**3GPP TSG-RAN WG2 Meeting #119-e *R2-2208140***

**Electronic, 17th - 29th August 2022**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.331** | **CR** | **3361** | **rev** | **-** | **Current version:** | **16.9.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

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

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Miscellaneous non-controversial corrections Set XV | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson (Rapp), Lenovo | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_unlic-Core, TEI16 | | | | |  | ***Date:*** | | | 2022-08-22 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Correction of miscellaneous non-controversial errors (typos etc). | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. *occ-Index* and *occ-length* in PUCCH-Resource, PUCCH-ResourceExt field descriptions Incorrect reference to *useInterlacePUCCH-Dedicated-r16* has been replaced by *useInterlacePUCCH-PUSCH-r16*. 2. In A.4.3.6 in the ASN.1 examples the issues have been fixed.   Several other typos and minor errors are corrected.  **Impact analysis**  Impacted 5G architecture options:  NR SA, (NG)EN-DC, NE-DC, NR-DC  Impacted functionality:  Miscellaneous  Inter-operability:  There are no interoperability issues. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Inconsistencies in the RRC specification remain. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.2.3.3, 6.3.2, A.4.3.6 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

*Start of changes*

##### 5.2.2.3.3 Request for on demand system information

The UE shall:

1> if *SIB1* includes *si-SchedulingInfo* containing *si-RequestConfigSUL* and criteria to select supplementary uplink as defined in TS 38.321[3], clause 5.1.1 is met:

2> trigger the lower layer to initiate the Random Access procedure on supplementary uplink in accordance with TS 38.321 [3] using the PRACH preamble(s) and PRACH resource(s) in *si-RequestConfigSUL* corresponding to the SI message(s) that the UE requires to operate within the cell, and for which *si-BroadcastStatus* is set to *notBroadcasting*;

2> if acknowledgement for SI request is received from lower layers:

3> acquire the requested SI message(s) as defined in clause 5.2.2.3.2, immediately;

1> else if *SIB1* includes *si-SchedulingInfo* containing *si-RequestConfig* and criteria to select normal uplink as defined in TS 38.321[3], clause 5.1.1 is met:

2> trigger the lower layer to initiate the random access procedure on normal uplink in accordance with TS 38.321 [3] using the PRACH preamble(s) and PRACH resource(s) in *si-RequestConfig* corresponding to the SI message(s) that the UE requires to operate within the cell, and for which *si-BroadcastStatus* is set to *notBroadcasting*;

2> if acknowledgement for SI request is received from lower layers:

3> acquire the requested SI message(s) as defined in clause 5.2.2.3.2, immediately;

1> else:

2> apply the default L1 parameter values as specified in corresponding physical layer specifications except for the parameters for which values are provided in *SIB1*;

2> apply the default MAC Cell Group configuration as specified in 9.2.2;

2> apply the *timeAlignmentTimerCommon* included in *SIB1*;

2> apply the CCCH configuration as specified in 9.1.1.2;

2> initiate transmission of the *RRCSystemInfoRequest* message in accordance with 5.2.2.3.4;

2> if acknowledgement for *RRCSystemInfoRequest* message is received from lower layers:

3> acquire the requested SI message(s) as defined in clause 5.2.2.3.2, immediately;

1> if cell reselection occurs while waiting for the acknowledgment for SI request from lower layers:

2> reset MAC;

2> if SI request is based on *RRCSystemInfoRequest* message:

3> release RLC entity for SRB0.

NOTE: After RACH failure for SI request it is up to UE implementation when to retry the SI request.

<Text omitted>

### 6.3.2 Radio resource control information elements

<Text omitted>

– *BWP-UplinkCommon*

The IE *BWP-UplinkCommon* is used to configure the common parameters of an uplink BWP. They are "cell specific" and the network ensures the necessary alignment with corresponding parameters of other UEs. The common parameters of the initial bandwidth part of the PCell are also provided via system information. For all other serving cells, the network provides the common parameters via dedicated signalling.

***BWP-UplinkCommon* information element**

-- ASN1START

-- TAG-BWP-UPLINKCOMMON-START

BWP-UplinkCommon ::= SEQUENCE {

genericParameters BWP,

rach-ConfigCommon SetupRelease { RACH-ConfigCommon } OPTIONAL, -- Need M

pusch-ConfigCommon SetupRelease { PUSCH-ConfigCommon } OPTIONAL, -- Need M

pucch-ConfigCommon SetupRelease { PUCCH-ConfigCommon } OPTIONAL, -- Need M

...,

[[

rach-ConfigCommonIAB-r16 SetupRelease { RACH-ConfigCommon } OPTIONAL, -- Need M

useInterlacePUCCH-PUSCH-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

msgA-ConfigCommon-r16 SetupRelease { MsgA-ConfigCommon-r16 } OPTIONAL -- Cond SpCellOnly2

]]

}

-- TAG-BWP-UPLINKCOMMON-STOP

-- ASN1STOP

|  |
| --- |
| ***BWP-UplinkCommon* field descriptions** |
| ***msgA-ConfigCommon***  Configuration of the cell specific PRACH and PUSCH resource parameters for transmission of MsgA in 2-step random access type procedure. The NW can configure *msgA-ConfigCommon* only for UL BWPs if the linked DL BWPs (same bwp-Id as UL-BWP) are the initial DL BWPs or DL BWPs containing the SSB associated to the initial BL BWP |
| ***pucch-ConfigCommon***  Cell specific parameters for the PUCCH of this BWP. |
| ***pusch-ConfigCommon***  Cell specific parameters for the PUSCH of this BWP. |
| ***rach-ConfigCommon***  Configuration of cell specific random access parameters which the UE uses for contention based and contention free random access as well as for contention based beam failure recovery in this BWP. The NW configures SSB-based RA (and hence *RACH-ConfigCommon*) only for UL BWPs if the linked DL BWPs (same *bwp-Id* as UL-BWP) are the initial DL BWPs or DL BWPs containing the SSB associated to the initial DL BWP. The network configures *rach-ConfigCommon*, whenever it configures contention free random access (for reconfiguration with sync or for beam failure recovery). |
| ***rach-ConfigCommonIAB***  Configuration of cell specific random access parameters for the IAB-MT. The IAB specific IAB RACH configuration is used by IAB-MT, if configured. |
| ***useInterlacePUCCH-PUSCH***  If the field is present, the UE uses uplink frequency domain resource allocation Type 2 for cell-specific PUSCH, e.g., PUSCH scheduled by RAR UL grant (see TS 38.213 [13], clause 8.3 and TS 38.214 [19], clause 6.1.2.2) and uses interlaced PUCCH Format 0 and 1 for cell-specific PUCCH (see TS 38.213 [13], clause 9.2.1). |

|  |  |
| --- | --- |
| **Conditional Presence** | **Explanation** |
| *SpCellOnly2* | The field is optionally present, Need M, in the *BWP-UplinkCommon* of an SpCell. It is absent otherwise. |

– *BWP-UplinkDedicated*

The IE *BWP-UplinkDedicated* is used to configure the dedicated (UE specific) parameters of an uplink BWP.

