.1.4.2). |
| ***tci-StatesToAddModList***A list of Transmission Configuration Indicator (TCI) states indicating a transmission configuration which includes QCL-relationships between the DL RSs in one RS set and the PDSCH DMRS ports (see TS 38.214 [19], clause 5.1.5). If *unifiedTCI-StateType* is configured for the serving cell, no element in this list is configured. |
| ***unifiedTCI-StateRef***Provides the serving cell and BWP where the configuration for *dl-OrJointTCI-StateToAddModList-r17* are defined. When this field is present, *dl-OrJointTCI-StateToAddModList* and *dl-OrJointTCI-StateToReleaseList* are not present. The value of *unifiedTCI-StateType* of current serving cell is the same in the serving cell indicated by *unifiedTCI-StateRef.* |
| ***vrb-ToPRB-Interleaver, vrb-ToPRB-InterleaverDCI-1-2***Interleaving unit configurable between 2 and 4 PRBs (see TS 38.211 [16], clause 7.3.1.6). When the field is absent, the UE performs non-interleaved VRB-to-PRB mapping. |
| ***xOverheadMulticast***Accounts for an overhead from CSI-RS, CORESET etc. If the field is absent, the UE applies value xOh0 (see TS 38.214 [19]). |
| ***zp-CSI-RS-ResourceToAddModList***A list of Zero-Power (ZP) CSI-RS resources used for PDSCH rate-matching. Each resource in this list may be referred to from only one type of resource set, i.e., aperiodic, semi-persistent or periodic (see TS 38.214 [19]). |

|  |
| --- |
| *PDSCH-ConfigDCI-1-3* field descriptions |
| ***harq-ProcessNumberSizeDCI-1-3***Configure the number of bits for the field "HARQ process number" in DCI format 1\_3 (see TS 38.212 [17], clause 7.3.1). |
| ***numberOfBitsForRV-DCI-1-3***Configures the number of bits for "Redundancy version" in the DCI format 1\_3 (see TS 38.212 [17], clause 7.3.1 and TS 38.214 [19], clause 5.1.2.1). |
| ***rbg-SizeDCI-1-3***Selection among config 1, config 2 and config 3 for RBG size for PDSCH scheduled by DCI format 1\_3. The UE ignores this field if resourceAllocationDCI-1-3 is set to resourceAllocationType1. (see TS 38.214 [19], clause 5.1.2.2.1). |
| ***resourceAllocationDCI-1-3***Configuration of resource allocation type 0 and resource allocation type 1 for DCI format 1\_3 (see TS 38.214 [19], clause 5.1.2.2). |
| ***resourceAllocationType1GranularityDCI-1-3***Configure the scheduling granularity applicable for both the starting point and length indication for resource allocation type 1 in DCI format 1\_3. If this field is absent, the granularity is 1 PRB (see TS 38.214 [19], clause 5.1.2.2.2). |

|  |  |
| --- | --- |
| Conditional Presence | Explanation |
| *DCI-1-3* | This field is mandatory present when *ScheduledCellListDCI-1-3* is configured to the serving cell. Otherwise, it is absent, Need R. |

#### – *PhysicalCellGroupConfig*

The IE *PhysicalCellGroupConfig* is used to configure cell-group specific L1 parameters.

*PhysicalCellGroupConfig* information element

-- ASN1START

-- TAG-PHYSICALCELLGROUPCONFIG-START

PhysicalCellGroupConfig ::= SEQUENCE {

 harq-ACK-SpatialBundlingPUCCH ENUMERATED {true} OPTIONAL, -- Need S

 harq-ACK-SpatialBundlingPUSCH ENUMERATED {true} OPTIONAL, -- Need S

 p-NR-FR1 P-Max OPTIONAL, -- Need R

 pdsch-HARQ-ACK-Codebook ENUMERATED {semiStatic, dynamic},

 tpc-SRS-RNTI RNTI-Value OPTIONAL, -- Need R

 tpc-PUCCH-RNTI RNTI-Value OPTIONAL, -- Need R

 tpc-PUSCH-RNTI RNTI-Value OPTIONAL, -- Need R

 sp-CSI-RNTI RNTI-Value OPTIONAL, -- Need R

 cs-RNTI SetupRelease { RNTI-Value } OPTIONAL, -- Need M

 ...,

 [[

 mcs-C-RNTI RNTI-Value OPTIONAL, -- Need R

 p-UE-FR1 P-Max OPTIONAL -- Cond MCG-Only

 ]],

 [[

 xScale ENUMERATED {dB0, dB6, spare2, spare1} OPTIONAL -- Cond SCG-Only

 ]],

 [[

 pdcch-BlindDetection SetupRelease { PDCCH-BlindDetection } OPTIONAL -- Need M

 ]],

 [[

 dcp-Config-r16 SetupRelease { DCP-Config-r16 } OPTIONAL, -- Need M

 harq-ACK-SpatialBundlingPUCCH-secondaryPUCCHgroup-r16 ENUMERATED {enabled, disabled} OPTIONAL, -- Cond twoPUCCHgroup

 harq-ACK-SpatialBundlingPUSCH-secondaryPUCCHgroup-r16 ENUMERATED {enabled, disabled} OPTIONAL, -- Cond twoPUCCHgroup

 pdsch-HARQ-ACK-Codebook-secondaryPUCCHgroup-r16 ENUMERATED {semiStatic, dynamic} OPTIONAL, -- Cond twoPUCCHgroup

 p-NR-FR2-r16 P-Max OPTIONAL, -- Need R

 p-UE-FR2-r16 P-Max OPTIONAL, -- Cond MCG-Only

 nrdc-PCmode-FR1-r16 ENUMERATED {semi-static-mode1, semi-static-mode2, dynamic} OPTIONAL, -- Cond MCG-Only

 nrdc-PCmode-FR2-r16 ENUMERATED {semi-static-mode1, semi-static-mode2, dynamic} OPTIONAL, -- Cond MCG-Only

 pdsch-HARQ-ACK-Codebook-r16 ENUMERATED {enhancedDynamic} OPTIONAL, -- Need R

 nfi-TotalDAI-Included-r16 ENUMERATED {true} OPTIONAL, -- Need R

 ul-TotalDAI-Included-r16 ENUMERATED {true} OPTIONAL, -- Need R

 pdsch-HARQ-ACK-OneShotFeedback-r16 ENUMERATED {true} OPTIONAL, -- Need R

 pdsch-HARQ-ACK-OneShotFeedbackNDI-r16 ENUMERATED {true} OPTIONAL, -- Need R

 pdsch-HARQ-ACK-OneShotFeedbackCBG-r16 ENUMERATED {true} OPTIONAL, -- Need R

 downlinkAssignmentIndexDCI-0-2-r16 ENUMERATED { enabled } OPTIONAL, -- Need S

 downlinkAssignmentIndexDCI-1-2-r16 ENUMERATED {n1, n2, n4} OPTIONAL, -- Need S

 pdsch-HARQ-ACK-CodebookList-r16 SetupRelease {PDSCH-HARQ-ACK-CodebookList-r16} OPTIONAL, -- Need M

 ackNackFeedbackMode-r16 ENUMERATED {joint, separate} OPTIONAL, -- Need R

 pdcch-BlindDetectionCA-CombIndicator-r16 SetupRelease { PDCCH-BlindDetectionCA-CombIndicator-r16 } OPTIONAL, -- Need M

 pdcch-BlindDetection2-r16 SetupRelease { PDCCH-BlindDetection2-r16 } OPTIONAL, -- Need M

 pdcch-BlindDetection3-r16 SetupRelease { PDCCH-BlindDetection3-r16 } OPTIONAL, -- Need M

 bdFactorR-r16 ENUMERATED {n1} OPTIONAL -- Need R

 ]],

 [[

 -- start of enhanced Type3 feedback

 pdsch-HARQ-ACK-EnhType3ToAddModList-r17 SEQUENCE (SIZE(1..maxNrofEnhType3HARQ-ACK-r17)) OF PDSCH-HARQ-ACK-EnhType3-r17

 OPTIONAL, -- Need N

 pdsch-HARQ-ACK-EnhType3ToReleaseList-r17 SEQUENCE (SIZE(1..maxNrofEnhType3HARQ-ACK-r17)) OF PDSCH-HARQ-ACK-EnhType3Index-r17

 OPTIONAL, -- Need N

 pdsch-HARQ-ACK-EnhType3SecondaryToAddModList-r17 SEQUENCE (SIZE(1..maxNrofEnhType3HARQ-ACK-r17)) OF PDSCH-HARQ-ACK-EnhType3-r17

 OPTIONAL, -- Need N

 pdsch-HARQ-ACK-EnhType3SecondaryToReleaseList-r17 SEQUENCE (SIZE(1..maxNrofEnhType3HARQ-ACK-r17)) OF PDSCH-HARQ-ACK-EnhType3Index-r17

 OPTIONAL, -- Need N

 pdsch-HARQ-ACK-EnhType3DCI-FieldSecondaryPUCCHgroup-r17 ENUMERATED {enabled} OPTIONAL, -- Cond twoPUCCHgroup

 pdsch-HARQ-ACK-EnhType3DCI-Field-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 -- end of enhanced Type3 feedback

 -- start of triggering of HARQ-ACK re-transmission on a PUCCH resource

 pdsch-HARQ-ACK-Retx-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 pdsch-HARQ-ACK-RetxSecondaryPUCCHgroup-r17 ENUMERATED {enabled} OPTIONAL, -- Cond twoPUCCHgroup

 -- end of triggering of HARQ-ACK re-transmission on a PUCCH resource

 -- start of PUCCH Cell switching

 pucch-sSCell-r17 SCellIndex OPTIONAL, -- Need R

 pucch-sSCellSecondaryPUCCHgroup-r17 SCellIndex OPTIONAL, -- Cond twoPUCCHgroup

 pucch-sSCellDyn-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 pucch-sSCellDynSecondaryPUCCHgroup-r17 ENUMERATED {enabled} OPTIONAL, -- Cond twoPUCCHgroup

 pucch-sSCellPattern-r17 SEQUENCE (SIZE(1..maxNrofSlots)) OF INTEGER (0..1) OPTIONAL, -- Need R

 pucch-sSCellPatternSecondaryPUCCHgroup-r17 SEQUENCE (SIZE(1..maxNrofSlots)) OF INTEGER (0..1) OPTIONAL, -- Cond twoPUCCHgroup

 -- end of PUCCH Cell switching

 uci-MuxWithDiffPrio-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 uci-MuxWithDiffPrioSecondaryPUCCHgroup-r17 ENUMERATED {enabled} OPTIONAL, -- Cond twoPUCCHgroup

 simultaneousPUCCH-PUSCH-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 simultaneousPUCCH-PUSCH-SecondaryPUCCHgroup-r17 ENUMERATED {enabled} OPTIONAL, -- Cond twoPUCCHgroup

 prioLowDG-HighCG-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 prioHighDG-LowCG-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 twoQCLTypeDforPDCCHRepetition-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 multicastConfig-r17 SetupRelease { MulticastConfig-r17 } OPTIONAL, -- Need M

 pdcch-BlindDetectionCA-CombIndicator-r17 SetupRelease { PDCCH-BlindDetectionCA-CombIndicator-r17 } OPTIONAL -- Need M

 ]],

 [[

 simultaneousSR-PUSCH-diffPUCCH-Groups-r17 ENUMERATED {enabled} OPTIONAL -- Cond twoPUCCHgroup

 ]],

 [[

 intraBandNC-PRACH-simulTx-r17 ENUMERATED {enabled} OPTIONAL -- Need R

 ]],

 [[

 pdcch-BlindDetection4-r17 SetupRelease { PDCCH-BlindDetection4-r17 } OPTIONAL -- Need M

 ]],

 [[

 simultaneousPUCCH-PUSCH-SamePriority-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 simultaneousPUCCH-PUSCH-SamePriority-SecondaryPUCCHgroup-r17 ENUMERATED {enabled} OPTIONAL -- Cond twoPUCCHgroup

 ]],

 [[

 ncr-RNTI-r18 RNTI-Value OPTIONAL, -- Cond NCR

 cellDTRX-DCI-config-r18 SetupRelease { CellDTRX-DCI-config-r18 } OPTIONAL, -- Need M

 twoQCL-TypeD-ForMultiDCI-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 enableType1HARQ-ACK-MuxForDL-AssignmentAfterUL-Grant-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 enableType2HARQ-ACK-MuxForDL-AssignmentAfterUL-Grant-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 enableType3HARQ-ACK-MuxForDL-AssignmentAfterUL-Grant-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 enableDiffPUCCH-Resource-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 enableDiffCB-Size-r18 ENUMERATED {enabled} OPTIONAL -- Need R

 ]]

}

PDSCH-HARQ-ACK-EnhType3-r17 ::= SEQUENCE {

 pdsch-HARQ-ACK-EnhType3Index-r17 PDSCH-HARQ-ACK-EnhType3Index-r17,

 applicable-r17 CHOICE {

 perCC SEQUENCE (SIZE (1..maxNrofServingCells)) OF INTEGER (0..1),

 perHARQ SEQUENCE (SIZE (1..maxNrofServingCells)) OF BIT STRING (SIZE (16))

 },

 pdsch-HARQ-ACK-EnhType3NDI-r17 ENUMERATED {true} OPTIONAL, -- Need R

 pdsch-HARQ-ACK-EnhType3CBG-r17 ENUMERATED {true} OPTIONAL, -- Need S

 ...,

 [[

 perHARQ-Ext-r17 SEQUENCE (SIZE (1..maxNrofServingCells)) OF BIT STRING (SIZE (32)) OPTIONAL -- Need R

 ]]

}

PDSCH-HARQ-ACK-EnhType3Index-r17 ::= INTEGER (0..maxNrofEnhType3HARQ-ACK-1-r17)

PDCCH-BlindDetection ::= INTEGER (1..15)

DCP-Config-r16 ::= SEQUENCE {

 ps-RNTI-r16 RNTI-Value,

 ps-Offset-r16 INTEGER (1..120),

 sizeDCI-2-6-r16 INTEGER (1..maxDCI-2-6-Size-r16),

 ps-PositionDCI-2-6-r16 INTEGER (0..maxDCI-2-6-Size-1-r16),

 ps-WakeUp-r16 ENUMERATED {true} OPTIONAL, -- Need S

 ps-TransmitPeriodicL1-RSRP-r16 ENUMERATED {true} OPTIONAL, -- Need S

 ps-TransmitOtherPeriodicCSI-r16 ENUMERATED {true} OPTIONAL -- Need S

}

PDSCH-HARQ-ACK-CodebookList-r16 ::= SEQUENCE (SIZE (1..2)) OF ENUMERATED {semiStatic, dynamic}

PDCCH-BlindDetectionCA-CombIndicator-r16 ::= SEQUENCE {

 pdcch-BlindDetectionCA1-r16 INTEGER (1..15),

 pdcch-BlindDetectionCA2-r16 INTEGER (1..15)

}

PDCCH-BlindDetection2-r16 ::= INTEGER (1..15)

PDCCH-BlindDetection3-r16 ::= INTEGER (1..15)

PDCCH-BlindDetection4-r17 ::= INTEGER (1..15)

MulticastConfig-r17 ::= SEQUENCE {

 pdsch-HARQ-ACK-CodebookListMulticast-r17 SetupRelease { PDSCH-HARQ-ACK-CodebookList-r16} OPTIONAL, -- Need M

 type1CodebookGenerationMode-r17 ENUMERATED { mode1, mode2} OPTIONAL -- Need M

}

PDCCH-BlindDetectionCA-CombIndicator-r17 ::= SEQUENCE {

 pdcch-BlindDetectionCA1-r17 INTEGER (1..15) OPTIONAL, -- Need R

 pdcch-BlindDetectionCA2-r17 INTEGER (1..15) OPTIONAL, -- Need R

 pdcch-BlindDetectionCA3-r17 INTEGER (1..15)

}

CellDTRX-DCI-config-r18 ::= SEQUENCE {

 cellDTRX-RNTI-r18 RNTI-Value,

 sizeDCI-2-9-r18 INTEGER (1..maxDCI-2-9-Size-r18)

}

-- TAG-PHYSICALCELLGROUPCONFIG-STOP

-- ASN1STOP

|  |
| --- |
| *PhysicalCellGroupConfig* field descriptions |
| ***ackNackFeedbackMode***Indicates which among the joint and separate ACK/NACK feedback modes to use within a slot as specified in TS 38.213 [13] (clause 9). |
| ***bdFactorR***Parameter for determining and distributing the maximum numbers of BD/CCE for mPDCCH based mPDSCH transmission as specified in TS 38.213 [13] Clause 10.1. |
| ***cs-RNTI***RNTI value for downlink SPS (see *SPS-Config*) and uplink configured grant (see *ConfiguredGrantConfig*). |
| ***downlinkAssignmentIndexDCI-0-2***Indicates if "Downlink assignment index" is present or absent in DCI format 0\_2. If the field "*downlinkAssignmentIndexDCI-0-2*" is absent, then 0 bit for "Downlink assignment index" in DCI format 0\_2. If the field "*downlinkAssignmentIndexDCI-0-2*" is present, then the bitwidth of "Downlink assignment index" in DCI format 0\_2 is defined in the same was as that in DCI format 0\_1 (see TS 38.212 [17], clause 7.3.1 and TS 38.213 [13], clause 9.1). |
| ***downlinkAssignmentIndexDCI-1-2***Configures the number of bits for "Downlink assignment index" in DCI format 1\_2. If the field is absent, then 0 bit is applied for "Downlink assignment index" in DCI format 1\_2. Note that 1 bit and 2 bits are applied if only one serving cell is configured in the DL and *pdsch-HARQ-ACK-Codebook* is set to *dynamic*. 4 bits is applied if more than one serving cell are configured in the DL and *pdsch-HARQ-ACK-Codebook* is set to *dynamic* (see TS 38.212 [17], clause 7.3.1 and TS 38.213 [13], clause 9.1). |
| ***enableDiffCB-Size***This field indicates whether a different codebook size from the size determined based on HARQ-ACK information associated with PDSCH reception(s) scheduled before a UL grant, is determined or not to include HARQ-ACK information associated with PDSCH reception(s) scheduled after a UL grant scheduling a PUSCH transmission with repetitions and the HARQ-ACK information are multiplexed on a repetition of the PUSCH transmission other than a first repetition. If enabled, a different HARQ codebook size might be determined. See clause 9 in TS 38.213 [13]. |
| ***enableDiffPUCCH-Resource***This field indicates whether a different PUCCH resource in time domain in a slot from the PUCCH resource indicated by the last DCI format before a UL grant in the slot, is determined or not to include HARQ-ACK information associated with PDSCH reception(s) scheduled after a UL grant scheduling a PUSCH transmission with repetitions and the HARQ-ACK information are multiplexed on a repetition of the PUSCH transmission other than a first repetition in the same slot. If enabled, a different PUCCH resource in time domain might be determined. See clause 9 in TS 38.213 [13]. |
| ***enableType1HARQ-ACK-MuxForDL-AssignmentAfterUL-Grant***If enabled, UE multiplexes Type-1 HARQ-ACK codebook on a repetition of a PUSCH transmission other than a first repetition, where the HARQ-ACK codebook includes HARQ-ACK information associated with PDSCH reception(s) scheduled after the UL grant scheduling the PUSCH transmission. See clause 9 in TS 38.213 [13]. This feature is not simultaneously enabled with PUCCH cell switching. |
| ***enableType2HARQ-ACK-MuxForDL-AssignmentAfterUL-Grant***If enabled, UE multiplexes Type-2 HARQ-ACK codebook on a repetition of a PUSCH transmission other than a first repetition, where the HARQ-ACK codebook includes HARQ-ACK information associated with PDSCH reception(s) scheduled after the UL grant scheduling the PUSCH transmission. See clause 9 in TS 38.213 [13]. This feature is not simultaneously enabled with PUCCH cell switching. |
| ***enableType3HARQ-ACK-MuxForDL-AssignmentAfterUL-Grant***If enabled, UE multiplexes Type-3 HARQ-ACK codebook on a repetition of a PUSCH transmission other than a first repetition, where the HARQ-ACK codebook includes HARQ-ACK information associated with PDSCH reception(s) scheduled after the UL grant scheduling the PUSCH transmission. See clause 9 in TS 38.213 [13]. This feature is not simultaneously enabled with PUCCH cell switching. |
| ***harq-ACK-SpatialBundlingPUCCH***Enables spatial bundling of HARQ ACKs. It is configured per cell group (i.e. for all the cells within the cell group) for PUCCH reporting of HARQ-ACK. It is only applicable when more than 4 layers are possible to schedule. When the field is absent, the spatial bundling of PUCCH HARQ ACKs for the primary PUCCH group is disabled (see TS 38.213 [13], clause 9.1.2.1). If the field *harq-ACK SpatialBundlingPUCCH-secondaryPUCCHgroup* is present, *harq-ACK-SpatialBundlingPUCCH* is only applied to primary PUCCH group. Network does not configure for a UE both spatial bundling of HARQ ACKs and *codeBlockGroupTransmission* within the same cell group. |
| ***harq-ACK-SpatialBundlingPUCCH-secondaryPUCCHgroup***Indicates whether spatial bundling of PUCCH HARQ ACKs for the secondary PUCCH group is enabled or disabled. The field is only applicable when more than 4 layers are possible to schedule (see TS 38.213 [13], clause 9.1.2.1). When the field is absent, the use of spatial bundling of PUCCH HARQ ACKs for the secondary PUCCH group is indicated by *harq-ACK-SpatialBundlingPUCCH*. See TS 38.213 [13], clause 9.1.2.1. Network does not configure for a UE both spatial bundling of HARQ ACKs and *codeBlockGroupTransmission* within the same cell group. |
| ***harq-ACK-SpatialBundlingPUSCH***Enables spatial bundling of HARQ ACKs. It is configured per cell group (i.e. for all the cells within the cell group) for PUSCH reporting of HARQ-ACK. It is only applicable when more than 4 layers are possible to schedule. When the field is absent, the spatial bundling of PUSCH HARQ ACKs for the primary PUCCH group is disabled (see TS 38.213 [13], clauses 9.1.2.2 and 9.1.3.2). If the field *harq-ACK SpatialBundlingPUSCH-secondaryPUCCHgroup* is present, *harq-ACK-SpatialBundlingPUSCH* is only applied to primary PUCCH group. Network does not configure for a UE both spatial bundling of HARQ ACKs and *codeBlockGroupTransmission* within the same cell group. |
| ***harq-ACK-SpatialBundlingPUSCH-secondaryPUCCHgroup***Indicates whether spatial bundling of PUSCH HARQ ACKs for the secondary PUCCH group is enabled or disabled. The field is only applicable when more than 4 layers are possible to schedule (see TS 38.213 [13], clauses 9.1.2.2 and 9.1.3.2). When the field is absent, the use of spatial bundling of PUSCH HARQ ACKs for the secondary PUCCH group is indicated by *harq-ACK-SpatialBundlingPUSCH*. See TS 38.213 [13], clauses 9.1.2.2 and 9.1.3.2. Network does not configure for a UE both spatial bundling of HARQ ACKs and *codeBlockGroupTransmission* within the same cell group. |
| ***intraBandNC-PRACH-simulTx***Enables parallel PRACH and SRS/PUCCH/PUSCH transmissions across CCs in intra-band non-contiguous CA (see TS 38.213 [13], clause 8.1 and TS 38.214 [19], clause 6.2.1). This field is absent in the IE *CellGroupConfig* when provided as part of *RRCSetup* message. |
| ***mcs-C-RNTI***RNTI to indicate use of *qam64LowSE* for grant-based transmissions. When the *mcs*-*C-RNTI* is configured, RNTI scrambling of DCI CRC is used to choose the corresponding MCS table. |
| ***ncr-RNTI***RNTI value for NCR-MT, used to scramble the PDCCHs carrying side control information (see TS 38.213 [13], clause 10.1). |
| ***nfi-TotalDAI-Included***Indicates whether the NFI and total DAI fields of the non-scheduled PDSCH group is included in the non-fallback DL grant DCI (see TS 38.212 [17], clause 7.3.1). The network configures this only when enhanced dynamic codebook is configured (*pdsch-HARQ-ACK-Codebook* is set to *enhancedDynamic*). |
| ***nrdc-PCmode-FR1***Indicates the uplink power sharing mode that the UE uses in NR-DC in frequency range 1 (FR1) (see TS 38.213 [13], clause 7.6). |
| ***nrdc-PCmode-FR2***Indicates the uplink power sharing mode that the UE uses in NR-DC in frequency range 2 (FR2) (see TS 38.213 [13], clause 7.6). |
| ***pdcch-BlindDetection, pdcch-BlindDetection2, pdcch-BlindDetection3, pdcch-BlindDetection4***Indicates the reference number of cells for PDCCH blind detection for the CG. Network configures the field for each CG when the UE is in NR DC and sets the value in accordance with the constraints specified in TS 38.213 [13]. The network configures *pdcch-BlindDetection* only if the UE is in NR-DC. The network configures *pdcch-BlindDetection2* only if the UE is in NR-DC with at least one downlink cell using Rel-16 PDCCH monitoring capability. The network configures *pdcch-BlindDetection3* only if the UE is in NR-DC with at least one downlink cell using Rel-15 PDCCH monitoring capability. The network configures *pdcch-BlindDetection4* only if the UE is in NR-DC with at least one downlink cell using Rel-17 PDCCH monitoring capability. |
| ***pdcch-BlindDetectionCA-CombIndicator***Configure one combination of *pdcch-BlindDetectionCA1* (for R15) and *pdcch-BlindDetectionCA2* (for R16) for UE to use for scaling PDCCH monitoring capability if the number of serving cells configured to a UE is larger than the reported capability, and if UE reports more than one combination of *pdcch-BlindDetectionCA1* and *pdcch-BlindDetectionCA2* as UE capability. The combination of *pdcch-BlindDetectionCA1* and *pdcch-BlindDetectionCA2* configured by *pdcch-BlindDetectionCA-CombIndicator* is from the more than one combination of *pdcch-BlindDetectionCA1* and *pdcch-BlindDetectionCA2* reported by UE (see TS 38.213 [13], clause 10).*pdcch-BlindDetectionCA-CombIndicator-r17* is used to configure one combination of *pdcch-BlindDetectionCA1* (for R15), *pdcch-BlindDetectionCA2* (for R16) and *pdcch-BlindDetectionCA3* (for R17) for UE to use for scaling PDCCH monitoring capability if the number of serving cells configured to a UE is larger than the reported capability, and if UE reports more than one combination of *pdcch-BlindDetectionCA1*, *pdcch-BlindDetectionCA2* and *pdcch-BlindDetectionCA3* as UE capability. The combination of *pdcch-BlindDetectionCA1*, *pdcch-BlindDetectionCA2* and *pdcch-BlindDetectionCA3* configured by *pdcch-BlindDetectionCA-CombIndicator-r17* is from the more than one combination of *pdcch-BlindDetectionCA1*, *pdcch-BlindDetectionCA2* and *pdcch-BlindDetectionCA3* reported by UE (see TS 38.213 [13], clause 10).*pdcch-BlindDetectionCA-CombIndicator-r16* and *pdcch-BlindDetectionCA-CombIndicator-r17* are not configured simultaneously. |
| ***p-NR-FR1***The maximum total transmit power to be used by the UE in this NR cell group across all serving cells in frequency range 1 (FR1). The maximum transmit power that the UE may use may be additionally limited by *p-Max* (configured in *FrequencyInfoUL*) and by *p-UE-FR1* (configured total for all serving cells operating on FR1). |
| ***p-NR-FR2***The maximum total transmit power to be used by the UE in this NR cell group across all serving cells in frequency range 2 (FR2). The maximum transmit power that the UE may use may be additionally limited by *p-Max* (configured in *FrequencyInfoUL*) and by *p-UE-FR2* (configured total for all serving cells operating on FR2). This field is only used in NR-DC. A UE does not expect to be configured with this parameter in this release of the specification. |
| ***prioLowDG-HighCG***Enable PHY prioritization for the case where low-priority dynamic grant-PUSCH collides with high-priority configured grant-PUSCH on a BWP of a serving cell (see TS 38.213 [13], clause 9), when the UE has generated transport blocks for both DG-PUSCH and CG-PUSCH as described in TS 38.321 [3]. |
| ***prioHighDG-LowCG***Enable PHY prioritization for the case where high-priority dynamic grant PUSCH collides with low-priority configured grant PUSCH on a BWP of a serving cell (see TS 38.213 [13], clause 9), when the UE has generated transport blocks for both DG-PUSCH and CG-PUSCH as described in TS 38.321 [3]. |
| ***ps-RNTI***RNTI value for scrambling CRC of DCI format 2\_6 used for power saving (see TS 38.213 [13], clause 10.1). |
| ***ps-Offset***The start of the search-time of DCI format 2\_6 with CRC scrambled by PS-RNTI relative to the start of the *drx-onDurationTimer* of Long DRX (see TS 38.213 [13], clause 10.3). Value in multiples of 0.125ms (milliseconds). 1 corresponds to 0.125 ms, 2corresponds to 0.25 ms, 3 corresponds to 0.375 ms and so on. |
| ***ps-WakeUp***Indicates the UE to wake-up if DCI format 2\_6 is not detected outside active time (see TS 38.321 [3], clause 5.7). If the field is absent, the UE does not wake-up if DCI format 2-6 is not detected outside active time. |
| ***ps-PositionDCI-2-6***Starting position of UE wakeup and SCell dormancy indication in DCI format 2\_6 (see TS 38.213 [13], clause 10.3). |
| ***ps-TransmitPeriodicL1-RSRP***Indicates the UE to transmit periodic L1-RSRP report(s) when the *drx-onDurationTimer* does not start (see TS 38.321 [3], clause 5.7). If the field is absent, the UE does not transmit periodic L1-RSRP report(s) when the *drx-onDurationTimer* does not start. |
| ***ps-TransmitOtherPeriodicCSI***Indicates the UE to transmit periodic CSI report(s) other than L1-RSRP reports when the *drx-onDurationTimer* does not start (see TS 38.321 [3], clause 5.7). If the field is absent, the UE does not transmit periodic CSI report(s) other than L1-RSRP reports when the *drx-onDurationTimer* does not start. |
| ***p-UE-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 by *p-Max* (configured in *FrequencyInfoUL*) and by *p-NR-FR1* (configured for the cell group). |
| ***p-UE-FR2***The maximum total transmit power to be used by the UE across all serving cells in frequency range 2 (FR2) across all cell groups. The maximum transmit power that the UE may use may be additionally limited by *p-Max* (configured in *FrequencyInfoUL*) and by p-NR-FR2 (configured for the cell group). A UE does not expect to be configured with this parameter in this release of the specification. |
| ***pdsch-HARQ-ACK-Codebook***The PDSCH HARQ-ACK codebook is either semi-static or dynamic. This is applicable to both CA and non-CA operation (see TS 38.213 [13], clauses 9.1.2 and 9.1.3). If *pdsch-HARQ-ACK-Codebook-r16* is signalled, UE shall ignore the *pdsch-HARQ-ACK-Codebook* (without suffix). For the HARQ-ACK for sidelink, if *pdsch-HARQ-ACK-Codebook-r16* is signalled, the UE uses *pdsch-HARQ-ACK-Codebook* (without suffix) and ignores *pdsch-HARQ-ACK-Codebook-r16*. If the field *pdsch-HARQ-ACK-Codebook-secondaryPUCCHgroup* is present, *pdsch-HARQ-ACK-Codebook* is applied to primary PUCCH group. Otherwise, this field is applied to the cell group (i.e. for all the cells within the cell group). For the HARQ-ACK for sidelink, if the field *pdsch-HARQ-ACK-Codebook-secondaryPUCCHgroup* is present, *pdsch-HARQ-ACK-Codebook* is applied to primary and secondary PUCCH group and the UE ignores *pdsch-HARQ-ACK-Codebook-secondaryPUCCHgroup*. |
| ***pdsch-HARQ-ACK-CodebookList***A list of configurations for one or two HARQ-ACK codebooks. Each configuration in the list is defined in the same way as *pdsch-HARQ-ACK-Codebook* (see TS 38.212 [17], clause 7.3.1.2.2 and TS 38.213 [13], clauses 7.2.1, 9.1.2, 9.1.3 and 9.2.1). If this field is present, the field *pdsch-HARQ-ACK-Codebook* is ignored. If this field is present, the value of this field is applied for primary PUCCH group and for secondary PUCCH group (if configured). For the HARQ-ACK for sidelink, the UE uses *pdsch-HARQ-ACK-Codebook* and ignores *pdsch-HARQ-ACK-CodebookList* if this field is present. |
| ***pdsch-HARQ-ACK-Codebook-secondaryPUCCHgroup***The PDSCH HARQ-ACK codebook is either semi-static or dynamic. This is applicable to CA operation (see TS 38.213 [13], clauses 9.1.2 and 9.1.3). It is configured for secondary PUCCH group*.* |
| ***pdsch-HARQ-ACK-EnhType3DCI-Field, pdsch-HARQ-ACK-EnhType3DCI-FieldSecondaryPUCCHgroup***Indicates the enhanced Type 3 codebook through a new DCI field to indicate the enhanced Type 3 HARQ-ACK codebook in the primary PUCCH group if the more than one enhanced Type 3 HARQ-ACK codebook is configured for the primary PUCCH group, or in the secondary PUCCH group if the more than one enhanced Type 3 HARQ-ACK code is configured for the secondary PUCCH group, respectively. |
| ***pdsch-HARQ-ACK-EnhType3ToAddModList, pdsch-HARQ-ACK-EnhType3SecondaryToAddModList***Configure the list of enhanced Type 3 HARQ-ACK codebooks for the primary PUCCH group and the secondary PUCCH group, respectively. When configured, DCI format 1\_1 can request the UE to report A/N for one of the configured enhanced Type 3 HARQ-ACK codebooks in the corresponding PUCCH group (see TS 38.213 [13], clause 9.1.4). The network can configure *pdsch-HARQ-ACK-EnhType3SecondaryToAddModList* only if secondary PUCCH group is configured. |
| ***pdsch-HARQ-ACK-OneShotFeedback***When configured, the DCI format 1\_1 can request the UE to report A/N for all HARQ processes and all CCs configured in the PUCCH group (see TS 38.212 [17], clause 7.3.1). |
| ***pdsch-HARQ-ACK-OneShotFeedbackCBG***When configured, the DCI format 1\_1 can request the UE to include CBG level A/N for each CC with CBG level transmission configured. When not configured, the UE will report TB level A/N even if CBG level transmission is configured for a CC.The network configures this only when *pdsch-HARQ-ACK-OneShotFeedback* is configured. |
| ***pdsch-HARQ-ACK-OneShotFeedbackNDI***When configured, the DCI format 1\_1 can request the UE to include NDI for each A/N reported.The network configures this only when *pdsch-HARQ-ACK-OneShotFeedback* is configured. |
| ***pdsch-HARQ-ACK-Retx, pdsch-HARQ-ACK-RetxSecondaryPUCCHgroup***When configured, the DCI format 1\_1 can request the UE to perform a HARQ-ACK re-transmission on a PUCCH resource in the primary PUCCH group and the secondary PUCCH group, respectively (see TS 38.213 [13], clause 9.1.5). |
| ***pucch-sSCell, pucch-sSCellSecondaryPUCCHgroup***indictates the alternative PUCCH cells for PUCCH cell switching in the primary and the secondary PUCCH group, respectively. For the primary PUCCH group, it is configured for cells on top of SpCell. For the secondary PUCCH group, it is configured for cell on top of the PUCCH SCell. |
| ***pucch-sSCellDyn, pucch-sSCellDynsecondaryPUCCHgroup***When configured, PUCCH cell switching based on dynamic indication in DCI format 1\_1 is enabled (see TS 38.213 [13], clause 9.A, clause 9.1.5), respectively for the primary PUCCH group and the secondary PUCCH group. |
| ***pucch-sSCellPattern, pucch-sSCellPatternSecondaryPUCCHgroup***When configured, the UE applies the semi-static PUCCH cell switching (see TS 38.213 [13], clause 9.A) using the time domain pattern of applicable PUCCH cells indicated by this field, respectively for the primary PUCCH group and the secondary PUCCH group. |
| ***simultaneousPUCCH-PUSCH, simultaneousPUCCH-PUSCH-SecondaryPUCCHgroup***Enables simultaneous PUCCH and PUSCH transmissions with different priorities for the primary PUCCH group and the secondary PUCCH group, respectively. |
| ***simultaneousPUCCH-PUSCH-SamePriority, simultaneousPUCCH-PUSCH-SamePriority-SecondaryPUCCHgroup***Enables simultaneous PUCCH and PUSCH transmissions on different cells in different bands with same priority for the primary PUCCH group and the secondary PUCCH group, respectively, as specified in clause 9 of TS 38.213 [13]. |
| ***simultaneousSR-PUSCH-diffPUCCH-Groups***Enables simultaneous SR and PUSCH transmissions in different PUCCH groups (see TS 38.321 [3], clause 5.4.1, clause 5.4.4). |
| ***sizeDCI-2-6***Size of DCI format 2\_6 (see TS 38.213 [13], clause 10.3). |
| ***sp-CSI-RNTI***RNTI for Semi-Persistent CSI reporting on PUSCH (see *CSI-ReportConfig*) (see TS 38.214 [19], clause 5.2.1.5.2). Network always configures the UE with a value for this field when at least one *CSI-ReportConfig* with *reportConfigType* set to *semiPersistentOnPUSCH* is configured. |
| ***tpc-PUCCH-RNTI***RNTI used for PUCCH TPC commands on DCI (see TS 38.213 [13], clause 10.1). |
| ***tpc-PUSCH-RNTI***RNTI used for PUSCH TPC commands on DCI (see TS 38.213 [13], clause 10.1). |
| ***tpc-SRS-RNTI***RNTI used for SRS TPC commands on DCI (see TS 38.213 [13], clause 10.1). |
| ***twoQCL-TypeD-ForMultiDCI***Indicates whether a UE is expected to identify and monitor two QCL-TypeD properties for multiple overlapping CORESETs, where the first QCL-TypeD is associated with *coresetPoolIndex* value 0, and the second QCL-TypeD is associated with *coresetPoolIndex* value 1. (See TS 38,213 [13], clause 10). |
| ***twoQCLTypeDforPDCCHRepetition***Indicates whether a UE is expected UE to identify and monitor two QCL-TypeD properties for multiple overlapping CORESETs in the case of PDCCH repetition. |
| ***uci-MuxWithDiffPrio, uci-MuxWithDiffPrio-secondaryPUCCHgroup***When configured, enables multiplexing a high-priority (HP) HARQ-ACK UCI and a low-priority (LP) HARQ-ACK UCI into a PUCCH or PUSCH for the primary PUCCH group and the secondary PUCCH group, respectively. |
| ***ul-TotalDAI-Included***Indicates whether the total DAI fields of the additional PDSCH group is included in the non-fallback UL grant DCI (see TS 38.212 [17], clause 7.3.1). The network configures this only when enhanced dynamic codebook is configured (*pdsch-HARQ-ACK-Codebook* is set to *enhancedDynamic*). |
| ***xScale***The UE is allowed to drop NR only if the power scaling applied to NR results in a difference between scaled and unscaled NR UL of more than *xScale* dB (see TS 38.213 [13]). If the value is not configured for dynamic power sharing, the UE assumes default value of 6 dB. |

