**3GPP TSG-RAN WG2 Meeting #124R2-23xxxxx**

**Chicago, USA, November 13th -17th, 2023**

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| --- |
| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.331** | **CR** | **draftCR** | **rev** | - | **Current version:** | **17.6.0** |  |
|  |
| *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:***  | Rapporteur CR for Sidelink Positioning RRC Changes |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_pos\_enh2 |  | ***Date:*** | 2023-11-01 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-18 |
|  | *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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | Capture Agreements/RAN1 parameters that impacts RRC for Rel-18 PositioningSLPPR1-2308672 Consolidated\_higher\_layer\_parameters\_list\_for\_Rel18R1-2308692 Consolidated\_higher\_layer\_parameters\_list\_for\_Rel18 |
|  |  |
| ***Summary of change:*** | IEs for SL PRS resource pool has been modified or added in the RRC specification |
|  |  |
| ***Consequences if not approved:*** | Rel-18 Positioning feature would be incomplete |
|  |  |
| ***Clauses affected:*** | 3.1, 3.5.8.2, 5.8.16, 6.3.5, 6.4 |
|  |  |
|  | **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:*** |  |

*Beginning of Changes*

## 3.1 Definitions

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**NR sidelink communication**: AS functionality enabling at least V2X Communication as defined in TS 23.287 [55], and ProSe Communication (including ProSe UE-to-Network Relay and non-Relay communication) as defined in TS 23.304 [65] between two or more nearby UEs, using NR technology but not traversing any network node.

**NR sidelink discovery**: AS functionality enabling ProSe non-Relay Discovery and ProSe UE-to-Network Relay discovery for Proximity based Services as defined in TS 23.304 [65] between two or more nearby UEs, using NR technology but not traversing any network node.

**NR sidelink positioning**: AS functionality enabling absolute positioning of a target UE or ranging via PC5 interface using SL-PRS transmission and reception as defined in TS 38.305.

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*Next Change*

## 3.2 Abbreviations

SL-PRS Sidelink Positioning Reference Signals

*Next Change*

5.3.5.14 Sidelink dedicated configuration

Upon initiating the procedure, the UE shall:

1> if *sl-FreqInfoToReleaseList* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

2> for each entry included in the received *sl-FreqInfoToReleaseList* that is part of the current UE configuration:

3> release the related configurations from the stored NR sidelink communication/discovery configurations;

1> if *sl-FreqInfoToAddModList* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

2> if configured to receive NR sidelink communication:

3> use the resource pool(s) indicated by *sl-RxPool* for NR sidelink communication reception, as specified in 5.8.7;

2> if configured to transmit NR sidelink communication:

3> use the resource pool(s) indicated by *sl-TxPoolSelectedNormal*, *sl-TxPoolScheduling* or *sl-TxPoolExceptional* for NR sidelink communication transmission, as specified in 5.8.8;

2> if configured to receive NR sidelink discovery:

3> use the resource pool(s) indicated by *sl-DiscRxPool* or *sl-RxPool* for NR sidelink discovery reception, as specified in 5.8.13.2;

2> if configured to transmit NR sidelink discovery:

3> use the resource pool(s) indicated by *sl-DiscTxPoolSelected*, *sl-DiscTxPoolScheduling*, *sl-TxPoolSelectedNormal*, *sl-TxPoolScheduling* or *sl-TxPoolExceptional* for NR sidelink discovery transmission, as specified in 5.8.13.3;

2> if configured to receive SL-PRS:

3> use the resource pool(s) indicated by *sl-RxPool* and/or *sl-PRS-RxPool* for SL-PRS reception, as specified in 5.8.X.2;

2> if configured to transmit SL-PRS:

3> use the resource pool(s) indicated by *sl-TxPoolSelectedNormal*, *sl-TxPoolScheduling, sl-BWP-PRS-PoolConfig* or *sl-TxPoolExceptional* for SL-PRS transmission, as specified in 5.8.X.3;

Editor’s Note: *sl-TxPoolExceptional* applicability for NR Sidelink Positioning needs to be discussed.