***BWP-UplinkDedicated* information element**

-- ASN1START

-- TAG-BWP-UPLINKDEDICATED-START

BWP-UplinkDedicated ::= SEQUENCE {

pucch-Config SetupRelease { PUCCH-Config } OPTIONAL, -- Need M

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

configuredGrantConfig SetupRelease { ConfiguredGrantConfig } OPTIONAL, -- Need M

srs-Config SetupRelease { SRS-Config } OPTIONAL, -- Need M

beamFailureRecoveryConfig SetupRelease { BeamFailureRecoveryConfig } OPTIONAL, -- Cond SpCellOnly

...,

[[

sl-PUCCH-Config-r16 SetupRelease { PUCCH-Config } OPTIONAL, -- Need M

cp-ExtensionC2-r16 INTEGER (1..28) OPTIONAL, -- Need R

cp-ExtensionC3-r16 INTEGER (1..28) OPTIONAL, -- Need R

useInterlacePUCCH-PUSCH-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

pucch-ConfigurationList-r16 SetupRelease { PUCCH-ConfigurationList-r16 } OPTIONAL, -- Need M

lbt-FailureRecoveryConfig-r16 SetupRelease { LBT-FailureRecoveryConfig-r16 } OPTIONAL, -- Need M

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

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

configuredGrantConfigType2DeactivationStateList-r16 ConfiguredGrantConfigType2DeactivationStateList-r16 OPTIONAL -- Need R

]]

}

ConfiguredGrantConfigToAddModList-r16 ::= SEQUENCE (SIZE (1..maxNrofConfiguredGrantConfig-r16)) OF ConfiguredGrantConfig

ConfiguredGrantConfigToReleaseList-r16 ::= SEQUENCE (SIZE (1..maxNrofConfiguredGrantConfig-r16)) OF ConfiguredGrantConfigIndex-r16

ConfiguredGrantConfigType2DeactivationState-r16 ::= SEQUENCE (SIZE (1..maxNrofConfiguredGrantConfig-r16)) OF ConfiguredGrantConfigIndex-r16

ConfiguredGrantConfigType2DeactivationStateList-r16 ::=

SEQUENCE (SIZE (1..maxNrofCG-Type2DeactivationState)) OF ConfiguredGrantConfigType2DeactivationState-r16

-- TAG-BWP-UPLINKDEDICATED-STOP

-- ASN1STOP

|  |
| --- |
| ***BWP-UplinkDedicated* field descriptions** |
| ***beamFailureRecoveryConfig***  Configuration of beam failure recovery. If *supplementaryUplink* is present, the field is present only in one of the uplink carriers, either UL or SUL. |
| ***configuredGrantConfig***  A *Configured-Grant* of *type1* or *type2*. It may be configured for UL or SUL but in case of *type1* not for both at a time. Except for reconfiguration with sync, the NW does not reconfigure *configuredGrantConfig* when there is an active configured uplink grant Type 2 (see TS 38.321 [3]). However, the NW may release the *configuredGrantConfig* at any time. Network can only configure configured grant in one BWP using either this field or *configuredGrantConfigToAddModList.* |
| ***configuredGrantConfigToAddModList***  Indicates a list of one or more configured grant configurations to be added or modified for one BWP. Except for reconfiguration with sync, the NW does not reconfigure a Type 2 configured grant configuration when it is active (see TS 38.321 [3]). |
| ***configuredGrantConfigToReleaseList***  Indicates a list of one or more UL Configured Grant configurations to be released. The NW may release a configured grant configuration at any time. |
| ***configuredGrantConfigType2DeactivationStateList***  Indicates a list of the deactivation states in which each state can be mapped to a single or multiple Configured Grant type 2 configurations to be deactivated when the corresponding deactivation DCI is received, see clause 7.3.1 in TS 38.212 [17] and clause 10.2 in TS 38.213 [13]. |
| ***cp-ExtensionC2, cp-ExtensionC3***  Configures the cyclic prefix (CP) extension (see TS 38.211 [16], clause 5.3.1). For 15 kHz SCS, {1..28} are valid for both *cp-ExtensionC2* and *cp-ExtensionC3*. For 30 kHz SCS, {1..28} are valid for *cp-ExtensionC2* and {2..28} are valid for *cp-ExtensionC3.* For 60 kHz SCS, {2..28} are valid for *cp-ExtensionC2* and {3..28} are valid for *cp-ExtensionC3*. |
| ***lbt-FailureRecoveryConfig***  Configures parameters used for detection of consistent uplink LBT failures for operationwith shared spectrum channel access, as specified in TS 38.321 [3]. |
| ***pucch-Config***  PUCCH configuration for one BWP of the normal UL or SUL of a serving cell. If the UE is configured with SUL, the network configures PUCCH only on the BWPs of one of the uplinks (normal UL or SUL). The network configures *PUCCH-Config* at least on non-initial BWP(s) for SpCell and PUCCH SCell. If supported by the UE, the network may configure at most one additional SCell of a cell group with *PUCCH-Config* (i.e. PUCCH SCell).  In (NG)EN-DC and NE-DC, the NW configures at most one serving cell per frequency range with PUCCH. In (NG)EN-DC and NE-DC, if two PUCCH groups are configured, the serving cells of the NR PUCCH group in FR2 use the same numerology. For NR-DC, the maximum number of PUCCH groups in each cell group is one, and only the same numerology is supported for the cell group with carriers only in FR2.  The NW may configure PUCCH for a BWP when setting up the BWP. The network may also add/remove the *pucch-Config* in an *RRCReconfiguration* with *reconfigurationWithSync* (for SpCell or PUCCH SCell) or with SCell release and add (for PUCCH SCell) to move the PUCCH between the UL and SUL carrier of one serving cell. In other cases, only modifications of a previously configured *pucch-Config* are allowed.  If one (S)UL BWP of a serving cell is configured with PUCCH, all other (S)UL BWPs must be configured with PUCCH, too. |
| ***pucch-ConfigurationList***  PUCCH configurations for two simultaneously constructed HARQ-ACK codebooks (see TS 38.213 [13], clause 9.1). Different PUCCH Resource IDs are configured in different *PUCCH-Config* within the *pucch-ConfigurationList* if configured. |
| ***pusch-Config***  PUSCH configuration for one BWP of the normal UL or SUL of a serving cell. If the UE is configured with SUL and if it has a *PUSCH-Config* for both UL and SUL, an UL/SUL indicator field in DCI indicates which of the two to use. See TS 38.212 [17], clause 7.3.1. |
| ***sl-PUCCH-Config***  Indicates the UE specific PUCCH configurations used for the HARQ-ACK feedback reporting for NR sidelink communication. |
| ***srs-Config***  Uplink sounding reference signal configuration. |
| ***useInterlacePUCCH-PUSCH***  If the field is present, the UE uses uplink frequency domain resource allocation Type 2 for PUSCH (see TS 38.213 [13], clause 8.3 and TS 38.214 [19], clause 6.1.2.2) and uses interlaced PUCCH Format 0, 1, 2, and 3 for PUCCH (see TS 38.213 [13], clause 9.2.1). |

