**3GPP TSG-RAN WG2 Meeting #122 *R2-230xxxx***

**Incheon, South Korea, May 22 – 26, 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.331** | **CR** | **4116** | **rev** | **1** | **Current version:** | **16.12.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** | Miscellaneous non-controversial corrections Set XVIII | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI16 | | | | |  | ***Date:*** | | | 2023-05-29 |
|  |  | | | |  | |  | | |  |
| ***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. 6.1.2 Need codes and conditions for optional fields Based on discussion at #121bis-e of R2-2303282 Clarification on drb-ContinueROHC, added an optional field with Need N in ASN.1 example. 2. BWP-UplinkDedicated field descriptions   Changed typo BPW to BWP.  **CRs agreed at #121bis-e to be merged:**   1. R2-2304535 Clarifications on CG Parameters in NR-U In field description for cg-StartingFullBW-InsideCOT in CG-StartingOffsets, added reference to TS 38.211.   **CRs agreed at #122 to be merged:**   1. R2-2305134 Miscellaneous corrections for Rel-15 RRC In IE *PosSchedulingInfo* the description of the conditions *MSG-1* and *SUL-MSG-1* the reference to *SchedulingInfo* has been replaced by *schedulingInfoList*.   In IE *SI-SchedulingInfo* the description of the conditions *MSG-1* and *SUL-MSG-1* the reference to *SchedulingInfo* has been replaced by *schedulingInfoList*.  Some editorial issues have been fixed (missing Rel-16, missing “-r16” etc).  **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. | | | | | | | | |
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| ***Consequences if not approved:*** | | Typos and minor errors remain in the RRC specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.1.2, 6.3.1a, 6.3.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | R2-2305832 | | | | | | | | |

### 6.1.2 Need codes and conditions for optional fields

The need for fields to be present in a message or an abstract type, i.e., the ASN.1 fields that are specified as OPTIONAL in the abstract notation (ASN.1), is specified by means of comment text tags attached to the OPTIONAL statement in the abstract syntax. All comment text tags are available for use in the downlink direction for RRC message and in the sidelink for PC5 RRC message. The meaning of each tag is specified in table 6.1.2-1.

If conditions are used, a conditional presence table is provided for the message or information element specifying the need of the field for each condition case. The table also specifies whether UE maintains or releases the value in case the field is absent. The conditions clarify what the UE may expect regarding the setting of the message by the network for the RRC message or by the peer UE in the sidelink RRC message. Violation of conditions is regarded as invalid network behaviour when transmitting downlink RRC message or invalid UE behavior when transmitting PC5 RRC message, which the UE is not required to cope with. Hence the general error handling defined in 10.4 does not apply in case a field is absent although it is mandatory according to the CondC or CondM condition.

For guidelines on the use of need codes and conditions, see Annex A.6 and A.7.

Table 6.1.2-1: Meaning of abbreviations used to specify the need for fields to be present

| Abbreviation | Meaning |
| --- | --- |
| Cond conditionTag | Conditionally present  Presence of the field is specified in a tabular form following the ASN.1 segment. |
| CondC conditionTag | Configuration condition  Presence of the field is conditional to other configuration settings. |
| CondM conditionTag | Message condition  Presence of the field is conditional to other fields included in the message. |
| Need S | *Specified*  Used for (configuration) fields, whose field description or procedure **specifies** the UE behavior performed upon receiving a message with the field absent (and not if field description or procedure specifies the UE behavior when field is not configured). |
| Need M | *Maintain*  Used for (configuration) fields that are stored by the UE i.e. not one-shot. Upon receiving a message with the field absent, the UE maintains the current value. |
| Need N | *No action* (one-shot configuration that is not maintained)  Used for (configuration) fields that are not stored and whose presence causes a one-time action by the UE. Upon receiving message with the field absent, the UE takes no action. |
| Need R | *Release*  Used for (configuration) fields that are stored by the UE i.e. not one-shot. Upon receiving a message with the field absent, the UE releases the current value. |

NOTE: In this version of the specification, the condition tags CondC and CondM are not used.

Any field with Need M or Need N in system information shall be interpreted as Need R.

The need code used within a CondX definition only applies for the case (part of the condition) where it is defined: A condition may have different need codes for different parts of the condition. In particular, the CondX definition may contain the following "otherwise the field is absent" parts:

- "Otherwise, the field is absent": The field is not relevant or should not be configured when this part of the condition applies. In particular, the UE behaviour is not defined when the field is configured via another part of the condition and is reconfigured to this part of the condition. A need code is not provided when the transition from another part of the condition to this part of the condition is not supported, when the field clearly is a one-shot or there is no difference whether UE maintains or releases the value (e.g., in case the field is mandatory present according to the other part of the condition).

- "Otherwise, the field is absent, Need R": The field is released if absent when this part of the condition applies. This handles UE behaviour in case the field is configured via another part of the condition and this part of the condition applies (which means that network when transmitting downlink RRC message or peer UE transmitting PC5 RRC message can assume UE releases the field if this part of the condition is valid).

- "Otherwise, the field is absent, Need M": The UE retains the field if it was already configured when this part of the condition applies. This means the network when transmitting downlink RRC message or the peer UE when transmitting PC5 RRC message cannot release the field , but UE retains the previously configured value.

Use of different Need codes in different parts of a condition should be avoided.

For downlink RRC message and sidelink PC5 RRC messages, the need codes, conditions and ASN.1 defaults specified for a particular (child) field only apply in case the (parent) field including the particular field is present. Thus, if the parent is absent the UE shall not release the field unless the absence of the parent field implies that.

For (parent) fields without need codes in downlink RRC messages or sidelink PC5 RRC message, if the parent field is absent, UE shall follow the need codes of the child fields. Thus, if parent field is absent, the need code of each child field is followed (i.e. Need R child fields are released, Need M child fields are not modified and the actions for Need S child fields depend on the specified conditions of each field). Examples of (parent) fields in downlink RRC messages and sidelink PC5 RRC message without need codes where this rule applies are:

- *nonCriticalExtension* fields at the end of a message using empty SEQUENCE extension mechanism,

- groups of non-critical extensions using double brackets (referred to as extension groups), and

- non-critical extensions at the end of a message or at the end of a structure, contained in a BIT STRING or OCTET STRING (referred to as parent extension fields).

