**3GPP TSG-RAN WG2 Meeting #111-e *R2-2XXXXXX***

**Online, 17th – 28th Aug, 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **38.331** | **CR** | **1943** | **rev** | **1** | **Current version:** | **16.1.0** |  |
|  |
| *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)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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|  |
| ***Title:***  | Correction on RRC parameters for 5G V2X with NR sidelink |
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| ***Source to WG:*** | Huawei, HiSilicon  |
| ***Source to TSG:*** | RAN WG2 |
|  |  |
| ***Work item code:*** | 5G\_V2X\_NRSL-Core |  | ***Date:*** | 2020-08-25 |
|  |  |  |  |  |
| ***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 canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | The intentions of the CRs in R2-2007917, R2-2007853, R2-2007854, R2-2007280, R2-2007299 and R2-2007855 were agreed during RAN2 #111e. The changes of this CR reflects their intentions, with the following detailed reasons for change:1. According to the RAN1 agreement, the configured sidelink grant is assocaited with a single transmit resource pool, and for configured sidelink grant Type 2, the assocaited resource pool ID is indicated in the activated DCI. However, for configured sidelink grant Type 1, this restriction has not been reflected in the current RRC specification. In case multiple transmit resource pools are configured, the UE may not know which transmit resource pool the configured sidelink grant Type 1 belongs to and cannot use this configured sidelink grant Type 1 to transmit properly. (R2-2007917)
2. In the current specification, *sl-PeriodCG* is used to configure the periodicity value for configured sidelink type 1. One of the values in the current specification is “ms0”, which is meaningless to define a periodicity as zero ms. Besides, the UE behaviours in case the “ms0” is configured as the periodicity is not defined. Therefore, the value “ms0” in sl-PeriodCG1-r16 should not be used. (R2-2007853)
3. In the current specification, sl-RSRP in SL-MeasReportQuantity is defined as “RSRP-Range”. However, the measurement quantity should not be defined as an INTEGER by RSRP-Range, but should be defined as one measurement type with BOOLEAN value, which should be similar to the the MeasReportQuantity for CBR. (R2-2007854)
4. In the field description of sl-X-Overhead, it is mentioned that if the field is not present, the default value should be xOh0. However, according to the updated paramenters list in R1-2005050, the default paramenters in the RAN2 specification it should be 0. (R2-2007280)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **WI code** | Sub-feature group | Parameter name in the spec | New or existing? | Parameter name in the text | Description | Value range | Default value aspect (see note) |
| 5G\_V2X\_NRSL-Core | PSSCH | sl-xOverhead | new | sl-xOverhead | Accounts for overhead from CSI-RS, PT-RS. If the field is absent, the UE applies value xOh0 (see TS 38.214 [19], clause 5.1.3.2). | ~~FFS~~ 0, 3, 6, 9 | 0 |

1. Need codes for the following three fields for SL power control are now wrongly specified as “Need M”:
* *sl-Alpha-PSSCH-PSCCH*
* *dl-Alpha-PSSCH-PSCCH*
* *dl-Alpha-PSFCH*

Particularly, “Need M” is contradictory to the description of “*When the field is absent the UE applies the value 1*”, which actually means “Need S”, in the current filed description. As the current field description for these fields are derived from RAN1 RRC parameter sheet, RAN1’s intention is just to make these fields “Need S”, in comparison to also the counterpart parameters for UL power control (i.e. *alpha* in *P0-PUSCH-AlphaSet*) which are intended to be reused by RAN1 for the SL. Therefore, the Need codes for the above three fields should be revised. (R2-2007299)1. In the current specification, sl-SDAP-Header is configured by NW in Uu RRC signalling to the TX UE, but is missing in the PC5 RRC signalling from the TX UE to the RX UE. Without the configuration/indication from TX UE on whether the SDAP header is present or not, the RX UE cannot decode the received sidelink SDAP PDU correctly.(R2-2007855)
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|  |  |
| ***Summary of change:*** | 1. Add the resource pool index in the configured sidelink grant Type 1 configuration to restrict a certain configured sidelink grant Type 1 can only be associated with a single transmit resource pool.
2. In 6.3.5 for sl-PeriodCG1-r16, remove value “ms0” and add other missing spare values.
3. In 6.3.5 for SL-ReportConfigList, change “sl-RSRP-r16” SL-MeasReportQuantity-r16 to a “BOOLEAN” variable.
4. In 6.3.5, clarify that in the field description of sl-X-Overhead it should be 0, according to the paramenters list we got from RAN1. Further, the need code of this field is changed to Need S since when the field is absent, the UE should not maintain the vaule, but apply the default value as now specified in the related field description.
5. Change “Need M” to “Need S” for the three fields listed above in “Reason for Change”, Bullet 5.
6. In 6.6.2 for RRCReconfigurationSidelink, add “sl-SDAP-Header-r16 ENUMERATED {present, absent}” into SL-SDAP-ConfigPC5.