2> perform CBR measurement on the transmission resource pool(s) indicated by *sl-TxPoolSelectedNormal*, *sl-TxPoolScheduling*, *sl-DiscTxPoolSelected, sl-DiscTxPoolScheduling* or *sl-TxPoolExceptional* for NR sidelink communication/discovery transmission, as specified in 5.5.3;

2> use the synchronization configuration parameters for NR sidelink communication/discovery on frequencies included in *sl-FreqInfoToAddModList*, as specified in 5.8.5;

1> if *sl-RadioBearerToReleaseList* or *sl-RLC-BearerToReleaseList* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

2> perform sidelink DRB release as specified in 5.8.9.1a.1;

1> if *sl-RadioBearerToAddModList* or *sl-RLC-BearerToAddModList* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

2> perform sidelink DRB addition/modification as specified in 5.8.9.1a.2;

1> if *sl-ScheduledConfig* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

2> configure the MAC entity parameters, which are to be used for NR sidelink communication/discovery, in accordance with the received *sl-ScheduledConfig*;

1> if *sl-UE-SelectedConfig* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

2> configure the parameters, which are to be used for NR sidelink communication/discovery, in accordance with the received *sl-UE-SelectedConfig*;

1> if *sl-MeasConfigInfoToReleaseList* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

2> for each *SL-DestinationIndex* included in the received *sl-MeasConfigInfoToReleaseList* that is part of the current UE configuration:

3> remove the entry with the matching *SL-DestinationIndex* from the stored NR sidelink measurement configuration information;

1> if *sl-MeasConfigInfoToAddModList* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

2> for each *sl-DestinationIndex* included in the received *sl-MeasConfigInfoToAddModList* that is part of the current stored NR sidelink measurement configuration:

3> reconfigure the entry according to the value received for this *sl-DestinationIndex* from the stored NR sidelink measurement configuration information;

2> for each *sl-DestinationIndex* included in the received *sl-MeasConfigInfoToAddModList* that is not part of the current stored NR sidelink measurement configuration:

3> add a new entry for this *sl-DestinationIndex* to the stored NR sidelink measurement configuration.

NOTE 1: The UE is expected to update the mapping between the Destination Layer-2 ID and the destination index for the stored NR sidelink measurement configuration after the UE updates the destination list and reports to the gNB.

1> if *sl-DRX-ConfigUC-ToReleaseList* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

2> for each *SL-DestinationIndex* included in the received *sl-DRX-ConfigUC-ToReleaseList* that is part of the current UE configuration:

3> remove the entry with the matching *SL-DestinationIndex* from the stored NR sidelink DRX configuration information;

1> if *sl-DRX-ConfigUC-ToAddModList* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

2> for each *sl-DestinationIndex* included in the received *sl-DRX-ConfigUC-ToAddModList* that is part of the current stored NR sidelink DRX configuration:

3> reconfigure the entry according to the value received for this *sl-DestinationIndex* from the stored NR sidelink DRX configuration information;

2> for each *sl-DestinationIndex* included in the received *sl-DRX-ConfigUC-ToAddModList* that is not part of the current stored NR sidelink DRX configuration:

3> add a new entry for this *sl-DestinationIndex* to the stored NR sidelink DRX configuration.

NOTE 2: The UE is expected to update the mapping between the Destination Layer-2 ID and the destination index for the stored NR sidelink DRX configuration after the UE updates the destination list and reports to the gNB.

1> if *sl-RLC-ChannelToReleaseList* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

2> perform PC5 Relay RLC channel release as specified in 5.8.9.7.1;

1> if *sl-RLC-ChannelToAddModList* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration* or *RRCSetup*:

2> perform PC5 Relay RLC channel addition/modification as specified in 5.8.9.7.2;

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### 5.8.2 Conditions for NR sidelink communication/discovery/positioning operation

The UE shall perform NR sidelink communication/positioning operation only if the conditions defined in this clause are met:

