**3GPP TSG-RAN2 Meeting #121bis-e *R2-2304217***

**Online, 17th - 26th Apr 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.331** | **CR** | **4067** | **rev** | **-** | **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:*** | Corrections including field description for transmission power | | | | | | | | | |
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| ***Source to WG:*** | Huawei, HiSilicon (Rapporteur), ZTE Corporation, Sanechips, CATT | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_V2X\_NRSL-Core | | | | |  | ***Date:*** | | | 2023-04-26 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | 1. In 5.8.7 Sidelink communication reception, from the procedfure “4> configure lower layers to monitor sidelink control information and the corresponding data using the pool of resources indicated by sl-RxPool;”, only one resoure pool indicated in sl-Rxpool is used to monitor sidelink control information. However, accoring to the field description in sl-RxPool, one or more resource pools can be used to monitor sidelink control information and the corresponding data.  2. According to RAN4’s LS(R4-2220553), PEMAX,c for PSFCH configured Tx Power in TS38.101-1 as sum of IEs *sl-maxTransPower* when multiple resource pools configured are transmitted simultaneously. In current FD of *sl-maxTransPower*, it indicates the maximum value of the UE's sidelink transmission power on this resource pool. As we know, the sidelink transmission includes PSSCH/PSCCH and PSFCH. Therefore, the max transmission power configured per resource pool for PSFCH currently is not aligned with RAN4 spec.  3. In the latest TS38.213, in subclause 16.2.3, it is mentioned that:   |  | | --- | | For resource pools configured with PSFCH resources overlapping in time, the UE either expects not to be provided with *dl-P0-PSFCH* or *dl-Alpha-PSFCH* in any of the resource pools, or expects to be provided with the same values of *dl-P0-PSFCH* and the same values of *dl-Alpha-PSFCH* for all the resource pools. |   This impacts the corresponding RRC parameters configuration, hence it should also be reflected in TS38.331 accordingly.  4. In 6.3.5, the abbreviation of "sidelink Synchronization Signal Block" shall be "S-SSB" to avoid ambiguity. For the term S-SSB, it is used in PHY specs for sidelink SSB. So, the following SL-SSB in 331 shall be changed to S-SSB. | | | | | | | | |
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| ***Summary of change:*** | | 1. Change “using the pool of resources indicated by sl-RxPool”changed to “using the pool(s) of resources indicated by sl-RxPool”.  2. In clause 6.3.5, modify the FD of *sl-maxTransPower*.  3. In subclause 6.3.5, in the filed description of “*dl-P0-PSFCH*” and “ *dl-Alpha-PSFCH*” add the clarification that “For resource pools configured with PSFCH resources overlapping in time, this field is either not configured in any of the resource pools or configured with the same values for all the resource pools.”  4. Change “SL-SSB” to "S-SSB".  **Impact analysis**  **Impacted 5G architecture options:**  NR SA, NR-DC  **Impacted functionality:**  Sidelink  **Inter-operability:**  This CR is mandatory, as UE might set wrong power value for PSFCH(s).  If network implements this CR but the UE does not, there is no interoperability issue.  If UE implements this CR but the network does not, there is no interoperability issue.  If one UE implements this CR but the other UE does not, there is no interoperability issue. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | 1. The UE can not reception SL signaling or data in multiple resource pools.  2. The max transmission power for PSFCH can not be configured correctly.  3. “*dl-P0-PSFCH*” and “ *dl-Alpha-PSFCH*” may be configured wrongly in case of multiple resource pools configured with PSFCH resouces overlapping in time.  4. The abbreviation of sidelink Synchronization Signal Block may be confusing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.8.7, 6.3.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 the changes

5.8.7 Sidelink communication reception

1> if the conditions for NR sidelink communication operation as defined in 5.8.2 are met:

2> if the frequency used for NR sidelink communication is included in *sl-FreqInfoToAddModList* in *RRCReconfiguration* message or *sl-FreqInfoList* included in *SIB12*:

3> if the UE is configured with *sl-RxPool* included in *RRCReconfiguration* message with *reconfigurationWithSync* (i.e. handover):

4> configure lower layers to monitor sidelink control information and the corresponding data using the pool(s) of resources indicated by *sl-RxPool*;

3> else if the cell chosen for NR sidelink communication provides *SIB12*:

4> configure lower layers to monitor sidelink control information and the corresponding data using the pool(s) of resources indicated by *sl-RxPool in SIB12*;

2> else:

3> configure lower layers to monitor sidelink control information and the corresponding data using the pool(s) of resources that were preconfigured by *sl-RxPool* in *SL-PreconfigurationNR*, asdefined in clause 9.3;

Next change

### 6.3.5 Sidelink information elements

#### – *SL-BWP-Config*

The IE *SL-BWP-Config* is used to configure the UE specific NR sidelink communication on one particular sidelink bandwidth part.