**Impact analysis**Impacted functionality:NR sidelink communicationInter-operability: If the NW implements the CR but the UE does not, the UE cannot correctly understand the RRC signalling including related NR SL communication configurations as follows, with the related functions unable to work within the UE not implementing the CR:* SL-ConfiguredGrant (for configured SL grant type 1/2);
* SL-ReportConfigList (for SL RSRP measumrent reporting);
* sl-X-Overhead (for SL CSI-RS and PT-RS)

If the UE implements the CR but the NW does not, the NW cannot correctly provide RRC signalling including related NR SL communication configurations as follows, which makes the UE unable to get correct corresponding NR SL configurations and consequently unable to work for the related functions:* SL-ConfiguredGrant (for configured SL grant type 1/2);
* SL-ReportConfigList (for SL RSRP measumrent reporting);
* sl-X-Overhead (for SL CSI-RS and PT-RS)

If one UE implements this CR but the other UE does not, the receving UE may have different understanding on the whether SDAP header is present with the trasmitting UE, and thus be unable to decode SDAP PDU correctly.Note that the above interoperablity issues between UE and NW result from change 1 to 5 in above “Summary of change” and the interoperability issues between one UE and another UE results from change 6 in above “Summary of change”. |
|  |  |
| ***Consequences if not approved:*** | 1. In case of configured with multiple transmit resource pool, the UE may not know which transmit resource pool the configured sidelink grant Type 1 belongs to and cannot use this configured sidelink grant Type 1 to transmit properly
2. The UE behaviours are not defined on how to treat the 0ms period of sidelink configured grant.
3. The configuration for SL RSRP measurement quantities in SL-MeasReportQuantity is incorrect.
4. The UE will set the wrong default value for the field sl-X-Overhead and this it may cause a configuration error.
5. There is misalignment existing in the Spec between the Need Codes for SL power control parameters and their field descriptions.
6. The RX UE cannot decode the SDAP PDU correctly in sidelink.
 |
|  |  |
| ***Clauses affected:*** | 6.3.5, 6.6.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  |  |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  |  |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  |  |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

---------------------------------- [Start of change] ----------------------------------

6.3.5 Sidelink information elements

<Unrelated Texts Removed>

– *SL-ConfiguredGrantConfig*

The IE *SL-ConfiguredGrantConfig* specifies the configured grant configuration information for NR sidelink communication.

***SL-ConfiguredGrantConfig* information element**

-- ASN1START

-- TAG-SL-CONFIGUREDGRANTCONFIG-START

SL-ConfiguredGrantConfig-r16 ::= SEQUENCE {

 sl-ConfigIndexCG-r16 SL-ConfigIndexCG-r16,

 sl-PeriodCG-r16 SL-PeriodCG-r16 OPTIONAL, -- Need M

 sl-NrOfHARQ-Processes-r16 INTEGER (1..16) OPTIONAL, -- Need M

 sl-HARQ-ProcID-offset-r16 INTEGER (1..16) OPTIONAL, -- Need M

 sl-CG-MaxTransNumList-r16 SL-CG-MaxTransNumList-r16 OPTIONAL, -- Need M

 rrc-ConfiguredSidelinkGrant SEQUENCE {

 sl-TimeResourceCG-Type1-r16 INTEGER (0..496) OPTIONAL, -- Need M

 sl-StartSubchannelCG-Type1-r16 INTEGER (0..26) OPTIONAL, -- Need M

 sl-FreqResourceCG-Type1-r16 INTEGER (0..6929) OPTIONAL, -- Need M

 sl-TimeOffsetCG-Type1-r16 INTEGER (0..7999) OPTIONAL, -- Need R

 sl-N1PUCCH-AN-r16 PUCCH-ResourceId OPTIONAL, -- Need M

 sl-PSFCH-ToPUCCH-CG-Type1-r16 INTEGER (0..15) OPTIONAL, -- Need M

 sl-ResourcePoolID-r16 SL-ResourcePoolID-r16 OPTIONAL -- Need M

 } OPTIONAL, -- Need M

 ...

}

SL-ConfigIndexCG-r16 ::= INTEGER (1..maxNrofCG-SL-r16)

SL-CG-MaxTransNumList-r16 ::= SEQUENCE (SIZE (1..8)) OF SL-CG-MaxTransNum-r16

SL-CG-MaxTransNum-r16 ::= SEQUENCE {

 sl-Priority-r16 INTEGER (1..8),

 sl-MaxTransNum-r16 INTEGER (1..32)

}

SL-PeriodCG-r16 ::= CHOICE{

 sl-PeriodCG1-r16 ENUMERATED { ms100, ms200, ms300, ms400, ms500, ms600, ms700, ms800, ms900, ms1000, spare6, spare5, spare4, spare3, spare2, spare1},

 sl-PeriodCG2-r16 INTEGER (1..99)

}

-- TAG-SL-CONFIGUREDGRANTCONFIG-STOP

-- ASN1STOP

| ***SL- ConfiguredGrantConfig* field descriptions** |
| --- |
| ***sl-ConfigIndexCG***This field indicates the ID to identify configured grant for sidelink. |
| ***sl-CG-MaxTransNumList***This field indicates the maximum number of times that a TB can be transmitted using the resources provided by the configured grant. *sl-Priority* corresponds to the logical channel priority. |
| ***sl-FreqResourceCG-Type1***Indicates the frequency resource location of sidelink configured grant type 1. An index giving valid combinations of one or two starting sub-channel and length (joinly encoded) as resource indicator (RIV), as defined in TS 38.214 [19]. |
| ***sl-N1PUCCH-AN***This field indicates the HARQ resource for PUCCH for SL configured grant type 1 or SL configured type 2. The actual PUCCH-Resource is configured in sl-PUCCH-Config and referred to by its ID. |
| ***sl-NrOfHARQ-Processes***This field indicates the number of HARQ processes configured for a specific configured grant. It applies for both Type 1 and Type 2. |
| ***sl-PeriodCG***This field indicates the period of sidelink configured grant in the unit of ms. |
| ***sl-PSFCH-ToPUCCH -CG-Type1***This field, for configured grant type 1, indicates slot offset between the PSFCH associated with the last PSSCH resource of each period and the PUCCH occasion used for reporting sidelink HARQ. |
| ***sl-StartSubchannelCG-Type1***This field indicates the starting sub-channel of sidelink configured grant Type 1. An index giving valid sub-channel index. |
| ***sl-TimeResourceCG-Type1***This field indicates the time resource location of sidelink configured grant Type 1. An index giving valid combinations of up to two slot positions (jointly encoded) as time resource indicator (TRIV), as defined in TS 38.212 [17]. |
| ***sl-TimeOffsetCG-Type1***This field indicates the time offset related to SFN=0. |
| ***sl-ResourcePoolID***Indicates the resource pool in which the configured sidelink grant Type 1 is applied. |