1> if the UE's serving cell is suitable (RRC\_IDLE or RRC\_INACTIVE or RRC\_CONNECTED); and if either the selected cell on the frequency used for NR sidelink communication/discovery/positioning operation belongs to the registered or equivalent PLMN as specified in TS 24.587 [57] or TS 24.554 [72] or the UE is out of coverage on the frequency used for NR sidelink communication/discovery/ positioning operation as defined in TS 38.304 [20] and TS 36.304 [27]; or

1> if the UE's serving cell (RRC\_IDLE or RRC\_CONNECTED) fulfils the conditions to support NR sidelink communication/discovery/positioning in limited service state as specified in TS 23.287 [55]; and if either the serving cell is on the frequency used for NR sidelink communication/discovery/positioning operation or the UE is out of coverage on the frequency used for NR sidelink communication/discovery/positioning operation as defined in TS 38.304 [20] and TS 36.304 [27]; or

1> if the UE has no serving cell (RRC\_IDLE).

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5.8. X NR sidelink positioning

5.8.X.1 General

The purpose of this procedure is to perform NR sidelink positioning as specified in TS 38.305 [73].

5.8.X.2 NR sidelink positioning reception

A UE capable of NR sidelink positioning that is configured by upper layers for reception of SL-PRS:

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

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

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

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

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

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

2> else:

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

5.8.X.3 NR sidelink positioning transmission

A UE capable of NR sidelink positioning that is configured by upper layers to transmit SL-PRS shall:

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

2> if the frequency used for NR sidelink positioning is included in *sl-FreqInfoToAddModList* in *sl-ConfigDedicatedNR* within *RRCReconfiguration* message or includedin *sl-ConfigCommonNR* within *SIB12*:

3> if the UE is in RRC\_CONNECTED and uses the frequency included in *sl-ConfigDedicatedNR* within *RRCReconfiguration* message:

4> if the UE is configured with *sl-ScheduledConfig*:

5> if T310 for MCG or T311 is running; and if *sl-TxPoolExceptional* is included in *sl-FreqInfoList* for the concerned frequency in *SIB12* or included in *sl-ConfigDedicatedNR* in *RRCReconfiguration*; or

5> if T301 is running and the cell on which the UE initiated RRC connection re-establishment provides *SIB12* including *sl-TxPoolExceptional* for the concerned frequency; or

5> if T304 for MCG is running and the UE is configured with *sl-TxPoolExceptional* included in *sl-ConfigDedicatedNR* for the concerned frequency in *RRCReconfiguration*:

6> configure lower layers to perform the sidelink resource allocation scheme 2 based on random selection using the resource pool indicated by *sl-TxPoolExceptional* as defined in TS 38.321 [3];

5> else:

6> configure lower layers to perform the sidelink resource allocation scheme 1 for NR sidelink positioning;

5> if T311 is running, configure the lower layers to release the resources indicated by *rrc-ConfiguredSidelinkGrant* (if any);

4> if the UE is configured with *sl-UE-SelectedConfig*:

5> if a result of full/partial sensing, if selected and is allowed by *sl-AllowedResourceSelectionConfig*, on the resources configured in *sl-TxPoolSelectedNormal* or *sl-BWP-PRS-PoolConfig* for the concerned frequency included in *sl-ConfigDedicatedNR* within *RRCReconfiguration* is not available in accordance with TS 38.214 [19];

6> if *sl-TxPoolExceptional* for the concerned frequency is included in *RRCReconfiguration*; or

6> if the PCell provides *SIB12* including *sl-TxPoolExceptional* in *sl-FreqInfoList* for the concerned frequency:

7> configure lower layers to perform the sidelink resource allocation scheme 2 based on random selection using the pool of resources indicated by *sl-TxPoolExceptional* as defined in TS 38.321 [3];

5> else, if the *sl-TxPoolSelectedNormal* for the concerned frequency is included in the *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

6> configure lower layers to perform the sidelink resource allocation scheme 2 based on resource selection operation according to *sl-AllowedResourceSelectionConfig* (as defined in TS 38.321 [3] and TS 38.214 [19]) using the pools of resources indicated by *sl-TxPoolSelectedNormal* for the concerned frequency;