The handling of need codes as specified in the previous is illustrated by means of an example, as shown in the following ASN.1.

-- /example/ ASN1START

RRCMessage-IEs ::= SEQUENCE {

field1 InformationElement1 OPTIONAL, -- Need M

field2 InformationElement2 OPTIONAL, -- Need R

nonCriticalExtension RRCMessage-v1570-IEs OPTIONAL

}

RRCMessage-1570-IEs ::= SEQUENCE {

field3 InformationElement3 OPTIONAL, -- Need M

nonCriticalExtension RRCMessage-v1640-IEs OPTIONAL

}

RRCMessage-v1640-IEs ::= SEQUENCE {

field4 InformationElement4 OPTIONAL, -- Need R

nonCriticalExtension SEQUENCE {} OPTIONAL

}

InformationElement1 ::= SEQUENCE {

field10 InformationElement10 OPTIONAL, -- Need N

field11 InformationElement11 OPTIONAL, -- Need M

field12 InformationElement12 OPTIONAL, -- Need R

...,

[[

field13 InformationElement13 OPTIONAL, -- Need R

field14 InformationElement14 OPTIONAL -- Need M

]]

}

InformationElement2 ::= SEQUENCE {

field21 InformationElement11 OPTIONAL, -- Need M

...

}

-- ASN1STOP

The handling of need codes as specified in the previous implies that:

- if *field1* in *RRCMessage-IEs* is absent, UE does not modify or take action on any child fields configured within *field1* (regardless of their need codes);

- if *field2* in *RRCMessage-IEs* is absent, UE releases the *field2* (and also its child field *field21*);

- if *field1* or *field2* in *RRCMessage-IEs* is present, UE retains or releases their child fields according to the child field presence conditions;

- if *field1* in *RRCMessage-IEs* is present but the extension group containing *field13* and *field14* is absent, the UE releases *field13* but does not modify *field14*;

- if *nonCriticalExtension* defined by IE *RRCMessage-v1570-IEs* is absent, the UE does not modify *field3* but releases *field4*;

### 6.3.1a Positioning System information blocks

<Text omitted>

– *PosSI-SchedulingInfo*

-- ASN1START

-- TAG-POSSI-SCHEDULINGINFO-START

PosSI-SchedulingInfo-r16 ::= SEQUENCE {

posSchedulingInfoList-r16 SEQUENCE (SIZE (1..maxSI-Message)) OF PosSchedulingInfo-r16,

posSI-RequestConfig-r16 SI-RequestConfig OPTIONAL, -- Cond MSG-1

posSI-RequestConfigSUL-r16 SI-RequestConfig OPTIONAL, -- Cond SUL-MSG-1

...

}

PosSchedulingInfo-r16 ::= SEQUENCE {

offsetToSI-Used-r16 ENUMERATED {true} OPTIONAL, -- Need R

posSI-Periodicity-r16 ENUMERATED {rf8, rf16, rf32, rf64, rf128, rf256, rf512},

posSI-BroadcastStatus-r16 ENUMERATED {broadcasting, notBroadcasting},

posSIB-MappingInfo-r16 PosSIB-MappingInfo-r16,

...

}

PosSIB-MappingInfo-r16 ::= SEQUENCE (SIZE (1..maxSIB)) OF PosSIB-Type-r16

PosSIB-Type-r16 ::= SEQUENCE {

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

gnss-id-r16 GNSS-ID-r16 OPTIONAL, -- Need R

sbas-id-r16 SBAS-ID-r16 OPTIONAL, -- Cond GNSS-ID-SBAS

posSibType-r16 ENUMERATED { posSibType1-1, posSibType1-2, posSibType1-3, posSibType1-4, posSibType1-5, posSibType1-6,

posSibType1-7, posSibType1-8, posSibType2-1, posSibType2-2, posSibType2-3, posSibType2-4,

posSibType2-5, posSibType2-6, posSibType2-7, posSibType2-8, posSibType2-9, posSibType2-10,

posSibType2-11, posSibType2-12, posSibType2-13, posSibType2-14, posSibType2-15,

posSibType2-16, posSibType2-17, posSibType2-18, posSibType2-19, posSibType2-20,

posSibType2-21, posSibType2-22, posSibType2-23, posSibType3-1, posSibType4-1,

posSibType5-1,posSibType6-1, posSibType6-2, posSibType6-3,... },

areaScope-r16 ENUMERATED {true} OPTIONAL -- Need S

}

GNSS-ID-r16 ::= SEQUENCE {

gnss-id-r16 ENUMERATED{gps, sbas, qzss, galileo, glonass, bds, ...},

...

}

SBAS-ID-r16 ::= SEQUENCE {

sbas-id-r16 ENUMERATED { waas, egnos, msas, gagan, ...},

...