|  |  |
| --- | --- |
| **Conditional Presence** | **Explanation** |
| *SpCellOnly* | The field is optionally present, Need M, in the *BWP-UplinkDedicated* of an SpCell. It is absent otherwise. |

NOTE 1: In case of *RRCReconfiguration* with *reconfigurationWithSync*, the UE performs a MAC reset, which involves releasing the PUCCH-CSI/SRS/SR configuration in accordance with clause 5.3.12 and TS 38.321 [3], clauses 5.12 and 5.2. Hence, for these parts of the dedicated radio resource configuration, delta signalling is not supported in the message when *reconfigurationWithSync* is included.

<Text omitted>

– *DRX-ConfigSecondaryGroup*

The IE *DRX-ConfigSecondaryGroup* is used to configure DRX related parameters for the second DRX group as specified in TS 38.321 [3].

***DRX-ConfigSecondaryGroup* information element**

-- ASN1START

-- TAG-DRX-CONFIGSECONDARYGROUP-START

DRX-ConfigSecondaryGroup-r16 ::= SEQUENCE {

drx-onDurationTimer-r16 CHOICE {

subMilliSeconds INTEGER (1..31),

milliSeconds 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 }

},

drx-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}

}

-- TAG-DRX-CONFIGSECONDARYGROUP-STOP

-- ASN1STOP

|  |
| --- |
| ***DRX-ConfigSecondaryGroup* field descriptions** |
| ***drx-InactivityTimer***  Value in multiple integers of 1 ms. *ms0* corresponds to 0 ms, *ms1* corresponds to 1 ms, *ms2* corresponds to 2 ms, and so on, as specified in TS 38.321 [3]. The network configures a *drx-InactivityTimer* value for the second DRX group that is smaller than the *drx-InactivityTimer* configured for the default DRX group in IE *DRX-Config*. |
| ***drx-onDurationTimer***  Value in multiples of 1/32 ms (subMilliSeconds) or in ms (milliSeconds). For the latter, value *ms1* corresponds to 1 ms, value *ms2* corresponds to 2 ms, and so on, as specified in TS 38.321 [3]. The network configures a *drx-onDurationTimer* value for the second DRX group that is smaller than the *drx-onDurationTimer* configured for the default DRX group in IE *DRX-Config*. |

<Text omitted>

– *MAC-CellGroupConfig*

The IE *MAC-CellGroupConfig* is used to configure MAC parameters for a cell group, including DRX.

***MAC-CellGroupConfig* information element**

-- ASN1START

-- TAG-MAC-CELLGROUPCONFIG-START

MAC-CellGroupConfig ::= SEQUENCE {

drx-Config SetupRelease { DRX-Config } OPTIONAL, -- Need M

schedulingRequestConfig SchedulingRequestConfig OPTIONAL, -- Need M

bsr-Config BSR-Config OPTIONAL, -- Need M

tag-Config TAG-Config OPTIONAL, -- Need M

phr-Config SetupRelease { PHR-Config } OPTIONAL, -- Need M

skipUplinkTxDynamic BOOLEAN,

...,

[[

csi-Mask BOOLEAN OPTIONAL, -- Need M

dataInactivityTimer SetupRelease { DataInactivityTimer } OPTIONAL -- Cond MCG-Only

]],

[[

usePreBSR-r16 ENUMERATED {true} OPTIONAL, -- Need R

schedulingRequestID-LBT-SCell-r16 SchedulingRequestId OPTIONAL, -- Need R

lch-BasedPrioritization-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

schedulingRequestID-BFR-SCell-r16 SchedulingRequestId OPTIONAL, -- Need R

drx-ConfigSecondaryGroup-r16 SetupRelease { DRX-ConfigSecondaryGroup-r16 } OPTIONAL -- Need M

]],

[[

enhancedSkipUplinkTxDynamic-r16 ENUMERATED {true} OPTIONAL, -- Need R

enhancedSkipUplinkTxConfigured-r16 ENUMERATED {true} OPTIONAL -- Need R

]]

}

DataInactivityTimer ::= ENUMERATED {s1, s2, s3, s5, s7, s10, s15, s20, s40, s50, s60, s80, s100, s120, s150, s180}