|  |
| --- |
| *MulticastConfig* field descriptions |
| ***pdsch-HARQ-ACK-CodebookListMulticast***A list of configurations for one or two HARQ-ACK codebooks for MBS multicast. Each configuration in the list is defined in the same way as *pdsch-HARQ-ACK-Codebook* (see TS 38.212 [17], clause 7.3.1.2.2 and TS 38.213 [13], clauses 7.2.1, 9.1.2, 9.1.3 and 9.2.1). If this field is present, the field *pdsch-HARQ-ACK-Codebook* is ignored. If this field is present, the value of this field is applied for primary PUCCH group and for secondary PUCCH group (if configured). |
| ***type1CodebookGenerationMode***Indicates the mode of Type-1 HARQ-ACK codebook generation, as specified in TS 38.213 [13]. Mode 1 is based on the k1 values that are in the intersection of K1 set for unicast and K1 set for multicast. Mode 2 is based on the k1 values that are in the union of K1 set for unicast and K1 set for multicast. |

|  |
| --- |
| *PDSCH-HARQ-ACK-EnhType3* field descriptions |
| ***pdsch-HARQ-ACK-EnhType3CBG***When configured, the DCI format 1\_1 or DCI format 1\_2 can request the UE to include CBG level A/N for each CC with CBG level transmission configured of the enhanced Type 3 HARQ-ACK codebook. When not configured, the UE will report TB level A/N even if CBG level transmission is configured for a CC. |
| ***pdsch-HARQ-ACK-EnhType3NDI***When configured, the DCI format 1\_1 or DCI format 1\_2 can request the UE to include NDI for each A/N reported of the enhanced Type 3 HARQ-ACK codebook. |
| ***perCC***Configures enhanced Type 3 HARQ-ACK codebook using per CC configuration. |
| ***perHARQ, perHARQ-Ext***Configures enhanced Type 3 HARQ-ACK codebook using per HARQ process and CC configuration. *perHARQ-Ext* is present only when *nrofHARQ-ProcessesForPDSCH-v1700* is present in *pdsch-ServingCellConfig* of at least one serving cell in the PUCCH group. If *perHARQ-Ext* is present, the UE ignores *perHARQ*. |

|  |
| --- |
| *CellDTRX-DCI-config* field descriptions |
| ***cellDTRX-RNTI***The RNTI value for scrambling CRC of DCI format 2\_9 for activating and/or deactivating Cell DTX and/or Cell DRX and/or NES mode for CHO indication. |
| ***sizeDCI-2-9***The size of DCI format 2\_9. |

|  |  |
| --- | --- |
| Conditional Presence | Explanation |
| *MCG-Only* | This field is optionally present, Need R, in the *PhysicalCellGroupConfig* of the MCG. It is absent otherwise.  |
| *NCR* | This field is optionally present, Need M for NCR-MT. It is absent otherwise. |
| *SCG-Only* | This field is optionally present, Need S, in the *PhysicalCellGroupConfig* of the SCG in (NG)EN-DC as defined in TS 38.213 [13]. It is absent otherwise. |
| *twoPUCCHgroup* | This field is optionally present, Need R, if secondary PUCCH group is configured. It is absent otherwise, Need R.  |

#### – *RA-Prioritization*

The IE *RA-Prioritization* is used to configure prioritized random access.

*RA-Prioritization* information element

-- ASN1START

-- TAG-RA-PRIORITIZATION-START

RA-Prioritization ::= SEQUENCE {

 powerRampingStepHighPriority ENUMERATED {dB0, dB2, dB4, dB6},

 scalingFactorBI ENUMERATED {zero, dot25, dot5, dot75} OPTIONAL, -- Need R

 ...

}

-- TAG-RA-PRIORITIZATION-STOP

-- ASN1STOP

|  |
| --- |
| *RA-Prioritization* field descriptions |
| ***powerRampingStepHighPriority***Power ramping step applied for prioritized random access procedure. |
| ***scalingFactorBI***Scaling factor for the backoff indicator (BI) for the prioritized random access procedure. (see TS 38.321 [3], clause 5.1.4). Value *zero* corresponds to 0, value *dot25* corresponds to 0.25 and so on. |

#### – *ServingCellConfig*

The IE *ServingCellConfig* is used to configure (add or modify) the UE with a serving cell, which may be the SpCell or an SCell of an MCG or SCG. The parameters herein are mostly UE specific but partly also cell specific (e.g. in additionally configured bandwidth parts). Reconfiguration between a PUCCH and PUCCHless SCell is only supported using an SCell release and add.

*ServingCellConfig* information element

-- ASN1START

-- TAG-SERVINGCELLCONFIG-START

ServingCellConfig ::= SEQUENCE {

 tdd-UL-DL-ConfigurationDedicated TDD-UL-DL-ConfigDedicated OPTIONAL, -- Cond TDD

 initialDownlinkBWP BWP-DownlinkDedicated OPTIONAL, -- Need M

 downlinkBWP-ToReleaseList SEQUENCE (SIZE (1..maxNrofBWPs)) OF BWP-Id OPTIONAL, -- Need N

 downlinkBWP-ToAddModList SEQUENCE (SIZE (1..maxNrofBWPs)) OF BWP-Downlink OPTIONAL, -- Need N

 firstActiveDownlinkBWP-Id BWP-Id OPTIONAL, -- Cond SyncAndCellAdd

 bwp-InactivityTimer ENUMERATED {ms2, ms3, ms4, ms5, ms6, ms8, ms10, ms20, ms30,

 ms40,ms50, ms60, ms80,ms100, ms200,ms300, ms500,

 ms750, ms1280, ms1920, ms2560, spare10, spare9, spare8,

 spare7, spare6, spare5, spare4, spare3, spare2, spare1 } OPTIONAL, --Need R

 defaultDownlinkBWP-Id BWP-Id OPTIONAL, -- Need S

 uplinkConfig UplinkConfig OPTIONAL, -- Need M

 supplementaryUplink UplinkConfig OPTIONAL, -- Need M

 pdcch-ServingCellConfig SetupRelease { PDCCH-ServingCellConfig } OPTIONAL, -- Need M

 pdsch-ServingCellConfig SetupRelease { PDSCH-ServingCellConfig } OPTIONAL, -- Need M

 csi-MeasConfig SetupRelease { CSI-MeasConfig } OPTIONAL, -- Need M

 sCellDeactivationTimer ENUMERATED {ms20, ms40, ms80, ms160, ms200, ms240,

 ms320, ms400, ms480, ms520, ms640, ms720,

 ms840, ms1280, spare2,spare1} OPTIONAL, -- Cond ServingCellWithoutPUCCH

 crossCarrierSchedulingConfig CrossCarrierSchedulingConfig OPTIONAL, -- Need M

 tag-Id TAG-Id,

 dummy1 ENUMERATED {enabled} OPTIONAL, -- Need R

 pathlossReferenceLinking ENUMERATED {spCell, sCell} OPTIONAL, -- Cond SCellOnly

 servingCellMO MeasObjectId OPTIONAL, -- Cond MeasObject

 ...,

 [[

 lte-CRS-ToMatchAround SetupRelease { RateMatchPatternLTE-CRS } OPTIONAL, -- Need M

 rateMatchPatternToAddModList SEQUENCE (SIZE (1..maxNrofRateMatchPatterns)) OF RateMatchPattern OPTIONAL, -- Need N

 rateMatchPatternToReleaseList SEQUENCE (SIZE (1..maxNrofRateMatchPatterns)) OF RateMatchPatternId OPTIONAL, -- Need N

 downlinkChannelBW-PerSCS-List SEQUENCE (SIZE (1..maxSCSs)) OF SCS-SpecificCarrier OPTIONAL -- Need S

 ]],

 [[

 supplementaryUplinkRelease-r16 ENUMERATED {true} OPTIONAL, -- Need N

 tdd-UL-DL-ConfigurationDedicated-IAB-MT-r16 TDD-UL-DL-ConfigDedicated-IAB-MT-r16 OPTIONAL, -- Cond TDD\_IAB

 dormantBWP-Config-r16 SetupRelease { DormantBWP-Config-r16 } OPTIONAL, -- Need M

 ca-SlotOffset-r16 CHOICE {

 refSCS15kHz INTEGER (-2..2),

 refSCS30KHz INTEGER (-5..5),

 refSCS60KHz INTEGER (-10..10),

 refSCS120KHz INTEGER (-20..20)

 } OPTIONAL, -- Cond AsyncCA

 dummy2 SetupRelease { DummyJ } OPTIONAL, -- Need M

 intraCellGuardBandsDL-List-r16 SEQUENCE (SIZE (1..maxSCSs)) OF IntraCellGuardBandsPerSCS-r16 OPTIONAL, -- Need S

 intraCellGuardBandsUL-List-r16 SEQUENCE (SIZE (1..maxSCSs)) OF IntraCellGuardBandsPerSCS-r16 OPTIONAL, -- Need S

 csi-RS-ValidationWithDCI-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

 lte-CRS-PatternList1-r16 SetupRelease { LTE-CRS-PatternList-r16 } OPTIONAL, -- Need M

 lte-CRS-PatternList2-r16 SetupRelease { LTE-CRS-PatternList-r16 } OPTIONAL, -- Need M

 crs-RateMatch-PerCORESETPoolIndex-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

 enableTwoDefaultTCI-States-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

 enableDefaultTCI-StatePerCoresetPoolIndex-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

 enableBeamSwitchTiming-r16 ENUMERATED {true} OPTIONAL, -- Need R

 cbg-TxDiffTBsProcessingType1-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

 cbg-TxDiffTBsProcessingType2-r16 ENUMERATED {enabled} OPTIONAL -- Need R

 ]],

 [[

 directionalCollisionHandling-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

 channelAccessConfig-r16 SetupRelease { ChannelAccessConfig-r16 } OPTIONAL -- Need M

 ]],

 [[

 nr-dl-PRS-PDC-Info-r17 SetupRelease {NR-DL-PRS-PDC-Info-r17} OPTIONAL, -- Need M

 semiStaticChannelAccessConfigUE-r17 SetupRelease {SemiStaticChannelAccessConfigUE-r17} OPTIONAL, -- Need M

 mimoParam-r17 SetupRelease {MIMOParam-r17} OPTIONAL, -- Need M

 channelAccessMode2-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 timeDomainHARQ-BundlingType1-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 nrofHARQ-BundlingGroups-r17 ENUMERATED {n1, n2, n4} OPTIONAL, -- Need R

 fdmed-ReceptionMulticast-r17 ENUMERATED {true} OPTIONAL, -- Need R

 moreThanOneNackOnlyMode-r17 ENUMERATED {mode2} OPTIONAL, -- Need S

 tci-ActivatedConfig-r17 TCI-ActivatedConfig-r17 OPTIONAL, -- Cond TCI\_ActivatedConfig

 directionalCollisionHandling-DC-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

 lte-NeighCellsCRS-AssistInfoList-r17 SetupRelease { LTE-NeighCellsCRS-AssistInfoList-r17 } OPTIONAL -- Need M

 ]],

 [[

 lte-NeighCellsCRS-Assumptions-r17 ENUMERATED {false} OPTIONAL -- Need R

 ]],

 [[

 crossCarrierSchedulingConfigRelease-r17 ENUMERATED {true} OPTIONAL -- Need N

 ]],

 [[

 multiPDSCH-PerSlotType1-CB-r17 ENUMERATED {enabled, disabled} OPTIONAL -- Need R

 ]],

 [[

 lte-CRS-PatternList3-r18 SetupRelease { LTE-CRS-PatternList-r16 } OPTIONAL, -- Need M

 lte-CRS-PatternList4-r18 SetupRelease { LTE-CRS-PatternList-r16 } OPTIONAL, -- Need M

 pdcch-CandidateReceptionWithCRS-Overlap-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 cjt-Scheme-PDSCH-r18 ENUMERATED {cjtSchemeA, cjtSchemeB} OPTIONAL, -- Need R

 tag2-r18 Tag2-r18 OPTIONAL, -- Need R

 cellDTX-DRX-Config-r18 SetupRelease { CellDTX-DRX-Config-r18 } OPTIONAL, -- Need M

 positionInDCI-cellDTRX-r18 INTEGER (0..maxDCI-2-9-Size-1-r18) OPTIONAL, -- Need R

 cellDTX-DRX-L1activation-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 mc-DCI-SetOfCellsToAddModList-r18 SEQUENCE (SIZE (1..maxNrofSetsOfCells-r18)) OF MC-DCI-SetOfCells-r18 OPTIONAL, -- Need N

 mc-DCI-SetOfCellsToReleaseList-r18 SEQUENCE (SIZE (1..maxNrofSetsOfCells-r18)) OF SetOfCellsId-r18 OPTIONAL -- Need N

 ]],

 [[

 mimoParam-v1850 SetupRelease {MIMOParam-v1850} OPTIONAL -- Need M

 ]]

}

Tag2-r18 ::= SEQUENCE {

 tag2-Id-r18 TAG-Id,

 tag2-flag-r18 BOOLEAN,

 n-TimingAdvanceOffset2-r18 ENUMERATED { n0, n25600, n39936, spare1 } OPTIONAL -- Need S

}

UplinkConfig ::= SEQUENCE {

 initialUplinkBWP BWP-UplinkDedicated OPTIONAL, -- Need M

 uplinkBWP-ToReleaseList SEQUENCE (SIZE (1..maxNrofBWPs)) OF BWP-Id OPTIONAL, -- Need N

 uplinkBWP-ToAddModList SEQUENCE (SIZE (1..maxNrofBWPs)) OF BWP-Uplink OPTIONAL, -- Need N

 firstActiveUplinkBWP-Id BWP-Id OPTIONAL, -- Cond SyncAndCellAdd

 pusch-ServingCellConfig SetupRelease { PUSCH-ServingCellConfig } OPTIONAL, -- Need M

 carrierSwitching SetupRelease { SRS-CarrierSwitching } OPTIONAL, -- Need M

 ...,

 [[

 powerBoostPi2BPSK BOOLEAN OPTIONAL, -- Need M

 uplinkChannelBW-PerSCS-List SEQUENCE (SIZE (1..maxSCSs)) OF SCS-SpecificCarrier OPTIONAL -- Need S

 ]],

 [[

 enablePL-RS-UpdateForPUSCH-SRS-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

 enableDefaultBeamPL-ForPUSCH0-0-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

 enableDefaultBeamPL-ForPUCCH-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

 enableDefaultBeamPL-ForSRS-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

 uplinkTxSwitching-r16 SetupRelease { UplinkTxSwitching-r16 } OPTIONAL, -- Need M

 mpr-PowerBoost-FR2-r16 ENUMERATED {true} OPTIONAL -- Need R

 ]],

 [[

 srs-PosTx-Hopping-r18 SetupRelease { SRS-PosTx-Hopping-r18 } OPTIONAL, -- Need M

 enablePL-RS-UpdateForType1CG-PUSCH-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 powerBoostPi2BPSK-r18 BOOLEAN OPTIONAL, -- Need R

 powerBoostQPSK-r18 BOOLEAN OPTIONAL -- Need R

 ]]

}

DummyJ ::= SEQUENCE {

 maxEnergyDetectionThreshold-r16 INTEGER(-85..-52),

 energyDetectionThresholdOffset-r16 INTEGER (-20..-13),

 ul-toDL-COT-SharingED-Threshold-r16 INTEGER (-85..-52) OPTIONAL, -- Need R

 absenceOfAnyOtherTechnology-r16 ENUMERATED {true} OPTIONAL -- Need R

}

ChannelAccessConfig-r16 ::= SEQUENCE {

 energyDetectionConfig-r16 CHOICE {

 maxEnergyDetectionThreshold-r16 INTEGER (-85..-52),

 energyDetectionThresholdOffset-r16 INTEGER (-13..20)

 } OPTIONAL, -- Need R

 ul-toDL-COT-SharingED-Threshold-r16 INTEGER (-85..-52) OPTIONAL, -- Need R

 absenceOfAnyOtherTechnology-r16 ENUMERATED {true} OPTIONAL -- Need R

}

IntraCellGuardBandsPerSCS-r16 ::= SEQUENCE {

 guardBandSCS-r16 SubcarrierSpacing,

 intraCellGuardBands-r16 SEQUENCE (SIZE (1..4)) OF GuardBand-r16

}

GuardBand-r16 ::= SEQUENCE {

 startCRB-r16 INTEGER (0..274),

 nrofCRBs-r16 INTEGER (0..15)

}

DormancyGroupID-r16 ::= INTEGER (0..4)

DormantBWP-Config-r16::= SEQUENCE {

 dormantBWP-Id-r16 BWP-Id OPTIONAL, -- Need M

 withinActiveTimeConfig-r16 SetupRelease { WithinActiveTimeConfig-r16 } OPTIONAL, -- Need M

 outsideActiveTimeConfig-r16 SetupRelease { OutsideActiveTimeConfig-r16 } OPTIONAL -- Need M

}

WithinActiveTimeConfig-r16 ::= SEQUENCE {

 firstWithinActiveTimeBWP-Id-r16 BWP-Id OPTIONAL, -- Need M

 dormancyGroupWithinActiveTime-r16 DormancyGroupID-r16 OPTIONAL -- Need R

}

OutsideActiveTimeConfig-r16 ::= SEQUENCE {

 firstOutsideActiveTimeBWP-Id-r16 BWP-Id OPTIONAL, -- Need M

 dormancyGroupOutsideActiveTime-r16 DormancyGroupID-r16 OPTIONAL -- Need R

}

UplinkTxSwitching-r16 ::= SEQUENCE {

 uplinkTxSwitchingPeriodLocation-r16 BOOLEAN,

 uplinkTxSwitchingCarrier-r16 ENUMERATED {carrier1, carrier2}

}

MIMOParam-r17 ::= SEQUENCE {

 additionalPCI-ToAddModList-r17 SEQUENCE (SIZE(1..maxNrofAdditionalPCI-r17)) OF SSB-MTC-AdditionalPCI-r17 OPTIONAL, -- Need N

 additionalPCI-ToReleaseList-r17 SEQUENCE (SIZE(1..maxNrofAdditionalPCI-r17)) OF AdditionalPCIIndex-r17 OPTIONAL, -- Need N

 unifiedTCI-StateType-r17 ENUMERATED {separate, joint} OPTIONAL, -- Need R

 uplink-PowerControlToAddModList-r17 SEQUENCE (SIZE (1..maxUL-TCI-r17)) OF Uplink-powerControl-r17 OPTIONAL, -- Need N

 uplink-PowerControlToReleaseList-r17 SEQUENCE (SIZE (1..maxUL-TCI-r17)) OF Uplink-powerControlId-r17 OPTIONAL, -- Need N

 sfnSchemePDCCH-r17 ENUMERATED {sfnSchemeA,sfnSchemeB} OPTIONAL, -- Need R

 sfnSchemePDSCH-r17 ENUMERATED {sfnSchemeA,sfnSchemeB} OPTIONAL -- Need R

}

MIMOParam-v1850 ::= SEQUENCE {

 additionalTDDConfig-perPCI-ToAddModList-r18 SEQUENCE (SIZE (1..maxNrofAdditionalPCI-r17)) OF AdditionalTDDConfig-perPCI-ToAddMod-r18