}

-- TAG-POSSI-SCHEDULINGINFO-STOP

-- ASN1STOP

|  |
| --- |
| ***PosSI-SchedulingInfo* field descriptions** |
| ***areaScope***  Indicates that a posSIB is area specific. If the field is absent, the posSIB is cell specific. |
| ***encrypted***  The presence of this field indicates that the *pos-sib-type* is encrypted as specified in TS 37.355 [49]. |
| ***gnss-id***  The presence of this field indicates that the positioning SIB type is for a specific GNSS. Indicates a specific GNSS (see also TS 37.355 [49]) |
| ***posSI-BroadcastStatus***  Indicates if the SI message is being broadcasted or not. Change of *posSI-BroadcastStat*us should not result in system information change notifications in Short Message transmitted with P-RNTI over DCI (see clause 6.5). The value of the indication is valid until the end of the BCCH modification period when set to *broadcasting*. |
| ***posSI-RequestConfig***  Configuration of Msg1 resources that the UE uses for requesting SI-messages for which *posSI-BroadcastStatus* is set to notBroadcasting. |
| ***posSI-RequestConfigSUL***  Configuration of Msg1 resources that the UE uses for requesting SI-messages for which *posSI-BroadcastStatus* is set to notBroadcasting. |
| ***posSIB-MappingInfo***  List of the posSIBs mapped to this *SystemInformation* message. |
| ***posSibType***  The positioning SIB type is defined in TS 37.355 [49]. |
| ***posSI-Periodicity***  Periodicity of the SI-message in radio frames, such that rf8 denotes 8 radio frames, rf16 denotes 16 radio frames, and so on. If the *offsetToSI-Used* is configured, the *posSI-Periodicity* of rf8 cannot be used. |
| ***offsetToSI-Used***  This field, if present indicates that all the SI messages in *posSchedulingInfoList* are scheduled with an offset of 8 radio frames compared to SI messages in *schedulingInfoList*. *offsetToSI-Used* may be present only if the shortest configured SI message periodicity for SI messages in *schedulingInfoList* is 80ms. If SI offset is used, this field is present in each of the SI messages in the *posSchedulingInfoList*. |
| ***sbas-id***  The presence of this field indicates that the positioning SIB type is for a specific SBAS. Indicates a specific SBAS (see also TS 37.355 [49]). |

| **Conditional presence** | **Explanation** |
| --- | --- |
| *GNSS-ID-SBAS* | The field is mandatory present if *gnss-id* is set to *sbas*. It is absent otherwise. |
| *MSG-1* | The field is optionally present, Need R, if *posSI-BroadcastStatus* is set to *notBroadcasting* for any SI-message included in *posSchedulingInfoList*. It is absent otherwise. |
| *SUL-MSG-1* | The field is optionally present, Need R, if *supplementaryUplink* is configured in *ServingCellConfigCommonSIB* and if *posSI-BroadcastStatus* is set to *notBroadcasting* for any SI-message included in *posSchedulingInfoList*. It is absent otherwise. |

### 6.3.2 Radio resource control information elements

<Text omitted>

#### – *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 on all BWP(s) for 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>

#### – *ConfiguredGrantConfig*

The IE *ConfiguredGrantConfig* is used to configure uplink transmission without dynamic grant according to two possible schemes. The actual uplink grant may either be configured via RRC (*type1*) or provided via the PDCCH (addressed to CS-RNTI) (*type2*). Multiple Configured Grant configurations may be configured in one BWP of a serving cell.

*ConfiguredGrantConfig* information element

-- ASN1START

-- TAG-CONFIGUREDGRANTCONFIG-START

ConfiguredGrantConfig ::= SEQUENCE {

frequencyHopping ENUMERATED {intraSlot, interSlot} OPTIONAL, -- Need S

cg-DMRS-Configuration DMRS-UplinkConfig,

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

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

uci-OnPUSCH SetupRelease { CG-UCI-OnPUSCH } OPTIONAL, -- Need M

resourceAllocation ENUMERATED { resourceAllocationType0, resourceAllocationType1, dynamicSwitch },

rbg-Size ENUMERATED {config2} OPTIONAL, -- Need S

powerControlLoopToUse ENUMERATED {n0, n1},

p0-PUSCH-Alpha P0-PUSCH-AlphaSetId,

transformPrecoder ENUMERATED {enabled, disabled} OPTIONAL, -- Need S

nrofHARQ-Processes INTEGER(1..16),

repK ENUMERATED {n1, n2, n4, n8},

repK-RV ENUMERATED {s1-0231, s2-0303, s3-0000} OPTIONAL, -- Need R

periodicity ENUMERATED {

sym2, sym7, sym1x14, sym2x14, sym4x14, sym5x14, sym8x14, sym10x14, sym16x14, sym20x14,

sym32x14, sym40x14, sym64x14, sym80x14, sym128x14, sym160x14, sym256x14, sym320x14, sym512x14,

sym640x14, sym1024x14, sym1280x14, sym2560x14, sym5120x14,

sym6, sym1x12, sym2x12, sym4x12, sym5x12, sym8x12, sym10x12, sym16x12, sym20x12, sym32x12,

sym40x12, sym64x12, sym80x12, sym128x12, sym160x12, sym256x12, sym320x12, sym512x12, sym640x12,

sym1280x12, sym2560x12

},

configuredGrantTimer INTEGER (1..64) OPTIONAL, -- Need R

rrc-ConfiguredUplinkGrant SEQUENCE {

timeDomainOffset INTEGER (0..5119),

timeDomainAllocation INTEGER (0..15),

frequencyDomainAllocation BIT STRING (SIZE(18)),

antennaPort INTEGER (0..31),

dmrs-SeqInitialization INTEGER (0..1) OPTIONAL, -- Need R

precodingAndNumberOfLayers INTEGER (0..63),

srs-ResourceIndicator INTEGER (0..15) OPTIONAL, -- Need R

mcsAndTBS INTEGER (0..31),

frequencyHoppingOffset INTEGER (1.. maxNrofPhysicalResourceBlocks-1) OPTIONAL, -- Need R

pathlossReferenceIndex INTEGER (0..maxNrofPUSCH-PathlossReferenceRSs-1),

...,

[[

pusch-RepTypeIndicator-r16 ENUMERATED {pusch-RepTypeA,pusch-RepTypeB} OPTIONAL, -- Need M

frequencyHoppingPUSCH-RepTypeB-r16 ENUMERATED {interRepetition, interSlot} OPTIONAL, -- Cond RepTypeB

timeReferenceSFN-r16 ENUMERATED {sfn512} OPTIONAL -- Need S

]]