<Unrelated Texts Removed>

– *SL-ReportConfigList*

The IE *SL*-*ReportConfigList* concerns a list of SL measurement reporting configurations to add or modify for a destination.

***SL-ReportConfigList* information element**

-- ASN1START

-- TAG-SL-REPORTCONFIGLIST-START

SL-ReportConfigList-r16 ::= SEQUENCE (SIZE (1..maxNrofSL-ReportConfigId-r16)) OF SL-ReportConfigInfo-r16

SL-ReportConfigInfo-r16 ::= SEQUENCE {

 sl-ReportConfigId-r16 SL-ReportConfigId-r16,

 sl-ReportConfig-r16 SL-ReportConfig-r16,

 ...

}

SL-ReportConfigId-r16 ::= INTEGER (1..maxNrofSL-ReportConfigId-r16)

SL-ReportConfig-r16 ::= SEQUENCE {

 sl-ReportType-r16 CHOICE {

 sl-Periodical-r16 SL-PeriodicalReportConfig-r16,

 sl-EventTriggered-r16 SL-EventTriggerConfig-r16,

 ...

 },

 ...

}

SL-PeriodicalReportConfig-r16 ::= SEQUENCE {

 sl-ReportInterval-r16 ReportInterval,

 sl-ReportAmount-r16 ENUMERATED {r1, r2, r4, r8, r16, r32, r64, infinity},

 sl-ReportQuantity-r16 SL-MeasReportQuantity-r16,

 sl-RS-Type-r16 SL-RS-Type-r16,

 ...

}

SL-EventTriggerConfig-r16 ::= SEQUENCE {

 sl-EventId-r16 CHOICE {

 eventS1-r16 SEQUENCE {

 s1-Threshold-r16 SL-MeasTriggerQuantity-r16,

 sl-ReportOnLeave-r16 BOOLEAN,

 sl-Hysteresis-r16 Hysteresis,

 sl-TimeToTrigger-r16 TimeToTrigger,

 ...

 },

 eventS2-r16 SEQUENCE {

 s2-Threshold-r16 SL-MeasTriggerQuantity-r16,

 sl-ReportOnLeave-r16 BOOLEAN,

 sl-Hysteresis-r16 Hysteresis,

 sl-TimeToTrigger-r16 TimeToTrigger,

 ...

 },

 ...

 },

 sl-ReportInterval-r16 ReportInterval,

 sl-ReportAmount-r16 ENUMERATED {r1, r2, r4, r8, r16, r32, r64, infinity},

 sl-ReportQuantity-r16 SL-MeasReportQuantity-r16,

 sl-RS-Type-r16 SL-RS-Type-r16,

 ...

}

SL-MeasReportQuantity-r16 ::= CHOICE {

 sl-RSRP-r16 BOOLEAN,

 ...

}

SL-MeasTriggerQuantity-r16 ::= CHOICE {

 sl-RSRP-r16 RSRP-Range,

 ...

}

SL-RS-Type-r16 ::= ENUMERATED {dmrs, spare3, spare2, spare1}

-- TAG-SL-REPORTCONFIGLIST-STOP

-- ASN1STOP

| ***SL-ReportConfig* field descriptions** |
| --- |
| ***sl-ReportType***Type of the configured sidelink measurement report. |

| ***SL-EventTriggerConfig* field descriptions** |
| --- |
| ***sl-EventId***Choice of sidelink measurement event triggered reporting criteria. |
| ***sl-ReportAmount***Number of sidelink measurement reports applicable for *sl-EventTriggered* report type. |
| ***sl-ReportInterval***Indicates the interval between periodical reports (i.e., when sl-ReportAmount exceeds 1) for *sl-EventTriggered* report type. |
| ***sl-ReportOnLeave***indicates whether or not the UE shall initiate the sidelink measurement reporting procedure when the leaving condition is meet for a frequency in *sl-FrequencyTriggeredList*, as specified in 5.8.10.4.1. |
| ***sl-ReportQuantity***The sidelink measurement quantities to be included in the sidelink measurement report. |
| ***sl-TimeToTrigger***Time during which specific criteria for the event needs to be met in order to trigger a sidelink measurement report. |
| ***sN-Threshold***Threshold used for events S1 and S2 specified in subclauses 5.8.10.4.2 and 5.8.10.4.3, respectively. |

| ***SL-PeriodicReportConfig* field descriptions** |
| --- |
| ***sl-ReportAmount***Number of sidelink measurement reports applicable for *sl-Periodical* report type. |
| ***sl-ReportInterval***Indicates the interval between periodical reports (i.e., when sl-ReportAmount exceeds 1) for *sl-Periodical* report type. |
| ***sl-ReportQuantity***The sidelink measurement quantities to be included in the sidelink measurement report. |

<Unrelated Texts Removed>

– *SL-ResourcePool*

The IE *SL-ResourcePool* specifies the configuration information for NR sidelink communication resource pool.