-- TAG-MAC-CELLGROUPCONFIG-STOP

-- ASN1STOP

|  |
| --- |
| ***MAC-CellGroupConfig* field descriptions** |
| ***csi-Mask***  If set to true, the UE limits CSI reports to the on-duration period of the DRX cycle, see TS 38.321 [3]. |
| ***dataInactivityTimer***  Releases the RRC connection upon data inactivity as specified in clause 5.3.8.5 and in TS 38.321 [3]. Value *s1* corresponds to 1 second, value s2 corresponds to 2 seconds, and so on. |
| ***drx-Config***  Used to configure DRX as specified in TS 38.321 [3]. |
| ***drx-ConfigSecondaryGroup***  Used to configure DRX related parameters for the second DRX group as specified in TS 38.321 [3]. The network does not configure secondary DRX group with DCP simultaneously nor secondary DRX group with a dormant BWP simultaneously. |
| ***lch-BasedPrioritization***  If this field is present, the corresponding MAC entity of the UE is configured with prioritization between overlapping grants and between scheduling request and overlapping grants based on LCH priority, see TS 38.321 [3]. The network does not configure *lch-BasedPrioritization* with *enhancedSkipUplinkTxDynamic* simultaneously nor *lch-BasedPrioritization* with *enhancedSkipUplinkTxConfigured* simultaneously. |
| ***schedulingRequestID-BFR-SCell***  Indicates the scheduling request configuration applicable for BFR on SCell, as specified in TS 38.321 [3]. |
| ***schedulingRequestID-LBT-SCell***  Indicates the scheduling request configuration applicable for consistent uplink LBT recovery on SCell, as specified in TS 38.321 [3]. |
| ***skipUplinkTxDynamic, enhancedSkipUplinkTxDynamic, enhancedSkipUplinkTxConfigured***  If set to *true*, the UE skips UL transmissions as described in TS 38.321 [3]. If the UE is configured with *enhancedSkipUplinkTxDynamic* or *enhancedSkipUplinkTxConfigured* with value *true*, REPETITION\_NUMBER (as specified in TS 38.321 [3], clause 5.4.2.1) of the corresponding PUSCH transmission of the uplink grant shall be equal to 1. |
| ***tag-Config***  The field is used to configure parameters for a time-alignment group. The field is not present if any DAPS bearer is configured. |
| ***usePreBSR***  If set to true, the MAC entity of the IAB-MT may use the Pre-emptive BSR, see TS 38.321 [3]. |

|  |  |
| --- | --- |
| **Conditional Presence** | **Explanation** |
| *MCG-Only* | This field is optionally present, Need M, for the *MAC-CellGroupConfig* of the MCG. It is absent otherwise. |

<Text omitted>

– *PUCCH-Config*

The IE *PUCCH-Config* is used to configure UE specific PUCCH parameters (per BWP).

***PUCCH-Config* information element**

-- ASN1START

-- TAG-PUCCH-CONFIG-START

PUCCH-Config ::= SEQUENCE {

resourceSetToAddModList SEQUENCE (SIZE (1..maxNrofPUCCH-ResourceSets)) OF PUCCH-ResourceSet OPTIONAL, -- Need N

resourceSetToReleaseList SEQUENCE (SIZE (1..maxNrofPUCCH-ResourceSets)) OF PUCCH-ResourceSetId OPTIONAL, -- Need N

resourceToAddModList SEQUENCE (SIZE (1..maxNrofPUCCH-Resources)) OF PUCCH-Resource OPTIONAL, -- Need N

resourceToReleaseList SEQUENCE (SIZE (1..maxNrofPUCCH-Resources)) OF PUCCH-ResourceId OPTIONAL, -- Need N

format1 SetupRelease { PUCCH-FormatConfig } OPTIONAL, -- Need M

format2 SetupRelease { PUCCH-FormatConfig } OPTIONAL, -- Need M

format3 SetupRelease { PUCCH-FormatConfig } OPTIONAL, -- Need M

format4 SetupRelease { PUCCH-FormatConfig } OPTIONAL, -- Need M

schedulingRequestResourceToAddModList SEQUENCE (SIZE (1..maxNrofSR-Resources)) OF SchedulingRequestResourceConfig

OPTIONAL, -- Need N

schedulingRequestResourceToReleaseList SEQUENCE (SIZE (1..maxNrofSR-Resources)) OF SchedulingRequestResourceId

OPTIONAL, -- Need N

multi-CSI-PUCCH-ResourceList SEQUENCE (SIZE (1..2)) OF PUCCH-ResourceId OPTIONAL, -- Need M

dl-DataToUL-ACK SEQUENCE (SIZE (1..8)) OF INTEGER (0..15) OPTIONAL, -- Need M

spatialRelationInfoToAddModList SEQUENCE (SIZE (1..maxNrofSpatialRelationInfos)) OF PUCCH-SpatialRelationInfo

OPTIONAL, -- Need N

spatialRelationInfoToReleaseList SEQUENCE (SIZE (1..maxNrofSpatialRelationInfos)) OF PUCCH-SpatialRelationInfoId

OPTIONAL, -- Need N

pucch-PowerControl PUCCH-PowerControl OPTIONAL, -- Need M

...,

[[

resourceToAddModListExt-v1610 SEQUENCE (SIZE (1..maxNrofPUCCH-Resources)) OF PUCCH-ResourceExt-v1610 OPTIONAL, -- Need N

dl-DataToUL-ACK-r16 SetupRelease { DL-DataToUL-ACK-r16 } OPTIONAL, -- Need M

ul-AccessConfigListDCI-1-1-r16 SetupRelease { UL-AccessConfigListDCI-1-1-r16 } OPTIONAL, -- Need M

subslotLengthForPUCCH-r16 CHOICE {

normalCP-r16 ENUMERATED {n2,n7},

extendedCP-r16 ENUMERATED {n2,n6}

} OPTIONAL, -- Need R

dl-DataToUL-ACK-DCI-1-2-r16 SetupRelease { DL-DataToUL-ACK-DCI-1-2-r16} OPTIONAL, -- Need M

numberOfBitsForPUCCH-ResourceIndicatorDCI-1-2-r16 INTEGER (0..3) OPTIONAL, -- Need R

dmrs-UplinkTransformPrecodingPUCCH-r16 ENUMERATED {enabled} OPTIONAL, -- Cond PI2-BPSK

spatialRelationInfoToAddModListSizeExt-v1610 SEQUENCE (SIZE (1..maxNrofSpatialRelationInfosDiff-r16)) OF PUCCH-SpatialRelationInfo

OPTIONAL, -- Need N

spatialRelationInfoToReleaseListSizeExt-v1610 SEQUENCE (SIZE (1..maxNrofSpatialRelationInfosDiff-r16)) OF PUCCH-SpatialRelationInfoId

OPTIONAL, -- Need N

spatialRelationInfoToAddModListExt-v1610 SEQUENCE (SIZE (1..maxNrofSpatialRelationInfos-r16)) OF PUCCH-SpatialRelationInfoExt-r16