} OPTIONAL, -- Need R

...,

[[

cg-RetransmissionTimer-r16 INTEGER (1..64) OPTIONAL, -- Need R

cg-minDFI-Delay-r16 ENUMERATED

{sym7, sym1x14, sym2x14, sym3x14, sym4x14, sym5x14, sym6x14, sym7x14, sym8x14,

sym9x14, sym10x14, sym11x14, sym12x14, sym13x14, sym14x14,sym15x14, sym16x14

} OPTIONAL, -- Need R

cg-nrofPUSCH-InSlot-r16 INTEGER (1..7) OPTIONAL, -- Need R

cg-nrofSlots-r16 INTEGER (1..40) OPTIONAL, -- Need R

cg-StartingOffsets-r16 CG-StartingOffsets-r16 OPTIONAL, -- Need R

cg-UCI-Multiplexing-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

cg-COT-SharingOffset-r16 INTEGER (1..39) OPTIONAL, -- Need R

betaOffsetCG-UCI-r16 INTEGER (0..31) OPTIONAL, -- Need R

cg-COT-SharingList-r16 SEQUENCE (SIZE (1..1709)) OF CG-COT-Sharing-r16 OPTIONAL, -- Need R

harq-ProcID-Offset-r16 INTEGER (0..15) OPTIONAL, -- Need M

harq-ProcID-Offset2-r16 INTEGER (0..15) OPTIONAL, -- Need M

configuredGrantConfigIndex-r16 ConfiguredGrantConfigIndex-r16 OPTIONAL, -- Cond CG-List

configuredGrantConfigIndexMAC-r16 ConfiguredGrantConfigIndexMAC-r16 OPTIONAL, -- Cond CG-IndexMAC

periodicityExt-r16 INTEGER (1..5120) OPTIONAL, -- Need R

startingFromRV0-r16 ENUMERATED {on, off} OPTIONAL, -- Need R

phy-PriorityIndex-r16 ENUMERATED {p0, p1} OPTIONAL, -- Need R

autonomousTx-r16 ENUMERATED {enabled} OPTIONAL -- Cond LCH-BasedPrioritization

]]

}

CG-UCI-OnPUSCH ::= CHOICE {

dynamic SEQUENCE (SIZE (1..4)) OF BetaOffsets,

semiStatic BetaOffsets

}

CG-COT-Sharing-r16 ::= CHOICE {

noCOT-Sharing-r16 NULL,

cot-Sharing-r16 SEQUENCE {

duration-r16 INTEGER (1..39),

offset-r16 INTEGER (1..39),

channelAccessPriority-r16 INTEGER (1..4)

}

}

CG-StartingOffsets-r16 ::= SEQUENCE {

cg-StartingFullBW-InsideCOT-r16 SEQUENCE (SIZE (1..7)) OF INTEGER (0..6) OPTIONAL, -- Need R

cg-StartingFullBW-OutsideCOT-r16 SEQUENCE (SIZE (1..7)) OF INTEGER (0..6) OPTIONAL, -- Need R