5> else, if the *sl-BWP-PRS-PoolConfig* for the concerned frequency is included in the *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

6> configure lower layers to perform the sidelink resource allocation scheme 2 based on resource selection operation according to *sl-AllowedResourceSelectionConfig* (as defined in TS 38.321 [3] and TS 38.214 [19]) using the pools of resources indicated by *sl-BWP-PRS-PoolConfig* for the concerned frequency;

3> else:

4> if the cell chosen for NR sidelink positioning transmission provides *SIB12*:

5> if *SIB12* includes *sl-TxPoolSelectedNormal* for the concerned frequency,and a result of full/partial sensing, if selected and is allowed by *sl-AllowedResourceSelectionConfig*, on the resources configured in the *sl-TxPoolSelectedNormal* is available in accordance with TS 38.214 [19] or random selection, if allowed by *sl-AllowedResourceSelectionConfig*, is selected:

6> configure lower layers to perform the sidelink resource allocation scheme 2 based on resource selection operation according to *sl-AllowedResourceSelectionConfig* using the pools of resources indicated by *sl-TxPoolSelectedNormal* for the concerned frequency as defined in TS 38.321 [3];

5> if *SIB12* includes *sl-BWP-PRS-PoolConfig* for the concerned frequency,and a result of full/partial sensing, if selected and is allowed by *sl-AllowedResourceSelectionConfig*, on the resources configured in the *sl-BWP-PRS-PoolConfig* is available in accordance with TS 38.214 [19] or random selection, if allowed by *sl-AllowedResourceSelectionConfig*, is selected:

6> configure lower layers to perform the sidelink resource allocation scheme 2 based on resource selection operation according to *sl-AllowedResourceSelectionConfig* using the pools of resources indicated by *sl-BWP-PRS-PoolConfig* for the concerned frequency as defined in TS 38.321 [3];

5> else if *SIB12* includes *sl-TxPoolExceptional* for the concerned frequency:

6> from the moment the UE initiates RRC connection establishment or RRC connection resume, until receiving an *RRCReconfiguration* including *sl-ConfigDedicatedNR*, or receiving an *RRCRelease* or an *RRCReject*; or

6> if a result of full/partial sensing, if selected and is allowed by *sl-AllowedResourceSelectionConfig*, on the resources configured in *sl-TxPoolSelectedNormal* or *sl-BWP-PRS-PoolConfig* for the concerned frequency in *SIB12* is not available in accordance with TS 38.214 [19]:

7> configure lower layers to perform the sidelink resource allocation scheme 2 based on random selection (as defined in TS 38.321 [3]) using the pool of resources indicated by *sl-TxPoolExceptional* for the concerned frequency;

2> else:

3> configure lower layers to perform the sidelink resource allocation scheme 2 based on resource selection operation according to *sl-AllowedResourceSelectionConfig* (as defined in TS 38.321 [3] and TS 38.214 [19]) using the pools of resources indicated by *sl-TxPoolSelectedNormal* and/or *SidelinkPreconfigNR* in *SidelinkPreconfigNR* for the concerned frequency.

Editor’s Note: How timers/mobility affect the SL-PRS transmission needs to be discussed. Is it same as communication or different?

NOTE 1: The same Notes as in section 5.8.8 are applicable for this section unless otherwise stated.

*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/ positioning 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

 ...,

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 sl-BWP-PoolConfigPS-r17 SetupRelease {SL-BWP-PoolConfig-r16} OPTIONAL, -- Need M

 sl-BWP-DiscPoolConfig-r17 SetupRelease {SL-BWP-DiscPoolConfig-r17} OPTIONAL -- Need M

]],

[[

sl-BWP-PRS-PoolConfig-r18 SetupRelease {SL-BWP-PRS-PoolConfig-r18} 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