***SL-ResourcePool* information element**

-- ASN1START

-- TAG-SL-RESOURCEPOOL-START

SL-ResourcePool-r16 ::= SEQUENCE {

 sl-PSCCH-Config-r16 SetupRelease { SL-PSCCH-Config-r16 } OPTIONAL, -- Need M

 sl-PSSCH-Config-r16 SetupRelease { SL-PSSCH-Config-r16 } OPTIONAL, -- Need M

 sl-PSFCH-Config-r16 SetupRelease { SL-PSFCH-Config-r16 } OPTIONAL, -- Need M

 sl-SyncAllowed-r16 SL-SyncAllowed-r16 OPTIONAL, -- Need M

 sl-SubchannelSize-r16 ENUMERATED {n10, n12, n15, n20, n25, n50, n75, n100} OPTIONAL, -- Need M

 sl-TimeResource-r16 INTEGER (10..160) OPTIONAL, -- Need M

 sl-StartRB-Subchannel-r16 INTEGER (0..265) OPTIONAL, -- Need M

 sl-NumSubchannel-r16 INTEGER (1..27) OPTIONAL, -- Need M

 sl-Additional-MCS-Table-r16 ENUMERATED {qam256, qam64LowSE, qam256-qam64LowSE } OPTIONAL, -- Need M

 sl-ThreshS-RSSI-CBR-r16 INTEGER (0..45) OPTIONAL, -- Need M

 sl-TimeWindowSizeCBR-r16 ENUMERATED {ms100, slot100} OPTIONAL, -- Need M

 sl-TimeWindowSizeCR-r16 ENUMERATED {ms1000, slot1000} OPTIONAL, -- Need M

 sl-PTRS-Config-r16 SL-PTRS-Config-r16 OPTIONAL, -- Need M

 sl-UE-SelectedConfigRP-r16 SL-UE-SelectedConfigRP-r16 OPTIONAL, -- Need M

 sl-RxParametersNcell-r16 SEQUENCE {

 sl-TDD-Configuration-r16 TDD-UL-DL-ConfigCommon OPTIONAL, -- Need M

 sl-SyncConfigIndex-r16 INTEGER (0..15)

 } OPTIONAL, -- Need M

 sl-ZoneConfigMCR-List-r16 SEQUENCE (SIZE (16)) OF SL-ZoneConfigMCR-r16 OPTIONAL, -- Need M

 sl-FilterCoefficient-r16 FilterCoefficient OPTIONAL, -- Need M

 sl-RB-Number-r16 INTEGER (10..275) OPTIONAL, -- Need M

 sl-PreemptionEnable-r16 ENUMERATED {enabled, pl1, pl2, pl3, pl4, pl5, pl6, pl7, pl8} OPTIONAL, -- Need R

 sl-PriorityThreshold-UL-URLLC-r16 INTEGER (1..9) OPTIONAL, -- Need M

 sl-PriorityThreshold-r16 INTEGER (1..9) OPTIONAL, -- Need M

 sl-X-Overhead-r16 ENUMERATED {n0,n3, n6, n9} OPTIONAL, -- Need S

 sl-PowerControl-r16 SL-PowerControl-r16 OPTIONAL, -- Need M

 sl-TxPercentageList-r16 SL-TxPercentageList-r16 OPTIONAL, -- Need M

 sl-MinMaxMCS-List-r16 SL-MinMaxMCS-List-r16 OPTIONAL, -- Need M

...

}

SL-ZoneConfigMCR-r16 ::= SEQUENCE {

 sl-ZoneConfigMCR-Index-r16 INTEGER (0..15),

 sl-TransRange-r16 ENUMERATED {m20, m50, m80, m100, m120, m150, m180, m200, m220, m250, m270, m300, m350,

 m370, m400, m420, m450, m480, m500, m550, m600, m700, m1000, spare8, spare7,

 spare6, spare5, spare4, spare3, spare2, spare1} OPTIONAL, -- Need M

 sl-ZoneConfig-r16 SL-ZoneConfig-r16 OPTIONAL, -- Need M

...

}

SL-SyncAllowed-r16 ::= SEQUENCE {

 gnss-Sync-r16 ENUMERATED {true} OPTIONAL, -- Need R

 gnbEnb-Sync-r16 ENUMERATED {true} OPTIONAL, -- Need R

 ue-Sync-r16 ENUMERATED {true} OPTIONAL -- Need R

}

SL-PSCCH-Config-r16 ::= SEQUENCE {

 sl-TimeResourcePSCCH-r16 ENUMERATED {n2, n3} OPTIONAL, -- Need M

 sl-FreqResourcePSCCH-r16 ENUMERATED {n10,n12, n15, n20, n25} OPTIONAL, -- Need M

 sl-DMRS-ScrambleID-r16 INTEGER (0..65535) OPTIONAL, -- Need M

 sl-NumReservedBits-r16 INTEGER (2..4) OPTIONAL, -- Need M

 ...

}

SL-PSSCH-Config-r16 ::= SEQUENCE {

 sl-PSSCH-DMRS-TimePatternList-r16 SEQUENCE (SIZE (1..3)) OF INTEGER (2..4) OPTIONAL, -- Need M

 sl-BetaOffsets2ndSCI-r16 SEQUENCE (SIZE (4)) OF SL-BetaOffsets-r16 OPTIONAL, -- Need M

 sl-Scaling-r16 ENUMERATED {f0p5, f0p65, f0p8, f1} OPTIONAL, -- Need M

 ...