cg-StartingPartialBW-InsideCOT-r16 INTEGER (0..6) OPTIONAL, -- Need R

cg-StartingPartialBW-OutsideCOT-r16 INTEGER (0..6) OPTIONAL -- Need R

}

-- TAG-CONFIGUREDGRANTCONFIG-STOP

-- ASN1STOP

|  |
| --- |
| *ConfiguredGrantConfig* field descriptions |
| ***antennaPort***  Indicates the antenna port(s) to be used for this configuration, and the maximum bitwidth is 5. See TS 38.214 [19], clause 6.1.2, and TS 38.212 [17], clause 7.3.1. |
| ***autonomousTx***  If this field is present, the Configured Grant configuration is configured with autonomous transmission, see TS 38.321 [3]. |
| ***betaOffsetCG-UCI***  Beta offset for CG-UCI in CG-PUSCH, see TS 38.213 [13], clause 9.3 |
| ***cg-COT-SharingList***  Indicates a table for COT sharing combinations (see 37.213 [48], clause 4.1.3). One row of the table can be set to noCOT-Sharing to indicate that there is no channel occupancy sharing. |
| ***cg-COT-SharingOffset***  Indicates the offset from the end of the slot where the COT sharing indication in UCI is enabled where the offset in symbols is equal to 14\*n, where n is the signaled value for *cg-COT-SharingOffset*. Applicable when *ul-toDL-COT-SharingED-Threshold-r16* is not configured (see 37.213 [48], clause 4.1.3). |
| ***cg-DMRS-Configuration***  DMRS configuration (see TS 38.214 [19], clause 6.1.2.3). |
| ***cg-minDFI-Delay***  Indicates the minimum duration (in unit of symbols) from the ending symbol of the PUSCH to the starting symbol of the PDCCH containing the downlink feedback indication (DFI) carrying HARQ-ACK for this PUSCH. The HARQ-ACK received before this minimum duration is not considered as valid for this PUSCH (see TS 38.213 [13], clause 10.5). The following minimum duration values are supported, depending on the configured subcarrier spacing [symbols]:  15 kHz: 7, m\*14, where m = {1, 2, 3, 4}  30 kHz: 7, m\*14, where m = {1, 2, 3, 4, 5, 6, 7, 8}  60 kHz: 7, m\*14, where m = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16} |
| ***cg-nrofPUSCH-InSlot***  Indicates the number of consecutive PUSCH configured to CG within a slot where the SLIV indicating the first PUSCH and additional PUSCH appended with the same length (see TS 38.214 [19], clause 6.1.2.3). |
| ***cg-nrofSlots***  Indicates the number of allocated slots in a configured grant periodicity following the time instance of configured grant offset (see TS 38.214 [19], clause 6.1.2.3). |
| ***cg-RetransmissionTimer***  Indicates the initial value of the configured retransmission timer (see TS 38.321 [3]) in multiples of *periodicity*. The value of *cg-RetransmissionTimer* is always less than or equal to the value of *configuredGrantTimer.* This field is always configured for operation with shared spectrum channel access together with *harq-ProcID-Offset*. This field is not configured for operation in licensed spectrum or simultaneously with *harq-ProcID-Offset2.* |
| ***cg-UCI-Multiplexing***  If present, this field indicates that in the case of PUCCH overlapping with CG-PUSCH(s) within a PUCCH group, the CG-UCI and HARQ-ACK are jointly encoded (see TS 38.213 [13], clause 9). |
| ***configuredGrantConfigIndex***  Indicates the index of the Configured Grant configurations within the BWP. |
| ***configuredGrantConfigIndexMAC***  Indicates the index of the Configured Grant configurations within the MAC entity. |
| ***configuredGrantTimer***  Indicates the initial value of the configured grant timer (see TS 38.321 [3]) in multiples of periodicity. When *cg-RetransmissonTimer* is configured, if HARQ processes are shared among different configured grants on the same BWP, *configuredGrantTimer \* periodicity* is set to the same value for the configurations that share HARQ processes on this BWP. |
| ***dmrs-SeqInitialization***  The network configures this field if *transformPrecoder* is disabled. Otherwise the field is absent. |
| ***frequencyDomainAllocation***  Indicates the frequency domain resource allocation, see TS 38.214 [19], clause 6.1.2, and TS 38.212 [17], clause 7.3.1). |
| ***frequencyHopping***  The value *intraSlot* enables 'Intra-slot frequency hopping' and the value *interSlot* enables 'Inter-slot frequency hopping'. If the field is absent, frequency hopping is not configured. The field *frequencyHopping* applies to configured grant for 'pusch-RepTypeA' (see TS 38.214 [19], clause 6.3.1). |
| ***frequencyHoppingOffset***  Frequency hopping offset used when frequency hopping is enabled (see TS 38.214 [19], clause 6.1.2 and clause 6.3). |
| ***frequencyHoppingPUSCH-RepTypeB***  Indicates the frequency hopping scheme for Type 1 CG when *pusch-RepTypeIndicator* is set to 'pusch-RepTypeB' (see TS 38.214 [19], clause 6.1). The value *interRepetition* enables 'Inter-repetition frequency hopping', and the value *interSlot* enables 'Inter-slot frequency hopping'. If the field is absent, the frequency hopping is not enabled for Type 1 CG. |
| ***harq-ProcID-Offset***  For operation with shared spectrum channel access, this configures the range of HARQ process IDs which can be used for this configured grant where the UE can select a HARQ process ID within [*harq-procID-offset, ..,* (*harq-procID-offset + nrofHARQ-Processes* – 1)]. |
| ***harq-ProcID-Offset2***  Indicates the offset used in deriving the HARQ process IDs, see TS 38.321 [3], clause 5.4.1. This field is not configured for operation with shared spectrum channel access. |
| ***mcs-Table***  Indicates the MCS table the UE shall use for PUSCH without transform precoding. If the field is absent the UE applies the value *qam64*. |
| ***mcs-TableTransformPrecoder***  Indicates the MCS table the UE shall use for PUSCH with transform precoding. If the field is absent the UE applies the value *qam64*. |
| ***mcsAndTBS***  The modulation order, target code rate and TB size (see TS 38.214 [19], clause 6.1.2). The NW does not configure the values 28~31 in this version of the specification. |
| ***nrofHARQ-Processes***  The number of HARQ processes configured. It applies for both Type 1 and Type 2. See TS 38.321 [3], clause 5.4.1. |
| ***p0-PUSCH-Alpha***  Index of the *P0-PUSCH-AlphaSet* to be used for this configuration. |
| ***pathlossReferenceIndex***  Indicates the reference signal index used as PUSCH pathloss reference (see TS 38.213 [13], clause 7.1.1). |
| ***periodicity***  Periodicity for UL transmission without UL grant for type 1 and type 2 (see TS 38.321 [3], clause 5.8.2).  The following periodicities are supported depending on the configured subcarrier spacing [symbols]:  15 kHz: 2, 7, n\*14, where n={1, 2, 4, 5, 8, 10, 16, 20, 32, 40, 64, 80, 128, 160, 320, 640}  30 kHz: 2, 7, n\*14, where n={1, 2, 4, 5, 8, 10, 16, 20, 32, 40, 64, 80, 128, 160, 256, 320, 640, 1280}  60 kHz with normal CP 2, 7, n\*14, where n={1, 2, 4, 5, 8, 10, 16, 20, 32, 40, 64, 80, 128, 160, 256, 320, 512, 640, 1280, 2560}  60 kHz with ECP: 2, 6, n\*12, where n={1, 2, 4, 5, 8, 10, 16, 20, 32, 40, 64, 80, 128, 160, 256, 320, 512, 640, 1280, 2560}  120 kHz: 2, 7, n\*14, where n={1, 2, 4, 5, 8, 10, 16, 20, 32, 40, 64, 80, 128, 160, 256, 320, 512, 640, 1024, 1280, 2560, 5120} |
| ***periodicityExt***  This field is used to calculate the periodicity for UL transmission without UL grant for type 1 and type 2 (see TS 38.321 [3], clause 5.8.2). If this field is present, the field *periodicity* is ignored.  The following periodicites are supported depending on the configured subcarrier spacing [symbols]:  15 kHz: *periodicityExt*\*14, where *periodicityExt* has a value between 1 and 640.  30 kHz: *periodicityExt*\*14, where *periodicityExt* has a value between 1 and 1280.  60 kHz with normal CP: *periodicityExt*\*14, where *periodicityExt* has a value between 1 and 2560.  60 kHz with ECP: *periodicityExt*\*12, where *periodicityExt* has a value between 1 and 2560.  120 kHz: *periodicityExt*\*14, where *periodicityExt* has a value between 1 and 5120. |
| ***phy-PriorityIndex***  Indicates the PHY priority of CG PUSCH at least for PHY-layer collision handling. Value *p0* indicates low priority and value *p1* indicates high priority. |
| ***powerControlLoopToUse***  Closed control loop to apply (see TS 38.213 [13], clause 7.1.1). |
| ***precodingAndNumberOfLayers***  Indicates the precoding and number of layers (see TS 38.212 [17], clause 7.3.1.1.2, and TS 38.214 [19], clause 6.1.2.3). |
| ***pusch-RepTypeIndicator***  Indicates whether UE follows the behavior for PUSCH repetition type A or the behavior for PUSCH repetition type B for each Type 1 configured grant configuration. The value *pusch-RepTypeA* enables the 'PUSCH repetition type A' and the value *pusch-RepTypeB* enables the 'PUSCH repetition type B' (see TS 38.214 [19], clause 6.1.2.3). The value *pusch-RepTypeB* is not configured simultaneously with *cg-nrofPUSCH-InSlot-r16* and *cg-nrofSlots-r16*. |
| ***rbg-Size***  Selection between configuration 1 and configuration 2 for RBG size for PUSCH. The UE does not apply this field if *resourceAllocation* is set to *resourceAllocationType1*. Otherwise, the UE applies the value *config1* when the field is absent. Note: *rbg-Size* is used when the *transformPrecoder* parameter is disabled. |
| ***repK-RV***  The redundancy version (RV) sequence to use. See TS 38.214 [19], clause 6.1.2. The network configures this field if repetitions are used, i.e., if *repK* is set to *n2*, *n4* or *n8*. This field is not configured when *cg-RetransmissionTimer* is configured. Otherwise, the field is absent. |
| ***repK***  Number of repetitions K, see TS 38.214 [19]. |
| ***resourceAllocation***  Configuration of resource allocation type 0 and resource allocation type 1. For Type 1 UL data transmission without grant, *resourceAllocation* should be *resourceAllocationType0* or *resourceAllocationType1*. |
| ***rrc-ConfiguredUplinkGrant***  Configuration for "configured grant" transmission with fully RRC-configured UL grant (Type1). If this field is absent the UE uses UL grant configured by DCI addressed to CS-RNTI (Type2). |
| ***srs-ResourceIndicator***  Indicates the SRS resource to be used. |
| ***startingFromRV0***  This field is used to determine the initial transmission occasion of a transport block for a given RV sequence, see TS 38.214 [19], clause 6.1.2.3.1. |
| ***timeDomainAllocation***  Indicates a combination of start symbol and length and PUSCH mapping type, see TS 38.214 [19], clause 6.1.2 and TS 38.212 [17], clause 7.3.1. |
| ***timeDomainOffset***  Offset related to the reference SFN indicated by *timeReferenceSFN*, see TS 38.321 [3], clause 5.8.2. |
| ***timeReferenceSFN***  Indicates SFN used for determination of the offset of a resource in time domain. The UE uses the closest SFN with the indicated number preceding the reception of the configured grant configuration, see TS 38.321 [3], clause 5.8.2. If the field *timeReferenceSFN* is not present, the reference SFN is 0. |
| ***transformPrecoder***  Enables or disables transform precoding for *type1* and *type2*. If the field is absent, the UE enables or disables transform precoding in accordance with the field *msg3-transformPrecoder* in *RACH-ConfigCommon*, see TS 38.214 [19], clause 6.1.3. |
| ***uci-OnPUSCH***  Selection between and configuration of dynamic and semi-static beta-offset. For Type 1 UL data transmission without grant, *uci-OnPUSCH* should be set to *semiStatic.* |