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| --- |
| ***SL-BWP-Config* field descriptions** |
| ***sl-BWP-DiscPoolConfig***This field indicates the NR sidelink discovery dedicated resource pool configurations on the configured sidelink BWP. The total number of Rx/Tx resource pools configured for communication and discovery does not exceed the maximum number of Rx/Tx resource pool for NR sidelink communication (i.e. *maxNrofRXPool-r16/maxNrofTXPool-r16*). |
| ***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. |
| ***sl-BWP-PoolConfigPS***This field indicates the resource pool configurations for power saving on the configured sidelink BWP. This field does not include *sl-TxPoolExceptional*. |
| ***sl-BWP-PRS-PoolConfig***This field indicates the resource pool configurations for SL-PRS on the configured sidelink BWP. This field does not include *sl-TxPoolExceptional*. |

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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. |

– *SL-BWP-ConfigCommon*

The IE *SL-BWP-ConfigCommon* is used to configure the cell-specific configuration information on one particular sidelink bandwidth part.

***SL-BWP-ConfigCommon* information element**

-- ASN1START

-- TAG-SL-BWP-CONFIGCOMMON-START

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

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

 sl-BWP-PoolConfigCommon-r16 SL-BWP-PoolConfigCommon-r16 OPTIONAL, -- Need R

 ...,

 [[

 sl-BWP-PoolConfigCommonPS-r17 SL-BWP-PoolConfigCommon-r16 OPTIONAL, -- Need R

 sl-BWP-DiscPoolConfigCommon-r17 SL-BWP-DiscPoolConfigCommon-r17 OPTIONAL -- Need R

]],

[[

sl-BWP-PRS-PoolConfigCommon-r18 SL-BWP-PRS-PoolConfig-r18 OPTIONAL -- Need R

]]

}

-- TAG-SL-BWP-CONFIGCOMMON-STOP

-- ASN1STOP

|  |
| --- |
| ***SL-BWP-ConfigCommon* field descriptions** |
| ***sl-BWP-DiscPoolConfigCommon***This field indicates the NR sidelink discovery dedicated resource pool configurations on the configured sidelink BWP. The total number of Rx/Tx resource pools configured for communication and discovery does not exceed the maximum number of Rx/Tx resource pool for NR sidelink communication (i.e. *maxNrofRXPool-r16/maxNrofTXPool-r16*). |
| ***sl-BWP-Generic***This field indicates the generic parameters on the configured sidelink BWP. |
| ***sl-BWP-PoolConfigCommon***This field indicates the resource pool configurations on the configured sidelink BWP. |
| ***sl-BWP-PoolConfigCommonPS***This field indicates the resource pool configurations for power saving on the configured sidelink BWP. This field does not include *sl-TxPoolExceptional*. |
| ***sl-BWP-PRS-PoolConfigCommon***This field indicates the resource pool configurations for SL-PRS on the configured sidelink BWP. This field does not include *sl-TxPoolExceptional*. |

– *SL-BWP-PRS-PoolConfig*

The IE *SL-BWP-PRS-PoolConfig* is used to configure UE specific NR sidelink PRS dedicated resource pool.

***SL-BWP-PRSPoolConfig* information element**

-- ASN1START

-- TAG-SL-BWP-PRS-POOLCONFIG-START

SL-BWP-PRS-PoolConfig-r18 ::= SEQUENCE {

 sl-PRS-RxPool-r18 SEQUENCE (SIZE (1..TBD)) OF SL-PRS-ResourcePool-r18 OPTIONAL, -- Cond HO

 sl-PRS-TxPoolSelected-r18 SL-PRS-TxPoolDedicated-r18 OPTIONAL, -- Need M

 sl-PRS-TxPoolScheduling-r18 SL-PRS-TxPoolDedicated-r18 OPTIONAL -- Need N

}

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

 sl-PRS-PoolToReleaseList-r18 SEQUENCE (SIZE (1..maxNrofPRSTXPool-r18)) OF SL-PRS-ResourcePoolID-r18 OPTIONAL, -- Need N

 sl-PRS-PoolToAddModList-r18 SEQUENCE (SIZE (1..maxNrofPRSTXPool-r18)) OF SL-PRS-ResourcePoolConfig-r18 OPTIONAL -- Need N

}

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

 sl-PRS-ResourcePoolID-r18 SL-PRS-ResourcePoolID-r18,

 sl-PRS-ResourcePool-r18 SL-PRS-ResourcePool-r18 OPTIONAL -- Need M

}

SL-PRS-ResourcePoolID-r18 ::= INTEGER (1..maxNrofPRSTXPool-r18)

-- TAG-SL-BWP-PRS-POOLCONFIG-STOP

-- ASN1STOP

Editor's note FFS Value of maxNrofPRSTXPool-r18. Besides how much SL-PRS would resue the communication such as condition of HO, Radio Link Failure Timers T310/T311.