}

SL-PSFCH-Config-r16 ::= SEQUENCE {

 sl-PSFCH-Period-r16 ENUMERATED {sl0, sl1, sl2, sl4} OPTIONAL, -- Need M

 sl-PSFCH-RB-Set-r16 BIT STRING (SIZE (10..275)) OPTIONAL, -- Need M

 sl-NumMuxCS-Pair-r16 ENUMERATED {n1, n2, n3, n6} OPTIONAL, -- Need M

 sl-MinTimeGapPSFCH-r16 ENUMERATED {sl2, sl3} OPTIONAL, -- Need M

 sl-PSFCH-HopID-r16 INTEGER (0..1023) OPTIONAL, -- Need M

 sl-PSFCH-CandidateResourceType-r16 ENUMERATED {startSubCH, allocSubCH} OPTIONAL, -- Need M

 ...

}

SL-PTRS-Config-r16 ::= SEQUENCE {

 sl-PTRS-FreqDensity-r16 SEQUENCE (SIZE (2)) OF INTEGER (1..276) OPTIONAL, -- Need M

 sl-PTRS-TimeDensity-r16 SEQUENCE (SIZE (3)) OF INTEGER (0..29) OPTIONAL, -- Need M

 sl-PTRS-RE-Offset-r16 ENUMERATED {offset01, offset10, offset11} OPTIONAL, -- Need M

 ...

}

SL-UE-SelectedConfigRP-r16 ::= SEQUENCE {

 sl-CBR-PriorityTxConfigList-r16 SL-CBR-PriorityTxConfigList-r16 OPTIONAL, -- Need M

 sl-ThresPSSCH-RSRP-List-r16 SL-ThresPSSCH-RSRP-List-r16 OPTIONAL, -- Need M

 sl-MultiReserveResource-r16 ENUMERATED {enabled} OPTIONAL, -- Need M

 sl-MaxNumPerReserve-r16 ENUMERATED {n2, n3} OPTIONAL, -- Need M

 sl-SensingWindow-r16 ENUMERATED {ms100, ms1100} OPTIONAL, -- Need M

 sl-SelectionWindowList-r16 SL-SelectionWindowList-r16 OPTIONAL, -- Need M

 sl-ResourceReservePeriodList-r16 SEQUENCE (SIZE (1..16)) OF SL-ResourceReservePeriod-r16 OPTIONAL, -- Need M

 sl-RS-ForSensing-r16 ENUMERATED {pscch, pssch},

 ...

}

SL-ResourceReservePeriod-r16 ::= CHOICE {

 sl-ResourceReservePeriod1-r16 ENUMERATED {ms0, ms100, ms200, ms300, ms400, ms500, ms600, ms700, ms800, ms900, ms1000},

 sl-ResourceReservePeriod2-r16 INTEGER (1..99)

}

SL-SelectionWindowList-r16 ::= SEQUENCE (SIZE (8)) OF SL-SelectionWindowConfig-r16

SL-SelectionWindowConfig-r16 ::= SEQUENCE {

 sl-Priority-r16 INTEGER (1..8),

 sl-SelectionWindow-r16 ENUMERATED {n1, n5, n10, n20}

}

SL-TxPercentageList-r16 ::= SEQUENCE (SIZE (8)) OF SL-TxPercentageConfig-r16

SL-TxPercentageConfig-r16 ::= SEQUENCE {

 sl-Priority-r16 INTEGER (1..8),

 sl-TxPercentage-r16 ENUMERATED {p20, p35, p50}

}

SL-MinMaxMCS-List-r16 ::= SEQUENCE (SIZE (1..3)) OF SL-MinMaxMCS-Config-r16

SL-MinMaxMCS-Config-r16 ::= SEQUENCE {

 sl-MCS-Table-r16 ENUMERATED {qam64, qam256, qam64LowSE},

 sl-MinMCS-PSSCH-r16 INTEGER (0..27),

 sl-MaxMCS-PSSCH-r16 INTEGER (0..31)

}

SL-BetaOffsets-r16 ::= INTEGER (0..31)

SL-PowerControl-r16 ::= SEQUENCE {

 sl-MaxTransPower-r16 INTEGER (-30..33),

 sl-Alpha-PSSCH-PSCCH-r16 ENUMERATED {alpha0, alpha04, alpha05, alpha06, alpha07, alpha08, alpha09, alpha1} OPTIONAL, -- Need M

 dl-Alpha-PSSCH-PSCCH-r16 ENUMERATED {alpha0, alpha04, alpha05, alpha06, alpha07, alpha08, alpha09, alpha1} OPTIONAL, -- Need S

 sl-P0-PSSCH-PSCCH-r16 INTEGER (-16..15) OPTIONAL, -- Need S

 dl-P0-PSSCH-PSCCH-r16 INTEGER (-16..15) OPTIONAL, -- Need M

 dl-Alpha-PSFCH-r16 ENUMERATED {alpha0, alpha04, alpha05, alpha06, alpha07, alpha08, alpha09, alpha1} OPTIONAL, -- Need M

 dl-P0-PSFCH-r16 INTEGER (-16..15) OPTIONAL, -- Need S

 ...