|  |
| --- |
| *CG-COT-Sharing* field descriptions |
| ***channelAccessPriority***  Indicates the Channel Access Priority Class that the gNB can assume when sharing the UE initiated COT (see 37.213 [48], clause 4.1.3). |
| ***duration***  Indicates the number of DL transmission slots within UE initiated COT (see 37.213 [48], clause 4.1.3). |
| ***offset***  Indicates the number of DL transmission slots from the end of the slot where CG-UCI is detected after which COT sharing can be used (see 37.213 [48], clause 4.1.3). |

|  |
| --- |
| *CG-StartingOffsets* field descriptions |
| ***cg-StartingFullBW-InsideCOT***  A set of configured grant PUSCH transmission starting offsets (see TS 38.211[16], Table 5.3.1-2) which indicates the length of a CP extension of the first symbol that is located before the configured resource when frequency domain resource allocation includes all interlaces in the allocated RB set(s) and the CG PUSCH resource is inside gNB COT (see TS 38.214 [19], clause 6.1.2.3). |
| ***cg-StartingFullBW-OutsideCOT***  A set of configured grant PUSCH transmission starting offset indices (see TS 38.211[16], Table 5.3.1-2) which indicates the length of a CP extension of the first symbol that is located before the configured resource when frequency domain resource allocation includes all interlaces in the allocated RB set(s) and the CG PUSCH resource is outside gNB COT (see TS 38.214 [19], clause 6.1.2.3). |
| ***cg-StartingPartialBW-InsideCOT***  A set of configured grant PUSCH transmission starting offset index (see TS 38.211[16], Table 5.3.1-2) which indicates the length of a CP extension of the first symbol that is located before the configured resource when frequency domain resource allocation does not include all interlaces in the allocated RB set(s) and the CG PUSCH resource is inside gNB COT (see TS 38.214 [19], clause 6.1.2.3). |
| ***cg-StartingPartialBW-OutsideCOT***  A set of configured grant PUSCH transmission starting offset index (see TS 38.211[16], Table 5.3.1-2) which indicates the length of a CP extension of the first symbol that is located before the configured resource when frequency domain resource allocation does not include all interlaces in the allocated RB set(s) and the CG PUSCH resource is outside gNB COT (see TS 38.214 [19], clause 6.1.2.3). |

|  |  |
| --- | --- |
| Conditional Presence | Explanation |
| *LCH-BasedPrioritization* | This field is optionally present, Need R, if *lch-BasedPrioritization* is configured in the MAC entity. It is absent otherwise. |
| *RepTypeB* | The field is optionally present if pusch-RepTypeIndicator is set to pusch-RepTypeB, Need S, and absent otherwise. |
| *CG-List* | The field is mandatory present when included in *configuredGrantConfigToAddModList-r16*, otherwise the field is absent. |
| *CG-IndexMAC* | The field is mandatory present if at least one configured grant is configured by *configuredGrantConfigToAddModList-r16* in any BWP of this MAC entity, otherwise it is optionally present, need R. |

<Text omitted>

– *PDCCH-Config*

The IE *PDCCH-Config* is used to configure UE specific PDCCH parameters such as control resource sets (CORESET), search spaces and additional parameters for acquiring the PDCCH. If this IE is used for the scheduled cell in case of cross carrier scheduling, the fields other than *searchSpacesToAddModList* and *searchSpacesToReleaseList* are absent. If the IE is used for a dormant BWP, the fields other than *controlResourceSetToAddModList* and *controlResourceSetToReleaseList* are absent.