OPTIONAL, -- Need N

spatialRelationInfoToReleaseListExt-v1610 SEQUENCE (SIZE (1..maxNrofSpatialRelationInfos-r16)) OF

PUCCH-SpatialRelationInfoId-r16 OPTIONAL, -- Need N

resourceGroupToAddModList-r16 SEQUENCE (SIZE (1..maxNrofPUCCH-ResourceGroups-r16)) OF PUCCH-ResourceGroup-r16

OPTIONAL, -- Need N

resourceGroupToReleaseList-r16 SEQUENCE (SIZE (1..maxNrofPUCCH-ResourceGroups-r16)) OF PUCCH-ResourceGroupId-r16

OPTIONAL, -- Need N

sps-PUCCH-AN-List-r16 SetupRelease { SPS-PUCCH-AN-List-r16 } OPTIONAL, -- Need M

schedulingRequestResourceToAddModListExt-v1610 SEQUENCE (SIZE (1..maxNrofSR-Resources)) OF SchedulingRequestResourceConfigExt-v1610

OPTIONAL -- Need N

]]

}

PUCCH-FormatConfig ::= SEQUENCE {

interslotFrequencyHopping ENUMERATED {enabled} OPTIONAL, -- Need R

additionalDMRS ENUMERATED {true} OPTIONAL, -- Need R

maxCodeRate PUCCH-MaxCodeRate OPTIONAL, -- Need R

nrofSlots ENUMERATED {n2,n4,n8} OPTIONAL, -- Need S

pi2BPSK ENUMERATED {enabled} OPTIONAL, -- Need R

simultaneousHARQ-ACK-CSI ENUMERATED {true} OPTIONAL -- Need R

}

PUCCH-MaxCodeRate ::= ENUMERATED {zeroDot08, zeroDot15, zeroDot25, zeroDot35, zeroDot45, zeroDot60, zeroDot80}

-- A set with one or more PUCCH resources

PUCCH-ResourceSet ::= SEQUENCE {

pucch-ResourceSetId PUCCH-ResourceSetId,

resourceList SEQUENCE (SIZE (1..maxNrofPUCCH-ResourcesPerSet)) OF PUCCH-ResourceId,

maxPayloadSize INTEGER (4..256) OPTIONAL -- Need R

}

PUCCH-ResourceSetId ::= INTEGER (0..maxNrofPUCCH-ResourceSets-1)

PUCCH-Resource ::= SEQUENCE {

pucch-ResourceId PUCCH-ResourceId,

startingPRB PRB-Id,

intraSlotFrequencyHopping ENUMERATED { enabled } OPTIONAL, -- Need R

secondHopPRB PRB-Id OPTIONAL, -- Need R

format CHOICE {

format0 PUCCH-format0,

format1 PUCCH-format1,

format2 PUCCH-format2,

format3 PUCCH-format3,

format4 PUCCH-format4

}

}

PUCCH-ResourceExt-v1610 ::= SEQUENCE {

interlaceAllocation-r16 SEQUENCE {

rb-SetIndex-r16 INTEGER (0..4),

interlace0-r16 CHOICE {

scs15 INTEGER (0..9),

scs30 INTEGER (0..4)

}

} OPTIONAL, --Need R

format-v1610 CHOICE {

interlace1-v1610 INTEGER (0..9),

occ-v1610 SEQUENCE {

occ-Length-v1610 ENUMERATED {n2,n4} OPTIONAL, -- Need M

occ-Index-v1610 ENUMERATED {n0,n1,n2,n3} OPTIONAL -- Need M

}

} OPTIONAL, -- Need R

...

}

PUCCH-ResourceId ::= INTEGER (0..maxNrofPUCCH-Resources-1)

PUCCH-format0 ::= SEQUENCE {

initialCyclicShift INTEGER(0..11),

nrofSymbols INTEGER (1..2),

startingSymbolIndex INTEGER(0..13)

}

PUCCH-format1 ::= SEQUENCE {

initialCyclicShift INTEGER(0..11),

nrofSymbols INTEGER (4..14),

startingSymbolIndex INTEGER(0..10),

timeDomainOCC INTEGER(0..6)

}

PUCCH-format2 ::= SEQUENCE {

nrofPRBs INTEGER (1..16),

nrofSymbols INTEGER (1..2),

startingSymbolIndex INTEGER(0..13)

}

PUCCH-format3 ::= SEQUENCE {

nrofPRBs INTEGER (1..16),

nrofSymbols INTEGER (4..14),

startingSymbolIndex INTEGER(0..10)

}

PUCCH-format4 ::= SEQUENCE {

nrofSymbols INTEGER (4..14),

occ-Length ENUMERATED {n2,n4},

occ-Index ENUMERATED {n0,n1,n2,n3},

startingSymbolIndex INTEGER(0..10)

}

PUCCH-ResourceGroup-r16 ::= SEQUENCE {

pucch-ResourceGroupId-r16 PUCCH-ResourceGroupId-r16,

resourcePerGroupList-r16 SEQUENCE (SIZE (1..maxNrofPUCCH-ResourcesPerGroup-r16)) OF PUCCH-ResourceId

}

PUCCH-ResourceGroupId-r16 ::= INTEGER (0..maxNrofPUCCH-ResourceGroups-1-r16)

DL-DataToUL-ACK-r16 ::= SEQUENCE (SIZE (1..8)) OF INTEGER (-1..15)

DL-DataToUL-ACK-DCI-1-2-r16 ::= SEQUENCE (SIZE (1..8)) OF INTEGER (0..15)

UL-AccessConfigListDCI-1-1-r16 ::= SEQUENCE (SIZE (1..16)) OF INTEGER (0..15)