 OPTIONAL, -- Cond 2TA-TDD-Only

 additionalTDDConfig-perPCI-ToReleaseList-r18 SEQUENCE (SIZE (1..maxNrofAdditionalPCI-r17)) OF AdditionalPCIIndex-r17

 OPTIONAL -- Need N

}

AdditionalTDDConfig-perPCI-ToAddMod-r18 ::= SEQUENCE {

 additionalTDDConfig-Index-r18 AdditionalPCIIndex-r17,

 tdd-UL-DL-ConfigurationCommon-r18 TDD-UL-DL-ConfigCommon

}

MC-DCI-SetOfCells-r18 ::= SEQUENCE {

 setOfCellsId-r18 SetOfCellsId-r18,

 nCI-Value-r18 INTEGER (0..7),

 scheduledCellListDCI-1-3-r18 SEQUENCE (SIZE (2..maxNrofCellsInSet-r18)) OF ServCellIndex OPTIONAL, -- Need R

 scheduledCellListDCI-0-3-r18 SEQUENCE (SIZE (2..maxNrofCellsInSet-r18)) OF ServCellIndex OPTIONAL, -- Need R

 scheduledCellComboListDCI-1-3-r18 SEQUENCE (SIZE (1..maxNrofCellCombos-r18)) OF ScheduledCellCombo-r18 OPTIONAL, -- Need R

 scheduledCellComboListDCI-0-3-r18 SEQUENCE (SIZE (1..maxNrofCellCombos-r18)) OF ScheduledCellCombo-r18 OPTIONAL, -- Need R

 antennaPortsDCI1-3-r18 ENUMERATED {type1a, type2} OPTIONAL, -- Cond TypeDCI1-3

 antennaPortsDCI0-3-r18 ENUMERATED {type1a, type2} OPTIONAL, -- Cond TypeDCI0-3

 tpmi-DCI0-3-r18 ENUMERATED {type1a, type2} OPTIONAL, -- Cond TypeDCI0-3

 sri-DCI0-3-r18 ENUMERATED {type1a, type2} OPTIONAL, -- Cond TypeDCI0-3

 priorityIndicatorDCI-1-3-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 priorityIndicatorDCI-0-3-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 dormancyDCI-1-3-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 dormancyDCI-0-3-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 pdcchMonAdaptDCI-1-3-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 pdcchMonAdaptDCI-0-3-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 minimumSchedulingOffsetK0DCI-1-3-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 minimumSchedulingOffsetK0DCI-0-3-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 pdsch-HARQ-ACK-OneShotFeedbackDCI-1-3-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 pdsch-HARQ-ACK-enhType3DCI-1-3-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 pdsch-HARQ-ACK-enhType3DCIfieldDCI-1-3-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 pdsch-HARQ-ACK-retxDCI-1-3-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 pucch-sSCellDynDCI-1-3-r18 ENUMERATED {enabled} OPTIONAL, -- Need R

 tdra-FieldIndexListDCI-1-3-r18 SEQUENCE (SIZE (1..32)) OF TDRA-FieldIndexDCI-1-3-r18 OPTIONAL, -- Need R

 tdra-FieldIndexListDCI-0-3-r18 SEQUENCE (SIZE (1..64)) OF TDRA-FieldIndexDCI-0-3-r18 OPTIONAL, -- Need R

 rateMatchListDCI-1-3-r18 SEQUENCE (SIZE (1..16)) OF RateMatchDCI-1-3-r18 OPTIONAL, -- Need R

 zp-CSI-RSListDCI-1-3-r18 SEQUENCE (SIZE (1..8)) OF ZP-CSI-DCI-1-3-r18 OPTIONAL, -- Need R

 tci-ListDCI-1-3-r18 SEQUENCE (SIZE (1..16)) OF TCI-DCI-1-3-r18 OPTIONAL, -- Need R

 srs-RequestListDCI-1-3-r18 SEQUENCE (SIZE (1..16)) OF SRS-RequestCombo-r18 OPTIONAL, -- Need R

 srs-OffsetListDCI-1-3-r18 SEQUENCE (SIZE (1..8)) OF SRS-OffsetCombo-r18 OPTIONAL, -- Need R

 srs-RequestListDCI-0-3-r18 SEQUENCE (SIZE (1..16)) OF SRS-RequestCombo-r18 OPTIONAL, -- Need R

 srs-OffsetListDCI-0-3-r18 SEQUENCE (SIZE (1..8)) OF SRS-OffsetCombo-r18 OPTIONAL -- Need R

}

SetOfCellsId-r18 ::= INTEGER (0..maxNrofSetsOfCells-1-r18)

ScheduledCellCombo-r18 ::= SEQUENCE (SIZE (1..maxNrofCellsInSet-r18)) OF INTEGER (0..maxNrofCellsInSet-1-r18)

RateMatchDCI-1-3-r18 ::= SEQUENCE (SIZE (1..maxNrofCellsInSet-r18)) OF BIT STRING (SIZE (1..2))

ZP-CSI-DCI-1-3-r18 ::= SEQUENCE (SIZE (1.. maxNrofCellsInSet-r18)) OF BIT STRING (SIZE (1..2))

TCI-DCI-1-3-r18 ::= SEQUENCE (SIZE (2.. maxNrofCellsInSet-r18)) OF BIT STRING (SIZE (3))

SRS-RequestCombo-r18 ::= SEQUENCE (SIZE (1.. maxNrofCellsInSet-r18)) OF BIT STRING (SIZE (2..3))

SRS-OffsetCombo-r18 ::= SEQUENCE (SIZE (1.. maxNrofCellsInSet-r18)) OF INTEGER (0..3)

TDRA-FieldIndexDCI-1-3-r18 ::= SEQUENCE (SIZE (2.. maxNrofBWPsInSetOfCells-r18)) OF INTEGER (0..maxNrofDL-Allocations-1-r18)

TDRA-FieldIndexDCI-0-3-r18 ::= SEQUENCE (SIZE (2.. maxNrofBWPsInSetOfCells-r18)) OF INTEGER (0..maxNrofUL-Allocations-1-r18)

-- TAG-SERVINGCELLCONFIG-STOP

-- ASN1STOP

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| *ChannelAccessConfig* field descriptions |
| ***absenceOfAnyOtherTechnology***Presence of this field indicates absence on a long term basis (e.g. by level of regulation) of any other technology sharing the carrier; absence of this field indicates the potential presence of any other technology sharing the carrier, as specified in TS 37.213 [48] clauses 4.2.1 and 4.2.3. |
| ***energyDetectionConfig***Indicates whether to use the *maxEnergyDetectionThreshold* or the *energyDetectionThresholdOffset* (see TS 37.213 [48], clause 4.2.3)*.* |
| ***energyDetectionThresholdOffset***Indicates the offset to the default maximum energy detection threshold value. Unit in dB. Value -13 corresponds to -13dB, value -12 corresponds to -12dB, and so on (i.e. in steps of 1dB) as specified in TS 37.213 [48], clause 4.2.3. |
| ***maxEnergyDetectionThreshold***Indicates the absolute maximum energy detection threshold value. Unit in dBm. Value -85 corresponds to -85 dBm, value -84 corresponds to -84 dBm, and so on (i.e. in steps of 1dBm) as specified in TS 37.213 [48], clause 4.2.3. |
| ***ul-toDL-COT-SharingED-Threshold***Maximum energy detection threshold that the UE should use to share channel occupancy with gNB for DL transmission as specified in TS 37.213 [48], clause 4.1.3 for downlink channel access and clause 4.2.3 for uplink channel access. This field is not applicable in semi-static channel access mode. |

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| *ServingCellConfig* field descriptions |
| ***additionalPCI-ToAddModList***List of information for the additional SSB with different PCI than the serving cell PCI. The additional SSBs with different PCIs are not used for serving cell quality derivation. |
| ***additionalTDDConfig-perPCI-ToAddModList***List of TDD-UL-DL configurations for the additional PCIs. When the network releases an additional PCI of a serving cell, the network also explicitly releases the associated TDD-UL-DL configuration for the additional PCI. |
| ***bwp-InactivityTimer***The duration in ms after which the UE falls back to the default Bandwidth Part (see TS 38.321 [3], clause 5.15). When the network releases the timer configuration, the UE stops the timer without switching to the default BWP. |
| ***ca-SlotOffset***Slot offset between the primary cell (PCell/PSCell) and the SCell in unaligned frame boundary with slot alignment and partial SFN alignment inter-band CA. Based on this field, the UE determines the time offset of the SCell as specified in clause 4.5 of TS 38.211 [16]. The granularity of this field is determined by the reference SCS for the slot offset (i.e. the maximum of PCell/PSCell lowest SCS among all the configured SCSs in DL/UL *SCS-SpecificCarrierList* in *ServingCellConfigCommon* or *ServingCellConfigCommonSIB* and this serving cell's lowest SCS among all the configured SCSs in DL/UL *SCS-SpecificCarrierList* in *ServingCellConfigCommon* or *ServingCellConfigCommonSIB*).The Network configures at most single non-zero offset duration in ms (independent on SCS) among CCs in the unaligned CA configuration. If the field is absent, the UE applies the value of 0. The slot offset value can only be changed with SCell release and add. |
| ***cbg-TxDiffTBsProcessingType1, cbg-TxDiffTBsProcessingType2***Indicates whether processing types 1 and 2 based CBG based operation is enabled according to Rel-16 UE capabilities. |
| ***cellDTX-DRX-Config***Used to configure cell DTX/DRX for the serving cell, as specified in TS 38.321 [3]. A maximum of two cell DTX/DRX patterns can be configured per MAC entity for different serving cells. The two configured patterns are aligned, that the start and slot offset are common and the periodicity of one pattern is an integer multiple of the other. Cell DTX is configured only when connected mode DRX is configured. |
| ***cellDTX-DRX-L1activation***Indicates whether this serving cell has enabled L1 signaling based on DCI 2\_9 for dynamic activation/deactivation of cell DTX/DRX configuration. |
| ***cjt-Scheme-PDSCH***This field is used to configure CJT Tx scheme *cjtSchemeA* or *cjtSchemeB* for PDSCH reception, see TS 38.214 [19] clause 5.1.5. |
| ***channelAccessConfig***List of parameters used for access procedures of operation with shared spectrum channel access (see TS 37.213 [48). |
| ***channelAccessMode2***If present, this field indicates that the UE shall apply channel access procedures for operation with shared spectrum channel access in accordance with TS 37.213 [48], clause 4.4 for FR2-2. If absent, the UE does not apply these channel access procedures. The network always configures this field if channel access procedures are required for the serving cell within this region by regulations.Overwrites the corresponding field in *ServingCellConfigCommon* or *ServingCellConfigCommonSIB* for this serving cell. |
| ***crossCarrierSchedulingConfig***Indicates whether this serving cell is cross-carrier scheduled by another serving cell or whether it cross-carrier schedules another serving cell. If the field *other* is configured for an SpCell (i.e., the SpCell is cross-carrier scheduled by another serving cell), the SpCell can be additionally scheduled by the PDCCH on the SpCell. |
| ***crossCarrierSchedulingConfigRelease***If this field is included, the UE shall release the cross carrier scheduling configuration configured by *crossCarrierSchedulingConfig*. The network may only include either *crossCarrierSchedulingConfigRelease* or *crossCarrierSchedulingConfig* at a time. |
| ***crs-RateMatch-PerCORESETPoolIndex***Indicates how UE performs rate matching when both lte-CRS-PatternList1-r16 and lte-CRS-PatternList2-r16 are configured or when both *lte-CRS-PatternList3-r18* and *lte-CRS-PatternList4-r18* are configured as specified in TS 38.214 [19], clause 5.1.4.2. |
| ***csi-RS-ValidationWithDCI***Indicates how the UE performs periodic and semi-persistent CSI-RS reception in a slot. The presence of this field indicates that the UE uses DCI detection to validate whether to receive CSI-RS (see TS 38.213 [13], clause 11.1). |
| ***defaultDownlinkBWP-Id***The initial bandwidth part is referred to by BWP-Id = 0. ID of the downlink bandwidth part to be used upon expiry of the BWP inactivity timer. This field is UE specific. When the field is absent the UE uses the initial BWP as default BWP. (see TS 38.213 [13], clause 12 and TS 38.321 [3], clause 5.15). |
| ***directionalCollisionHandling***Indicates that this serving cell is using directional collision handling between a reference and other cell(s) for half-duplex operation in TDD CA with same SCS as specified in TS 38.213 [13], clause 11.1. The half-duplex operation only applies within the same frequency range and cell group.The network only configures this field for TDD serving cells that are using the same SCS. |
| ***directionalCollisionHandling-DC***For the IAB-MT, it indicates that this serving cell is using directional collision handling between a reference and other cell(s) for half-duplex operation in TDD NR-DC with same SCS within same cell group or cross different cell groups. |
| ***dormantBWP-Config***The dormant BWP configuration for an SCell. This field can be configured only for a (non-PUCCH) SCell. |
| ***downlinkBWP-ToAddModList***List of additional downlink bandwidth parts to be added or modified. (see TS 38.213 [13], clause 12). |
| ***downlinkBWP-ToReleaseList***List of additional downlink bandwidth parts to be released. (see TS 38.213 [13], clause 12). |
| ***downlinkChannelBW-PerSCS-List***A set of UE specific channel bandwidth and location configurations for different subcarrier spacings (numerologies). Defined in relation to Point A. The UE uses the configuration provided in this field only for the purpose of channel bandwidth and location determination. If absent, UE uses the configuration indicated in *scs-SpecificCarrierList* in *DownlinkConfigCommon* / *DownlinkConfigCommonSIB*. Network only configures channel bandwidth that corresponds to the channel bandwidth values defined in TS 38.101-1 [15], TS 38.101-2 [39], and TS 38.101-5 [75]. If the UE is an (e)RedCap UE and needs to autonomously switch to its initial downlink bandwidth part to perform a random access procedure but its current UE specific channel bandwidth does not cover the initial downlink bandwidth part, the UE autonomously changes its UE specific channel bandwidth to cover the initial downlink bandwidth part. In that case, after completion of the random access procedure, the network ensures that the UE specific channel bandwidth fully covers the UE's active downlink bandwidth part in subsequent bandwidth part switch operations. |
| ***dummy1, dummy 2***This field is not used in the specification. If received it shall be ignored by the UE. |
| ***enableBeamSwitchTiming***Indicates the aperiodic CSI-RS triggering with beam switching triggering behaviour as defined in clause 5.2.1.5.1 of TS 38.214 [19]. |
| ***enableDefaultTCI-StatePerCoresetPoolIndex***Presence of this field indicates the UE shall follow the release 16 behavior of default TCI state per CORESETPoolindex when the UE is configured by higher layer parameter PDCCH-Config that contains two different values of CORESETPoolIndex in ControlResourceSet is enabled. |
| ***enableTwoDefaultTCI-States***Presence of this field indicates the UE shall follow the release 16 behavior of two default TCI states for PDSCH when at least one TCI codepoint is mapped to two TCI states is enabled |
| ***fdmed-ReceptionMulticast***Indicates the Type-1 HARQ codebook generation as specified in TS 38.213 [13], clause 9.1.2.1. |
| ***firstActiveDownlinkBWP-Id***If configured for an SpCell, this field contains the ID of the DL BWP to be activated or to be used for RLM, BFD and measurements if included in an *RRCReconfiguration* message contained in an NR or E-UTRA RRC message indicating that the SCG is deactivated, upon performing the RRC (re-)configuration. If the field is absent, the RRC (re-)configuration does not impose a BWP switch. If the field is absent for the PSCell at SCG deactivation, the UE considers the previously activated DL BWP as the BWP to be used for RLM, BFD and measurements. If the field is absent for the PSCell at SCG activation, the DL BWP to be activated is the DL BWP previously to be used for RLM, BFD and measurements.If configured for an SCell, this field contains the ID of the downlink bandwidth part to be used upon activation of an SCell. The initial bandwidth part is referred to by BWP-Id = 0.Upon reconfiguration with *reconfigurationWithSync*, the network sets the *firstActiveDownlinkBWP-Id* and *firstActiveUplinkBWP-Id* to the same value. |
| ***initialDownlinkBWP***The dedicated (UE-specific) configuration for the initial downlink bandwidth-part (i.e., DL BWP#0). If any of the optional IEs are configured within this IE, the UE considers the BWP#0 to be an RRC configured BWP (from UE capability viewpoint). Otherwise, the UE does not consider the BWP#0 as an RRC configured BWP (from UE capability viewpoint). Network always configures the UE with a value for this field if no other BWPs are configured. NOTE1 |
| ***intraCellGuardBandsDL-List, intraCellGuardBandsUL-List***List of intra-cell guard bands in a serving cell for operation with shared spectrum channel access in FR1. If not configured, the guard bands are defined according to 38.101-1 [15], see TS 38.214 [19], clause 7. For operation in licensed spectrum, this field is absent, and no UE action is required. |
| ***lte-CRS-PatternList1***A list of LTE CRS patterns around which the UE shall do rate matching for PDSCH. The LTE CRS patterns in this list shall be non-overlapping in frequency. The network does not configure this field and *lte-CRS-ToMatchAround* simultaneously. |
| ***lte-CRS-PatternList2***A list of LTE CRS patterns around which the UE shall do rate matching for PDSCH scheduled with a DCI detected on a CORESET with CORESETPoolIndex configured with 1. This list is configured only if CORESETPoolIndex configured with 1. The first LTE CRS pattern in this list shall be fully overlapping in frequency with the first LTE CRS pattern in lte-CRS-PatternList1, The second LTE CRS pattern in this list shall be fully overlapping in frequency with the second LTE CRS pattern in lte-CRS-PatternList1, and so on. Network configures this field only if the field *lte-CRS-ToMatchAround* is not configured and there is at least one ControlResourceSet in one DL BWP of this serving cell with *coresetPoolIndex* set to 1. |
| ***lte-CRS-PatternList3***A list of LTE CRS patterns around which the UE shall do rate matching for PDSCH. The LTE CRS patterns in this list shall be non-overlapping in frequency. The network does not configure this field and *lte-CRS-ToMatchAround,* or this field and *lte-CRS-PatternList1*, or this field and *lte-CRS-PatternList2* simultaneously. |
| ***lte-CRS-PatternList4***A list of LTE CRS patterns around which the UE shall do rate matching for PDSCH. The LTE CRS patterns in this list shall be non-overlapping in frequency. The first LTE CRS pattern in this list shall be fully overlapping in frequency with the first LTE CRS pattern in *lte-CRS-PatternList3*. The second LTE CRS pattern in this list shall be fully overlapping in frequency with the second LTE CRS pattern in *lte-CRS-PatternList3*, and so on. Network configures this field only if the field *lte-CRS-ToMatchAround* is not configured and the field *lte-CRS-PatternList3* is configured. |
| ***lte-CRS-ToMatchAround***Parameters to determine an LTE CRS pattern that the UE shall rate match around. |
| ***lte-NeighCellsCRS-AssistInfoList***A list of LTE neighbour cells configuration information which is used to assist the UE to perform CRS interference mitigation (CRS-IM) in scenarios with overlapping spectrum for LTE and NR (see TS 38.101-4 [59]). If the field is included, it replaces any previous list, i.e. all the entries of the list are replaced and each of the *LTE-NeighCellsCRS-AssistInfo* entries is considered to be newly created and the conditions and Need codes for setup of the entry apply. |
| ***lte-NeighCellsCRS-Assumptions***If the field is not configured, the following default network configuration assumptions are valid for all LTE neighbour cells for the purpose of CRS interference mitigation (CRS-IM) in scenarios with overlapping spectrum for LTE and NR (see TS 38.101-4 [59]).- The CRS port number is the same as the one indicated in *RateMatchPatternLTE-CRS* if configured for the serving cell.- The CRS port number is 4 if *RateMatchPatternLTE-CRS* is not configured for the serving cell.- The channel bandwidth and centre frequency are the same as the ones indicated in *RateMatchPatternLTE-CRS* if configured for the serving cell.- The MBSFN configuration is the same as the one indicated in *RateMatchPatternLTE-CRS* if configured for the serving cell. If *RateMatchPatternLTE-CRS* is not configured for the serving cell, MBSFN subframe is not configured.- Network-based CRS interference mitigation (i.e., CRS muting), as in *crs-IntfMitigConfig* specified in TS 36.331 [10], is not enabled.If the field is configured (i.e. false) and *LTE-NeighCellsCRS-AssistInfoList* is configured, the configuration provided in *LTE-NeighCellsCRS-AssistInfoList* overrides the default network configuration assumptions.If the field is configured (i.e. false) and *LTE-NeighCellsCRS-AssistInfoList* is not configured, it is up to the UE implementation whether to apply CRS-IM operation. |
| ***mc-DCI-SetOfCellsToAddModList***List of up to N (N<=4) configurations of set(s) of cells for multi-cell PDSCH/PUSCH scheduling from the serving cell, where N is reported as UE capability and up to 4 sets of cells can be configured per PUCCH group. When this field is configured to a SCell, PCell cannot be included in either *ScheduledCellListDCI-1-3* or *ScheduledCellListDCI-0-3*. |
| ***mc-DCI-SetOfCellsToReleaseList***List of cell set configurations to release. |
| ***multiPDSCH-PerSlotType1-CB***Configures the UE behaviour for Type1 codebook HARQ ACK generation regarding the number of PDSCHs per slot on a serving cell as specified in TS 38.213 [13], clause 9.1.2.1.When this parameter is configured and set to *disabled* for a serving cell, the network does not schedule UE with more than one PDSCH in a slot on the serving cell if HARQ-ACKs of any two PDSCHs in the slot on the serving cell are supposed to be reported on one PUCCH resource in the same PUCCH slot. If two *coresetPoolIndex* values are configured, the number of received PDSCHs is per *coresetPoolIndex* value per slot for a serving cell. If the UE generates two HARQ-ACK codebooks for two priorities, the number of received PDSCHs is per priority per slot for a serving cell. If *fdmed-ReceptionMulticast* is configured, the number of received PDSCHs is per traffic type (unicast / multicast) per slot for a serving cell. |
| ***nr-dl-PRS-PDC-Info***Configures the DL PRS for propagation delay compensation. When configured, the UE measures the UE Rx-Tx time difference based on the reference signals configured in this field. |
| ***nrofHARQ-BundlingGroups***Indicates the number of HARQ bundling groups for type2 HARQ-ACK codebook. |
| ***pathlossReferenceLinking***Indicates whether UE shall apply as pathloss reference either the downlink of SpCell (PCell for MCG or PSCell for SCG) or of SCell that corresponds with this uplink (see TS 38.213 [13], clause 7). |
| ***pdcch-CandidateReceptionWithCRS-Overlap***Presence of this field indicates the UE shall monitor PDCCH candidates that overlap with LTE CRS RE(s). |
| ***pdsch-ServingCellConfig***PDSCH related parameters that are not BWP-specific. |
| ***positionInDCI-cellDTRX***The starting bit position of an information block of DCI format 2\_9 for this serving cell (see TS 38.212 [17], clause 7.3.1.3.10). |
| ***rateMatchPatternToAddModList***Resources patterns which the UE should rate match PDSCH around. The UE rate matches around the union of all resources indicated in the rate match patterns. Rate match patterns defined here on cell level apply only to PDSCH of the same numerology. See TS 38.214 [19], clause 5.1.4.1. If a *RateMatchPattern* with the same *RateMatchPatternId* is configured in both *ServingCellConfig/ServingCellConfigCommon* and in SIB20/MCCH, the entire *RateMatchPattern* configuration shall be the same, including the set of RBs/REs indicated by the patterns for the rate matching around, and they are counted as a single rate match pattern in the total configured rate match patterns as defined in TS 38.214 [19]. |
| ***sCellDeactivationTimer***SCell deactivation timer in TS 38.321 [3]. If the field is absent, the UE applies the value infinity. |
| ***sfnSchemePDCCH***This parameter is used to configure single frequency network scheme for PDCCH: sfnSchemeA or sfnSchemeB as specified (see TS 38.214 [19], clause 5.1). If network includes both *sfnSchemePDCCH* and *sfnSchemePDSCH*, same value shall be configured. |
| ***sfnSchemePDSCH***This parameter is used to configure single frequency network scheme for PDSCH: sfnSchemeA or sfnSchemeB as specified (see TS 38.214 [19], clause 5.1). If network includes both *sfnSchemePDCCH* and *sfnSchemePDSCH*, same value shall be configured. The network does not configure this parameter and *repetitionSchemeConfig* in *PDSCH-Config* simultaneously in the same serving cell. |
| ***semiStaticChannelAccessConfigUE***When this field is configured and when *channelAccessMode-r16* (see IE ServingCellConfigCommon and IE ServingCellConfigCommonSIB) is configured to *semiStatic*, the UE operates in semi-static channel access mode and can initiate a channel occupancy periodically (see TS 37.213 [48], Clause 4.3).The period can be configured independently from period configured in *SemiStaticChannelAccessConfig-r16* if the UE indicates the corresponding capability. Otherwise, the periodicity configured by *periodUE-r17* is an integer multiple of or an integer factor of the periodicity indicated by *period* in *SemiStaticChannelAccessConfig-r16.* |
| ***servingCellMO****measObjectId* of the *MeasObjectNR* in *MeasConfig* which is associated to the serving cell. For this *MeasObjectNR*, the following relationship applies between this MeasObjectNR and *frequencyInfoDL* in *ServingCellConfigCommon/ServingCellConfigCommonSIB* of the serving cell: if *ssbFrequency* is configured, its value is the same as the *absoluteFrequencySSB* and if *csi-rs-ResourceConfigMobility* is configured, the value of its *subcarrierSpacing* is present in one entry of the *scs-SpecificCarrierList*, *csi-RS-CellListMobility* includes an entry corresponding to the serving cell (with *cellId* equal to *physCellId* in *ServingCellConfigCommon*) and the frequency range indicated by the *csi-rs-MeasurementBW* of the entry in *csi-RS-CellListMobility* is included in the frequency range indicated by in the entry of the *scs-SpecificCarrierList*. |
| ***supplementaryUplink***Network may configure this field only when *supplementaryUplinkConfig* is configured in *ServingCellConfigCommon* or *supplementaryUplink* is configured in *ServingCellConfigCommonSIB*. |
| ***supplementaryUplinkRelease***If this field is included, the UE shall release the uplink configuration configured by *supplementaryUplink*. The network only includes either *supplementaryUplinkRelease* or *supplementaryUplink* at a time. |
| ***tag-Id***Timing Advance Group ID, as specified in TS 38.321 [3], which this cell or set of TCI-States of this cell are associated with. |
| ***tag2***This field is used to indicate the second TAG information for the serving cell, it is optionally configured in a serving cell if and only if the serving cell is configured with more than one value for the *coresetPoolIndex*. |
| ***tci-ActivatedConfig***If configured for an SCell, or if configured for the PSCell when the SCG is being activated upon the reception of the containing message, the UE shall consider the TCI states provided in this field as the activated TCI states for PDCCH/PDSCH reception on this serving cell.If configured for the PSCell when the SCG is indicated as deactivated in the containing message:- the UE shall consider the TCI states provided in this field as the TCI states to be activated for PDCCH/PDSCH reception upon a later SCG activation in which *tci-ActivatedConfig* is absent- if bfd-and-RLM is configured and no RS is configured in *RadioLinkMonitoringConfig* for RLM, respectively for BFD, the UE shall use the TCI states provided in this field for PDCCH as RS for RLM, respectively for BFD.When this field is absent for the PSCell and the SCG is being deactivated:- the UE shall consider the previously activated TCI states as the TCI states to be activated for PDCCH/PDSCH reception upon a later SCG activation in which *tci-ActivatedConfig* is absent- if *bfd-and-RLM* is configured and no RS is configured in *RadioLinkMonitoringConfig* for RLM, respectively for BFD, the UE shall use the previously activated TCI states for PDCCH as RS for RLM, respectively for BFD. |
| ***tdd-UL-DL-ConfigurationDedicated-IAB-MT***Resource configuration per IAB-MT D/U/F overrides all symbols (with a limitation that effectively only flexible symbols can be overwritten in Rel-16) per slot over the number of slots as provided by *TDD-UL-DL ConfigurationCommon*. |
| ***unifiedTCI-StateType***Indicates the unified TCI state type the UE is configured for this serving cell. The value *separate* means this serving cell is configured with *dl-OrJointTCI-StateList* for DL TCI state and *ul-TCI-StateList* for UL TCI state. The value *joint* means this serving cell is configured with *dl-OrJointTCI-StateList* for joint TCI state for UL and DL operation. |
| ***uplinkConfig***Network may configure this field only when *uplinkConfigCommon* is configured in *ServingCellConfigCommon* or *ServingCellConfigCommonSIB*. Addition or release of this field can only be done upon SCell addition or release (respectively). |
| ***uplink-PowerControlToAddModList***Configures UL power control parameters for PUSCH, PUCCH and SRS when field unifiedTCI-StateType is configured for this serving cell. |