*SL-BWP-Config* information element

-- ASN1START

-- TAG-SL-BWP-CONFIG-START

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

sl-BWP-Id BWP-Id,

sl-BWP-Generic-r16 SL-BWP-Generic-r16 OPTIONAL, -- Need M

sl-BWP-PoolConfig-r16 SL-BWP-PoolConfig-r16 OPTIONAL, -- Need M

...

}

SL-BWP-Generic-r16 ::= SEQUENCE {

sl-BWP-r16 BWP OPTIONAL, -- Need M

sl-LengthSymbols-r16 ENUMERATED {sym7, sym8, sym9, sym10, sym11, sym12, sym13, sym14} OPTIONAL, -- Need M

sl-StartSymbol-r16 ENUMERATED {sym0, sym1, sym2, sym3, sym4, sym5, sym6, sym7} OPTIONAL, -- Need M

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

sl-TxDirectCurrentLocation-r16 INTEGER (0..3301) OPTIONAL, -- Need M

...

}

-- TAG-SL-BWP-CONFIG-STOP

-- ASN1STOP

|  |
| --- |
| *SL-BWP-Config* field descriptions |
| ***sl-BWP-Generic***  This field indicates the generic parameters on the configured sidelink BWP. |
| ***sl-BWP-PoolConfig***  This field indicates the resource pool configurations on the configured sidelink BWP. |
| ***sl-BWP-Id***  An identifier for this sidelink bandwidth part. |

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| *SL-BWP-Generic* field descriptions |
| ***sl-LengthSymbols***  This field indicates the number of symbols used for sidelink in a slot without S-SSB. A single value can be (pre)configured per sidelink bandwidth part. |
| ***sl-StartSymbol***  This field indicates the starting symbol used for sidelink in a slot without S-SSB. A single value can be (pre)configured per sidelink bandwidth part. |
| ***sl-TxDirectCurrentLocation***  The sidelink Tx/Rx Direct Current location for the carrier. Only values in the value range of this field between 0 and 3299, which indicate the subcarrier index within the carrier corresponding to the numerology of the corresponding sidelink BWP and value 3300, which indicates "Outside the carrier" and value 3301, which indicates "Undetermined position within the carrier" are used in this version of the specification. |

Next change

### 6.3.5 Sidelink information elements

*<<<<<<<<skipped>>>>>>>>*

#### – *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

dummy 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-TimeResource-r16 BIT STRING (SIZE (10..160)) 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, spare9, 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-Thres-RSRP-List-r16 SL-Thres-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-CBR-PriorityTxConfigList-v1650 SL-CBR-PriorityTxConfigList-v1650 OPTIONAL -- Need M

]]

}

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 S

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

...

}

-- 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 |
| ***dummy***  This field is not used in the specification. If received it shall be ignored by the UE. |
| ***sl-FilterCoefficient***  This field indicates the filtering coefficient for long-term measurement and reference signal power derivation used for sidelink 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. If two MCS tables are indicated, 256QAM MCS table is the 1st table and qam64lowSE MCS table is the 2nd table as specified in TS 38.214 [19], clause 8.1.3.1. |
| ***sl-NumSubchannel***  Indicates the number of subchannels in the corresponding resource pool, which consists of contiguous PRBs only. |
| ***sl-PreemptionEnable***  Indicates whether pre-emption is disabled or enabled in a resource pool. If the field is present and the value is *pl1*, *pl2*, and so on (but not *enabled*), it means that pre-emption is enabled and a priority level p\_preemption is configured. If the field is present and the value is *enabled*, the pre-emption is enabled (but p\_preemption is not configured) and pre-emption is applicable to all levels. |
| ***sl-PriorityThreshold-UL-URLLC***  Indicates the threshold used to determine whether NR sidelink transmission is prioritized over uplink transmission of priority index 1 as specified in TS 38.213[13], clause 16.2.4.3, or whether PUCCH transmission carrying SL HARQ is prioritized over PUCCH transmission carrying UCI of priority index 1 if they overlap in time as specified in TS 38.213 [13], clause 9.2.5.0. |
| ***sl-PriorityThreshold***  Indicates the threshold used to determine whether NR sidelink transmission is prioritized over uplink transmission of priority index 0 as specified in TS 38.213[13], clause 16.2.4.3, or whether PUCCH transmission carrying SL HARQ is prioritized over PUCCH transmission carrying UCI of priority index 0 if they overlap in time as specified in TS 38.213 [13], clause 9.2.5.0. |
| ***sl-RB-Number***  Indicates the number of PRBs in the corresponding resource pool, which consists of contiguous PRBs only. The remaining RB cannot be used (See TS 38.214[19], clause 8). |
| ***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 total 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-Config* 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 symbols of PSCCH in a resource pool. |