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| ***SL-BWP-PRSPoolConfig* field descriptions** |
| ***sl-PRS-TxPoolSelected***Indicates the resources by which the UE is allowed to perform sidelink PRS transmission by UE autonomous resource selection on the configured BWP. |
| ***sl-PRS-TxPoolScheduling***Indicates the resources by which the UE is allowed to perform sidelink PRS transmission based on network selection on the configured BWP. |

|  |  |
| --- | --- |
| Conditional Presence | Explanation |
| *HO* | This field is optionally present, need M, in an *RRCReconfiguration* message including *reconfigurationWithSync*; otherwise it is absent, Need M. |

– *SL-BWP-PRSPoolConfigCommon*

The IE *SL-BWP-PRSPoolConfigCommon* is used to configure the cell-specific NR sidelink PRS dedicated resource pool.

***SL-BWP-PRSPoolConfigCommon* information element**

-- ASN1START

-- TAG-SL-BWP-PRS-POOLCONFIGCOMMON-START

SL-BWP-PRS-PoolConfigCommon-r18 ::= SEQUENCE {

 sl-PRS-RxPool-r18 SEQUENCE (SIZE (1..TBD)) OF SL-PRS-ResourcePool-r18 OPTIONAL, -- Need R

 sl-PRS-TxPoolSelected-r18 SEQUENCE (SIZE (1..TBD)) OF SL-PRS-ResourcePoolConfig-r18 OPTIONAL, -- Need R

 ...

}

-- TAG-SL-BWP-PRSPOOLCONFIGCOMMON-STOP

-- ASN1STOP

– *SL-PRS-ResourcePool*

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

***SL-*** ***PRS-ResourcePool* information element**

-- ASN1START

-- TAG-SL-PRS-RESOURCEPOOL-START

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

 sl-PRS-PSCCH-Config-r18 SetupRelease { SL-PRS-PSCCH-Config-r18 } OPTIONAL, -- Need M

 sl-StartRB-Subchannel-Dedicated-SL-PRS-RP-r18 INTEGER (0...265) OPTIONAL, -- Need M

 sl-RB-Number-r18 INTEGER (10..275) OPTIONAL, -- Need M

 sl-TimeResource-r18 BIT STRING (SIZE (10..160)) OPTIONAL, -- Need M

sl-Pos-AllowedResourceSelectionConfig-r18 ENUMERATED {c1, c2, c3} OPTIONAL, -- Need M

sl-PRS-ResourceReservePeriodList-r18 SEQUENCE (SIZE (1..16)) OF SL-ReservationPeriodAllowedDedicatedSL-PRS-RP-r18 OPTIONAL,

sl-PRS-SequenceID-r18 INTEGER (0..4095) OPTIONAL, -- Need M

sl-PrsResources-Dedicated-SL-PRS-RP-r18 SL-PrsResources-Dedicated-SL-PRS-RP-r18 OPTIONAL, -- Need M

sl-PRS-PowerControl-r18 SL-PRS-PowerControl-r18 OPTIONAL, -- Need M

sl-SensingWindow-Dedicated-SL-PRS-RP-r18 ENUMERATED {ms100, ms1100} OPTIONAL, -- Need M

sl-TxPercentageList-Dedicated-SL-PRS-RP-r18 SEQUENCE (SIZE (8)) OF SL-TxPercentageConfig-Dedicated-SL-PRS-RP-r18 OPTIONAL, -- Need M