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| *Tag2 field descriptions* |
| ***n-TimingAdvanceOffset2***The *N\_TA-Offset2* to be applied for PDCCH order CFRA towards the active *additionalPCI* as specified in TS 38.133 [14] clause 7.1.1 and for all uplink transmissions on this serving cell associated to *tag2* as specified in TS 38.213 [13] clause 4.2. This field is always present if *SSB-MTC-AdditionalPCI* is configured. It is absent otherwise. If absent, the *N\_TA-Offset* is applied for all uplink transmissions on this serving cell associated to *tag2*. |
| ***tag2-flag***If this field is set to true, the *tag2-Id* is associated to value 0 and *tag-Id* is associated to value 1 of field TI bit in RAR, fallbackRAR and in the absolute TAC MAC CE, see TS 38.321 [3]. Otherwise, the *tag2-Id* is associated to value 1 and *tag-Id* is associated to value 0 of field TI bit in RAR, fallbackRAR and in the absolute TAC MAC CE, see TS 38.321 [3]. |
| ***tag2-Id***Timing Advance Group ID, as specified in TS 38.321 [3], which this cell or set of TCI-States of this cell are associated with. |

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| *UplinkConfig* field descriptions |
| ***carrierSwitching***Includes parameters for configuration of carrier based SRS switching (see TS 38.214 [19], clause 6.2.1.3. |
| ***enableDefaultBeamPL-ForPUSCH0-0, enableDefaultBeamPL-ForPUCCH, enableDefaultBeamPL-ForSRS***When the parameter is present, UE derives the spatial relation and the corresponding pathloss reference Rs as specified in 38.213, clauses 7.1.1, 7.2.1, 7.3.1 and 9.2.2. The network only configures these parameters for FR2. |
| ***enablePL-RS-UpdateForPUSCH-SRS***When this parameter is present, the Rel-16 feature of MAC CE based pathloss RS updates for PUSCH/SRS is enabled. Network only configures this parameter when the UE is configured with *sri-PUSCH-PowerControl*. If this field is not configured, network configures at most 4 pathloss RS resources for PUSCH/PUCCH/SRS transmissions per BWP, not including pathloss RS resources for SRS transmissions for positioning. (See TS 38.213 [13], clause 7). |
| ***enablePL-RS-UpdateForType1CG-PUSCH***When this parameter is present, the Rel-18 feature of MAC CE based pathloss RS updates for Type 1 CG-PUSCH is enabled. The network only configures this parameter, when the parameter *enablePL-RS-UpdateForPUSCH-SRS* is configured. (See TS 38.213 [13], clause 7). |
| ***firstActiveUplinkBWP-Id***If configured for an SpCell, this field contains the ID of the UL BWP to be activated upon performing the RRC (re-)configuration. If the field is absent, the RRC (re-)configuration does not impose a BWP switch.If configured for an SCell, this field contains the ID of the uplink bandwidth part to be used upon activation of an SCell. The initial bandwidth part is referred to by BandiwdthPartId = 0. |
| ***initialUplinkBWP***The dedicated (UE-specific) configuration for the initial uplink bandwidth-part (i.e. UL BWP#0). If any of the optional IEs are configured within this IE as part of the IE *uplinkConfig*, the UE considers the BWP#0 to be an RRC configured BWP (from UE capability viewpoint). Otherwise, the UE does not consider the BWP#0 as an RRC configured BWP (from UE capability viewpoint). Network always configures the UE with a value for this field if no other BWPs are configured. NOTE1 |
| ***moreThanOneNackOnlyMode***Indicates the mode of NACK-only feedback in the PUCCH transmission, as specified in TS 38.213 [13], clause 18. If multicast CFR is not configured, this field is not included. Otherwise, if the field is absent, UE uses mode 1 for multicast CFR. |
| ***mpr-PowerBoost-FR2***Indicates whether UE is allowed to boost uplink transmission power by suspending in-band emission (IBE) requirements as specified in TS 38.101-2 [39]. Network only configures this field for FR2 serving cells. |
| ***powerBoostPi2BPSK***If this field is set to *true*, the UE determines the maximum output power for PUCCH/PUSCH transmissions that use pi/2 BPSK modulation according to TS 38.101-1 [15] /TS 38.101-5 [75], clause 6.2.4. The network ensures that *powerBoostPi2BPSK* and *powerBoostPi2BPSK-r18* are not configured at the same time for a UE. |
| ***powerBoostQPSK***If this field is set to *true*, the UE determines the maximum output power for PUSCH transmissions that use QPSK modulation according to TS 38.101-1 [15], clause 6.2.4. |
| ***pusch-ServingCellConfig***PUSCH related parameters that are not BWP-specific. |
| ***srs-PosTx-Hopping***Contains configuration related to the SRS for Positioning with frequency hopping for RRC\_CONNECTED state. |
| ***uplinkBWP-ToAddModList***The additional bandwidth parts for uplink to be added or modified. In case of TDD uplink- and downlink BWP with the same *bandwidthPartId* are considered as a BWP pair and must have the same center frequency. |
| ***uplinkBWP-ToReleaseList***The additional bandwidth parts for uplink to be released. |
| ***uplinkChannelBW-PerSCS-List***A set of UE specific channel bandwidth and location configurations for different subcarrier spacings (numerologies). Defined in relation to Point A. The UE uses the configuration provided in this field only for the purpose of channel bandwidth and location determination. If absent, UE uses the configuration indicated in *scs-SpecificCarrierList* in *UplinkConfigCommon* / *UplinkConfigCommonSIB*. Network only configures channel bandwidth that corresponds to the channel bandwidth values defined in TS 38.101-1 [15], TS 38.101-2 [39], and TS 38.101-5 [75]. If the UE is an (e)RedCap UE and needs to autonomously switch to its initial uplink bandwidth part to perform a random access procedure but its current UE specific channel bandwidth does not cover the initial uplink bandwidth part, the UE autonomously changes its UE specific channel bandwidth to cover the initial uplink bandwidth part. In that case, after completion of the random access procedure, the network ensures that the UE specific channel bandwidth fully covers the UE's active uplink bandwidth part in subsequent bandwidth part switch operations. |
| ***uplinkTxSwitchingPeriodLocation***Indicates whether the location of UL Tx switching period is configured in this uplink carrier in case of inter-band UL CA, SUL, or (NG)EN-DC, as specified in TS 38.101-1 [15] and TS 38.101-3 [34].In case of (NG)EN-DC, network always configures this field to TRUE for NR carrier (i.e. with (NG)EN-DC, the UL switching period always occurs on the NR carrier).In case of inter-band UL CA or SUL, for dynamic uplink Tx switching between 2 bands with 2 uplink carriers or 3 uplink carriers as defined in TS 38.101-1 [15], network configures this field to TRUE for the uplink carrier(s) on one band and configures this field to FALSE for the uplink carrier(s) on the other band. This field is set to the same value for the carriers on the same band. |
| ***uplinkTxSwitchingCarrier***Indicates that the configured carrier is carrier1 or carrier2 for dynamic uplink Tx switching, as defined in TS 38.101-1 [15] and TS 38.101-3 [34]. In case of (NG)EN-DC, network always configures the NR carrier as carrier 2.In case of inter-band UL CA or SUL, for dynamic uplink Tx switching between 2 bands with 2 uplink carriers or 3 uplink carriers as defined in TS 38.101-1 [15], network configures the uplink carrier(s) on one band as carrier1 and the uplink carrier(s) on the other band as carrier2. This field is set to the same value for the carriers on the same band. |

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| *DormantBWP-Config* field descriptions |
| ***dormancyGroupWithinActiveTime***This field contains the ID of an SCell group for Dormancy within active time, to which this SCell belongs. The use of the Dormancy within active time for SCell groups is specified in TS 38.213 [13]. |
| ***dormancyGroupOutsideActiveTime***This field contains the ID of an SCell group for Dormancy outside active time, to which this SCell belongs. The use of the Dormancy outside active time for SCell groups is specified in TS 38.213 [13]. |
| ***dormantBWP-Id***This field contains the ID of the downlink bandwidth part to be used as dormant BWP. If this field is configured, its value is different from *defaultDownlinkBWP-Id*, and at least one of the *withinActiveTimeConfig* and *outsideActiveTimeConfig* should be configured. |
| ***firstOutsideActiveTimeBWP-Id***This field contains the ID of the downlink bandwidth part to be activated when receiving a DCI indication for SCell dormancy outside active time. |
| ***firstWithinActiveTimeBWP-Id***This field contains the ID of the downlink bandwidth part to be activated when receiving a DCI indication for SCell dormancy within active time. |
| ***outsideActiveTimeConfig***This field contains the configuration to be used for SCell dormancy outside active time, as specified in TS 38.213 [13]. The field can only be configured when the cell group the SCell belongs to is configured with *dcp-Config*. |
| ***withinActiveTimeConfig***This field contains the configuration to be used for SCell dormancy within active time, as specified in TS 38.213 [13].  |

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| *GuardBand* field descriptions |
| ***startCRB***Indicates the starting RB of the guard band. |
| ***nrofCRB***Indicates the length of the guard band in RBs. When set to 0, zero-size guard band is used. |

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| *MC-DCI-SetOfCells* field descriptions |
| ***antennaPortsDCI1-3, antennaPortsDCI0-3***Configure the indication type for antenna port(s) field in DCI format 1\_3 and DCI format 0\_3, respectively (see TS 38.212, clauses 7.3.1.2.4 and 7.3.1.1.4). |
| ***dormancyDCI-1-3, dormancyDCI-0-3***Configure the presence of Scell dormancy indication field in DCI format 1\_3 and DCI format 0\_3, respectively. |
| ***minimumSchedulingOffsetK0DCI-1-3, minimumSchedulingOffsetK0DCI-0-3***Configure the presence of minimum applicable scheduling offset indicator field in DCI format 1\_3 and DCI format 0\_3, respectively. |
| ***nCI-Value***Configure n\_CI value used for the set of cells, where unique n\_CI value is configured for each set of cells. |
| ***pdcchMonAdaptDCI-1-3, pdcchMonAdaptDCI-0-3***Configure the presence of PDCCH monitoring adaptation indication field in DCI format 1\_3 and DCI format 0\_3, respectively. |
| ***pdsch-HARQ-ACK-enhType3DCI-1-3***Enable the enhanced Type 3 HARQ-ACK codebook triggering using DCI format 1\_3. |
| ***pdsch-HARQ-ACK-enhType3DCIfieldDCI-1-3***Enables the enhanced Type 3 CB through a new DCI field to indicate the enhanced Type 3 HARQ-ACK codebook in DCI format 1\_3 if the more than one enhanced Type HARQ-ACK codebook is configured for the primary PUCCH cell group. |
| ***pdsch-HARQ-ACK-OneShotFeedbackDCI-1-3***When configured, the DCI format 1\_3 can request the UE to report A/N for all HARQ processes and all CCs configured in the PUCCH group. |
| ***pdsch-HARQ-ACK-retxDCI-1-3***When configured, the DCI format 1\_3 can request the UE to perform a HARQ-ACK re-transmission on a PUCCH resource (see TS 38.213 [13], clause 9.1.5). |
| ***priorityIndicatorDCI-1-3, priorityIndicatorDCI-0-3***Configure the presence of priority indicator field in DCI format 1\_3 and DCI format 0\_3, respectively (see TS 38.212 [17], clauses 7.3.1.2.4 and 7.3.1.1.4 and TS 38.213 [13] clause 9). |
| ***pucch-sSCellDynDCI-1-3***Configure the UE with PUCCH cell switching based on dynamic indication in DCI format 1\_3 (see TS 38.213 [13], clause 9.A). |
| ***RateMatchDCI-1-3***Configure each row of the joint rate matching indication table for DL scheduling via DCI format 1\_3, where bitmap for a cell points to a corresponding rate matching indication applicable for DCI format 1\_1 (i.e., MSB and LSB of bitmap refer *rateMatchPatternGroup1* and *rateMatchPatternGroup2* for a cell, respectively), the order of rate matching indication bitmap in each row refers the order of cells in *ScheduledCellListDCI-1-3*, that are configured with *rateMatchPatternGroup1* or *rateMatchPatternGroup2* on at least one DL BWP (i.e., first bitmap is for the first cell in *ScheduledCellListDCI-1-X*, that are configured with *rateMatchPatternGroup1* or *rateMatchPatternGroup2* on at least one DL BWP and so on), the number of entries in a row of *rateMatchDCI-1-3* should be the same as the number of cells, that are configured with *rateMatchPatternGroup1* or *rateMatchPatternGroup2* on at least one DL BWP, included in *ScheduledCellListDCI-1-3*, and entries for co-scheduled cells in a row of *rateMatchDCI-1-3* are interpreted based on the BWPs of co-scheduled cells on which the UE operates based on the BWP indicator field of DCI format 1\_3 (see TS 38.212 [17], clause 7.3.1.2.4 and TS 38.213 [13], clause 12). |
| ***rateMatchListDCI-1-3***Configure joint rate matching indication table for DL scheduling via DCI format 1\_3. |
| ***ScheduledCellCombo***Configure each row of the table for combinations of co-scheduled cells for DL scheduling via DCI format 1\_3 and for UL scheduling via DCI format 0\_3, where index with value INTEGER (0...3) of co-scheduled cell refers to *scheduledCellListDCI-1-3* for DL and *scheduledCellListDCI-0-3* for UL. |
| ***scheduledCellComboListDCI-1-3, scheduledCellComboListDCI-0-3***Configure the table for combinations of co-scheduled cells for DL scheduling via DCI format 1\_3 and UL scheduling via DCI format 0\_3, respectively. |
| ***scheduledCellListDCI-1-3, scheduledCellListDCI-0-3***Configure the list of possible co-scheduled cells in the set for DL scheduling via DCI format 1\_3 and UL scheduling via DCI format 0\_3 respectively, where the serving cells in the list are in ascending order of serving cell indices and are mapped to index {0, 1, 2, 3} in the set. Total number of cells within the same set of cells i.e., in *scheduledCellListDCI-1-3* and *scheduledCellListDCI-0-3*, is up to 4.When a cell is included in either or both of *scheduledCellListDCI-1-3* or *scheduledCellListDCI-0-3* for one set of cells *MC-DCI-SetofCells*, the cell cannot be included in any of *scheduledCellListDCI-1-3* or *scheduledCellListDCI-0-3* for any other set of cells. |
| ***setOfCellsId***Configure index of the set of cells to be indicated in DCI format 0\_3/1\_3. |
| ***sri-DCI0-3***Configure the indication type for SRS resource indicator field in DCI format 0\_3 (See TS 38.212, clause 7.3.1.1.4). |
| ***SRS-OffsetCombo***Configure each row of the joint SRS offset indicator table for DL scheduling via DCI format 1\_3 and for UL scheduling via DCI format 0\_3, where index for a cell points to a corresponding SRS offset indicator applicable for DCI formats 1\_1 and 0\_1, and the order of SRS offset indicator index in each row refers the order of cells in *scheduledCell-ListDCI-1-3* (i.e., first index is for the first cell in *scheduledCellListDCI-1-3*, that are configured with more than one entry in *availableSlotOffsetList* for at least one aperiodic SRS resource set on at least one UL BWP and so on) for DL and *scheduledCellListDCI-0-3* for UL, included in *scheduledCellListDCI-1-3* for *srs-OffsetListDCI-1-3* and *scheduledCellListDCI-0-3* for *srs-OffsetListDCI-0-3*, and entries for co-scheduled cells in a row of *SRS-OffsetCombo* are interpreted based on the BWPs of co-scheduled cells on which the UE operates based on the BWP indicator field of DCI format 1\_3 and 0\_3 (see TS 38.212 [17], clause 7.3.1.2.4 and clause 7.3.1.1.4, and TS 38.213 [13], clause 12). |
| ***srs-OffsetListDCI-1-3, srs-OffsetListDCI-0-3***Configure joint SRS offset indicator table for DL scheduling via DCI format 1\_3 and UL scheduling via DCI format 0\_3, respectively. |
| ***SRS-RequestCombo***Configure each row of the joint SRS request table for DL scheduling via DCI format 1\_3 and for UL scheduling via DCI format 0\_3, where index for a cell points to a corresponding SRS request applicable for DCI formats 1\_1 and 0\_1, and the order of SRS request index in each row refers the order of cells in *scheduledCellListDCI-1-3* (i.e., first index is for the first cell in *scheduledCellListDCI-1-3* and so on) for DL and *scheduledCellListDCI-0-3* for UL. The number of entries in a row of *SRS-RequestCombo* should be the same as the number of cells included in *scheduledCellListDCI-1-3* for *srs-RequestListDCI-1-3* and *scheduledCellListDCI-0-3* for *srs-RequestListDCI-0-3*, and entries for co-scheduled cells in a row of *SRS-RequestCombo* are interpreted based on the BWPs of co-scheduled cells on which the UE operates based on the BWP indicator field of DCI format 1\_3 and 0\_3 (see TS 38.212 [17], clause 7.3.1.2.4 and clause 7.3.1.1.4, and TS 38.213 [13], clause 12). |
| ***srs-RequestListDCI-1-3, srs-RequestListDCI-0-3***Configure joint SRS request table for DL scheduling via DCI format 1\_3 and UL scheduling via DCI format 0\_3, respectively. |
| ***TCI-DCI-1-3***Configure each row of the joint TCI table for DL scheduling via DCI format 1\_3, where index for a cell points to a corresponding TCI applicable for DCI format 1\_1, and the order of TCI index in each row refers the order of cells in *scheduledCellListDCI-1-3* (i.e., first index is for the first cell in *scheduledCellListDCI-1-3* that configured with *tci-StatesToAddModList* and so on), the number of entries in a row of *TCI-DCI-1-3* should be the same as the number of cells that configured with *tci-StatesToAddModList* on at least one DL BWP, included in *scheduledCellListDCI-1-3*, and entries for cells in a row of *TCI-DCI-1-3* are interpreted based on the BWPs of cells in *scheduledCellListDCI-1-3* on which the UE operates based on the BWP indicator field of DCI format 1\_3 (see TS 38.212 [17], clause 7.3.1.2.4, and TS 38.213 [13], clause 12). |
| ***tci-ListDCI-1-3***Configure joint TCI table for DL scheduling via DCI format 1\_3 |
| ***TDRA-FieldIndexDCI-0-3***Configure each row of the joint TDRA field table for UL scheduling via DCI format 0\_3 containing the applicable TDRA field indexes for multiple BWPs/cells, where the TDRA index for a BWP of a cell points to a corresponding TDRA in the TDRA table applicable for DCI format 0\_1, the order of TDRA index in each row refers the *BWP-Id* for a cell and the order of cells in *scheduledCellListDCI-0-3* (i.e., first TDRA index in a row is for the smallest BWP-Id that can be scheduled by the DCI format 0\_3, as specified in TS 38.212 [17], of the first cell in *scheduledCellListDCI-0-3*, second TDRA index in a row is for the second smallest BWP-Id that can be scheduled by the DCI format 0\_3, as specified in TS 38.212 [17], of the first cell and so on), and the number of TDRA indices in a row of *TDRA-FieldIndexDCI-0-3* should be the same as the total number of BWPs that can be scheduled by the DCI format 0\_3, as specified in TS 38.212 [17], across cells included in *scheduledCellListDCI-0-3*. |
| ***TDRA-FieldIndexDCI-1-3***Configure each row of the joint TDRA field table for DL scheduling via DCI format 1\_3 containing the applicable TDRA field indexes for multiple BWPs/cells, where the TDRA index for a BWP of a cell points to a corresponding TDRA in the TDRA table applicable for DCI format 1\_1, the order of TDRA index in each row refers the BWP-Id for a cell and the order of cells in *scheduledCellListDCI-1-3* (i.e., first TDRA index in a row is for the smallest BWP-Id that can be scheduled by the DCI format 1\_3, as specified in TS 38.212 [17], of the first cell in *scheduledCellListDCI-1-3*, second TDRA index in a row is for the second smallest BWP-Id that can be scheduled by the DCI format 1\_3, as specified in TS 38.212 [17], of the first cell and so on ), and the number of TDRA indices in a row of *TDRA-FieldIndexDCI-1-3* should be the same as the total number of BWPs that can be scheduled by the DCI format 1\_3, as specified in TS 38.212 [17], across cells included in *scheduledCellListDCI-1-3*. |
| ***tdra-FieldIndexListDCI-1-3, tdra-FieldIndexListDCI-0-3***Configure joint TDRA table for DL scheduling via DCI format 1\_3 and UL scheduling via DCI format 0\_3, respectively. |
| ***tpmi-DCI0-3***Configure the indication type for precoding information and number of layers field in DCI format 0\_3 (See TS 38.212 [17], clause 7.3.1.1.4). |
| ***ZP-CSI-DCI-1-3***Configure each row of the joint ZP-CSI-RS trigger table for DL scheduling via DCI format 1\_3, where index for a cell points to a corresponding ZP-CSI-RS trigger applicable for DCI format 1\_1, and the order of ZP-CSI-RS trigger index in each row refers the order of cells in *scheduledCellListDCI-1-3* (i.e., first index is for the first cell in *scheduledCellListDCI-1-3*, that are configured with aperiodic-*ZP-CSI-RS-ResourceSetsToAddModList* on at least one DL BWP and so on), the number of entries in a row of *ZP-CSI-DCI-1-3* should be the same as the number of cells, that are configured with *aperiodic-ZP-CSI-RS-ResourceSetsToAddModList* on at least one DL BWP, included in *scheduledCellListDCI-1-3*, and entries for co-scheduled cells in a row of *ZP-CSI-DCI-1-3* are interpreted based on the BWPs of co-scheduled cells on which the UE operates based on the BWP indicator field of DCI format 1\_3 (see TS 38.212 [17], clause 7.3.1.2.4 and TS 38.213 [13], clause 12). |
| ***zp-CSI-RSListDCI-1-3***Configure joint ZP-CSI-RS trigger table for DL scheduling via DCI format 1\_3. |

NOTE 1: If the dedicated part of initial UL/DL BWP configuration is absent, the initial BWP can be used but with some limitations. For example, changing to another BWP requires *RRCReconfiguration* since DCI format 1\_0 doesn't support DCI-based switching.

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| Conditional Presence | Explanation |
| *2TA-TDD-Only* | The field is optionally present, Need N, for a TDD cell, in the *mimoParam-v1850* if *additionalPCI-ToAddModList* is present in *ServingCellConfig* and if *tag2* is present in *ServingCellConfig*. It is absent otherwise. |
| *AsyncCA* | This field is mandatory present for SCells whose slot offset between the SpCell is not 0. Otherwise it is absent, Need S. |
| *MeasObject* | This field is mandatory present for the SpCell if the UE has a *measConfig*, and it is optionally present, Need M, for SCells. For (e)RedCap UEs, this field is optionally present, Need M. |
| *SCellOnly* | This field is optionally present, Need R, for SCells. It is absent otherwise.  |
| *ServingCellWithoutPUCCH* | This field is optionally present, Need S, for SCells except PUCCH SCells. It is absent otherwise. |
| *SyncAndCellAdd* | This field is mandatory present for a SpCell upon reconfiguration with *reconfigurationWithSync* and upon *RRCSetup*/*RRCResume*.The field is optionally present for an SpCell, Need N, upon reconfiguration without *reconfigurationWithSync*.The field is mandatory present for an SCell upon addition, and absent for SCell in other cases, Need M. |
| *TCI\_ActivatedConfig* | This field is optional Need N for SCells if *sCellState* is configured, otherwise it is absent.This field is optional Need S for the PSCell when the SCG is indicated as deactivated or is being activated, otherwise it is absent.This field is absent for the PCell. |
| *TDD* | This field is optionally present, Need R, for TDD cells. It is absent otherwise. |
| *TDD\_IAB* | For IAB-MT, this field is optionally present, Need R, for TDD cells. It is absent otherwise. |
| *TypeDCI0-3* | This field is mandatory present if *ScheduledCellListDCI-0-3* is configured, otherwise it is absent, Need R. |
| *TypeDCI1-3* | This field is mandatory present if *ScheduledCellListDCI-1-3* is configured, otherwise it is absent, Need R. |

*<unchanged part is omitted>*

### 6.3.3 UE capability information elements

<cut>

#### – *FeatureSetDownlink*

The IE *FeatureSetDownlink* indicates a set of features that the UE supports on the carriers corresponding to one band entry in a band combination.