}

-- TAG-SL-RESOURCEPOOL-STOP

-- ASN1STOP

| ***SL-ZoneConfigMCR* field descriptions** |
| --- |
| ***sl-TransRange***Indicates the communication range requirement for the corresponding *sl-ZoneConfigMCR-Index*. |
| ***sl-ZoneConfig***Indicates the zone configuration for the corresponding *sl-ZoneConfigMCR-Index*. |
| ***sl-ZoneConfigMCR-Index***Indicates the codepoint of the communication range requirement field in SCI. |

|  |
| --- |
| ***SL-ResourcePool* field descriptions** |
| ***sl-FilterCoefficient***This field indicates the filtering coefficient for long-term measurement and reference signal power derivation used for sideilnk open-loop power control. |
| ***sl-Additional-MCS-Table***Indicates the MCS table(s) additionally used in the resource pool. 64QAM table is (pre-)configured as default. Zero, one or two can be additionally (pre-)configured using the 256QAM and/or low-SE MCS tables |
| ***sl-NumSubchannel***Indicates the number of subchannels in the corresponding resource pool, which consists of contiguous PRBs only. |
| ***sl-PreemptionEnable***Indiates whether pre-emption is disabled or enabled in a resource pool. If enabled, a priority level p\_preemption can be optionally configured. If the pre-emption is enabled but p\_preemption is not configured, pre-emption is applicable to all levels. |
| ***sl-PriorityThreshold-UL-URLLC***Indicates the threshold used to determine whether SL V2X transmission or PUCCH transmission carrying SL HARQ is prioritized over uplink transmission of priority index 1 if they overlap in time. |
| ***sl-PriorityThreshold***Indicates the threshold used to determine whether SL V2X transmission or PUCCH transmission carrying SL HARQ is prioritized over uplink transmission of priority index 0 if they overlap in time. |
| ***sl-RB-Number***Indicates the number of PRBs in the corresponding resource pool, which consists of contiguous PRBs only. |
| ***sl-StartRB-Subchannel***Indicates the lowest RB index of the subchannel with the lowest index in the resource pool with respect to the lowest RB index of a SL BWP. |
| ***sl-SubchannelSize***Indicates the minimum granularity in frequency domain for the sensing for PSSCH resource selection in the unit of PRB. |
| ***sl-SyncAllowed***Indicates the allowed synchronization reference(s) which is (are) allowed to use the configured resource pool. |
| ***sl-SyncConfigIndex***Indicates the synchronisation configuration that is associated with a reception pool, by means of an index to the corresponding entry *SL-SyncConfigList* of in *SIB12* for NR sidelink communication. |
| ***sl-TDD-Configuration***Indicates the TDD configuration associated with the reception pool of the cell indicated by *sl-SyncConfigIndex*. |
| ***sl-ThreshS-RSSI-CBR***Indicates the S-RSSI threshold for determining the contribution of a sub-channel to the CBR measurement. Value 0 corresponds to -112 dBm, value 1 to -110 dBm, value n to (-112 + n\*2) dBm, and so on. |
| ***sl-TimeResource***Indicates the bitmap of the resource pool, which is defined by repeating the bitmap with a periodicity during a SFN or DFN cycle. |
| ***sl-TimeWindowSizeCBR***Indicates the time window size for CBR measurement. |
| ***sl-TimeWindowSizeCR***Indicates the time window size for CR evaluation. |
| ***sl-TxPercentageList***Indicates the portion of candidate single-slot PSSCH resources over the toal resources. Value p20 corresponds to 20%, and so on. |
| ***sl-X-Overhead***Accounts for overhead from CSI-RS, PT-RS. If the field is absent, the UE applies value *n0* (see TS 38.214 [19], clause 5.1.3.2). |

| ***SL-SyncAllowed* field descriptions** |
| --- |
| ***gnbEnb-Sync***If configured, the (pre-) configured resources can be used if the UE is directly or indirectly synchronized to eNB or gNB (i.e., synchronized to a reference UE which is directly synchronized to eNB or gNB). |
| ***gnss-Sync***If configured, the (pre-) configured resources can be used if the UE is directly or indirectly synchronized to GNSS (i.e., synchronized to a reference UE which is directly synchronized to GNSS). |
| ***ue-Sync***If configured, the (pre-) configured resources can be used if the UE is synchronized to a reference UE which is not synchronized to eNB, gNB and GNSS directly or indirectly. |

| ***SL-PSCCH* field descriptions** |
| --- |
| ***sl-FreqResourcePSCCH***Indicates the number of PRBs for PSCCH in a resource pool where it is not greater than the number PRBs of the subchannel. |
| ***sl-DMRS-ScrambleID***Indicates the initialization value for PSCCH DMRS scrambling. |
| ***sl-NumReservedBits***Indicates the number of reserved bits in first stage SCI. |
| ***sl-TimeResourcePSCCH***Indicates the number of sumbols of PSCCH in a resource pool. |

| ***SL-PSSCH* field descriptions** |
| --- |
| ***sl-BetaOffsets2ndSCI***Indicates candidates of beta-offset values to determine the number of coded modulation symbols for second stage SCI. The value indicates the index of Table 9.3-2 of TS 38.213 |
| ***sl-PSSCH-DMRS-TimePatternList***Indicates the set of PSSCH DMRS time domain patterns in terms of PSSCH DMRS symbols in a slot that can be used in the resource pool. |
| ***sl-Scaling***Indicates a scaling factor to limit the number of resource elements assigned to the second stage SCI on PSSCH. Value *f0p5* corresponds to 0.5, value *f0p65* corresponds to 0.65, and so on. |