-- TAG-PUCCH-CONFIG-STOP

-- ASN1STOP

|  |
| --- |
| ***PUCCH-Config* field descriptions** |
| ***dl-DataToUL-ACK, dl-DataToUL-ACK-DCI-1-2***  List of timing for given PDSCH to the DL ACK (see TS 38.213 [13], clause 9.1.2). The field *dl-DataToUL-ACK* applies to DCI format 1\_1 and the field *dl-DataToUL-ACK-DCI-1-2* applies to DCI format 1\_2 (see TS 38.212 [17], clause 7.3.1 and TS 38.213 [13], clause 9.2.3). If *dl-DataToUL-ACK-r16* is signalled, UE shall ignore the *dl-DataToUL-ACK* (without suffix). The value -1 corresponds to "inapplicable value" for the case where the A/N feedback timing is not explicitly included at the time of scheduling PDSCH. |
| ***dmrs-UplinkTransformPrecodingPUCCH***  This field is used for PUCCH formats 3 and 4 according to TS 38.211, Clause 6.4.1.3.3.1. |
| ***format1***  Parameters that are common for all PUCCH resources of format 1. |
| ***format2***  Parameters that are common for all PUCCH resources of format 2. |
| ***format3***  Parameters that are common for all PUCCH resources of format 3. |
| ***format4***  Parameters that are common for all PUCCH resources of format 4. |
| ***numberOfBitsForPUCCH-ResourceIndicatorDCI-1-2***  Configuration of the number of bits for "PUCCH resource indicator" in DCI format 1\_2 (see TS 38.212 [17], clause 7.3.1 and TS 38.213 [13], clause 9.2.3). |
| ***resourceGroupToAddModList, resourceGroupToReleaseList***  Lists for adding and releasing groups of PUCCH resources that can be updated simultaneously for spatial relations with a MAC CE. |
| ***resourceSetToAddModList, resourceSetToReleaseList***  Lists for adding and releasing PUCCH resource sets (see TS 38.213 [13], clause 9.2). |
| ***resourceToAddModList, resourceToAddModListExt, resourceToReleaseList***  Lists for adding and releasing PUCCH resources applicable for the UL BWP and serving cell in which the *PUCCH-Config* is defined. The resources defined herein are referred to from other parts of the configuration to determine which resource the UE shall use for which report. If the network includes of *resourceToAddModListExt*, it includes the same number of entries, and listed in the same order, as in *resourceToAddModList*. |
| ***spatialRelationInfoToAddModList, spatialRelationInfoToAddModListSizeExt , spatialRelationInfoToAddModListExt***  Configuration of the spatial relation between a reference RS and PUCCH. Reference RS can be SSB/CSI-RS/SRS. If the list has more than one element, MAC-CE selects a single element (see TS 38.321 [3], clause 5.18.8 and TS 38.213 [13], clause 9.2.2). The UE shall consider entries in *spatialRelationInfoToAddModList* and in *spatialRelationInfoToAddModListSizeExt* as a single list, i.e. an entry created using *spatialRelationInfoToAddModList* can be modified using *spatialRelationInfoToAddModListSizeExt* (or deleted using *spatialRelationInfoToReleaseListSizeExt*) and vice-versa. If the network includes *spatialRelationInfoToAddModListExt*, it includes the same number of entries, and listed in the same order, as in the concatenation of *spatialRelationInfoToAddModList* and of *spatialRelationInfoToAddModListSizeExt*. |
| ***spatialRelationInfoToReleaseList, spatialRelationInfoToReleaseListSizeExt, spatialRelationInfoToReleaseListExt***  Lists of spatial relation configurations between a reference RS and PUCCH to be released by the UE. |
| ***sps-PUCCH-AN-List***  Indicates a list of PUCCH resources for DL SPS HARQ ACK. The field *maxPayloadSize* is absent for the first and the last *SPS-PUCCH-AN* in the list. If configured, this overrides *n1PUCCH-AN* in *SPS-config.* |
| ***subslotLengthForPUCCH***  Indicates the sub-slot length for sub-slot based PUCCH feedback in number of symbols (see TS 38.213 [13], clause 9). Value *n2* corresponds to 2 symbols, value *n6* corresponds to 6 symbols, value *n7* corresponds to 7 symbols. For normal CP, the value is either *n2* or *n7*. For extended CP, the value is either *n2* or *n6*. |
| ***ul-AccessConfigListDCI-1-1***  List of the combinations of cyclic prefix extension and UL channel access type (See TS 38.212 [17], Clause 7.3.1). |

|  |
| --- |
| ***PUCCH-format3* field descriptions** |
| ***nrofPRBs***  The supported values are 1,2,3,4,5,6,8,9,10,12,15 and 16. The UE shall ignore this field when *formatExt* is configured. |

|  |
| --- |
| ***PUCCH-FormatConfig* field descriptions** |
| ***additionalDMRS***  If the field is present, the UE enables 2 DMRS symbols per hop of a PUCCH Format 3 or 4 if both hops are more than X symbols when FH is enabled (X=4). And it enables 4 DMRS symbols for a PUCCH Format 3 or 4 with more than 2X+1 symbols when FH is disabled (X=4). The field is not applicable for format 1 and 2. See TS 38.213 [13], clause 9.2.2. |
| ***interslotFrequencyHopping***  If the field is present, the UE enables inter-slot frequency hopping when PUCCH Format 1, 3 or 4 is repeated over multiple slots. For long PUCCH over multiple slots, the intra and inter slot frequency hopping cannot be enabled at the same time for a UE. The field is not applicable for format 2. See TS 38.213 [13], clause 9.2.6. |
| ***maxCodeRate***  Max coding rate to determine how to feedback UCI on PUCCH for format 2, 3 or 4. The field is not applicable for format 1. See TS 38.213 [13], clause 9.2.5. |
| ***nrofSlots***  Number of slots with the same PUCCH F1, F3 or F4. When the field is absent the UE applies the value *n1*. The field is not applicable for format 2. See TS 38.213 [13], clause 9.2.6. |
| ***pi2BPSK***  If the field is present, the UE uses pi/2 BPSK for UCI symbols instead of QPSK for PUCCH. The field is not applicable for format 1 and 2. See TS 38.213 [13], clause 9.2.5. |
| ***rb-SetIndex***  Indicates the RB set where PUCCH resource is allocated. |
| ***simultaneousHARQ-ACK-CSI***  If the field is present, the UE uses simultaneous transmission of CSI and HARQ-ACK feedback with or without SR with PUCCH Format 2, 3 or 4. See TS 38.213 [13], clause 9.2.5. When the field is absent the UE applies the value *off.* The field is not applicable for format 1. |