*FeatureSetDownlink* information element

-- ASN1START

-- TAG-FEATURESETDOWNLINK-START

FeatureSetDownlink ::= SEQUENCE {

 featureSetListPerDownlinkCC SEQUENCE (SIZE (1..maxNrofServingCells)) OF FeatureSetDownlinkPerCC-Id,

 intraBandFreqSeparationDL FreqSeparationClass OPTIONAL,

 scalingFactor ENUMERATED {f0p4, f0p75, f0p8} OPTIONAL,

 dummy8 ENUMERATED {supported} OPTIONAL,

 scellWithoutSSB ENUMERATED {supported} OPTIONAL,

 csi-RS-MeasSCellWithoutSSB ENUMERATED {supported} OPTIONAL,

 dummy1 ENUMERATED {supported} OPTIONAL,

 type1-3-CSS ENUMERATED {supported} OPTIONAL,

 pdcch-MonitoringAnyOccasions ENUMERATED {withoutDCI-Gap, withDCI-Gap} OPTIONAL,

 dummy2 ENUMERATED {supported} OPTIONAL,

 ue-SpecificUL-DL-Assignment ENUMERATED {supported} OPTIONAL,

 searchSpaceSharingCA-DL ENUMERATED {supported} OPTIONAL,

 timeDurationForQCL SEQUENCE {

 scs-60kHz ENUMERATED {s7, s14, s28} OPTIONAL,

 scs-120kHz ENUMERATED {s14, s28} OPTIONAL

 } OPTIONAL,

 pdsch-ProcessingType1-DifferentTB-PerSlot SEQUENCE {

 scs-15kHz ENUMERATED {upto2, upto4, upto7} OPTIONAL,

 scs-30kHz ENUMERATED {upto2, upto4, upto7} OPTIONAL,

 scs-60kHz ENUMERATED {upto2, upto4, upto7} OPTIONAL,

 scs-120kHz ENUMERATED {upto2, upto4, upto7} OPTIONAL

 } OPTIONAL,

 dummy3 DummyA OPTIONAL,

 dummy4 SEQUENCE (SIZE (1.. maxNrofCodebooks)) OF DummyB OPTIONAL,

 dummy5 SEQUENCE (SIZE (1.. maxNrofCodebooks)) OF DummyC OPTIONAL,

 dummy6 SEQUENCE (SIZE (1.. maxNrofCodebooks)) OF DummyD OPTIONAL,

 dummy7 SEQUENCE (SIZE (1.. maxNrofCodebooks)) OF DummyE OPTIONAL

}

FeatureSetDownlink-v1540 ::= SEQUENCE {

 oneFL-DMRS-TwoAdditionalDMRS-DL ENUMERATED {supported} OPTIONAL,

 additionalDMRS-DL-Alt ENUMERATED {supported} OPTIONAL,

 twoFL-DMRS-TwoAdditionalDMRS-DL ENUMERATED {supported} OPTIONAL,

 oneFL-DMRS-ThreeAdditionalDMRS-DL ENUMERATED {supported} OPTIONAL,

 pdcch-MonitoringAnyOccasionsWithSpanGap SEQUENCE {

 scs-15kHz ENUMERATED {set1, set2, set3} OPTIONAL,

 scs-30kHz ENUMERATED {set1, set2, set3} OPTIONAL,

 scs-60kHz ENUMERATED {set1, set2, set3} OPTIONAL,

 scs-120kHz ENUMERATED {set1, set2, set3} OPTIONAL

 } OPTIONAL,

 pdsch-SeparationWithGap ENUMERATED {supported} OPTIONAL,

 pdsch-ProcessingType2 SEQUENCE {

 scs-15kHz ProcessingParameters OPTIONAL,

 scs-30kHz ProcessingParameters OPTIONAL,

 scs-60kHz ProcessingParameters OPTIONAL

 } OPTIONAL,

 pdsch-ProcessingType2-Limited SEQUENCE {

 differentTB-PerSlot-SCS-30kHz ENUMERATED {upto1, upto2, upto4, upto7}

 } OPTIONAL,

 dl-MCS-TableAlt-DynamicIndication ENUMERATED {supported} OPTIONAL

}

FeatureSetDownlink-v15a0 ::= SEQUENCE {

 supportedSRS-Resources SRS-Resources OPTIONAL

}

FeatureSetDownlink-v1610 ::= SEQUENCE {

 -- R1 22-4e/4f/4g/4h: CBG based reception for DL with unicast PDSCH(s) per slot per CC with UE processing time Capability 1

 cbgPDSCH-ProcessingType1-DifferentTB-PerSlot-r16 SEQUENCE {

 scs-15kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL,

 scs-30kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL,

 scs-60kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL,

 scs-120kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL

 } OPTIONAL,

 -- R1 22-3e/3f/3g/3h: CBG based reception for DL with unicast PDSCH(s) per slot per CC with UE processing time Capability 2

 cbgPDSCH-ProcessingType2-DifferentTB-PerSlot-r16 SEQUENCE {

 scs-15kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL,

 scs-30kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL,

 scs-60kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL,

 scs-120kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL

 } OPTIONAL,

 intraFreqDAPS-r16 SEQUENCE {

 intraFreqDiffSCS-DAPS-r16 ENUMERATED {supported} OPTIONAL,

 intraFreqAsyncDAPS-r16 ENUMERATED {supported} OPTIONAL

 } OPTIONAL,

 intraBandFreqSeparationDL-v1620 FreqSeparationClassDL-v1620 OPTIONAL,

 intraBandFreqSeparationDL-Only-r16 FreqSeparationClassDL-Only-r16 OPTIONAL,

 -- R1 11-2: Rel-16 PDCCH monitoring capability

 pdcch-Monitoring-r16 SEQUENCE {

 pdsch-ProcessingType1-r16 SEQUENCE {

 scs-15kHz-r16 PDCCH-MonitoringOccasions-r16 OPTIONAL,

 scs-30kHz-r16 PDCCH-MonitoringOccasions-r16 OPTIONAL

 } OPTIONAL,

 pdsch-ProcessingType2-r16 SEQUENCE {

 scs-15kHz-r16 PDCCH-MonitoringOccasions-r16 OPTIONAL,

 scs-30kHz-r16 PDCCH-MonitoringOccasions-r16 OPTIONAL

 } OPTIONAL

 } OPTIONAL,

 -- R1 11-2b: Mix of Rel. 16 PDCCH monitoring capability and Rel. 15 PDCCH monitoring capability on different carriers

 pdcch-MonitoringMixed-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 18-5c: Processing up to X unicast DCI scheduling for DL per scheduled CC

 crossCarrierSchedulingProcessing-DiffSCS-r16 SEQUENCE {

 scs-15kHz-120kHz-r16 ENUMERATED {n1,n2,n4} OPTIONAL,

 scs-15kHz-60kHz-r16 ENUMERATED {n1,n2,n4} OPTIONAL,

 scs-30kHz-120kHz-r16 ENUMERATED {n1,n2,n4} OPTIONAL,

 scs-15kHz-30kHz-r16 ENUMERATED {n2} OPTIONAL,

 scs-30kHz-60kHz-r16 ENUMERATED {n2} OPTIONAL,

 scs-60kHz-120kHz-r16 ENUMERATED {n2} OPTIONAL

 } OPTIONAL,

 -- R1 16-2b-1: Support of single-DCI based SDM scheme

 singleDCI-SDM-scheme-r16 ENUMERATED {supported} OPTIONAL

}

FeatureSetDownlink-v1700 ::= SEQUENCE {

 -- R1 36-2: Scaling factor to be applied to 1024QAM for FR1

 scalingFactor-1024QAM-FR1-r17 ENUMERATED {f0p4, f0p75, f0p8} OPTIONAL,

 -- R1 24 feature for existing UE cap to include new SCS

 timeDurationForQCL-v1710 SEQUENCE {

 scs-480kHz ENUMERATED {s56, s112} OPTIONAL,

 scs-960kHz ENUMERATED {s112, s224} OPTIONAL

 } OPTIONAL,

 -- R1 23-6-1 SFN scheme A (scheme 1) for PDSCH and PDCCH

 sfn-SchemeA-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-6-1-1 SFN scheme A (scheme 1) for PDCCH only

 sfn-SchemeA-PDCCH-only-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-6-1a Dynamic switching - scheme A

 sfn-SchemeA-DynamicSwitching-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-6-1b SFN scheme A (scheme 1) for PDSCH only

 sfn-SchemeA-PDSCH-only-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-6-2 SFN scheme B (TRP based pre-compensation) for PDSCH and PDCCH

 sfn-SchemeB-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-6-2a Dynamic switching - scheme B

 sfn-SchemeB-DynamicSwitching-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-6-2b SFN scheme B (TRP based pre-compensation) for PDSCH only

 sfn-SchemeB-PDSCH-only-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-2-1d PDCCH repetition for Case 2 PDCCH monitoring with a span gap

 mTRP-PDCCH-Case2-1SpanGap-r17 SEQUENCE {

 scs-15kHz-r17 PDCCH-RepetitionParameters-r17 OPTIONAL,

 scs-30kHz-r17 PDCCH-RepetitionParameters-r17 OPTIONAL,

 scs-60kHz-r17 PDCCH-RepetitionParameters-r17 OPTIONAL,

 scs-120kHz-r17 PDCCH-RepetitionParameters-r17 OPTIONAL

 } OPTIONAL,

 -- R1 23-2-1e PDCCH repetition for Rel-16 PDCCH monitoring

 mTRP-PDCCH-legacyMonitoring-r17 SEQUENCE {

 scs-15kHz-r17 PDCCH-RepetitionParameters-r17 OPTIONAL,

 scs-30kHz-r17 PDCCH-RepetitionParameters-r17 OPTIONAL

 } OPTIONAL,

 -- R1 23-2-4 Simultaneous configuration of PDCCH repetition and multi-DCI based multi-TRP

 mTRP-PDCCH-multiDCI-multiTRP-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-2: Dynamic scheduling for multicast for PCell

 dynamicMulticastPCell-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-2-1 PDCCH repetition

 mTRP-PDCCH-Repetition-r17 SEQUENCE {

 numBD-twoPDCCH-r17 INTEGER (2..3),

 maxNumOverlaps-r17 ENUMERATED {n1,n2,n3,n5,n10,n20,n40}

 } OPTIONAL

}

FeatureSetDownlink-v1720 ::= SEQUENCE {

 -- R1 25-19: RTT-based Propagation delay compensation based on CSI-RS for tracking and SRS

 rtt-BasedPDC-CSI-RS-ForTracking-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 25-19a: RTT-based Propagation delay compensation based on DL PRS for RTT-based PDC and SRS

 rtt-BasedPDC-PRS-r17 SEQUENCE {

 maxNumberPRS-Resource-r17 ENUMERATED {n1, n2, n4, n8, n16, n32, n64},

 maxNumberPRS-ResourceProcessedPerSlot-r17 SEQUENCE {

 scs-15kHz-r17 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64} OPTIONAL,

 scs-30kHz-r17 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64} OPTIONAL,

 scs-60kHz-r17 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64} OPTIONAL,

 scs-120kHz-r17 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64} OPTIONAL

 }

 } OPTIONAL,

 -- R1 33-5-1: SPS group-common PDSCH for multicast on PCell

 sps-Multicast-r17 ENUMERATED {supported} OPTIONAL

}

FeatureSetDownlink-v1730 ::= SEQUENCE {

 -- R1 25-19b: Support of PRS as spatial relation RS for SRS

 prs-AsSpatialRelationRS-For-SRS-r17 ENUMERATED {supported} OPTIONAL

}

FeatureSetDownlink-v1800 ::= SEQUENCE {

 -- R1 40-1-14a: Dynamic switching - scheme A

 dynamicSwitchingA-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-1-14b: Dynamic switching - scheme B

 dynamicSwitchingB-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-3-2-11: Aperiodic CSI report timing relaxation for doppler codebook based on Type-II codebook

 aperiodicCSI-TimeRelaxation-r18 SEQUENCE {

 valueW-r18 SEQUENCE{

 scs-15kHz ENUMERATED {value1, value2} OPTIONAL,

 scs-30kHz ENUMERATED {value1, value2} OPTIONAL,

 scs-60kHz ENUMERATED {value1, value2} OPTIONAL,

 scs-120kHz ENUMERATED {value1, value2} OPTIONAL

 },

 timeRelaxation-r18 ENUMERATED {cap1, cap2}

 } OPTIONAL,

 -- R1 40-4-1: Basic feature of Rel.18 enhanced DMRS ports for PDSCH for scheduling of mapping type A

 pdsch-TypeA-DMRS-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1a: Basic feature of Rel.18 enhanced DMRS ports for PDSCH for scheduling of mapping type B

 pdsch-TypeB-DMRS-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1b: 1 symbol FL DMRS and 2 additional DMRS symbols for more than one port for Rel.18 enhanced DMRS ports for PDSCH

 pdsch-1SymbolFL-DMRS-Addition2Symbol-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1c: Alternative additional DMRS position for co-existence with LTE CRS for Rel.18 enhanced DMRS ports for PDSCH

 pdsch-AlternativeDMRS-Coexistence-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1d: 2 symbols FL-DMRS for Rel.18 enhanced DMRS ports for PDSCH

 pdsch-2SymbolFL-DMRS-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1e: 2-symbol FL DMRS + one additional 2-symbols DMRS for Rel.18 enhanced DMRS ports for PDSCH

 pdsch-2SymbolFL-DMRS-Addition2Symbol-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1f: 1 symbol FL DMRS and 3 additional DMRS symbols for Rel.18 enhanced DMRS ports for PDSCH

 pdsch-1SymbolFL-DMRS-Addition3Symbol-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1g: DMRS type for Rel.18 enhanced DMRS ports for PDSCH

 pdsch-DMRS-Type-r18 ENUMERATED {etype1, etype1And2} OPTIONAL,

 -- R1 40-4-1h: 1 port DL PTRS for Rel.18 enhanced DMRS ports for PDSCH with rank 1-8

 pdsch-1PortDL-PTRS-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1i: 2 port DL PTRS for Rel.18 enhanced DMRS ports for PDSCH with rank 1-8

 pdsch-2PortDL-PTRS-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1j: Support 1 symbol FL DMRS and 2 additional DMRS symbols for one port for scheduling of mapping type A

 mappingTypeA-1SymbolFL-DMRS-Addition2Symbol-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-2: Capability on the maximum number of configured DMRS types for PDSCH across all DL DCI formats per cell

 maxNumberDMRS-AcrossAllDL-DCI-r18 INTEGER (2..4) OPTIONAL,

 -- R1 40-4-4: Reception of PDSCH without the scheduling restriction for Rel.18 eType1 DMRS ports

 pdsch-ReceptionWithoutSchedulingRestriction-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-4a: Reception of PDSCH without the scheduling restriction for Rel.18 eType1 DMRS ports for PDSCH with fdmSchemeA

 pdsch-ReceptionSchemeA-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-4b: Reception of PDSCH without the scheduling restriction for Rel.18 eType1 DMRS ports for PDSCH with fdmSchemeB

 pdsch-ReceptionSchemeB-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-5: Rel-18 DL DMRS with single DCI based M-TRP

 dmrs-MultiTRP-SingleDCI-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-5a: Additional row(s) for antenna ports (0,2,3) for Rel.18 DL DMRS ports for single-DCI based M-TRP

 dmrs-MultiTRP-AdditionRows-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-7: Rel-18 DL DMRS with M-DCI based M-TRP

 dmrs-MultiTRP-MultiDCI-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-12: Support of Rel-18 DMRS and PDSCH processing capability 2 simultaneously

 simulDMRS-PDSCH-r18 SEQUENCE {

 scs-15kHz-r18 INTEGER (0..4) OPTIONAL,

 scs-30kHz-r18 INTEGER (0..5) OPTIONAL,

 scs-60kHz-r18 INTEGER (0..7) OPTIONAL

 } OPTIONAL,

 -- R1 53-1: Support RLM/BM/BFD and gapless L3 intra-frequency measurements based on CD-SSB outside active BWP without interruptions

 bwpOperationMeasWithoutInterrupt-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 55-6: (2, 2) span-based PDCCH monitoring with additional restriction(s)

 pdcch-MonitoringSpan2-2-r18 SEQUENCE{

 pdsch-ProcessingType1-r18 SEQUENCE{

 scs-15kHz-r18 ENUMERATED {supported} OPTIONAL,

 scs-30kHz-r18 ENUMERATED {supported} OPTIONAL

 },

 pdsch-ProcessingType2-r18 SEQUENCE{

 scs-15kHz-r18 ENUMERATED {supported} OPTIONAL,

 scs-30kHz-r18 ENUMERATED {supported} OPTIONAL

 }

 } OPTIONAL,

 -- R1 55-6b: Mix of Rel-16 PDCCH monitoring capability and Rel. 15 PDCCH monitoring capability on different carriers

 pdcch-MonitoringMixed-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 55-6h: PDCCH repetition for Rel-16 PDCCH monitoring

 mTRP-PDCCH-legacyMonitoring-r18 SEQUENCE {

 scs-15kHz-r18 PDCCH-RepetitionParameters-r17 OPTIONAL,

 scs-30kHz-r18 PDCCH-RepetitionParameters-r17 OPTIONAL

 } OPTIONAL,

 -- R4 42-1: Support of SCell without SS/PBCH block for inter-band CA

 scellWithoutSSB-InterBandCA-r18 CHOICE {

 supportOfSingleGroup ENUMERATED {referenceBand, scellWithoutSSB, both},

 supportOfMultipleGroups ENUMERATED {referenceBand1, scellWithoutSSB1, referenceBand2, scellWithoutSSB2}

 } OPTIONAL,

 dummy SEQUENCE (SIZE (1..maxBandsMRDC)) OF Dummy-PDCCH-RACH-DL-Info-r18 OPTIONAL

}

FeatureSetDownlink-v1830 ::= SEQUENCE {

 -- R4 39-4: Interruption on DL slot(s) due to PDCCH- ordered RACH transmission

 pdcch-RACH-AffectedBandsList-r18 SEQUENCE (SIZE (1..maxBandsMRDC)) OF ENUMERATED {noInterruption, interruption} OPTIONAL,

 -- R4 39-4a: Interruption due to RF retuning for PDCCH- ordered RACH

 pdcch-RACH-SwitchingTimeList-r18 SEQUENCE (SIZE (1..maxBandsMRDC)) OF ENUMERATED {ms0, ms0dot25, ms0dot5, ms1, ms2, notSupported} OPTIONAL,

 -- R4 39-5: the RF/BB preparation time for PDCCH ordered RACH of which the resources are not fully contained

 -- in any of UE's configured UL BWP(s) of active serving cells

 pdcch-RACH-PrepTimeList-r18 SEQUENCE (SIZE (1..maxBandsMRDC)) OF ENUMERATED {ms1, ms3, ms5, ms10, notSupported} OPTIONAL

}

PDCCH-MonitoringOccasions-r16 ::= SEQUENCE {

 period7span3-r16 ENUMERATED {supported} OPTIONAL,

 period4span3-r16 ENUMERATED {supported} OPTIONAL,

 period2span2-r16 ENUMERATED {supported} OPTIONAL

}

PDCCH-RepetitionParameters-r17 ::= SEQUENCE {

 supportedMode-r17 ENUMERATED {intra-span, inter-span, both},

 limitX-PerCC-r17 ENUMERATED {n4, n8, n16, n32, n44, n64, nolimit} OPTIONAL,

 limitX-AcrossCC-r17 ENUMERATED {n4, n8, n16, n32, n44, n64, n128, n256, n512, nolimit} OPTIONAL

}

DummyA ::= SEQUENCE {

 maxNumberNZP-CSI-RS-PerCC INTEGER (1..32),

 maxNumberPortsAcrossNZP-CSI-RS-PerCC ENUMERATED {p2, p4, p8, p12, p16, p24, p32, p40, p48, p56, p64, p72, p80,

 p88, p96, p104, p112, p120, p128, p136, p144, p152, p160, p168,

 p176, p184, p192, p200, p208, p216, p224, p232, p240, p248, p256},

 maxNumberCS-IM-PerCC ENUMERATED {n1, n2, n4, n8, n16, n32},

 maxNumberSimultaneousCSI-RS-ActBWP-AllCC ENUMERATED {n5, n6, n7, n8, n9, n10, n12, n14, n16, n18, n20, n22, n24, n26,

 n28, n30, n32, n34, n36, n38, n40, n42, n44, n46, n48, n50, n52,

 n54, n56, n58, n60, n62, n64},

 totalNumberPortsSimultaneousCSI-RS-ActBWP-AllCC ENUMERATED {p8, p12, p16, p24, p32, p40, p48, p56, p64, p72, p80,

 p88, p96, p104, p112, p120, p128, p136, p144, p152, p160, p168,

 p176, p184, p192, p200, p208, p216, p224, p232, p240, p248, p256}

}

DummyB ::= SEQUENCE {

 maxNumberTxPortsPerResource ENUMERATED {p2, p4, p8, p12, p16, p24, p32},

 maxNumberResources INTEGER (1..64),

 totalNumberTxPorts INTEGER (2..256),

 supportedCodebookMode ENUMERATED {mode1, mode1AndMode2},

 maxNumberCSI-RS-PerResourceSet INTEGER (1..8)

}

DummyC ::= SEQUENCE {

 maxNumberTxPortsPerResource ENUMERATED {p8, p16, p32},

 maxNumberResources INTEGER (1..64),

 totalNumberTxPorts INTEGER (2..256),

 supportedCodebookMode ENUMERATED {mode1, mode2, both},

 supportedNumberPanels ENUMERATED {n2, n4},

 maxNumberCSI-RS-PerResourceSet INTEGER (1..8)

}

DummyD ::= SEQUENCE {

 maxNumberTxPortsPerResource ENUMERATED {p4, p8, p12, p16, p24, p32},

 maxNumberResources INTEGER (1..64),

 totalNumberTxPorts INTEGER (2..256),

 parameterLx INTEGER (2..4),

 amplitudeScalingType ENUMERATED {wideband, widebandAndSubband},

 amplitudeSubsetRestriction ENUMERATED {supported} OPTIONAL,

 maxNumberCSI-RS-PerResourceSet INTEGER (1..8)

}

DummyE ::= SEQUENCE {

 maxNumberTxPortsPerResource ENUMERATED {p4, p8, p12, p16, p24, p32},

 maxNumberResources INTEGER (1..64),

 totalNumberTxPorts INTEGER (2..256),

 parameterLx INTEGER (2..4),

 amplitudeScalingType ENUMERATED {wideband, widebandAndSubband},

 maxNumberCSI-RS-PerResourceSet INTEGER (1..8)

}

Dummy-PDCCH-RACH-DL-Info-r18 ::= CHOICE {

 notSupported NULL,

 supported SEQUENCE {

 -- R4 39-4: Interruption on DL slot(s) due to PDCCH- ordered RACH transmission

 pdcch-RACH-AffectedBands-r18 ENUMERATED {noIntrruption, interruption},

 -- R4 39-4a: Interruption on DL slot(s) due to PDCCH- ordered RACH transmission

 pdcch-RACH-SwitchingTimeList-r18 ENUMERATED {ms0, ms0dot25, ms0dot5 , ms1, ms2} OPTIONAL,

 -- R4 39-5: the RF/BB preparation time for PDCCH ordered RACH of which the resources are not fully contained

 -- in any of UE's configured UL BWP(s) of active serving cells

 pdcch-RACH-PrepTime-r18 ENUMERATED {ms1, ms3, ms5, ms10} OPTIONAL

 }

}

-- TAG-FEATURESETDOWNLINK-STOP

-- ASN1STOP

|  |
| --- |
| *FeatureSetDownlink* field descriptions |
| ***featureSetListPerDownlinkCC***Indicates which features the UE supports on the individual DL carriers of the feature set (and hence of a band entry that refer to the feature set). The UE shall hence include at least as many *FeatureSetDownlinkPerCC-Id* in this list as the number of carriers it supports according to the *ca-BandwidthClassDL*, except if indicating additional functionality by reducing the number of *FeatureSetDownlinkPerCC-Id* in the feature set (see NOTE 1 in *FeatureSetCombination* IE description). The order of the elements in this list is not relevant, i.e., the network may configure any of the carriers in accordance with any of the *FeatureSetDownlinkPerCC-Id* in this list. |
| ***supportedSRS-Resources***Indicates supported SRS resources for SRS carrier switching to the band associated with this *FeatureSetDownlink*. The UE is only allowed to set this field for a band with associated *FeatureSetUplinkId* set to 0. |

<cut>

#### – *PosSRS-TxFrequencyHoppingRRC-Inactive*

The IE *PosSRS-TxFrequencyHoppingRRC-Inactive* is used to convey the capabilities supported by the RRC\_INACTIVE UE for support of positioning SRS with Tx frequency hopping for RedCap UEs.

*PosSRS-TxFrequencyHoppingRRC-Inactive* information element

-- ASN1START

-- TAG-POSSRS-TXFREQUENCYHOPPINGRRCINACTIVE-START

PosSRS-TxFrequencyHoppingRRC-Inactive-r18 ::= SEQUENCE {

 maximumSRS-BandwidthAcrossAllHopsFR1-r18 ENUMERATED {mhz40, mhz50, mhz80, mhz100} OPTIONAL,

 maximumSRS-BandwidthAcrossAllHopsFR2-r18 ENUMERATED {mhz100, mhz200, mhz400} OPTIONAL,

 maximumTxFH-Hops-r18 ENUMERATED {n2, n3, n4, n5, n6} OPTIONAL,

 rf-TxRetuneTimeFR1-r18 ENUMERATED {n70, n140, n210} OPTIONAL,

 rf-TxRetuneTimeFR2-r18 ENUMERATED {n35, n70, n140} OPTIONAL,

 switchTimeBetweenActiveBWP-FrequencyHop-r18 ENUMERATED {n100, n140, n200, n300, n500} OPTIONAL,

 numOfOverlappingPRB-r18 ENUMERATED {n0, n1, n2, n4} OPTIONAL,

 maximumSRS-Resource-Periodic-r18 ENUMERATED {n1, n2, n4, n8, n16, n32, n64} OPTIONAL,

 maximumSRS-Resource-Semipersistent-r18 ENUMERATED {n0, n1, n2, n4, n8, n16, n32, n64} OPTIONAL,

 ...

}

-- TAG-POSSRS-TXFREQUENCYHOPPINGRRCINACTIVE-STOP

-- ASN1STOP

#### – *RF-Parameters*

The IE *RF-Parameters* is used to convey RF-related capabilities for NR operation.

*RF-Parameters* information element

-- ASN1START

-- TAG-RF-PARAMETERS-START

RF-Parameters ::= SEQUENCE {

 supportedBandListNR SEQUENCE (SIZE (1..maxBands)) OF BandNR,

 supportedBandCombinationList BandCombinationList OPTIONAL,

 appliedFreqBandListFilter FreqBandList OPTIONAL,

 ...,

 [[

 supportedBandCombinationList-v1540 BandCombinationList-v1540 OPTIONAL,

 srs-SwitchingTimeRequested ENUMERATED {true} OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1550 BandCombinationList-v1550 OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1560 BandCombinationList-v1560 OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1610 BandCombinationList-v1610 OPTIONAL,

 supportedBandCombinationListSidelinkEUTRA-NR-r16 BandCombinationListSidelinkEUTRA-NR-r16 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-r16 BandCombinationList-UplinkTxSwitch-r16 OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1630 BandCombinationList-v1630 OPTIONAL,

 supportedBandCombinationListSidelinkEUTRA-NR-v1630 BandCombinationListSidelinkEUTRA-NR-v1630 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v1630 BandCombinationList-UplinkTxSwitch-v1630 OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1640 BandCombinationList-v1640 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v1640 BandCombinationList-UplinkTxSwitch-v1640 OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1650 BandCombinationList-v1650 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v1650 BandCombinationList-UplinkTxSwitch-v1650 OPTIONAL

 ]],

 [[

 extendedBand-n77-r16 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 supportedBandCombinationList-UplinkTxSwitch-v1670 BandCombinationList-UplinkTxSwitch-v1670 OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1680 BandCombinationList-v1680 OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1690 BandCombinationList-v1690 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v1690 BandCombinationList-UplinkTxSwitch-v1690 OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1700 BandCombinationList-v1700 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v1700 BandCombinationList-UplinkTxSwitch-v1700 OPTIONAL,

 supportedBandCombinationListSL-RelayDiscovery-r17 OCTET STRING OPTIONAL, -- Contains PC5 BandCombinationListSidelinkNR-r16

 supportedBandCombinationListSL-NonRelayDiscovery-r17 OCTET STRING OPTIONAL, -- Contains PC5 BandCombinationListSidelinkNR-r16

 supportedBandCombinationListSidelinkEUTRA-NR-v1710 BandCombinationListSidelinkEUTRA-NR-v1710 OPTIONAL,

 sidelinkRequested-r17 ENUMERATED {true} OPTIONAL,

 extendedBand-n77-2-r17 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1720 BandCombinationList-v1720 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v1720 BandCombinationList-UplinkTxSwitch-v1720 OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1730 BandCombinationList-v1730 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v1730 BandCombinationList-UplinkTxSwitch-v1730 OPTIONAL,

 supportedBandCombinationListSL-RelayDiscovery-v1730 BandCombinationListSL-Discovery-r17 OPTIONAL,

 supportedBandCombinationListSL-NonRelayDiscovery-v1730 BandCombinationListSL-Discovery-r17 OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1740 BandCombinationList-v1740 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v1740 BandCombinationList-UplinkTxSwitch-v1740 OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1760 BandCombinationList-v1760 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v1760 BandCombinationList-UplinkTxSwitch-v1760 OPTIONAL

 ]],

 [[

 dummy1 BandCombinationList-v1770 OPTIONAL,

 dummy2 BandCombinationList-UplinkTxSwitch-v1770 OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1780 BandCombinationList-v1780 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v1780 BandCombinationList-UplinkTxSwitch-v1780 OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1800 BandCombinationList-v1800 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v1800 BandCombinationList-UplinkTxSwitch-v1800 OPTIONAL,

 supportedBandCombinationListSL-U2U-Relay-r18 SEQUENCE {

 supportedBandCombinationListSL-U2U-RelayDiscovery-r18 OCTET STRING OPTIONAL, -- Contains PC5

 -- BandCombinationListSidelinkNR-r16

 supportedBandCombinationListSL-U2U-DiscoveryExt BandCombinationListSL-Discovery-r17 OPTIONAL

 } OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1830 BandCombinationList-v1830 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v1830 BandCombinationList-UplinkTxSwitch-v1830 OPTIONAL

 ]],

 [[

 supportedBandCombinationList-v1840 BandCombinationList-v1840 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v1840 BandCombinationList-UplinkTxSwitch-v1840 OPTIONAL

 ]]

}

RF-Parameters-v15g0 ::= SEQUENCE {

 supportedBandCombinationList-v15g0 BandCombinationList-v15g0 OPTIONAL

}

RF-Parameters-v16a0 ::= SEQUENCE {

 supportedBandCombinationList-v16a0 BandCombinationList-v16a0 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v16a0 BandCombinationList-UplinkTxSwitch-v16a0 OPTIONAL

}

RF-Parameters-v16c0 ::= SEQUENCE {

 supportedBandListNR-v16c0 SEQUENCE (SIZE (1..maxBands)) OF BandNR-v16c0

}

RF-Parameters-v16j0 ::= SEQUENCE {

 supportedBandCombinationList-v16j0 BandCombinationList-v16j0 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v16j0 BandCombinationList-UplinkTxSwitch-v16j0 OPTIONAL

}

RF-Parameters-v17b0 ::= SEQUENCE {

 supportedBandListNR-v17b0 SEQUENCE (SIZE (1..maxBands)) OF BandNR-v17b0 OPTIONAL,

 supportedBandCombinationList-v17b0 BandCombinationList-v17b0 OPTIONAL,

 supportedBandCombinationList-UplinkTxSwitch-v17b0 BandCombinationList-UplinkTxSwitch-v17b0 OPTIONAL