| ***SL-PSFCH* field descriptions** |
| --- |
| ***sl-PSFCH-CandidateResourceType***Indicates the number of PSFCH resources available for multiplexing HARQ-ACK information in a PSFCH transmission (see TS 38.213 clause 16.3) |
| ***sl-PSFCH-Period***Indicates the period of PSFCH resource in the unit of slots within this resource pool. If set to *sl0*, no resource for PSFCH, and HARQ feedback for all transmissions in the resource pool is disabled. |
| ***sl-PSFCH-RB-Set***Indicates the set of PRBs that are actually used for PSFCH transmission and reception. The leftmost bit of the bitmap refers to the lowest RB index in the resource pool, and so on |

| ***SL-UE-SelectedConfigRP* field descriptions** |
| --- |
| ***sl-MaxNumPerReserve***Indicates the maximum number of reserved PSCCH/PSSCH resources that can be indicated by an SCI. |
| ***sl-MultiReserveResource***Indicates if it is allowed to reserve a sidelink resource for an initial transmission of a TB by an SCI associated with a different TB, based on sensing and resource selection procedure. |
| ***sl-ResourceReservePeriodList***Set of possible resource reservation period allowed in the resource pool in the unit of ms. Up to 16 values can be configured per resource pool. |
| ***sl-RS-ForSensing***Indicates whether DMRS of PSCCH or PSSCH is used for L1 RSRP measurement in the sensing operation. |
| ***sl-SensingWindow***Parameter that indicates the start of the sensing window. |
| ***sl-SelectionWindowList***Parameter that determines the end of the selection window in the resource selection for a TB with respect to priority indicated in SCI. Value n1 corresponds to 1\*2µ, value n5 corresponds to 5\*2µ, and so on, where µ = 0,1,2,3 for SCS 15,30,60,120 kHz respectively. |
| ***sl-ThresPSSCH-RSRP-List***Indicates a list of 64 thresholds, and the threshold should be selected based on the priority in the decoded SCI and the priority in the SCI to be transmitted. A resource is excluded if it is indicated or reserved by a decoded SCI and PSSCH RSRP in the associated data resource is above a threshold. |

| ***SL-PowerControl* field descriptions** |
| --- |
| ***sl-MaxTransPower***Indicates the maximum value of the UE's sidelink transmission power on this resource pool. The unit is dBm. |
| ***sl-Alpha-PSSCH-PSCCH***Indicates alpha value for sidelink pathloss based power control for PSCCH/PSSCH when sl-P0-PSSCH is configured. When the field is absent the UE applies the value 1.  |
| ***sl-P0-PSSCH-PSCCH***Indicates P0 value for sidelink pathloss based power control for PSCCH/PSSCH. If not configured, sidelink pathloss based power control is disabled for PSCCH/PSSCH. |
| ***dl-Alpha-PSSCH-PSCCH***Indicates alpha value for downlink pathloss based power control for PSCCH/PSSCH when dl-P0-PSSCH is configured. When the field is absent the UE applies the value 1.  |
| ***dl-P0-PSSCH-PSCCH***Indicates P0 value for downlink pathloss based power control for PSCCH/PSSCH. If not configured, downlink pathloss based power control is disabled for PSCCH/PSSCH. |
| ***dl-Alpha-PSFCH***Indicates alpha value for downlink pathloss based power control for PSFCH when dl-P0-PSFCH is configured. When the field is absent the UE applies the value 1.  |
| ***dl-P0-PSFCH***Indicates P0 value for downlink pathloss based power control for PSFCH. If not configured, downlink pathloss based power control is disabled for PSFCH. |

| ***SL-MinMaxMCS-Config* field descriptions** |
| --- |
| ***sl-MaxMCS-PSSCH***Indicates the maximum MCS value used for Mode 1 configured and dynamic grants when using the associated MCS table. If no MCS is configured, UE autonomously selects MCS from the full range of values. |
| ***sl-MinMCS-PSSCH***Indicates the minimum MCS value for Mode 1 configured and dynamic grants when using the associated MCS table. If no MCS is configured, UE autonomously selects MCS from the full range of values. |

---------------------------------- [Next change] ----------------------------------

6.6.2 Message definitions

<Unrelated Texts Removed>

– *RRCReconfigurationSidelink*

The *RRCReconfigurationSidelink* message is the command to AS configuration of the PC5 RRC connection. It is only applied to unicast of NR sidelink communication.

Signalling radio bearer: SL-SRB3

RLC-SAP: AM

Logical channel: SCCH

Direction: UE to UE

***RRCReconfigurationSidelink* message**

-- ASN1START

-- TAG-RRCRECONFIGURATIONSIDELINK-START

RRCReconfigurationSidelink ::= SEQUENCE {

 rrc-TransactionIdentifier-r16 RRC-TransactionIdentifier,

 criticalExtensions CHOICE {

 rrcReconfigurationSidelink-r16 RRCReconfigurationSidelink-IEs-r16,

 criticalExtensionsFuture SEQUENCE {}

 }

}

RRCReconfigurationSidelink-IEs-r16 ::= SEQUENCE {

 slrb-ConfigToAddModList-r16 SEQUENCE (SIZE (1..maxNrofSLRB-r16)) OF SLRB-Config-r16 OPTIONAL, -- Need N

 slrb-ConfigToReleaseList-r16 SEQUENCE (SIZE (1..maxNrofSLRB-r16)) OF SLRB-PC5-ConfigIndex-r16 OPTIONAL, -- Need N