|  |
| --- |
| ***PUCCH-Resource, PUCCH-ResourceExt* field descriptions** |
| ***format,*** ***formatExt***  Selection of the PUCCH format (format 0 – 4) and format-specific parameters, see TS 38.213 [13], clause 9.2. *format0* and *format1* are only allowed for a resource in a first PUCCH resource set. *format2*, *format3* and *format4* are only allowed for a resource in non-first PUCCH resource set. The network can only configure *formatExt* when format is set to *format2* or *format3*. |
| ***interlace0***  This is the only interlace of interlaced PUCCH Format 0 and 1 and the first interlace for interlaced PUCCH Format 2 and 3. |
| ***interlace1***  A second interlace, in addition to interlace 0, as specified in TS 38.213 [13], clause 9.2.1. For 15kHz SCS, values {0..9} are applicable; for 30kHz SCS, values {0..4} are applicable. For 15kHz SCS, the values of *interlace1* shall satisfy *interlace1*=mod(*interlace0*+X,10) where X=1, -1, or 5. |
| ***intraSlotFrequencyHopping***  Enabling intra-slot frequency hopping, applicable for all types of PUCCH formats. For long PUCCH over multiple slots, the intra and inter slot frequency hopping cannot be enabled at the same time for a UE. See TS 38.213 [13], clause 9.2.1. |
| ***occ-Index***  Indicates the orthogonal cover code index (see TS 38.213 [13], clause 9.2.1). This field is applicable when *useInterlacePUCCH-PUSCH-r16* is configured. |
| ***occ-Length***  Indicates the orthogonal cover code length (see TS 38.213 [13], clause 9.2.1). This field is applicable when *useInterlacePUCCH-PUSCH-r16* is configured. |
| ***pucch-ResourceId***  Identifier of the PUCCH resource. |
| ***secondHopPRB***  Index of first PRB after frequency hopping of PUCCH. This value is applicable for intra-slot frequency hopping (see TS 38.213 [13], clause 9.2.1) or inter-slot frequency hopping (see TS 38.213 [13], clause 9.2.6). |

|  |
| --- |
| ***PUCCH-ResourceSet* field descriptions** |
| ***maxPayloadSize***  Maximum number of UCI information bits that the UE may transmit using this PUCCH resource set (see TS 38.213 [13], clause 9.2.1). In a PUCCH occurrence, the UE chooses the first of its *PUCCH-ResourceSet* which supports the number of bits that the UE wants to transmit. The field is absent in the first set (Set0) and in the last configured set since the UE derives the maximum number of UCI information bits as specified in TS 38.213 [13], clause 9.2.1. This field can take integer values that are multiples of 4. |
| ***resourceList***  PUCCH resources of *format0* and *format1* are only allowed in the first PUCCH resource set, i.e., in a PUCCH-ResourceSet with *pucch-ResourceSetId* = 0. This set may contain between 1 and 32 resources. PUCCH resources of *format2*, *format3* and *format4* are only allowed in a *PUCCH-ResourceSet* with *pucch-ResourceSetId* > 0. If present, these sets contain between 1 and 8 resources each. The UE chooses a *PUCCH-Resource* from this list as specified in TS 38.213 [13], clause 9.2.3. Note that this list contains only a list of resource IDs. The actual resources are configured in *PUCCH-Config*. |

|  |  |
| --- | --- |
| **Conditional Presence** | **Explanation** |
| *PI2-BPSK* | The field is optionally present, Need R, if *format3* and/or *format4* are configured and *pi2BPSK* is configured in each of them. It is absent, Need R otherwise. |

<Text omitted>

#### – *T-Reselection*

The IE *T-Reselection* concerns the cell reselection timer TreselectionRAT for NR and E-UTRA. Value in seconds. For value 0, behaviour as specified in 7.1.2 applies.

*T-Reselection* information element

-- ASN1START

-- TAG-TRESELECTION-START

T-Reselection ::= INTEGER (0..7)

-- TAG-TRESELECTION-STOP

-- ASN1STOP

<Text omitted>

A.4.3.6 Non-critical extensions of lists with ToAddMod/ToRelease

When the size of a list using the ToAddMod/ToRelease construction is extended and/or fields are added to the list element structure, the list should be non-critically extended in accordance with the following general principles:

– When only the size of the list is extended, this extension is reflected in a non-critical extension of the list, with a "SizeExt" suffix added to the end of the field name (before the -vNxy suffix). The differential size of the extended list uses the suffix "Diff". A new ToRelease list is needed, and its range should include only the increase in list size. In many cases, extending the list size will also require an extended list element ID type to account for the increased size of the list; in these cases the element type will need to be extended to include the extended element ID, resulting in a more complex extension (see example 3 for further discussion of this case). The field description table should indicate that the UE considers the original list and the extension list as a single list; thus entries added with the original list can be modified by the extension list (or removed by the extension of the ToRelease list), or vice versa. The result is as shown in the following example:

-- /example 1/ ASN1START

ContainingStructure ::= SEQUENCE {

listElementToAddModList SEQUENCE (SIZE (1..maxNrofListElements)) OF ListElement OPTIONAL, -- Need N

listElementToReleaseList SEQUENCE (SIZE (1..maxNrofListElements)) OF ListElementId OPTIONAL, -- Need N

...,

[[

-- Non-critical extension lists

listElementToAddModListSizeExt-vNxy SEQUENCE (SIZE (1..maxNrofListElementsDiff-rN)) OF ListElement OPTIONAL, -- Need N

listElementToReleaseListSizeExt-vNxy SEQUENCE (SIZE (1..maxNrofListElementsDiff-rN)) OF ListElementId OPTIONAL -- Need N

]]

}

-- ASN1STOP

– When fields are added to the list element structure, an extension marker should normally be used if available. If no extension marker is available or if overhead or other considerations prevent using the extension marker, an extension structure should be created for the new fields, with the suffix "Ext" added to the end of the field name and the element structure type name (before the -vNxy suffix), and a parallel ToAddMod list introduced to hold the new structures, also with the "Ext" suffix. The field description table should indicate that the parallel list contains the same number of entries, and in the same order, as the original list. No new ToRelease list is typically needed (unless the list element ID type changes). It should typically be ensured that the contained fields in the "Ext" elements are releasable without release and add of the entire list element; this can, for instance, be ensured by having the new fields be OPTIONAL Need R. If multiple extensions of the same list are needed, the version suffix should distinguish the lists (e.g. *listElementToAddModListExt-vNwz* added after *listElementToAddModListExt-vNxy*). The result is as shown in the following example:

-- /example 2/ ASN1START

ContainingStructure ::= SEQUENCE {

listElementToAddModList SEQUENCE (SIZE (1..maxNrofListElements)) OF ListElement OPTIONAL, -- Need N

listElementToReleaseList SEQUENCE (SIZE (1..maxNrofListElements)) OF ListElementId OPTIONAL, -- Need N