| *SL-PSSCH-Config* 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 [13]. |
| ***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-Config* field descriptions |
| --- |
| ***sl-MinTimeGapPSFCH***  The minimum time gap between PSFCH and the associated PSSCH in the unit of slots. |
| ***sl-NumMuxCS-Pair***  Indicates the number of cyclic shift pairs used for a PSFCH transmission that can be multiplexed in a PRB. |
| ***sl-PSFCH-CandidateResourceType***  Indicates the number of PSFCH resources available for multiplexing HARQ-ACK information in a PSFCH transmission (see TS 38.213 [13], clause 16.3). |
| ***sl-PSFCH-HopID***  Scrambling ID for sequence hopping of the PSFCH used in the resource pool. |
| ***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. Value 0 in the bitmap indicates that the corresponding PRB is not used for PSFCH transmission and reception while value 1 indicates that the corresponding PRB is used for PSFCH transmission and reception (see TS 38.213 [13]). |

| *SL-PTRS-Config* field descriptions |
| --- |
| ***sl-PTRS-FreqDensity***  Presence and frequency density of SL PT-RS as a function of scheduled BW. If the field is not configured, the UE uses K\_PT-RS = 2 |
| ***sl-PTRS-TimeDensity***  Presence and time density of SL PT-RS as a function of MCS. If the field is not configured, the UE uses L\_PT-RS = 1 |
| ***sl-PTRS-RE-Offset***  Indicates the subcarrier offset for SL PT-RS . If the field is not configured, the UE applies the value *offset00* (see TS 38.211 [16], clause 8.4.1.2.2). |

| *SL-UE-SelectedConfigRP* field descriptions |
| --- |
| ***sl-CBR-PriorityTxConfigList***  Indicates the mapping between PSSCH transmission parameter (such as MCS, PRB number, retransmission number, CR limit) sets by using the indexes of the configurations in *sl-CBR-PSSCH-TxConfigList*, CBR ranges by using the indexes to the entry of the CBR range configurations in *sl-CBR-RangeConfigList*, and priority ranges. It also indicates the default PSSCH transmission parameters to be used when CBR measurement results are not available, and MCS range for the MCS tables used in the resource pool. The field *sl-CBR-PriorityTxConfigList-v1650* is present only when *sl-CBR-PriorityTxConfigList-r16* is configured. |
| ***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. The value *ms0* is always configured. |
| ***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 refers to SCS 15,30,60,120 kHz respectively. |
| ***sl-Thres-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/PSCCH RSRP in the associated data resource is above a threshold. |

| *SL-PowerControl* field descriptions |
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| ***sl-MaxTransPower***  Indicates the maximum value of the UE's sidelink transmission power on this resource pool when the sidelink transmission is performed only on this resource pool. The unit is dBm. If the sidelink transmission is PSFCH, and multiple resource pools are used, the maximum transmission power for PSFCH is configured as sum of fields *sl-maxTransPower* over multiple resource pools, as specified in 38.101-1[15]. |
| ***sl-Alpha-PSSCH-PSCCH***  Indicates alpha value for sidelink pathloss based power control for PSCCH/PSSCH when *sl-P0-PSSCH-PSCCH* 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-PSCCH* 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. For resource pools configured with PSFCH resources overlapping in time, this field is either not configured in any of the resource pools or configured with the same value for all the resource pools. |
| ***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. For resource pools configured with PSFCH resources overlapping in time, this field is either not configured in any of the resource pools or configured with the same value for all the resource pools. |

| *SL-MinMaxMCS-Config* field descriptions |
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| ***sl-MaxMCS-PSSCH***  Indicates the maximum MCS value 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 when using the associated MCS table. If no MCS is configured, UE autonomously selects MCS from the full range of values. |

End of the change