sl-SCI-based-SL-PRS-Tx-Trigger-SCI1-B-r18 BOOLEAN OPTIONAL, -- Need M

sl-NumSubchannel-Dedicated-SL-PRS-RP-r18 INTEGER (1..27) OPTIONAL, -- Need M

sl-SubchannelSize-Dedicated-SL-PRS-RP-r18 ENUMERATED {n10, n12, n15, n20, n25, n50, n75, n100} OPTIONAL, -- Need M

sl-MaxNumPerReserve-Dedicated-SL-PRS-RP-r18 ENUMERATED {n2, n3} OPTIONAL, -- Need M

sl-NumReservedBits-SCI1B-Dedicated-SL-PRS-RP-r18 INTEGER (0..20) OPTIONAL, -- Need M

sl-SRC-ID-Len-Dedicated-SL-PRS-RP-r18 ENUMERATED {n12, n24} OPTIONAL, -- Need M

sl-CBR-PriorityTxConfigList-Dedicated-SL-PRS-RP-r18 SEQUENCE (SIZE (1..8)) OF SL-PriorityTxConfigIndex-Dedicated-SL-PRS-RP-r18 OPTIONAL -- Need M

}

SL-PRS-PSCCH-Config-r18 ::= SEQUENCE {

timeResourcePSCCH-Dedicated-SL-PRS-RP-r18 ENUMERATED {n2, n3} OPTIONAL, -- Need M

freqResourcePSCCH-Dedicated-SL-PRS-RP-r18 ENUMERATED {n10,n12, n15, n20, n25} OPTIONAL, -- Need M

 …

}

SL-ReservationPeriodAllowedDedicatedSL-PRS-RP-r18 ::= CHOICE {

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

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

sl-PRS-Period-r18 ENUMERATED {TBD}

}

SL-PrsResources-Dedicated-SL-PRS-RP-r18::= SEQUENCE {

sl-PRS-ResourceID-r18 INTEGER (0...11) OPTIONAL, -- Need M

mNumberOfSymbols-r18 INTEGER {1..9} OPTIONAL, -- Need M

nCombSize-r18 ENUMERATED{n2,n4,n6} OPTIONAL,

sl-PRS-starting-symbol-r18 INTEGER (4...12) OPTIONAL, -- Need M

sl-PRS-comb-offset-r18 INTEGER(1..5) OPTIONAL -- Need M

}

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

 dl-P0-SL-PRS-r18 INTEGER(-202..24) OPTIONAL, -- Need M

 dl-Alpha-SL-PRS-r18 ENUMERATED {alpha0, alpha04, alpha05, alpha06, alpha07, alpha08, alpha09, alpha1} OPTIONAL, -- Need S

 sl-P0-SL-PRS-r18 INTEGER(-202..24) OPTIONAL, -- Need S

 sl-Alpha-SL-PRS-r18 ENUMERATED {alpha0, alpha04, alpha05, alpha06, alpha07, alpha08, alpha09, alpha1} OPTIONAL -- Need S

}

SL-TxPercentageConfig-Dedicated-SL-PRS-RP-r18::= SEQUENCE {

 sl-TxPercentage-Dedicated-SL-PRS-RP-r18 INTEGER (1..8) OPTIONAL, -- Need M

 sl-Priority-Dedicated-SL-PRS-RP ENUMERATED {p20, p35, p50} OPTIONAL -- Need M

}

SL-PriorityTxConfigIndex-Dedicated-SL-PRS-RP-r18 ::= SEQUENCE {

 sl-PriorityThreshold-r16 INTEGER (1..8) OPTIONAL, -- Need M

 sl-TxConfigIndex-Dedicated-SL-PRS-RP-r18 INTEGER (0.. maxCBR-Level-Dedicated-SL-PRS-RP-r18-1) OPTIONAL, -- Need M

 sl-CBR-ConfigIndex-Dedicated-SL-PRS-RP-r18 INTEGER (0.. maxCBR-Config-Dedicated-SL-PRS-RP-r18-1) OPTIONAL -- Need M