***PDCCH-Config* information element**

-- ASN1START

-- TAG-PDCCH-CONFIG-START

PDCCH-Config ::= SEQUENCE {

controlResourceSetToAddModList SEQUENCE(SIZE (1..3)) OF ControlResourceSet OPTIONAL, -- Need N

controlResourceSetToReleaseList SEQUENCE(SIZE (1..3)) OF ControlResourceSetId OPTIONAL, -- Need N

searchSpacesToAddModList SEQUENCE(SIZE (1..10)) OF SearchSpace OPTIONAL, -- Need N

searchSpacesToReleaseList SEQUENCE(SIZE (1..10)) OF SearchSpaceId OPTIONAL, -- Need N

downlinkPreemption SetupRelease { DownlinkPreemption } OPTIONAL, -- Need M

tpc-PUSCH SetupRelease { PUSCH-TPC-CommandConfig } OPTIONAL, -- Need M

tpc-PUCCH SetupRelease { PUCCH-TPC-CommandConfig } OPTIONAL, -- Need M

tpc-SRS SetupRelease { SRS-TPC-CommandConfig} OPTIONAL, -- Need M

...,

[[

controlResourceSetToAddModListSizeExt-v1610 SEQUENCE (SIZE (1..2)) OF ControlResourceSet OPTIONAL, -- Need N

controlResourceSetToReleaseListSizeExt-r16 SEQUENCE (SIZE (1..5)) OF ControlResourceSetId-r16 OPTIONAL, -- Need N

searchSpacesToAddModListExt-r16 SEQUENCE(SIZE (1..10)) OF SearchSpaceExt-r16 OPTIONAL, -- Need N

uplinkCancellation-r16 SetupRelease { UplinkCancellation-r16 } OPTIONAL, -- Need M

monitoringCapabilityConfig-r16 ENUMERATED { r15monitoringcapability,r16monitoringcapability } OPTIONAL, -- Need M

searchSpaceSwitchConfig-r16 SearchSpaceSwitchConfig-r16 OPTIONAL -- Need R

]]

}

SearchSpaceSwitchConfig-r16 ::= SEQUENCE {

cellGroupsForSwitchList-r16 SEQUENCE(SIZE (1..4)) OF CellGroupForSwitch-r16 OPTIONAL, -- Need R

searchSpaceSwitchDelay-r16 INTEGER (10..52) OPTIONAL -- Need R

}

CellGroupForSwitch-r16 ::= SEQUENCE(SIZE (1..16)) OF ServCellIndex

-- TAG-PDCCH-CONFIG-STOP

-- ASN1STOP

|  |
| --- |
| ***PDCCH-Config* field descriptions** |
| ***controlResourceSetToAddModList, controlResourceSetToAddModListSizeExt***  List of UE specifically configured Control Resource Sets (CORESETs) to be used by the UE. The network restrictions on configuration of CORESETs per DL BWP are specified in TS 38.213 [13], clause 10.1 and TS 38.306 [26]. The UE shall consider entries in *controlResourceSetToAddModList* and in *controlResourceSetToAddModListSizeExt* as a single list, i.e. an entry created using *controlResourceSetToAddModList* can be modified using *controlResourceSetToAddModListSizeExt* (or deleted using *controlResourceSetToReleaseListSizeExt*) and vice-versa. In case network reconfigures control resource set with the same *ControlResourceSetId* as used for *commonControlResourceSet* configured via *PDCCH-ConfigCommon*, the configuration from *PDCCH-Config* always takes precedence and should not be updated by the UE based on *servingCellConfigCommon*. |
| ***controlResourceSetToReleaseList, controlResourceSetToReleaseListSizeExt***  List of UE specifically configured Control Resource Sets (CORESETs) to be released by the UE. This field only applies to CORESETs configured by *controlResourceSetToAddModList* or *controlResourceSetToAddModListSizeExt* and does not release the field *commonControlResourceSet* configured by *PDCCH-ConfigCommon*. |
| ***downlinkPreemption***  Configuration of downlink preemption indications to be monitored in this cell (see TS 38.213 [13], clause 11.2). |
| ***monitoringCapabilityConfig***  Configures either Rel-15 PDCCH monitoring capability or Rel-16 PDCCH monitoring capability for PDCCH monitoring on a serving cell. Value *r15monitoringcapablity* enables the Rel-15 monitoring capability, and value *r16monitoringcapablity* enables the Rel-16 PDCCH monitoring capability (see TS 38.213 [13], clause 10.1). |
| ***searchSpacesToAddModList, searchSpacesToAddModListExt***  List of UE specifically configured Search Spaces. The network configures at most 10 Search Spaces per BWP per cell (including UE-specific and common Search Spaces). If the network includes *searchSpacesToAddModListExt*, it includes the same number of entries, and listed in the same order, as in *searchSpacesToAddModList*. |
| ***tpc-PUCCH***  Enable and configure reception of group TPC commands for PUCCH. |
| ***tpc-PUSCH***  Enable and configure reception of group TPC commands for PUSCH. |
| ***tpc-SRS***  Enable and configure reception of group TPC commands for SRS. |
| ***uplinkCancellation***  Configuration of uplink cancellation indications to be monitored in this cell (see TS 38.213 [13], clause 11.2A). |

|  |
| --- |
| ***SearchSpaceSwitchConfig* field descriptions** |
| ***cellGroupsForSwitchList***  The list of serving cells which are bundled for the search space group switching purpose (see TS 38.213 [13], clause 10.4). A serving cell can belong to only one *CellGroupForSwitch*. The network configures the same list for all BWPs of serving cells in the same *CellGroupForSwitch.* |
| ***searchSpaceSwitchDelay***  Indicates the value to be applied by a UE for Search Space Set Group switching; corresponds to the P value in TS 38.213 [13], clause 10.4. The network configures the same value for all BWPs of serving cells in the same *CellGroupForSwitch.* |