 sl-MeasConfig-r16 SetupRelease {SL-MeasConfig-r16} OPTIONAL, -- Need M

 sl-CSI-RS-Config-r16 SetupRelease {SL-CSI-RS-Config-r16} OPTIONAL, -- Need M

 sl-ResetConfig-r16 ENUMERATED {true} OPTIONAL, -- Need N

 sl-LatencyBoundCSI-Report-r16 INTEGER (3..160) OPTIONAL, -- Need M

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

SLRB-Config-r16::= SEQUENCE {

 slrb-PC5-ConfigIndex-r16 SLRB-PC5-ConfigIndex-r16,

 sl-SDAP-ConfigPC5-r16 SL-SDAP-ConfigPC5-r16 OPTIONAL, -- Need M

 sl-PDCP-ConfigPC5-r16 SL-PDCP-ConfigPC5-r16 OPTIONAL, -- Need M

 sl-RLC-ConfigPC5-r16 SL-RLC-ConfigPC5-r16 OPTIONAL, -- Need M

 sl-MAC-LogicalChannelConfigPC5-r16 SL-LogicalChannelConfigPC5-r16 OPTIONAL, -- Need M

 ...

}

SLRB-PC5-ConfigIndex-r16 ::= INTEGER (1..maxNrofSLRB-r16)

SL-SDAP-ConfigPC5-r16 ::= SEQUENCE {

 sl-MappedQoS-FlowsToAddList-r16 SEQUENCE (SIZE (1.. maxNrofSL-QFIsPerDest-r16)) OF SL-PFI-r16 OPTIONAL, -- Need N

 sl-MappedQoS-FlowsToReleaseList-r16 SEQUENCE (SIZE (1.. maxNrofSL-QFIsPerDest-r16)) OF SL-PFI-r16 OPTIONAL, -- Need N

 sl-SDAP-Header-r16 ENUMERATED {present, absent} OPTIONAL, -- Need N

 ...

}

SL-PDCP-ConfigPC5-r16 ::= SEQUENCE {

 sl-PDCP-SN-Size-r16 ENUMERATED {len12bits, len18bits} OPTIONAL, -- Need M

 sl-OutOfOrderDelivery ENUMERATED { true } OPTIONAL, -- Need R

 ...

}

SL-RLC-ConfigPC5-r16 ::= CHOICE {

 sl-AM-RLC-r16 SEQUENCE {

 sl-SN-FieldLengthAM-r16 SN-FieldLengthAM OPTIONAL, -- Need M

 ...

 },

 sl-UM-Bi-Directional-RLC-r16 SEQUENCE {

 sl-SN-FieldLengthUM-r16 SN-FieldLengthUM OPTIONAL, -- Need M

 ...

 },

 sl-UM-Uni-Directional-RLC-r16 SEQUENCE {

 sl-SN-FieldLengthUM-r16 SN-FieldLengthUM OPTIONAL, -- Need M

 ...

 }

}

SL-LogicalChannelConfigPC5-r16 ::= SEQUENCE {

 sl-LogicalChannelIdentity-r16 LogicalChannelIdentity,

 ...

}

SL-PFI-r16 ::= INTEGER (1..64)

SL-CSI-RS-Config-r16 ::= SEQUENCE {

 sl-CSI-RS-FreqAllocation-r16 CHOICE {

 sl-OneAntennaPort-r16 BIT STRING (SIZE (12)),

 sl-TwoAntennaPort-r16 BIT STRING (SIZE (6))

 } OPTIONAL, -- Need M

 sl-CSI-RS-FirstSymbol-r16 INTEGER (3..12) OPTIONAL, -- Need M

 ...

}

-- TAG-RRCRECONFIGURATIONSIDELINK-STOP

-- ASN1STOP

|  |
| --- |
| ***RRCReconfigurationSidelink* field descriptions** |
| ***sl-CSI-RS-FreqAllocation***Indicates the frequency domain position for sidelink CSI-RS. |
| ***sl-CSI-RS-FirstSymbol***Indicates the position of first symbol of sidelink CSI-RS. |
| ***sl-Resetconfig***Indicates that the full configuration should be applicable for the *RRCReconfigurationSidelink* message. |
| ***sl-LatencyBoundCSI-Report***Indicate the latency bound of SL CSI report from the associated SL CSI triggering in terms of number of slots. |
| ***sl-LogicalChannelIdentity***Indicates the identity of the sidelink logical channel. |
| ***sl-MappedQoS-FlowsToAddList***Indicate the QoS flows to be mapped to the configured sidelink DRB. Each entry is indicated by the SL-PFI, which is used between UEs, as defined in TS 23.287 [55]. |
| ***sl-MappedQoS-FlowsToReleaseList***Indicate the QoS flows to be released from the configured sidelink DRB. Each entry is indicated by the SL-PFI, which is used between UEs, as defined in TS 23.287 [55]. |
| ***sl-MeasConfig***Indicates the sidelink measurement configuration for the unicast destination. |
| ***sl-OutOfOrderDelivery***Indicates whether or not outOfOrderDelivery specified in TS 38.323 [5] is configured. This field should be either always present or always absent, after the radio bearer is established. |
| ***sl-PDCP-SN-Size***Indicates the PDCP SN size of the configured sidelink DRB. |
| ***sl-SDAP-Header***Indicates whether or not a SDAP header is present on this sidelink DRB. |

---------------------------------- [End of change] ----------------------------------