}

BandNR ::= SEQUENCE {

 bandNR FreqBandIndicatorNR,

 modifiedMPR-Behaviour BIT STRING (SIZE (8)) OPTIONAL,

 mimo-ParametersPerBand MIMO-ParametersPerBand OPTIONAL,

 extendedCP ENUMERATED {supported} OPTIONAL,

 multipleTCI ENUMERATED {supported} OPTIONAL,

 bwp-WithoutRestriction ENUMERATED {supported} OPTIONAL,

 bwp-SameNumerology ENUMERATED {upto2, upto4} OPTIONAL,

 bwp-DiffNumerology ENUMERATED {upto4} OPTIONAL,

 crossCarrierScheduling-SameSCS ENUMERATED {supported} OPTIONAL,

 pdsch-256QAM-FR2 ENUMERATED {supported} OPTIONAL,

 pusch-256QAM ENUMERATED {supported} OPTIONAL,

 ue-PowerClass ENUMERATED {pc1, pc2, pc3, pc4} OPTIONAL,

 rateMatchingLTE-CRS ENUMERATED {supported} OPTIONAL,

 channelBWs-DL CHOICE {

 fr1 SEQUENCE {

 scs-15kHz BIT STRING (SIZE (10)) OPTIONAL,

 scs-30kHz BIT STRING (SIZE (10)) OPTIONAL,

 scs-60kHz BIT STRING (SIZE (10)) OPTIONAL

 },

 fr2 SEQUENCE {

 scs-60kHz BIT STRING (SIZE (3)) OPTIONAL,

 scs-120kHz BIT STRING (SIZE (3)) OPTIONAL

 }

 } OPTIONAL,

 channelBWs-UL CHOICE {

 fr1 SEQUENCE {

 scs-15kHz BIT STRING (SIZE (10)) OPTIONAL,

 scs-30kHz BIT STRING (SIZE (10)) OPTIONAL,

 scs-60kHz BIT STRING (SIZE (10)) OPTIONAL

 },

 fr2 SEQUENCE {

 scs-60kHz BIT STRING (SIZE (3)) OPTIONAL,

 scs-120kHz BIT STRING (SIZE (3)) OPTIONAL

 }

 } OPTIONAL,

 ...,

 [[

 maxUplinkDutyCycle-PC2-FR1 ENUMERATED {n60, n70, n80, n90, n100} OPTIONAL

 ]],

 [[

 pucch-SpatialRelInfoMAC-CE ENUMERATED {supported} OPTIONAL,

 powerBoosting-pi2BPSK ENUMERATED {supported} OPTIONAL

 ]],

 [[

 maxUplinkDutyCycle-FR2 ENUMERATED {n15, n20, n25, n30, n40, n50, n60, n70, n80, n90, n100} OPTIONAL

 ]],

 [[

 channelBWs-DL-v1590 CHOICE {

 fr1 SEQUENCE {

 scs-15kHz BIT STRING (SIZE (16)) OPTIONAL,

 scs-30kHz BIT STRING (SIZE (16)) OPTIONAL,

 scs-60kHz BIT STRING (SIZE (16)) OPTIONAL

 },

 fr2 SEQUENCE {

 scs-60kHz BIT STRING (SIZE (8)) OPTIONAL,

 scs-120kHz BIT STRING (SIZE (8)) OPTIONAL

 }

 } OPTIONAL,

 channelBWs-UL-v1590 CHOICE {

 fr1 SEQUENCE {

 scs-15kHz BIT STRING (SIZE (16)) OPTIONAL,

 scs-30kHz BIT STRING (SIZE (16)) OPTIONAL,

 scs-60kHz BIT STRING (SIZE (16)) OPTIONAL

 },

 fr2 SEQUENCE {

 scs-60kHz BIT STRING (SIZE (8)) OPTIONAL,

 scs-120kHz BIT STRING (SIZE (8)) OPTIONAL

 }

 } OPTIONAL

 ]],

 [[

 asymmetricBandwidthCombinationSet BIT STRING (SIZE (1..32)) OPTIONAL

 ]],

 [[

 -- R1 10: NR-unlicensed

 sharedSpectrumChAccessParamsPerBand-r16 SharedSpectrumChAccessParamsPerBand-r16 OPTIONAL,

 -- R1 11-7b: Independent cancellation of the overlapping PUSCHs in an intra-band UL CA

 cancelOverlappingPUSCH-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 14-1: Multiple LTE-CRS rate matching patterns

 multipleRateMatchingEUTRA-CRS-r16 SEQUENCE {

 maxNumberPatterns-r16 INTEGER (2..6),

 maxNumberNon-OverlapPatterns-r16 INTEGER (1..3)

 } OPTIONAL,

 -- R1 14-1a: Two LTE-CRS overlapping rate matching patterns within a part of NR carrier using 15 kHz overlapping with a LTE carrier

 overlapRateMatchingEUTRA-CRS-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 14-2: PDSCH Type B mapping of length 9 and 10 OFDM symbols

 pdsch-MappingTypeB-Alt-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 14-3: One slot periodic TRS configuration for FR1

 oneSlotPeriodicTRS-r16 ENUMERATED {supported} OPTIONAL,

 olpc-SRS-Pos-r16 OLPC-SRS-Pos-r16 OPTIONAL,

 spatialRelationsSRS-Pos-r16 SpatialRelationsSRS-Pos-r16 OPTIONAL,

 simulSRS-MIMO-TransWithinBand-r16 ENUMERATED {n2} OPTIONAL,

 channelBW-DL-IAB-r16 CHOICE {

 fr1-100mhz SEQUENCE {

 scs-15kHz ENUMERATED {supported} OPTIONAL,

 scs-30kHz ENUMERATED {supported} OPTIONAL,

 scs-60kHz ENUMERATED {supported} OPTIONAL

 },

 fr2-200mhz SEQUENCE {

 scs-60kHz ENUMERATED {supported} OPTIONAL,

 scs-120kHz ENUMERATED {supported} OPTIONAL

 }

 } OPTIONAL,

 channelBW-UL-IAB-r16 CHOICE {

 fr1-100mhz SEQUENCE {

 scs-15kHz ENUMERATED {supported} OPTIONAL,

 scs-30kHz ENUMERATED {supported} OPTIONAL,

 scs-60kHz ENUMERATED {supported} OPTIONAL

 },

 fr2-200mhz SEQUENCE {

 scs-60kHz ENUMERATED {supported} OPTIONAL,

 scs-120kHz ENUMERATED {supported} OPTIONAL

 }

 } OPTIONAL,

 rasterShift7dot5-IAB-r16 ENUMERATED {supported} OPTIONAL,

 ue-PowerClass-v1610 ENUMERATED {pc1dot5} OPTIONAL,

 condHandover-r16 ENUMERATED {supported} OPTIONAL,

 condHandoverFailure-r16 ENUMERATED {supported} OPTIONAL,

 condHandoverTwoTriggerEvents-r16 ENUMERATED {supported} OPTIONAL,

 condPSCellChange-r16 ENUMERATED {supported} OPTIONAL,

 condPSCellChangeTwoTriggerEvents-r16 ENUMERATED {supported} OPTIONAL,

 mpr-PowerBoost-FR2-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 11-9: Multiple active configured grant configurations for a BWP of a serving cell

 activeConfiguredGrant-r16 SEQUENCE {

 maxNumberConfigsPerBWP-r16 ENUMERATED {n1, n2, n4, n8, n12},

 maxNumberConfigsAllCC-r16 INTEGER (2..32)

 } OPTIONAL,

 -- R1 11-9a: Joint release in a DCI for two or more configured grant Type 2 configurations for a given BWP of a serving cell

 jointReleaseConfiguredGrantType2-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 12-2: Multiple SPS configurations

 sps-r16 SEQUENCE {

 maxNumberConfigsPerBWP-r16 INTEGER (1..8),

 maxNumberConfigsAllCC-r16 INTEGER (2..32)

 } OPTIONAL,

 -- R1 12-2a: Joint release in a DCI for two or more SPS configurations for a given BWP of a serving cell

 jointReleaseSPS-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 13-19: Simultaneous positioning SRS and MIMO SRS transmission within a band across multiple CCs

 simulSRS-TransWithinBand-r16 ENUMERATED {n2} OPTIONAL,

 trs-AdditionalBandwidth-r16 ENUMERATED {trs-AddBW-Set1, trs-AddBW-Set2} OPTIONAL,

 handoverIntraF-IAB-r16 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 -- R1 22-5a: Simultaneous transmission of SRS for antenna switching and SRS for CB/NCB /BM for intra-band UL CA

 -- R1 22-5c: Simultaneous transmission of SRS for antenna switching and SRS for antenna switching for intra-band UL CA

 simulTX-SRS-AntSwitchingIntraBandUL-CA-r16 SimulSRS-ForAntennaSwitching-r16 OPTIONAL,

 -- R1 10: NR-unlicensed

 sharedSpectrumChAccessParamsPerBand-v1630 SharedSpectrumChAccessParamsPerBand-v1630 OPTIONAL

 ]],

 [[

 handoverUTRA-FDD-r16 ENUMERATED {supported} OPTIONAL,

 -- R4 7-4: Report the shorter transient capability supported by the UE: 2, 4 or 7us

 enhancedUL-TransientPeriod-r16 ENUMERATED {us2, us4, us7} OPTIONAL,

 sharedSpectrumChAccessParamsPerBand-v1640 SharedSpectrumChAccessParamsPerBand-v1640 OPTIONAL

 ]],

 [[

 type1-PUSCH-RepetitionMultiSlots-v1650 ENUMERATED {supported} OPTIONAL,

 type2-PUSCH-RepetitionMultiSlots-v1650 ENUMERATED {supported} OPTIONAL,

 pusch-RepetitionMultiSlots-v1650 ENUMERATED {supported} OPTIONAL,

 configuredUL-GrantType1-v1650 ENUMERATED {supported} OPTIONAL,

 configuredUL-GrantType2-v1650 ENUMERATED {supported} OPTIONAL,

 sharedSpectrumChAccessParamsPerBand-v1650 SharedSpectrumChAccessParamsPerBand-v1650 OPTIONAL

 ]],

 [[

 enhancedSkipUplinkTxConfigured-v1660 ENUMERATED {supported} OPTIONAL,

 enhancedSkipUplinkTxDynamic-v1660 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 maxUplinkDutyCycle-PC1dot5-MPE-FR1-r16 ENUMERATED {n10, n15, n20, n25, n30, n40, n50, n60, n70, n80, n90, n100} OPTIONAL,

 txDiversity-r16 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 -- R1 36-1: Support of 1024QAM for PDSCH for FR1

 pdsch-1024QAM-FR1-r17 ENUMERATED {supported} OPTIONAL,

 -- R4 22-1 support of FR2 HST operation

 ue-PowerClass-v1700 ENUMERATED {pc5, pc6, pc7} OPTIONAL,

 -- R1 24: NR extension to 71GHz (FR2-2)

 fr2-2-AccessParamsPerBand-r17 FR2-2-AccessParamsPerBand-r17 OPTIONAL,

 rlm-Relaxation-r17 ENUMERATED {supported} OPTIONAL,

 bfd-Relaxation-r17 ENUMERATED {supported} OPTIONAL,

 cg-SDT-r17 ENUMERATED {supported} OPTIONAL,

 locationBasedCondHandover-r17 ENUMERATED {supported} OPTIONAL,

 timeBasedCondHandover-r17 ENUMERATED {supported} OPTIONAL,

 eventA4BasedCondHandover-r17 ENUMERATED {supported} OPTIONAL,

 mn-InitiatedCondPSCellChangeNRDC-r17 ENUMERATED {supported} OPTIONAL,

 sn-InitiatedCondPSCellChangeNRDC-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 29-3a: PDCCH skipping

 pdcch-SkippingWithoutSSSG-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 29-3b: 2 search space sets group switching

 sssg-Switching-1BitInd-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 29-3c: 3 search space sets group switching

 sssg-Switching-2BitInd-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 29-3d: 2 search space sets group switching with PDCCH skipping

 pdcch-SkippingWithSSSG-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 29-3e: Support Search space set group switching capability 2 for FR1

 searchSpaceSetGrp-switchCap2-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 26-1: Uplink Time and Frequency pre-compensation and timing relationship enhancements

 uplinkPreCompensation-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 26-4: UE reporting of information related to TA pre-compensation

 uplink-TA-Reporting-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 26-5: Increasing the number of HARQ processes

 max-HARQ-ProcessNumber-r17 ENUMERATED {u16d32, u32d16, u32d32} OPTIONAL,

 -- R1 26-6: Type-2 HARQ codebook enhancement

 type2-HARQ-Codebook-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 26-6a: Type-1 HARQ codebook enhancement

 type1-HARQ-Codebook-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 26-6b: Type-3 HARQ codebook enhancement

 type3-HARQ-Codebook-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 26-9: UE-specific K\_offset

 ue-specific-K-Offset-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 24-1f: Multiple PDSCH scheduling by single DCI for 120kHz in FR2-1

 multiPDSCH-SingleDCI-FR2-1-SCS-120kHz-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 24-1g: Multiple PUSCH scheduling by single DCI for 120kHz in FR2-1

 multiPUSCH-SingleDCI-FR2-1-SCS-120kHz-r17 ENUMERATED {supported} OPTIONAL,

 -- R4 14-4: Parallel PRS measurements in RRC\_INACTIVE state, FR1/FR2 diff

 parallelPRS-MeasRRC-Inactive-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 27-1-2: Support of UE-TxTEGs for UL TDOA

 nr-UE-TxTEG-ID-MaxSupport-r17 ENUMERATED {n1, n2, n3, n4, n6, n8} OPTIONAL,

 -- R1 27-17: PRS processing in RRC\_INACTIVE

 prs-ProcessingRRC-Inactive-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 27-3-2: DL PRS measurement outside MG and in a PRS processing window

 prs-ProcessingWindowType1A-r17 ENUMERATED {option1, option2, option3} OPTIONAL,

 prs-ProcessingWindowType1B-r17 ENUMERATED {option1, option2, option3} OPTIONAL,

 prs-ProcessingWindowType2-r17 ENUMERATED {option1, option2, option3} OPTIONAL,

 -- R1 27-15: Positioning SRS transmission in RRC\_INACTIVE state for initial UL BWP

 srs-AllPosResourcesRRC-Inactive-r17 SRS-AllPosResourcesRRC-Inactive-r17 OPTIONAL,

 -- R1 27-16: OLPC for positioning SRS in RRC\_INACTIVE state - gNB

 olpc-SRS-PosRRC-Inactive-r17 OLPC-SRS-Pos-r16 OPTIONAL,

 -- R1 27-19: Spatial relation for positioning SRS in RRC\_INACTIVE state - gNB

 spatialRelationsSRS-PosRRC-Inactive-r17 SpatialRelationsSRS-Pos-r16 OPTIONAL,

 -- R1 30-1: Increased maximum number of PUSCH Type A repetitions

 maxNumberPUSCH-TypeA-Repetition-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-2: PUSCH Type A repetitions based on available slots

 puschTypeA-RepetitionsAvailSlot-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-3: TB processing over multi-slot PUSCH

 tb-ProcessingMultiSlotPUSCH-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-3a: Repetition of TB processing over multi-slot PUSCH

 tb-ProcessingRepMultiSlotPUSCH-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-4: The maximum duration for DM-RS bundling

 maxDurationDMRS-Bundling-r17 SEQUENCE {

 fdd-r17 ENUMERATED {n4, n8, n16, n32} OPTIONAL,

 tdd-r17 ENUMERATED {n2, n4, n8, n16} OPTIONAL

 } OPTIONAL,

 -- R1 30-6: Repetition of PUSCH transmission scheduled by RAR UL grant and DCI format 0\_0 with CRC scrambled by TC-RNTI

 pusch-RepetitionMsg3-r17 ENUMERATED {supported} OPTIONAL,

 sharedSpectrumChAccessParamsPerBand-v1710 SharedSpectrumChAccessParamsPerBand-v1710 OPTIONAL,

 -- R4 25-2: Parallel measurements on cells belonging to a different NGSO satellite than a serving satellite without scheduling restrictions

 -- on normal operations with the serving cell

 parallelMeasurementWithoutRestriction-r17 ENUMERATED {supported} OPTIONAL,

 -- R4 25-5: Parallel measurements on multiple NGSO satellites within a SMTC

 maxNumber-NGSO-SatellitesWithinOneSMTC-r17 ENUMERATED {n1, n2, n3, n4} OPTIONAL,

 -- R1 26-10: K1 range extension

 k1-RangeExtension-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 35-1: Aperiodic CSI-RS for tracking for fast SCell activation

 aperiodicCSI-RS-FastScellActivation-r17 SEQUENCE {

 maxNumberAperiodicCSI-RS-PerCC-r17 ENUMERATED {n8, n16, n32, n48, n64, n128, n255},

 maxNumberAperiodicCSI-RS-AcrossCCs-r17 ENUMERATED {n8, n16, n32, n64, n128, n256, n512, n1024}

 } OPTIONAL,

 -- R1 35-2: Aperiodic CSI-RS bandwidth for tracking for fast SCell activation for 10MHz UE channel bandwidth

 aperiodicCSI-RS-AdditionalBandwidth-r17 ENUMERATED {addBW-Set1, addBW-Set2} OPTIONAL,

 -- R1 28-1a: RRC-configured DL BWP without CD-SSB or NCD-SSB

 bwp-WithoutCD-SSB-OrNCD-SSB-RedCap-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 28-3: Half-duplex FDD operation type A for (e)RedCap UE

 halfDuplexFDD-TypeA-RedCap-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 27-15b: Positioning SRS transmission in RRC\_INACTIVE state configured outside initial UL BWP

 posSRS-RRC-Inactive-OutsideInitialUL-BWP-r17 PosSRS-RRC-Inactive-OutsideInitialUL-BWP-r17 OPTIONAL,

 -- R4 15-3 UE support of CBW for 480kHz SCS

 channelBWs-DL-SCS-480kHz-FR2-2-r17 BIT STRING (SIZE (8)) OPTIONAL,

 channelBWs-UL-SCS-480kHz-FR2-2-r17 BIT STRING (SIZE (8)) OPTIONAL,

 -- R4 15-4 UE support of CBW for 960kHz SCS

 channelBWs-DL-SCS-960kHz-FR2-2-r17 BIT STRING (SIZE (8)) OPTIONAL,

 channelBWs-UL-SCS-960kHz-FR2-2-r17 BIT STRING (SIZE (8)) OPTIONAL,

 -- R4 17-1 UL gap for Tx power management

 ul-GapFR2-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 25-4: One-shot HARQ ACK feedback triggered by DCI format 1\_2

 oneShotHARQ-feedbackTriggeredByDCI-1-2-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 25-5: PHY priority handling for one-shot HARQ ACK feedback

 oneShotHARQ-feedbackPhy-Priority-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 25-6: Enhanced type 3 HARQ-ACK codebook feedback

 enhancedType3-HARQ-CodebookFeedback-r17 SEQUENCE {

 enhancedType3-HARQ-Codebooks-r17 ENUMERATED {n1, n2, n4, n8},

 maxNumberPUCCH-Transmissions-r17 ENUMERATED {n1, n2, n3, n4, n5, n6, n7}

 } OPTIONAL,

 -- R1 25-7: Triggered HARQ-ACK codebook re-transmission

 triggeredHARQ-CodebookRetx-r17 SEQUENCE {

 minHARQ-Retx-Offset-r17 ENUMERATED {n-7, n-5, n-3, n-1, n1},

 maxHARQ-Retx-Offset-r17 ENUMERATED {n4, n6, n8, n10, n12, n14, n16, n18, n20, n22, n24}

 } OPTIONAL

 ]],

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 -- R4 22-2 support of one shot large UL timing adjustment

 ue-OneShotUL-TimingAdj-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 25-2: Repetitions for PUCCH format 0, and 2 over multiple slots with K = 2, 4, 8

 pucch-Repetition-F0-2-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 25-11a: 4-bits subband CQI for NTN and unlicensed

 cqi-4-BitsSubbandNTN-SharedSpectrumChAccess-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 25-16: HARQ-ACK with different priorities multiplexing on a PUCCH/PUSCH

 mux-HARQ-ACK-DiffPriorities-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 25-20a: Propagation delay compensation based on Rel-15 TA procedure for NTN and unlicensed

 ta-BasedPDC-NTN-SharedSpectrumChAccess-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-2b: DCI-based enabling/disabling ACK/NACK-based feedback for dynamic scheduling for multicast

 ack-NACK-FeedbackForMulticastWithDCI-Enabler-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-2e: Multiple G-RNTIs for group-common PDSCHs

 maxNumberG-RNTI-r17 INTEGER (2..8) OPTIONAL,

 -- R1 33-2f: Dynamic multicast with DCI format 4\_2

 dynamicMulticastDCI-Format4-2-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-2i: Supported maximal modulation order for multicast PDSCH

 maxModulationOrderForMulticast-r17 CHOICE {

 fr1-r17 ENUMERATED {qam256, qam1024},

 fr2-r17 ENUMERATED {qam64, qam256}

 } OPTIONAL,

 -- R1 33-3-1: Dynamic Slot-level repetition for group-common PDSCH for TN and licensed

 dynamicSlotRepetitionMulticastTN-NonSharedSpectrumChAccess-r17 ENUMERATED {n8, n16} OPTIONAL,

 -- R1 33-3-1a: Dynamic Slot-level repetition for group-common PDSCH for NTN and unlicensed

 dynamicSlotRepetitionMulticastNTN-SharedSpectrumChAccess-r17 ENUMERATED {n8, n16} OPTIONAL,

 -- R1 33-4-1: DCI-based enabling/disabling NACK-only based feedback for dynamic scheduling for multicast

 nack-OnlyFeedbackForMulticastWithDCI-Enabler-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-5-1b: DCI-based enabling/disabling ACK/NACK-based feedback for dynamic scheduling for multicast

 ack-NACK-FeedbackForSPS-MulticastWithDCI-Enabler-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-5-1h: Multiple G-CS-RNTIs for SPS group-common PDSCHs

 maxNumberG-CS-RNTI-r17 INTEGER (2..8) OPTIONAL,

 -- R1 33-10: Support group-common PDSCH RE-level rate matching for multicast

 re-LevelRateMatchingForMulticast-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 36-1a: Support of 1024QAM for PDSCH with maximum 2 MIMO layers for FR1

 pdsch-1024QAM-2MIMO-FR1-r17 ENUMERATED {supported} OPTIONAL,

 -- R4 14-3 PRS measurement without MG

 prs-MeasurementWithoutMG-r17 ENUMERATED {cpLength, quarterSymbol, halfSymbol, halfSlot} OPTIONAL,

 -- R4 25-7: The number of target NGSO satellites the UE can monitor per carrier

 maxNumber-NGSO-SatellitesPerCarrier-r17 INTEGER (3..4) OPTIONAL,

 -- R1 27-3-3 DL PRS Processing Capability outside MG - buffering capability

 prs-ProcessingCapabilityOutsideMGinPPW-r17 SEQUENCE (SIZE(1..3)) OF PRS-ProcessingCapabilityOutsideMGinPPWperType-r17 OPTIONAL,

 -- R1 27-15a: Positioning SRS transmission in RRC\_INACTIVE state for initial UL BWP with semi-persistent SRS

 srs-SemiPersistent-PosResourcesRRC-Inactive-r17 SEQUENCE {

 maxNumOfSemiPersistentSRSposResources-r17 ENUMERATED {n1, n2, n4, n8, n16, n32, n64},

 maxNumOfSemiPersistentSRSposResourcesPerSlot-r17 ENUMERATED {n1, n2, n3, n4, n5, n6, n8, n10, n12, n14}

 } OPTIONAL,

 -- R2: UE support of CBW for 120kHz SCS

 channelBWs-DL-SCS-120kHz-FR2-2-r17 BIT STRING (SIZE (8)) OPTIONAL,

 channelBWs-UL-SCS-120kHz-FR2-2-r17 BIT STRING (SIZE (8)) OPTIONAL

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 -- R1 30-4a: DM-RS bundling for PUSCH repetition type A

 dmrs-BundlingPUSCH-RepTypeA-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-4b: DM-RS bundling for PUSCH repetition type B

 dmrs-BundlingPUSCH-RepTypeB-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-4c: DM-RS bundling for TB processing over multi-slot PUSCH

 dmrs-BundlingPUSCH-multiSlot-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-4d: DMRS bundling for PUCCH repetitions

 dmrs-BundlingPUCCH-Rep-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-4e: Enhanced inter-slot frequency hopping with inter-slot bundling for PUSCH

 interSlotFreqHopInterSlotBundlingPUSCH-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-4f: Enhanced inter-slot frequency hopping for PUCCH repetitions with DMRS bundling

 interSlotFreqHopPUCCH-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-4g: Restart DM-RS bundling

 dmrs-BundlingRestart-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-4h: DM-RS bundling for non-back-to-back transmission

 dmrs-BundlingNonBackToBackTX-r17 ENUMERATED {supported} OPTIONAL

 ]],

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 -- R1 33-5-1e: Dynamic Slot-level repetition for SPS group-common PDSCH for multicast

 maxDynamicSlotRepetitionForSPS-Multicast-r17 ENUMERATED {n8, n16} OPTIONAL,

 -- R1 33-5-1g: DCI-based enabling/disabling NACK-only based feedback for SPS group-common PDSCH for multicast

 nack-OnlyFeedbackForSPS-MulticastWithDCI-Enabler-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-5-1i: Multicast SPS scheduling with DCI format 4\_2

 sps-MulticastDCI-Format4-2-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-5-2: Multiple SPS group-common PDSCH configuration on PCell

 sps-MulticastMultiConfig-r17 INTEGER (1..8) OPTIONAL,

 -- R1 33-6-1: DL priority indication for multicast in DCI

 priorityIndicatorInDCI-Multicast-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-6-1a: DL priority configuration for SPS multicast

 priorityIndicatorInDCI-SPS-Multicast-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-6-2: Two HARQ-ACK codebooks simultaneously constructed for supporting HARQ-ACK codebooks with different priorities

 -- for unicast and multicast at a UE

 twoHARQ-ACK-CodebookForUnicastAndMulticast-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-6-3: More than one PUCCH for HARQ-ACK transmission for multicast or for unicast and multicast within a slot

 multiPUCCH-HARQ-ACK-ForMulticastUnicast-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-9: Supporting unicast PDCCH to release SPS group-common PDSCH

 releaseSPS-MulticastWithCS-RNTI-r17 ENUMERATED {supported} OPTIONAL

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 -- R1 41-3-1a UE automomous TA adjustment when cell-reselection happens

 posUE-TA-AutoAdjustment-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 41-3-1: SRS for positioning configuration in multiple cells for UEs in RRC\_INACTIVE state for initial UL BWP

 posSRS-ValidityAreaRRC-InactiveInitialUL-BWP-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 41-3-2: SRS for positioning configuration in multiple cells for UEs in RRC\_INACTIVE state for configured outside

 -- initial UL BWP

 posSRS-ValidityAreaRRC-InactiveOutsideInitialUL-BWP-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 41-5-1:PRS measurement with Rx frequency hopping within a MG and measurement reporting RRC\_CONNECTED for RedCap UEs

 dl-PRS-MeasurementWithRxFH-RRC-ConnectedForRedCap-r18 DL-PRS-MeasurementWithRxFH-RRC-Connected-r18 OPTIONAL,

 -- R1 41-5-2: Support of positioning SRS with Tx frequency hopping in RRC\_CONNECTED for RedCap UEs

 posSRS-TxFH-RRC-ConnectedForRedCap-r18 PosSRS-TxFrequencyHoppingRRC-Connected-r18 OPTIONAL,

 -- R1 41-5-2a: Support of positioning SRS with Tx frequency hopping in RRC\_INACTIVE for RedCap UEs

 posSRS-TxFH-RRC-InactiveForRedCap-r18 PosSRS-TxFrequencyHoppingRRC-Inactive-r18 OPTIONAL,

 -- R1 41-4-8: Support of Positioning SRS bandwidth aggregation in RRC\_INACTIVE

 posSRS-BWA-RRC-Inactive-r18 PosSRS-BWA-RRC-Inactive-r18 OPTIONAL,

 -- R1 41-4-6a support a Rel-17 single DCI scheduling positioning SRS resource sets across the linked carriers