...,

[[

-- Parallel list

listElementToAddModListExt-vNxy SEQUENCE (SIZE (1..maxNrofListElements)) OF ListElementExt-vNxy OPTIONAL -- Need N

]],

[[

-- Second parallel list from a later spec version

listElementToAddModListExt-vNwz SEQUENCE (SIZE (1..maxNrofListElements)) OF ListElementExt-vNwz OPTIONAL -- Need N

]]

}

ListElement ::= SEQUENCE {

elementId ListElementId,

field1 INTEGER (0..3),

field2 ENUMERATED { value1, value2, value3 }

}

ListElementExt-vNxy ::= SEQUENCE {

field3-rN BIT STRING (SIZE (8)) OPTIONAL -- Need R

}

ListElementExt-vNwz ::= SEQUENCE {

field4-rN INTEGER (0..255) OPTIONAL -- Need R

}

-- ASN1STOP

– When the size of a list is extended and fields are added to the list element structure, an extension marker should normally be used for the added fields if available, and the list extended with the non-critical mechanism as described in example 1 above*.* Note that if the list element ID type changes in this case, the new ID can be added after the extension marker, and the entries of the size-extended ToRelease list should have the type of the new ID (e.g. *ListElementId-vNxy*). If no extension marker is available or if overhead or other considerations prevent using the extension marker, an extension structure should be created for the new fields and a parallel list with ToAddMod introduced to hold the extension structures, as in the second example above, for entries of the original list and for entries of the extension list holding new entries. The field description table should indicate that the parallel list contains the same number of entries, and in the same order, as the concatenation of the original list and the extension list. An extended ToRelease list is needed, but no additional parallel ToRelease list is needed (i.e. there is no *listElementToReleaseListExt-vNxy* in the example below), as the original and extended ToRelease lists suffice to release any element of the combined list. The extended element ID type should be captured as a non-critical extension of the original element ID type, with the field description indicating that if the extended ID is present, the original ID is ignored. The result is as shown in the following example:

-- /example 3/ ASN1START

ContainingStructure ::= SEQUENCE {

listElementToAddModList SEQUENCE (SIZE (1..maxNrofListElements)) OF ListElement OPTIONAL, -- Need N

listElementToReleaseList SEQUENCE (SIZE (1..maxNrofListElements)) OF ListElementId OPTIONAL, -- Need N

...,

[[

-- Non-critical extension lists

listElementToAddModListSizeExt-vNxy SEQUENCE (SIZE (1..maxNrofListElementsDiff-rN)) OF ListElement OPTIONAL, -- Need N

listElementToReleaseListSizeExt-vNxy SEQUENCE (SIZE (1..maxNrofListElementsDiff-rN)) OF ListElementId-vNxy OPTIONAL, -- Need N

-- Parallel list with maxNrofListElements-rN = maxNrofListElements + maxNrofListElementsDiff-rN

listElementToAddModListExt-vNxy SEQUENCE (SIZE (1..maxNrofListElements-rN)) OF ListElementExt-vNxy OPTIONAL -- Need N

]]

}

ListElement ::= SEQUENCE {

elementId ListElementId,

field1 INTEGER (0..3),

field2 ENUMERATED { value1, value2, value3 }

}

ListElementExt-vNxy ::= SEQUENCE {

-- Field description should indicate that if the elementId-vNxy is present, the elementId (without suffix) is ignored

elementId-vNxy ListElementId-vNxy OPTIONAL, -- Need S

field3-rN BIT STRING (SIZE (8)) OPTIONAL -- Need R

}

ListElementId ::= INTEGER (0..maxNrofListElements-1)

ListElementId-vNxy ::= INTEGER (maxNrofListElements..maxNrofListElements-1-rN)

-- ASN1STOP

– When different extensions are made to a list in separate releases, the extension mechanisms described above may interact. In case fields are added in Rel-M (*listElementToAddModListExt-vMxy*) and later the list size is extended in Rel-N (*listElementToAddModListSizeExt-vNwz*), the size-extended list in Rel-N should be a single list extending the combination of *listElementToAddModList* and *listElementToAddModListExt-vMxy*.This requires creating a new type (*ListElement-rN*) to contain the combined fields of *ListElement* and *ListElementExt-vMxy*. A corresponding ToRelease list is needed. The result is as shown in the following example:

-- /example 4/ ASN1START

ContainingStructure ::= SEQUENCE {

listElementToAddModList SEQUENCE (SIZE (1..maxNrofListElements)) OF ListElement OPTIONAL, -- Need N

listElementToReleaseList SEQUENCE (SIZE (1..maxNrofListElements)) OF ListElementId OPTIONAL, -- Need N

...,

[[

-- Parallel list (Rel-M)

listElementToAddModListExt-vMxy SEQUENCE (SIZE (1..maxNrofListElements)) OF ListElementExt-vMxy OPTIONAL -- Need N

]],

[[

-- Size-extended list (Rel-N) with maxNrofListElements-rN = maxNrofListElements + maxNrofListElementsDiff-rN

listElementToAddModListSizeExt-vNwz SEQUENCE (SIZE (1..maxNrofListElementsDiff-rN)) OF ListElement-rN OPTIONAL, -- Need N

listElementToReleaseListSizeExt-vNwz SEQUENCE (SIZE (1..maxNrofListElementsDiff-rN)) OF ListElementId-vNwz OPTIONAL -- Need N

]]

}

ListElement ::= SEQUENCE {

elementId ListElementId,

field1 INTEGER (0..3),

field2 ENUMERATED { value1, value2, value3 }

}

ListElementExt-vMxy ::= SEQUENCE {

field3-rM BIT STRING (SIZE (8)) OPTIONAL -- Need R

}

ListElement-rN ::= SEQUENCE {

elementId-vNwz ListElementId-vNwz,

field1 INTEGER (0..3),

field2 ENUMERATED { value1, value2, value3 },

field3-rN BIT STRING (SIZE (8)) OPTIONAL -- Need R

}

ListElementId ::= INTEGER (0..maxNrofListElements-1)

ListElementId-vNwz ::= INTEGER (maxNrofListElements..maxNrofListElementsDiff-1-rN)

-- ASN1STOP

*End of changes*