<Text omitted>

– *SemiStaticChannelAccessConfig*

The IE *SemiStaticChannelAccessConfig* is used to configure channel access parameters when the network is operating in semi-static channel access mode (see clause 4.3 in TS 37.213 [48].

***SemiStaticChannelAccessConfig* information element**

-- ASN1START

-- TAG-SEMISTATICCHANNELACCESSCONFIG-START

SemiStaticChannelAccessConfig-r16 ::= SEQUENCE {

period-r16 ENUMERATED {ms1, ms2, ms2dot5, ms4, ms5, ms10}

}

-- TAG-SEMISTATICCHANNELACCESSCONFIG-STOP

-- ASN1STOP

|  |
| --- |
| ***SemiStaticChannelAccessConfig* field descriptions** |
| ***period***  Indicates the periodicity of the semi-static channel access mode (see TS 37.213 [48], clause 4.3). Value ms1 corresponds to 1 ms, value ms2 corresponds to 2 ms, value ms2dot5 corresponds to 2.5 ms, and so on. |

<Text omitted>

– *SI-SchedulingInfo*

The IE *SI-SchedulingInfo* contains information needed for acquisition of SI messages.

***SI-SchedulingInfo* information element**

-- ASN1START

-- TAG-SI-SCHEDULINGINFO-START

SI-SchedulingInfo ::= SEQUENCE {

schedulingInfoList SEQUENCE (SIZE (1..maxSI-Message)) OF SchedulingInfo,

si-WindowLength ENUMERATED {s5, s10, s20, s40, s80, s160, s320, s640, s1280},

si-RequestConfig SI-RequestConfig OPTIONAL, -- Cond MSG-1

si-RequestConfigSUL SI-RequestConfig OPTIONAL, -- Cond SUL-MSG-1

systemInformationAreaID BIT STRING (SIZE (24)) OPTIONAL, -- Need R

...

}

SchedulingInfo ::= SEQUENCE {

si-BroadcastStatus ENUMERATED {broadcasting, notBroadcasting},

si-Periodicity ENUMERATED {rf8, rf16, rf32, rf64, rf128, rf256, rf512},

sib-MappingInfo SIB-Mapping

}

SIB-Mapping ::= SEQUENCE (SIZE (1..maxSIB)) OF SIB-TypeInfo

SIB-TypeInfo ::= SEQUENCE {

type ENUMERATED {sibType2, sibType3, sibType4, sibType5, sibType6, sibType7, sibType8, sibType9,

sibType10-v1610, sibType11-v1610, sibType12-v1610, sibType13-v1610, sibType14-v1610,

spare3, spare2, spare1,... },

valueTag INTEGER (0..31) OPTIONAL, -- Cond SIB-TYPE

areaScope ENUMERATED {true} OPTIONAL -- Need S

}

-- TAG-SI-SCHEDULINGINFO-STOP

-- ASN1STOP

|  |
| --- |
| ***SchedulingInfo* field descriptions** |
| ***areaScope***  Indicates that a SIB is area specific. If the field is absent, the SIB is cell specific. |
| ***si-BroadcastStatus***  Indicates if the SI message is being broadcasted or not. Change of *si-BroadcastStat*us should not result in system information change notifications in Short Message transmitted with P-RNTI over DCI (see clause 6.5). The value of the indication is valid until the end of the BCCH modification period when set to *broadcasting*. |
| ***si-Periodicity***  Periodicity of the SI-message in radio frames. Value *rf8* corresponds to 8 radio frames, value *rf16* corresponds to 16 radio frames, and so on. |

|  |
| --- |
| ***SI-SchedulingInfo* field descriptions** |
| ***si-RequestConfig***  Configuration of Msg1 resources that the UE uses for requesting SI-messages for which *si-BroadcastStatus* is set to notBroadcasting. |
| ***si-RequestConfigSUL***  Configuration of Msg1 resources that the UE uses for requesting SI-messages for which *si-BroadcastStatus* is set to notBroadcasting. |
| ***si-WindowLength***  The length of the SI scheduling window. Value *s5* corresponds to 5 slots, value *s10* corresponds to 10 slots and so on. The network always configures *si-WindowLength* to be shorter than or equal to the *si-Periodicity*. |
| ***systemInformationAreaID***  Indicates the system information area that the cell belongs to, if any. Any SIB with *areaScope* within the SI is considered to belong to this *systemInformationAreaID*. The systemInformationAreaID is unique within a PLMN/SNPN. |

| **Conditional presence** | **Explanation** |
| --- | --- |
| *MSG-1* | The field is optionally present, Need R, if *si-BroadcastStatus* is set to *notBroadcasting* for any SI-message included in *schedulingInfoList*. It is absent otherwise. |
| *SIB-TYPE* | The field is mandatory present if the SIB type is different from *SIB6*, *SIB7* or *SIB8*. For *SIB6*, *SIB7* and *SIB8* it is absent. |
| *SUL-MSG-1* | The field is optionally present, Need R, if *supplementaryUplink* is configured in *ServingCellConfigCommonSIB* and if *si-BroadcastStatus* is set to *notBroadcasting* for any SI-message included in *schedulingInfoList*. It is absent otherwise. |

<end of changes>