 -- for SRS bandwidth aggregation in RRC\_CONNECTED state

 posJointTriggerBySingleDCI-RRC-Connected-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 41-5-1a PRS measurement with Rx frequency hopping in RRC\_INACTIVE for RedCap UEs

 dl-PRS-MeasurementWithRxFH-RRC-InactiveforRedCap-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 41-5-1b PRS measurement with Rx frequency hopping in RRC\_IDLE for RedCap UEs

 dl-PRS-MeasurementWithRxFH-RRC-IdleforRedCap-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 42-1: Spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for periodic CSI reporting

 spatialAdaptation-CSI-Feedback-r18 SEQUENCE {

 csiFeedbackType-r18 ENUMERATED {sdType1, sdType2, both},

 maxNumberLmax-r18 INTEGER (2..4),

 maxNumberCSI-ResourcePerCC-r18 SEQUENCE {

 sdType1-Resource-r18 INTEGER (1..32),

 sdType2-Resource-r18 INTEGER (1..32)

 },

 maxNumberTotalCSI-ResourcePerCC-r18 SEQUENCE {

 sdType1-Resource-r18 ENUMERATED {n8, n16, n24, n32, n64, n128},

 sdType2-Resource-r18 ENUMERATED {n8, n16, n24, n32, n64, n128}

 },

 totalNumberCSI-Reporting-r18 INTEGER (2..4)

 } OPTIONAL,

 -- R1 42-1a: Spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for periodic CSI

 -- reporting on PUSCH

 spatialAdaptation-CSI-FeedbackPUSCH-r18 SEQUENCE {

 csiFeedbackType-r18 ENUMERATED {sdType1, sdType2, both},

 maxNumberLmax-r18 INTEGER (2..8),

 subReportCSI-r18 INTEGER (2..4),

 maxNumberCSI-ResourcePerCC-r18 INTEGER (1..32),

 maxNumberTotalCSI-ResourcePerCC-r18 ENUMERATED {n8, n16, n24, n32, n64, n128},

 totalNumberCSI-Reporting-r18 INTEGER (2..12)

 } OPTIONAL,

 -- R1 42-1b: Spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for aperiodic CSI reporting

 spatialAdaptation-CSI-FeedbackAperiodic-r18 SEQUENCE {

 csiFeedbackType-r18 ENUMERATED {sdType1, sdType2, both},

 maxNumberLmax-r18 INTEGER (2..8),

 subReportCSI-r18 INTEGER (2..4),

 maxNumberCSI-ResourcePerCC-r18 SEQUENCE {

 sdType1-Resource-r18 INTEGER (1..32),

 sdType2-Resource-r18 INTEGER (1..32)

 },

 maxNumberTotalCSI-ResourcePerCC-r18 SEQUENCE {

 sdType1-Resource-r18 ENUMERATED {n8, n16, n24, n32, n64, n128},

 sdType2-Resource-r18 ENUMERATED {n8, n16, n24, n32, n64, n128}

 },

 totalNumberCSI-Reporting-r18 INTEGER (2..12)

 } OPTIONAL,

 -- R1 42-1c: Spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for semi-persistent

 -- CSI reporting on PUCCH

 spatialAdaptation-CSI-FeedbackPUCCH-r18 SEQUENCE {

 csiFeedbackType-r18 ENUMERATED {sdType1, sdType2, both},

 maxNumberLmax-r18 INTEGER (2..4),

 subReportCSI-r18 INTEGER (2..4),

 maxNumberCSI-ResourcePerCC-r18 INTEGER (1..32),

 maxNumberTotalCSI-ResourcePerCC-r18 ENUMERATED {n8, n16, n24, n32, n64, n128},

 totalNumberCSI-Reporting-r18 INTEGER (2..4)

 } OPTIONAL,

 -- R1 42-2: Power domain adaptation with CSI feedback based on CSI report sub-configuration(s) for periodic CSI reporting

 powerAdaptation-CSI-Feedback-r18 SEQUENCE {

 maxNumberLmax-r18 INTEGER (2..4),

 maxNumberCSI-ResourcePerCC-r18 INTEGER (1..32),

 maxNumberTotalCSI-ResourcePerCC-r18 ENUMERATED {n8, n16, n24, n32, n64, n128},

 totalNumberCSI-Reporting-r18 INTEGER (2..4)

 } OPTIONAL,

 -- R1 42-2a: Power domain adaptation with CSI feedback based on CSI report sub-configuration(s) for semi-persistent CSI

 -- reporting on PUSCH

 powerAdaptation-CSI-FeedbackPUSCH-r18 SEQUENCE {

 maxNumberLmax-r18 INTEGER (2..8),

 subReportCSI-r18 INTEGER (2..4),

 maxNumberCSI-ResourcePerCC-r18 INTEGER (1..32),

 maxNumberTotalCSI-ResourcePerCC-r18 ENUMERATED {n8, n16, n24, n32, n64, n128},

 totalNumberCSI-Reporting-r18 INTEGER (2..12)

 } OPTIONAL,

 -- R1 42-2b: Power domain adaptation with CSI feedback based on CSI report sub-configuration(s) for aperiodic CSI reporting

 powerAdaptation-CSI-FeedbackAperiodic-r18 SEQUENCE {

 maxNumberLmax-r18 INTEGER (2..8),

 subReportCSI-r18 INTEGER (2..4),

 maxNumberCSI-ResourcePerCC-r18 INTEGER (1..32),

 maxNumberTotalCSI-ResourcePerCC-r18 ENUMERATED {n8, n16, n24, n32, n64, n128},

 totalNumberCSI-Reporting-r18 INTEGER (2..12)

 } OPTIONAL,

 -- R1 42-2c: Power domain adaptation with CSI feedback based on CSI report sub-configuration(s) for semi-persistent CSI

 -- reporting on PUCCH

 powerAdaptation-CSI-FeedbackPUCCH-r18 SEQUENCE {

 maxNumberLmax-r18 INTEGER (2..4),

 subReportCSI-r18 INTEGER (2..4),

 maxNumberCSI-ResourcePerCC-r18 INTEGER (1..32),

 maxNumberTotalCSI-ResourcePerCC-r18 ENUMERATED {n8, n16, n24, n32, n64, n128},

 totalNumberCSI-Reporting-r18 INTEGER (2..4)

 } OPTIONAL,

 -- R1 42-4: Cell DTX and/or DRX operation based on RRC configuration

 nes-CellDTX-DRX-r18 ENUMERATED {cellDTXonly, cellDRXonly, both} OPTIONAL,

 -- R1 42-5: Cell DTX/DRX operation triggered by DCI format 2\_9

 nes-CellDTX-DRX-DCI2-9-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 42-7: Mixed codebook combination for spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s),

 -- each containing one port subset configuration

 mixCodeBookSpatialAdaptation-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 42-8: the number of CSI report(s) for which the UE can measure and process reference signals simultaneously in a CC of the

 -- band for which this capability is provided.

 simultaneousCSI-SubReportsPerCC-r18 INTEGER (1..8) OPTIONAL,

 -- R1 44-2: NTN DMRS bundling enhancement for PUSCH in NGSO scenarios

 ntn-DMRS-BundlingNGSO-r18 ENUMERATED {n4, n8, n16, n32} OPTIONAL,

 -- R1 45-3: Beam indication with joint DL/UL LTM TCI states

 ltm-BeamIndicationJointTCI-r18 SEQUENCE {

 maxNumberJointTCI-PerCell-r18 ENUMERATED {n8,n12,n16,n24,n32,n48,n64,n128},

 qcl-Resource-r18 ENUMERATED {ssb, trs, both},

 maxNumberJointTCI-AcrossCells-r18 INTEGER (1..128),

 maxNumberCells-r18 INTEGER (1..8)

 } OPTIONAL,

 dummy-ltm-MAC-CE-JointTCI-r18 SEQUENCE {

 qcl-Resource-r18 ENUMERATED {ssb, trs, both},

 maxNumberJointTCI-PerCell-r18 INTEGER (1..16),

 maxNumberJointTCI-AcrossCells-r18 ENUMERATED {n1,n2,n3,n4,n8,n16,n32}

 } OPTIONAL,

 -- R1 45-4: Beam indication with separate DL/UL LTM TCI states

 ltm-BeamIndicationSeparateTCI-r18 SEQUENCE {

 maxNumberDL-TCI-PerCell-r18 ENUMERATED {n4,n8,n12,n16,n24,n32,n48,n64,n128},

 maxNumberUL-TCI-PerCell-r18 ENUMERATED {n4,n8,n12,n16,n24,n32,n48,n64},

 qcl-Resource-r18 ENUMERATED {ssb, trs, both},

 maxNumberDL-TCI-AcrossCells-r18 INTEGER (1..128),

 maxNumberUL-TCI-AcrossCells-r18 INTEGER (1..64),

 maxNumberCells-r18 INTEGER (1..8)

 } OPTIONAL,

 dummy-ltm-MAC-CE-SeparateTCI-r18 SEQUENCE {

 qcl-Resource-r18 ENUMERATED {ssb, trs, both},

 maxNumberDL-TCI-PerCell-r18 INTEGER (1..8),

 maxNumberUL-TCI-PerCell-r18 INTEGER (1..8),

 maxNumberDL-TCI-AcrossCells-r18 ENUMERATED {n1,n2,n4,n8,n16},

 maxNumberUL-TCI-AcrossCells-r18 ENUMERATED {n1,n2,n4,n8,n16}

 } OPTIONAL,

 -- R1 45-5: RACH-based early TA acquisition

 rach-EarlyTA-Measurement-r18 INTEGER (1..8) OPTIONAL,

 -- R1 45-6: UE-based TA measurement

 ue-TA-Measurement-r18 INTEGER (1..8) OPTIONAL,

 -- R1 45-7: TA indication in cell switch command

 ta-IndicationCellSwitch-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 49-8: Triggered HARQ-ACK codebook re-transmission for DCI format 1\_3

 triggeredHARQ-CodebookRetxDCI-1-3-r18 SEQUENCE {

 minHARQ-Retx-Offset-r18 ENUMERATED {n-7, n-5, n-3, n-1, n1},

 maxHARQ-Retx-Offset-r18 ENUMERATED {n4, n6, n8, n10, n12, n14, n16, n18, n20, n22, n24}

 } OPTIONAL,

 -- R1 49-12: Unified TCI with joint DL/UL TCI update by DCI format 1\_3 for intra-cell and inter-cell beam management with more than

 -- one MAC-CE activated joint TCI state per CC

 unifiedJointTCI-MultiMAC-CE-DCI-1-3-r18 SEQUENCE {

 minBeamApplicationTime-r18 CHOICE {

 fr1-r18 SEQUENCE {

 scs-15kHz-r18 ENUMERATED {sym1, sym2, sym4, sym7, sym14, sym28, sym42, sym56, sym70} OPTIONAL,

 scs-30kHz-r18 ENUMERATED {sym1, sym2, sym4, sym7, sym14, sym28, sym42, sym56, sym70} OPTIONAL,

 scs-60kHz-r18 ENUMERATED {sym1, sym2, sym4, sym7, sym14, sym28, sym42, sym56, sym70} OPTIONAL

 },

 fr2-r18 SEQUENCE {

 scs-60kHz-r18 ENUMERATED {sym1, sym2, sym4, sym7, sym14, sym28, sym42, sym56, sym70,

 sym84, sym98, sym112, sym224, sym336} OPTIONAL,

 scs-120kHz-r18 ENUMERATED {sym1, sym2, sym4, sym7, sym14, sym28, sym42, sym56, sym70,

 sym84, sym98, sym112, sym224, sym336} OPTIONAL

 }

 },

 maxActivatedTCI-PerCC-r18 INTEGER (2..8) OPTIONAL

 } OPTIONAL,

 -- R1 49-12a: Unified TCI with separate DL/UL TCI update by DCI format 1\_3 for intra-cell beam management with more than

 -- one MAC-CE activated separate TCI state per CC

 unifiedSeparateTCI-MultiMAC-CE-IntraCell-r18 SEQUENCE {

 minBeamApplicationTime-r18 CHOICE {

 fr1-r18 SEQUENCE {

 scs-15kHz-r18 ENUMERATED {sym1, sym2, sym4, sym7, sym14, sym28, sym42, sym56, sym70,

 sym84, sym98, sym112, sym224, sym336} OPTIONAL,

 scs-30kHz-r18 ENUMERATED {sym1, sym2, sym4, sym7, sym14, sym28, sym42, sym56, sym70,

 sym84, sym98, sym112, sym224, sym336} OPTIONAL,

 scs-60kHz-r18 ENUMERATED {sym1, sym2, sym4, sym7, sym14, sym28, sym42, sym56, sym70,

 sym84, sym98, sym112, sym224, sym336} OPTIONAL

 },

 fr2-r18 SEQUENCE {

 scs-60kHz-r18 ENUMERATED {sym1, sym2, sym4, sym7, sym14, sym28, sym42, sym56, sym70,

 sym84, sym98, sym112, sym224, sym336} OPTIONAL,

 scs-120kHz-r18 ENUMERATED {sym1, sym2, sym4, sym7, sym14, sym28, sym42, sym56, sym70,

 sym84, sym98, sym112, sym224, sym336} OPTIONAL

 }

 },

 maxActivatedDL-TCI-PerCC-r18 INTEGER (2..8) OPTIONAL,

 maxActivatedUL-TCI-PerCC-r18 INTEGER (2..8) OPTIONAL

 } OPTIONAL,

 -- R1 50-1: Multi-PUSCHs for Configured Grant

 multiPUSCH-CG-r18 ENUMERATED {n16, n32} OPTIONAL,

 -- R1 50-1a: Multiple active multi-PUSCHs configured grant configurations for a BWP of a serving cell

 multiPUSCH-ActiveConfiguredGrant-r18 SEQUENCE {

 maxNumberConfigsPerBWP ENUMERATED {n1, n2, n4, n8, n12},

 maxNumberConfigsAllCC-FR1 INTEGER (2..32),

 maxNumberConfigsAllCC-FR2 INTEGER (2..32)

 } OPTIONAL,

 -- R1 50-1b: Joint release in a DCI for two or more configured grant Type 2 configurations, including multi-PUSCH CG

 -- configuration(s), for a given BWP of a serving cell

 jointReleaseDCI-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 50-2: UCI indication of unused CG-PUSCH transmission occasions

 cg-PUSCH-UTO-UCI-Ind-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 50-3: PDCCH monitoring resumption after UL NACK

 pdcch-MonitoringResumptionAfterUL-NACK-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 51-1: Support for 3 MHz symmetric channel bandwidth in DL and UL

 support3MHz-ChannelBW-Symmetric-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 51-1a: Support for 3 MHz channel bandwidth in uplink with larger than 3 MHz channel BW in DL

 support3MHz-ChannelBW-Asymmetric-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 51-2a: support 12 PRB CORESET0

 support12PRB-CORESET0-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 52-1: Reception of NR PDCCH candidates overlapping with LTE CRS REs

 nr-PDCCH-OverlapLTE-CRS-RE-r18 SEQUENCE {

 overlapInRE-r18 ENUMERATED {oneSymbolNoOverlap, someOrAllSymOverlap},

 overlapInSymbol-r18 ENUMERATED {symbol2,symbol1And2}

 } OPTIONAL,

 -- R1 52-1a: Reception of NR PDCCH candidates overlapping with LTE CRS REs with multiple non-overlapping CRS rate matching patterns

 nr-PDCCH-OverlapLTE-CRS-RE-MultiPatterns-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 52-1b: NR PDCCH reception that overlaps with LTE CRS within a single span of 3 consecutive OFDM symbols that is within the

 -- first 4 OFDM symbols in a slot

 nr-PDCCH-OverlapLTE-CRS-RE-Span-3-4-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 52-2: Two LTE-CRS overlapping rate matching patterns within NR 15 kHz carrier overlapping with LTE carrier (regardless of

 -- support or configuration of multi-TRP)

 twoRateMatchingEUTRA-CRS-patterns-3-4-r18 SEQUENCE {

 maxNumberPatterns-r18 INTEGER (2..6),

 maxNumberNon-OverlapPatterns-r18 INTEGER (1..3)

 } OPTIONAL,

 -- R1 52-2a: Two LTE-CRS overlapping rate matching patterns with two different values of coresetPoolIndex within NR 15 kHz carrier

 -- overlapping with LTE carrier

 overlapRateMatchingEUTRA-CRS-Patterns-3-4-Diff-CS-Pool-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 53-3: Support RLM/BM/BFD measurements based on NCD-SSB within active BWP

 ncd-SSB-BWP-Wor-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 53-4: Support Support RLM/BM/BFD measurements based on CSI-RS when CD-SSB is outside active BWP

 rlm-BM-BFD-CSI-RS-OutsideActiveBWP-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 54-1: PRACH coverage enhancements

 prach-CoverageEnh-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 54-1a: PRACH repetitions with less than N symbols gap

 prach-Repetition-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 54-3: Dynamic waveform switching

 dynamicWaveformSwitch-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 54-3a: PHR enhancement for dynamic waveform switching

 dynamicWaveformSwitchPHR-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 54-3b: Dynamic waveform switching for intra-band UL CA

 dynamicWaveformSwitchIntraCA-r18 INTEGER (2..8) OPTIONAL,

 -- R1 55-3: Multiple PUSCHs scheduling by single DCI for non-consecutive slots in FR1

 multiPUSCH-SingleDCI-NonConsSlots-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 55-2d: single-symbol DL-PRS used in RTT-based Propagation delay compensation

 pdc-maxNumberPRS-ResourceProcessedPerSlot-r18 SEQUENCE {

 fr1-r18 SEQUENCE {

 scs-15kHz-r18 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64} OPTIONAL,

 scs-30kHz-r18 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64} OPTIONAL,

 scs-60kHz-r18 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64} OPTIONAL

 },

 fr2-r18 SEQUENCE {

 scs-60kHz-r18 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64} OPTIONAL,

 scs-120kHz-r18 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64} OPTIONAL

 }

 } OPTIONAL,

 -- R1 57-2: Intra-slot TDM-ed unicast PDSCH and group-common PDSCH for multicast in RRC\_INACTIVE state

 intraSlot-PDSCH-MulticastInactive-r18 BOOLEAN OPTIONAL,

 -- R1 57-1: Dynamic scheduling for multicast in RRC\_INACTIVE state

 multicastInactive-r18 ENUMERATED {supported} OPTIONAL,

 thresholdBasedMulticastResume-r18 ENUMERATED {supported} OPTIONAL,

 -- R4 27-2: LowerMSD for inter-band NR CA and EN-DC

 lowerMSD-r18 SEQUENCE (SIZE (1..maxLowerMSD-r18)) OF LowerMSD-r18 OPTIONAL,

 lowerMSD-ENDC-r18 SEQUENCE (SIZE (1..maxLowerMSD-r18)) OF LowerMSD-r18 OPTIONAL,

 -- R4 28-1: Enhanced channel raster

 enhancedChannelRaster-r18 ENUMERATED {supported} OPTIONAL,

 -- R4 30-2: Fast beam sweeping for layer-1 measurement when the UE is in multi-Rx operation

 fastBeamSweepingMultiRx-r18 ENUMERATED {n2,n4,n6} OPTIONAL,

 -- R4 31-2 Beam sweeping factor reduction for FR2 unknown SCell activation

 beamSweepingFactorReduction-r18 SEQUENCE {

 reduceForCellDetection ENUMERATED {n1, n2, n4, n6},

 reduceForSSB-L1-RSRP-Meas INTEGER (0..7)

 } OPTIONAL,

 -- R4 34-1: Support of NR FR2 HST with simultaneous DL reception with two different QCL TypeD RSs

 simultaneousReceptionTwoQCL-r18 ENUMERATED {supported} OPTIONAL,

 -- R4 34-2: Enhanced FR2 HST RRM requirements for intra-band CA and inter-frequency measurements in connected mode

 measEnhCAInterFreqFR2-r18 ENUMERATED {supported} OPTIONAL,

 -- R4 34-4: Support of enhanced MAC CE for TCI state switch indication for FR2 HST

 tci-StateSwitchInd-r18 ENUMERATED {supported} OPTIONAL,

 -- R4 35-2: the requirements defined for ATG UE with antenna array or omni-direction antenna requirements.

 antennaArrayType-r18 ENUMERATED {supported} OPTIONAL,

 locationBasedCondHandoverATG-r18 ENUMERATED {supported} OPTIONAL,

 -- R4 35-3: rated maximum output power value range from 23dBm to 40dBm with 1dB as granularity at maximum modulation order and full

 -- PRB configurations.

 maxOutputPowerATG-r18 INTEGER (1..18) OPTIONAL,

 -- R4 39-6: Fast processing of LTM candidate cell RRC configuration

 ltm-FastProcessingConfig-r18 SEQUENCE {

 maxNumberStoredConfigCells-r18 ENUMERATED {n2,n3,n4,n5,n6,n7,n8,n9,n10,n11,n12,n16},

 maxNumberConfigs-r18 INTEGER (1..4)

 } OPTIONAL,

 -- R4 39-8: Measurement validation based on EMR measurement during connection setup/resume

 measValidationReportEMR-r18 ENUMERATED {supported} OPTIONAL,

 -- R4 39-9: Measurement validation based on reselection measurement during connection setup/resume

 measValidationReportReselectionMeasurements-r18 ENUMERATED {supported} OPTIONAL,

 eventA4BasedCondHandoverNES-r18 ENUMERATED {supported} OPTIONAL,

 nesBasedCondHandoverWithDCI-r18 ENUMERATED {supported} OPTIONAL,

 rach-LessHandoverCG-r18 ENUMERATED {supported} OPTIONAL,

 rach-LessHandoverDG-r18 ENUMERATED {supported} OPTIONAL,

 locationBasedCondHandoverEMC-r18 ENUMERATED {supported} OPTIONAL,

 mt-CG-SDT-r18 ENUMERATED {supported} OPTIONAL,

 posSRS-PreconfigureRRC-InactiveInitialUL-BWP-r18 ENUMERATED {supported} OPTIONAL,

 posSRS-PreconfigureRRC-InactiveOutsideInitialUL-BWP-r18 ENUMERATED {supported} OPTIONAL,

 cg-SDT-PeriodicityExt-r18 ENUMERATED {supported} OPTIONAL,

 -- R2: 2Rx XR UEs

 supportOf2RxXR-r18 ENUMERATED {supported} OPTIONAL,

 condHandoverWithCandSCG-change-r18 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 mac-ParametersPerBand-r18 MAC-ParametersPerBand-r18 OPTIONAL,

 channelBW-DL-NCR-r18 CHOICE {

 fr1-100mhz SEQUENCE {

 scs-15kHz ENUMERATED {supported} OPTIONAL,

 scs-30kHz ENUMERATED {supported} OPTIONAL,

 scs-60kHz ENUMERATED {supported} OPTIONAL

 },

 fr2-200mhz SEQUENCE {

 scs-60kHz ENUMERATED {supported} OPTIONAL,

 scs-120kHz ENUMERATED {supported} OPTIONAL

 }

 } OPTIONAL,

 channelBW-UL-NCR-r18 CHOICE {

 fr1-100mhz SEQUENCE {

 scs-15kHz ENUMERATED {supported} OPTIONAL,

 scs-30kHz ENUMERATED {supported} OPTIONAL,

 scs-60kHz ENUMERATED {supported} OPTIONAL

 },

 fr2-200mhz SEQUENCE {

 scs-60kHz ENUMERATED {supported} OPTIONAL,

 scs-120kHz ENUMERATED {supported} OPTIONAL

 }

 } OPTIONAL,

 ncr-PDSCH-64QAM-FR2-r18 ENUMERATED {supported} OPTIONAL,

 ltm-MCG-IntraFreq-r18 ENUMERATED {supported} OPTIONAL,

 ltm-SCG-IntraFreq-r18 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 -- R1 45-3a: MAC-CE activated joint LTM TCI states

 ltm-MAC-CE-JointTCI-r18 SEQUENCE {

 qcl-Resource-r18 ENUMERATED {ssb, trs, both},

 maxNumberJointTCI-PerCell-r18 INTEGER (1..16),

 maxNumberJointTCI-AcrossCells-r18 INTEGER (1..32)

 } OPTIONAL,

 -- R1 45-4a: MAC-CE activated DL/UL LTM TCI states

 ltm-MAC-CE-SeparateTCI-r18 SEQUENCE {

 qcl-Resource-r18 ENUMERATED {ssb, trs, both},

 maxNumberDL-TCI-PerCell-r18 INTEGER (1..8),

 maxNumberUL-TCI-PerCell-r18 INTEGER (1..8),

 maxNumberDL-TCI-AcrossCells-r18 INTEGER (1..32),

 maxNumberUL-TCI-AcrossCells-r18 INTEGER (1..32)

 } OPTIONAL

 ]]

}

BandNR-v16c0 ::= SEQUENCE {

 pusch-RepetitionTypeA-v16c0 ENUMERATED {supported} OPTIONAL,

 ...

}

BandNR-v17b0 ::= SEQUENCE {

 mimo-ParametersPerBand-v17b0 MIMO-ParametersPerBand-v17b0 OPTIONAL,

 ...

}

LowerMSD-r18 ::= SEQUENCE {

 aggressorband1-r18 CHOICE {

 nr FreqBandIndicatorNR,

 eutra FreqBandIndicatorEUTRA

 },

 aggressorband2-r18 FreqBandIndicatorNR OPTIONAL,

 msd-Information-r18 SEQUENCE (SIZE (1..maxLowerMSDInfo-r18)) OF MSD-Information-r18

}

MSD-Information-r18 ::= SEQUENCE {

 msd-Type-r18 ENUMERATED {harmonic, harmonicMixing, crossBandIsolation, imd2, imd3, imd4, imd5, all, spare8, spare7,

 spare6, spare5,spare4, spare3, spare2, spare1},

 msd-PowerClass-r18 ENUMERATED {pc1dot5, pc2, pc3},

 msd-Class-r18 ENUMERATED {classI, classII, classIII, classIV, classV, classVI, classVII, classVIII }

}

-- TAG-RF-PARAMETERS-STOP

-- ASN1STOP

|  |
| --- |
| *RF-Parameters* field descriptions |
| ***appliedFreqBandListFilter***In this field the UE mirrors the *FreqBandList* that the NW provided in the capability enquiry, if any, as described in clause 5.6.1.4. The UE filtered the band combinations in the *supportedBandCombinationList* in accordance with this *appliedFreqBandListFilter*. The UE does not include this field if the UE capability is requested by E-UTRAN and the network request includes the field *eutra-nr-only* [10]. |
| ***dummy1, dummy2, dummy-ltm-MAC-CE-JointTCI-r18, dummy-ltm-MAC-CE-SeparateTCI-r18***The fields are not used in the specification and the network ignores the received values. |
| ***supportedBandCombinationList***A list of band combinations that the UE supports for NR (and NR-DC, if requested). The *FeatureSetCombinationId*:s in this list refer to the *FeatureSetCombination* entries in the *featureSetCombinations* list in the *UE-NR-Capability* IE. The UE does not include this field if the UE capability is requested by E-UTRAN and the network request includes the field *eutra-nr-only* [10]. |
| ***supportedBandCombinationListSidelinkEUTRA-NR***A list of band combinations that the UE supports for NR sidelink communication only, for joint NR sidelink communication and V2X sidelink communication, or for V2X sidelink communication only. The UE does not include this field if the UE capability is requested by E-UTRAN (see TS 36.331[10]) and the network request includes the field *eutra-nr-only*. |
| ***supportedBandCombinationListSL-NonRelayDiscovery***A list of band combinations that the UE supports for NR sidelink non-relay discovery. The encoding is defined in PC5 *BandCombinationListSidelinkNR-r16.* |
| ***supportedBandCombinationListSL-RelayDiscovery***A list of band combinations that the UE supports for NR sidelink relay discovery. The encoding is defined in PC5 *BandCombinationListSidelinkNR-r16.* |
| ***supportedBandCombinationListSL-U2U-DiscoveryExt***This field indicates the band parameter in *BandCombinationListSL-Discovery-r17* that the UE supports for NR U2U sidelink relay discovery in a band included in *supportedBandCombinationListSL-U2U-RelayDiscovery*. |
| ***supportedBandCombinationListSL-U2U-RelayDiscovery***A list of band combinations that the UE supports for NR U2U sidelink relay discovery. The encoding is defined in PC5 *BandCombinationListSidelinkNR-r16.* |
| ***supportedBandCombinationList-UplinkTxSwitch***A list of band combinations that the UE supports dynamic uplink Tx switching for NR UL CA and SUL. The *FeatureSetCombinationId*:s in this list refer to the *FeatureSetCombination* entries in the *featureSetCombinations* list in the *UE-NR-Capability* IE. The UE does not include this field if the UE capability is requested by E-UTRAN and the network request includes the field *eutra-nr-only* [10]. |
| ***supportedBandListNR***A list of NR bands supported by the UE. If *supportedBandListNR-v16c0* is included, the UE shall include the same number of entries, and listed in the same order, as in *supportedBandListNR* (without suffix). |

### 11.2.2 Message definitions

<cut>

#### – *CG-Config*

This message is used to transfer the SCG radio configuration as generated by the SgNB or SeNB. It can also be used by a CU to request a DU to perform certain actions, e.g. to request the DU to perform a new lower layer configuration.

Direction: Secondary gNB or eNB to master gNB or eNB, alternatively CU to DU.

*CG-Config* message

-- ASN1START

-- TAG-CG-CONFIG-START

CG-Config ::= SEQUENCE {

 criticalExtensions CHOICE {

 c1 CHOICE{

 cg-Config CG-Config-IEs,

 spare3 NULL, spare2 NULL, spare1 NULL

 },

 criticalExtensionsFuture SEQUENCE {}

 }

}

CG-Config-IEs ::= SEQUENCE {

 scg-CellGroupConfig OCTET STRING (CONTAINING RRCReconfiguration) OPTIONAL,

 scg-RB-Config OCTET STRING (CONTAINING RadioBearerConfig) OPTIONAL,

 configRestrictModReq ConfigRestrictModReqSCG OPTIONAL,

 drx-InfoSCG DRX-Info OPTIONAL,

 candidateCellInfoListSN OCTET STRING (CONTAINING MeasResultList2NR) OPTIONAL,

 measConfigSN MeasConfigSN OPTIONAL,

 selectedBandCombination BandCombinationInfoSN OPTIONAL,

 fr-InfoListSCG FR-InfoList OPTIONAL,

 candidateServingFreqListNR CandidateServingFreqListNR OPTIONAL,

 nonCriticalExtension CG-Config-v1540-IEs OPTIONAL

}

CG-Config-v1540-IEs ::= SEQUENCE {

 pSCellFrequency ARFCN-ValueNR OPTIONAL,

 reportCGI-RequestNR SEQUENCE {

 requestedCellInfo SEQUENCE {

 ssbFrequency ARFCN-ValueNR,

 cellForWhichToReportCGI PhysCellId

 } OPTIONAL

 } OPTIONAL,

 ph-InfoSCG PH-TypeListSCG OPTIONAL,

 nonCriticalExtension CG-Config-v1560-IEs OPTIONAL

}

CG-Config-v1560-IEs ::= SEQUENCE {

 pSCellFrequencyEUTRA ARFCN-ValueEUTRA OPTIONAL,

 scg-CellGroupConfigEUTRA OCTET STRING OPTIONAL,

 candidateCellInfoListSN-EUTRA OCTET STRING OPTIONAL,

 candidateServingFreqListEUTRA CandidateServingFreqListEUTRA OPTIONAL,

 needForGaps ENUMERATED {true} OPTIONAL,

 drx-ConfigSCG DRX-Config OPTIONAL,

 reportCGI-RequestEUTRA SEQUENCE {

 requestedCellInfoEUTRA SEQUENCE {

 eutraFrequency ARFCN-ValueEUTRA,

 cellForWhichToReportCGI-EUTRA EUTRA-PhysCellId

 } OPTIONAL

 } OPTIONAL,

 nonCriticalExtension CG-Config-v1590-IEs OPTIONAL

}

CG-Config-v1590-IEs ::= SEQUENCE {

 scellFrequenciesSN-NR SEQUENCE (SIZE (1.. maxNrofServingCells-1)) OF ARFCN-ValueNR OPTIONAL,

 scellFrequenciesSN-EUTRA SEQUENCE (SIZE (1.. maxNrofServingCells-1)) OF ARFCN-ValueEUTRA OPTIONAL,

 nonCriticalExtension CG-Config-v1610-IEs OPTIONAL

}

CG-Config-v1610-IEs ::= SEQUENCE {

 drx-InfoSCG2 DRX-Info2 OPTIONAL,

 nonCriticalExtension CG-Config-v1620-IEs OPTIONAL

}

CG-Config-v1620-IEs ::= SEQUENCE {

 ueAssistanceInformationSCG-r16 OCTET STRING (CONTAINING UEAssistanceInformation) OPTIONAL,

 nonCriticalExtension CG-Config-v1630-IEs OPTIONAL

}

CG-Config-v1630-IEs ::= SEQUENCE {

 selectedToffset-r16 T-Offset-r16 OPTIONAL,

 nonCriticalExtension CG-Config-v1640-IEs OPTIONAL

}

CG-Config-v1640-IEs ::= SEQUENCE {

 servCellInfoListSCG-NR-r16 ServCellInfoListSCG-NR-r16 OPTIONAL,

 servCellInfoListSCG-EUTRA-r16 ServCellInfoListSCG-EUTRA-r16 OPTIONAL,

 nonCriticalExtension CG-Config-v1700-IEs OPTIONAL

}

CG-Config-v1700-IEs ::= SEQUENCE {

 candidateCellInfoListCPC-r17 CandidateCellInfoListCPC-r17 OPTIONAL,

 twoPHRModeSCG-r17 ENUMERATED {enabled} OPTIONAL,

 nonCriticalExtension CG-Config-v1730-IEs OPTIONAL

}

CG-Config-v1730-IEs ::= SEQUENCE {

 fr1-Carriers-SCG-r17 INTEGER (1..32) OPTIONAL,

 fr2-Carriers-SCG-r17 INTEGER (1..32) OPTIONAL,

 nonCriticalExtension CG-Config-v1800-IEs OPTIONAL

}

CG-Config-v1800-IEs ::= SEQUENCE {

 candidateServingFreqRangeListNR-r18 CandidateServingFreqRangeListNR-r18 OPTIONAL,

 candidateServingFreqListNR-r18 CandidateServingFreqListNR-r16 OPTIONAL,

 idc-TDM-AssistanceConfig-r18 ENUMERATED {enabled} OPTIONAL,

 candidateCellInfoListSubsequentCPC-r18 CandidateCellInfoListCPC-r17 OPTIONAL,

 scpac-ReferenceConfigurationSCG-r18 ReferenceConfiguration-r18 OPTIONAL,

 subsequentCPAC-Information-r18 CandidateCellInfoListCPC-r17 OPTIONAL,

 successPSCell-Config-r18 SuccessPSCell-Config-r18 OPTIONAL,

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

ServCellInfoListSCG-NR-r16 ::= SEQUENCE (SIZE (1.. maxNrofServingCells)) OF ServCellInfoXCG-NR-r16

ServCellInfoXCG-NR-r16 ::= SEQUENCE {

 dl-FreqInfo-NR-r16 FrequencyConfig-NR-r16 OPTIONAL,

 ul-FreqInfo-NR-r16 FrequencyConfig-NR-r16 OPTIONAL, -- Cond FDD

 ...

}

FrequencyConfig-NR-r16 ::= SEQUENCE {

 freqBandIndicatorNR-r16 FreqBandIndicatorNR,

 carrierCenterFreq-NR-r16 ARFCN-ValueNR,

 carrierBandwidth-NR-r16 INTEGER (1..maxNrofPhysicalResourceBlocks),

 subcarrierSpacing-NR-r16 SubcarrierSpacing

}

ServCellInfoListSCG-EUTRA-r16 ::= SEQUENCE (SIZE (1.. maxNrofServingCellsEUTRA)) OF ServCellInfoXCG-EUTRA-r16

ServCellInfoXCG-EUTRA-r16 ::= SEQUENCE {

 dl-CarrierFreq-EUTRA-r16 ARFCN-ValueEUTRA OPTIONAL,

 ul-CarrierFreq-EUTRA-r16 ARFCN-ValueEUTRA OPTIONAL, -- Cond FDD

 transmissionBandwidth-EUTRA-r16 TransmissionBandwidth-EUTRA-r16 OPTIONAL,

 ...

}

TransmissionBandwidth-EUTRA-r16 ::= ENUMERATED {rb6, rb15, rb25, rb50, rb75, rb100}

PH-TypeListSCG ::= SEQUENCE (SIZE (1..maxNrofServingCells)) OF PH-InfoSCG

PH-InfoSCG ::= SEQUENCE {

 servCellIndex ServCellIndex,

 ph-Uplink PH-UplinkCarrierSCG,

 ph-SupplementaryUplink PH-UplinkCarrierSCG OPTIONAL,

 ...,

 [[

 twoSRS-PUSCH-Repetition-r17 ENUMERATED{enabled} OPTIONAL

 ]],

 [[

 twoSRS-MultipanelScheme-r18 ENUMERATED{enabled} OPTIONAL

 ]]

}

PH-UplinkCarrierSCG ::= SEQUENCE{

 ph-Type1or3 ENUMERATED {type1, type3},

 ...

}

MeasConfigSN ::= SEQUENCE {

 measuredFrequenciesSN SEQUENCE (SIZE (1..maxMeasFreqsSN)) OF NR-FreqInfo OPTIONAL,

 ...

}

NR-FreqInfo ::= SEQUENCE {

 measuredFrequency ARFCN-ValueNR OPTIONAL,

 ...

}

ConfigRestrictModReqSCG ::= SEQUENCE {

 requestedBC-MRDC BandCombinationInfoSN OPTIONAL,

 requestedP-MaxFR1 P-Max OPTIONAL,

 ...,

 [[

 requestedPDCCH-BlindDetectionSCG INTEGER (1..15) OPTIONAL,

 requestedP-MaxEUTRA P-Max OPTIONAL

 ]],

 [[

 requestedP-MaxFR2-r16 P-Max OPTIONAL,

 requestedMaxInterFreqMeasIdSCG-r16 INTEGER(1..maxMeasIdentitiesMN) OPTIONAL,

 requestedMaxIntraFreqMeasIdSCG-r16 INTEGER(1..maxMeasIdentitiesMN) OPTIONAL,

 requestedToffset-r16 T-Offset-r16 OPTIONAL

 ]],

 [[

 reservedResourceConfigNRDC-r17 ResourceConfigNRDC-r17 OPTIONAL

 ]],

 [[

 aggregatedBandwidthSN-r17 AggregatedBandwidthSN-r17 OPTIONAL

 ]],

 [[

 requestedMaxLTM-CandidateIdSCG-r18 INTEGER(0..maxNrofLTM-Configs-r18) OPTIONAL

 ]],

 [[

 requestedL1-MeasConfigNRDC-r18 L1-MeasConfigNRDC-r18 OPTIONAL

 ]]

}

BandCombinationIndex ::= INTEGER (1..maxBandComb)

BandCombinationInfoSN ::= SEQUENCE {

 bandCombinationIndex BandCombinationIndex,

 requestedFeatureSets FeatureSetEntryIndex

}

FR-InfoList ::= SEQUENCE (SIZE (1..maxNrofServingCells-1)) OF FR-Info

FR-Info ::= SEQUENCE {

 servCellIndex ServCellIndex,

 fr-Type ENUMERATED {fr1, fr2}

}

CandidateServingFreqListNR ::= SEQUENCE (SIZE (1.. maxFreqIDC-MRDC)) OF ARFCN-ValueNR

CandidateServingFreqListEUTRA ::= SEQUENCE (SIZE (1.. maxFreqIDC-MRDC)) OF ARFCN-ValueEUTRA

T-Offset-r16 ::= ENUMERATED {ms0dot5, ms0dot75, ms1, ms1dot5, ms2, ms2dot5, ms3, spare1}

CandidateCellInfoListCPC-r17 ::= SEQUENCE (SIZE (1..maxFreq)) OF CandidateCellInfo-r17

CandidateCellInfo-r17 ::= SEQUENCE {

 ssbFrequency-r17 ARFCN-ValueNR,

 candidateList-r17 SEQUENCE (SIZE (1..maxNrofCondCells-r16)) OF CandidateCell-r17

}

CandidateCell-r17 ::= SEQUENCE {

 physCellId-r17 PhysCellId,

 condExecutionCondSCG-r17 OCTET STRING (CONTAINING CondReconfigExecCondSCG-r17) OPTIONAL

}

AggregatedBandwidthSN-r17 ::= SEQUENCE {

 aggBW-FDD-DL-r17 SupportedAggBandwidth-r17 OPTIONAL,

 aggBW-FDD-UL-r17 SupportedAggBandwidth-r17 OPTIONAL,

 aggBW-TDD-DL-r17 SupportedAggBandwidth-r17 OPTIONAL,

 aggBW-TDD-UL-r17 SupportedAggBandwidth-r17 OPTIONAL,

 aggBW-TotalDL-r17 SupportedAggBandwidth-r17 OPTIONAL,

 aggBW-TotalUL-r17 SupportedAggBandwidth-r17 OPTIONAL

}

-- TAG-CG-CONFIG-STOP

-- ASN1STOP

|  |
| --- |
| *CG-Config* field descriptions |
| ***aggregatedBandwidthSN***Used to indicate or request the maximum aggregated bandwidth at the SN side if the *supportedAggBW-FR1* was reported for the *selectedBandCombination* or *requestedBC-MRDC*, respectively*.* This field is only used in NR-DC.- *aggBW-FDD-DL/UL-r17* indicates the aggregated bandwidth across FDD DL/UL CCs in SCG;- *aggBW-TDD-DL/UL-r17* indicates the aggregated bandwidth across TDD DL/UL CCs in SCG;- *aggBW-TotalDL/UL-r17* indicates the aggregated bandwidth across all DL/UL CCs in SCG. |
| ***candidateCellInfoListCPC***Contains information regarding candidate target cells for Conditional PSCell Change (CPC) or inter-SN subsequent CPAC that the source secondary gNB suggests the target secondary gNB to consider configuring for CPC or subsequent CPAC, and/or that the source secondary gNB prepares for intra-SN subsequent CPAC configuration(s) which are delivered embedded within an RRC message generated by the MN. This field is only used in SN initiated CPC and SN initiated subsequent CPAC. |
| ***candidateCellInfoListSN***Contains information regarding cells that the source secondary node suggests the target secondary gNB to consider configuring. |
| ***candidateCellInfoListSN-EUTRA***Includes the *MeasResultList3EUTRA* as specified in TS 36.331 [10]. Contains information regarding cells that the source secondary node suggests the target secondary eNB to consider configuring. This field is only used in NE-DC. |
| ***candidateCellInfoListSubsequentCPC***Contains information regarding candidate target cells for subsequent CPAC that candidate secondary gNB (or the serving secondary gNB in case of intra-SN subsequent CPAC configuration(s) which are delivered embedded within an RRC message generated by the MN) suggests the master gNB to consider configuring for subsequent CPAC. This field is only used in MN initiated and SN initiated subsequent CPAC. This field is only included in a *CG-Config* message which is contained within a *CG-CandidateList* message. |
| ***candidateServingFreqListNR, candidateServingFreqListEUTRA***Indicates frequencies of candidate serving cells for In-Device Co-existence Indication (see TS 36.331 [10]). |
| ***candidateServingFreqListNR-r18***indicates the candidate frequencies configured by SN for IDC. This field is only used in NR-DC. |
| ***candidateServingFreqRangeListNR***indicates the candidate frequency ranges configured by SN for IDC. This field is only used in NR-DC. |
| ***configRestrictModReq***Used by SN to request changes to SCG configuration restrictions previously set by MN to ensure UE capabilities are respected and to indicate the configured/reserved SCG resources. E.g. can be used to request configuring an NR band combination whose use MN has previously forbidden. SN only includes this field in SN-initiated procedures unless this field is used to indicate configured/reserved SCG resources (corresponding to *reservedResourceConfigNRDC* and/or *aggregatedBandwidthSN*) only. |
| ***drx-ConfigSCG***This field contains the complete DRX configuration of the SCG. This field is only used in NR-DC. |
| ***drx-InfoSCG***This field contains the DRX long and short cycle configuration of the SCG. This field is used in (NG)EN-DC and NE-DC. |
| ***drx-InfoSCG2***This field contains the drx-onDurationTimer configuration of the SCG. This field is only used in (NG)EN-DC. |
| ***fr-InfoListSCG***Contains information of FR information of serving cells that include PScell and SCells configured in SCG. |
| ***fr1-Carriers-SCG, fr2-Carriers-SCG***Indicates the number of FR1 or FR2 serving cells configured in SCG. |
| ***idc-TDM-AssistanceConfig***Indicates if the IDC TDM reporting is enabled for the UE by SN. This field is only used in NR-DC. |
| ***measuredFrequenciesSN***Used by SN to indicate a list of frequencies measured by the UE. |
| ***needForGaps***In NE-DC, indicates whether the SN requests gNB to configure measurements gaps. |
| ***ph-InfoSCG***Power headroom information in SCG that is needed in the reception of PHR MAC CE of MCG |
| ***ph-SupplementaryUplink***Power headroom information for supplementary uplink. In the case of (NG)EN-DC and NR-DC, this field is only present when two UL carriers are configured for a serving cell and one UL carrier reports type1 PH while the other reports type 3 PH. |
| ***ph-Type1or3***Type of power headroom for a certain serving cell in SCG (PSCell and activated SCells). Value *type1* refers to type 1 power headroom, value *type3* refers to type 3 power headroom. (See TS 38.321 [3]). |
| ***ph-Uplink***Power headroom information for uplink. |
| ***pSCellFrequency, pSCellFrequencyEUTRA***Indicates the frequency of PSCell in NR (i.e., *pSCellFrequency*) or E-UTRA (i.e., *pSCellFrequencyEUTRA*). In this version of the specification, *pSCellFrequency* is not used in NE-DC whereas *pSCellFrequencyEUTRA* is only used in NE-DC. *pSCellFrequency* indicates the *absoluteFrequencySSB*. |
| ***reportCGI-RequestNR, reportCGI-RequestEUTRA***Used by SN to indicate to MN about configuring *reportCGI* procedure. The request may optionally contain information about the cell for which SN intends to configure *reportCGI* procedure. In this version of the specification, the *reportCGI-RequestNR* is used in (NG)EN-DC and NR-DC whereas *reportCGI-RequestEUTRA* is used only for NE-DC. |
| ***requestedBC-MRDC***Used to request configuring a band combination and corresponding feature sets which are forbidden to use by MN (i.e. outside of the *allowedBC-ListMRDC*) to allow re-negotiation of the UE capabilities for SCG configuration. |
| ***requestedL1-MeasConfigNRDC***Used to request the maximum number of allowed resources for L1 measurements to be configured for LTM at the SCG. This field is only used in NR-DC. |
| ***requestedMaxInterFreqMeasIdSCG***Used to request the maximum number of allowed measurement identities to configure for inter-frequency measurement. This field is only used in NR-DC. |
| ***requestedMaxIntraFreqMeasIdSCG***Used to request the maximum number of allowed measurement identities to configure for intra-frequency measurement on each serving frequency. |
| ***requestedMaxLTM-CandidateIdSCG***Used to request the maximum number of allowed LTM candidate configurations to configure. This field is only used in NR-DC. |
| ***requestedPDCCH-BlindDetectionSCG***Requested value of the reference number of cells for PDCCH blind detection allowed to be configured for the SCG. |
| ***requestedP-MaxEUTRA***Requested value for the maximum power for the serving cells the UE can use in E-UTRA SCG. This field is only used in NE-DC. |
| ***requestedP-MaxFR1***Requested value for the maximum power for the serving cells on frequency range 1 (FR1) in this secondary cell group (see TS 38.104 [12]) the UE can use in NR SCG. |
| ***requestedP-MaxFR2***Requested value for the maximum power for the serving cells on frequency range 2 (FR2) in this secondary cell group the UE can use in NR SCG. This field is only used in NR-DC. |
| ***requestedToffset***Requests the new value for the time offset restriction used by the SN for scheduling SCG transmissions (i.e. $T\_{proc,SCG,}^{max} $see TS 38.213 [13]). This field is used in NR-DC only when the fields *nrdc-PC-mode-FR1-r16* or *nrdc-PC-mode-FR2-r16* are set to dynamic. Value ms0dot5 corresponds to 0.5 ms, value ms0dot75 corresponds to 0.75 ms, value ms1 corresponds to 1ms and so on. |
| ***reservedResourceConfigNRDC***Used to request or indicate the maximum number of resources reserved for the SCG. This field is only used in NR-DC. |
| ***scellFrequenciesSN-EUTRA, scellFrequenciesSN-NR***Indicates the frequency of all SCells with SSB configured in SCG. The field *scellFrequenciesSN-EUTRA* is used in NE-DC; the field *scellFrequenciesSN-NR* is used in (NG)EN-DC and NR-DC. In (NG)EN-DC, the field is optionally provided to the MN. *scellFrequenciesSN-NR* indicates *absoluteFrequencySSB*. |
| ***scg-CellGroupConfig***Contains the *RRCReconfiguration* message (containing only *secondaryCellGroup* and/or *measConfig* and/or *otherConfig* and/or *appLayerMeasConfig* and/or *conditionalReconfiguration*, *ltm-Config*, and/or *bap-Config* and/or *iab-IP-AddressConfigurationList*):- to be sent to the UE, used upon SCG establishment or modification (only when the SCG is not released by the SN), as generated (entirely) by the (target) SgNB. In this case, the SN sets the *RRCReconfiguration* message in accordance with clause 6 e.g. regarding the "Need" or "Cond" statements. or- including the current SCG configuration of the UE, when provided in response to a query from MN, or in SN triggered SN change in order to enable delta signaling by the target SN, or in SN triggered modification procedure in order to coordinate CHO or MN-initiated CPC with SCG reconfigurations (see TS 38.423 [35]). In this case, the SN sets the *RRCReconfiguration* message in accordance with clause 11.2.3.The field is absent if neither SCG (re)configuration nor SCG configuration query nor SN triggered modification procedure in order to coordinate CHO or MN-initiated CPC with SCG reconfigurations (see TS 38.423 [35]) nor SN triggered SN change is performed, e.g. at inter-node capability/configuration coordination which does not result in SCG (re)configuration towards the UE. The field is also absent upon an SCG release triggered by the SN. This field is not applicable in NE-DC. |
| ***scg-CellGroupConfigEUTRA***Includes the E-UTRA *RRCConnectionReconfiguration* message as specified in TS 36.331 [10]. In this version of the specification, the E-UTRA RRC message can only include the field *scg-Configuration*:- to be sent to the UE, used to (re-)configure the SCG configuration upon SCG establishment or modification (only when the SCG is not released by the SN), as generated (entirely) by the (target) SeNB. In this case, the SN sets the *scg-Configuration* within the EUTRA *RRCConnectionReconfiguration* message in accordance with clause 6 in TS 36.331 [10] e.g. regarding the "Need" or "Cond" statements.or- including the current SCG configuration of the UE, when provided in response to a query from MN, or in SN triggered SN change in order to enable delta signalling by the target SN.The field is absent if neither SCG (re)configuration nor SCG configuration query nor SN triggered SN change is performed, e.g. at inter-node capability/configuration coordination which does not result in SCG (re)configuration towards the UE. The field is also absent upon an SCG release triggered by the SN. This field is only used in NE-DC. |
| ***scg-RB-Config***Contains the IE *RadioBearerConfig*:- to be sent to the UE, used to (re-)configure the SCG RB configuration upon SCG establishment or modification, as generated (entirely) by the (target) SgNB or SeNB. In this case, the SN sets the *RadioBearerConfig* in accordance with clause 6, e.g. regarding the "Need" or "Cond" statements. or- including the current SCG RB configuration of the UE, when provided in response to a query from MN or in SN triggered SN change or in SN triggered SN release or bearer type change between SN terminated bearer to MN terminated bearer in order to enable delta signaling by the MN or target SN. In this case, the SN sets the *RadioBearerConfig* in accordance with clause 11.2.3.The field is absent if neither SCG (re)configuration nor SCG configuration query nor SN triggered SN change nor SN triggered SN release is performed, e.g. at inter-node capability/configuration coordination which does not result in SCG RB (re)configuration. |
| ***scpac-ReferenceConfigurationSCG***Includes the reference configuration associated with the SCG for the candidate supporting subsequent CPAC. |
| ***selectedBandCombination***Indicates the band combination selected by SN in (NG)EN-DC, NE-DC, and NR-DC. The SN should inform the MN with this field whenever the band combination and/or feature set it selected for the SCG changes (i.e. even if the new selection concerns a band combination and/or feature set that is allowed by the *allowedBC-ListMRDC*) |
| ***selectedToffset***Indicates the value used by the SN for scheduling SCG transmissions (i.e. $T\_{proc,SCG}^{max}, $see TS 38.213 [13]). This field is used in NR-DC only when the fields *nrdc-PC-mode-FR1-r16* or *nrdc-PC-mode-FR2-r16* are set to dynamic. The SN can only indicate a value that is less than or equal to *maxToffset* received from MN. This field is used in NR-DC only when MN has included the field *maxToffset* in *CG-ConfigInfo*. Value *ms0dot5* corresponds to 0.5 ms, value *ms0dot75* corresponds to 0.75 ms, value *ms1* corresponds to 1ms and so on. |
| ***servCellInfoListSCG-EUTRA***Indicates the carrier frequency and the transmission bandwidth of the serving cell(s) in the SCG in intra-band NE-DC. The field is needed when MN and SN operate serving cells in the same band for either contiguous or non-contiguous intra-band band combination or LTE NR inter-band band combinations where the frequency range of the E-UTRA band is a subset of the frequency range of the NR band (as specified in Table 5.5B.4.1-1 of TS 38.101-3 [34]) in NE-DC. |
| ***servCellInfoListSCG-NR***Indicates the frequency band indicator, carrier center frequency, UE specific channel bandwidth and SCS of the serving cell(s) in the SCG in intra-band (NG)EN-DC. The field is needed when MN and SN operate serving cells in the same band for either contiguous or non-contiguous intra-band band combination or LTE NR inter-band band combinations where the frequency range of the E-UTRA band is a subset of the frequency range of the NR band (as specified in Table 5.5B.4.1-1 of TS 38.101-3 [34]) in (NG)EN-DC. |
| ***subsequentCPAC-Information***Contains information about handling of stored subsequent CPAC configurations for the UE that the target secondary gNB suggests the master gNB to consider configuring for normal PSCell addition or change. It includes information about updates of execution conditions for the subsequent CPAC configurations that are to be kept at the PSCell addition/change. |
| ***successPSCell-Config***Include the successful PSCell change or addition report configuration in case of SN initiated PSCell change or CPC. The *thresholdPercentageT304-SCG* is not configured in this message. |
| ***twoPHRModeSCG***Indicates if the power headroom for SCG shall be reported as two PHRs (each PHR associated with a SRS resource set) is enabled or not. |
| ***twoSRS-MultipanelScheme***Indicates whether the indicated serving cell is configured with multiple panel simultaneous uplink transmission schemes of multipanelSchemeSDM or multipanelSchemeSFN corresponding to two SRS resource sets configured in either *srs-ResourceSetToAddModList* or *srs-ResourceSetToAddModListDCI-0-2* with usage 'codebook' or 'noncodebook'. |
| ***twoSRS-PUSCH-Repetition***Indicates whether the indicated serving cell is configured for PUSCH repetition corresponding to two SRS resource sets configured in either *srs-ResourceSetToAddModList* or *srs-ResourceSetToAddModListDCI-0-2* with usage 'codebook' or 'noncodebook'. |
| ***transmissionBandwidth-EUTRA***Indicates the transmission bandwidth on an E-UTRA carrier frequency as defined by the parameter Transmission Bandwidth Configuration "NRB" TS 36.104 [33]. The values rb6, rb15, rb25, rb50, rb75, rb100 indicate 6, 15, 25, 50, 75 and 100 resource blocks respectively. |
| ***ueAssistanceInformationSCG***Includes for each UE assistance feature associated with the SCG, the information last reported by the UE in the NR *UEAssistanceInformation* message for the SCG, if any. |

|  |
| --- |
| *BandCombinationInfoSN* field descriptions |
| ***bandCombinationIndex***In case of NR-DC, this field indicates the position of a band combination in the *supportedBandCombinationList*. In case of NE-DC, this field indicates the position of a band combination in the *supportedBandCombinationList* and/or *supportedBandCombinationListNEDC-Only*. In case of (NG)EN-DC, this field indicates the position of a band combination in the *supportedBandCombinationList* and/or *supportedBandCombinationList-UplinkTxSwitch*. Band combination entries in *supportedBandCombinationList* are referred by an index which corresponds to the position of a band combination in the *supportedBandCombinationList*. Band combination entries in *supportedBandCombinationListNEDC-Only* are referred by an index which corresponds to the position of a band combination in the *supportedBandCombinationListNEDC-Only* increased by the number of entries in *supportedBandCombinationList*. Band combination entries in *supportedBandCombinationList-UplinkTxSwitch* are referred by an index which corresponds to the position of a band combination in the *supportedBandCombinationList-UplinkTxSwitch* increased by the number of entries in *supportedBandCombinationList*. |
| ***requestedFeatureSets***The position in the *FeatureSetCombination* which identifies one *FeatureSetUplink*/*Downlink* for each band entry in the associated band combination |

|  |  |
| --- | --- |
| Conditional Presence | Explanation |
| *FDD* | This field is mandatory present if dl-FreqInfo-NR is included and concerns an FDD carrier; otherwise the field is absent. |

*End of changes*