}

-- TAG-SL-PRS-RESOURCEPOOL-STOP

-- ASN1STOP

Editor's note: *sl-PRS-SequenceID* and the exact field names value ranges in *SL-PriorityTxConfigIndex-Dedicated-SL-PRS-RP* are FFS.

|  |
| --- |
| ***SL-PRS-ResourcePool* field descriptions** |
| ***sl-RB-Number***Indicates the number of PRBs in the corresponding SL PRS dedicated resource pool, which consists of contiguous PRBs only. |
| ***sl-StartRB-Subchannel-Dedicated-SL-PRS-RP***Indicates the lowest RB index of the SL PRS dedicated resource pool with respect to the lowest RB index of a SL BWP. |
| ***sl-TimeResource***This field indicates the bitmap of the SL PRS dedicated resource pool, which is defined by repeating the bitmap with a periodicity during a SFN or DFN cycle. |
| ***sl-Pos-AllowedResourceSelectionConfig***Indicates allowed resource allocation method configured per resource pool.C1: only sensing allowedc2: only random resource selection allowedc3: sensing and random resource selection allowed |
| ***sl-PRS-ResourceReservePeriodList***Indicates set of possible resource reservation period in the unit of ms allowed in the resource pool. Up to 16 values can be configured per resource pool. The possible resource reservation period are periodicities for legacy SL communication and the ones defined for DL-PRS. |
| ***sl-PrsResources-Dedicated-SL-PRS-RP***Indicates SL PRS resources in a slot of dedicated SL PRS resource pool via the (pre-)configuration of tuple: {SL PRS Resource ID, (M, N) pattern, starting symbol, comb offset} where 'M' (L\_"SL-PRS" in RAN1 specs) is number of symbols in a SL PRS resource and 'N' (K\_"comb" ^"SL-PRS" in RAN1 specs) is comb size for the SL PRS resource |
| ***sl-SensingWindow-Dedicated-SL-PRS-RP***Indicates Parameter that indicates the start of the sensing window for SL PRS in a dedicated resource pool. |
| ***sl-TxPercentageList-Dedicated-SL-PRS-RP***Indicates List of minimum Tx percentage (list per priority) |
| ***sl-SCI-based-SL-PRS-Tx-Trigger-SCI1-B***Indicates presence of a bit-field in SCI format 1-B to trigger SL-PRS transmission by a receiving UE. |
| ***sl-SCI-based-SL-PRS-Tx-Trigger-SCI2-D***Indicates presence of a bit-field in SCI format 2-D to trigger SL-PRS transmission by a receiving UE. |
| ***sl-NumSubchannel-Dedicated-SL-PRS-RP***Indicates the number of subchannels in the corresponding resource pool, which consists of contiguous PRBs only. |
| ***sl-SubchannelSize-Dedicated-SL-PRS-RP***Indicates size of a subchannel for PSCCH in number of RBs. |
| ***sl-MaxNumPerReserve-Dedicated-SL-PRS-RP***Indicates the maximum number of SL PRS reservations that can be indicated by an SCI. |
| ***sl-NumReservedBits-SCI1B-Dedicated-SL-PRS-RP***Indicates the number of reserved bits in SCI format 1-B. |
| ***sl-SRC-ID-Len-Dedicated-SL-PRS-RP***Indicates the number of bits used for the source ID in SCI format 1-B. |
| ***sl-CBR-PriorityTxConfigList-Dedicated-SL-PRS-RP***Indicates the mapping between SL-PRS transmission parameter (such as transmission power, etc.) sets by using the indexes of the configurationsin sl-CBR-SL-PRS-TxConfigList, CBR ranges by using the indexes to the entry of the CBR range configurations in sl-CBR-SL-PRS-RangeConfigList, and priority ranges. It also indicates the default SL-PRS transmission parameters to be used when CBR measurement results are not available. |

| ***SL-PRS-PSCCH-Config* field descriptions** |
| --- |
| ***freqResourcePSCCH-Dedicated-SL-PRS-RP***Indicates the number of PRBs for PSCCH in a dedicated SL PRS resource pool. |
| ***timeResourcePSCCH-Dedicated-SL-PRS-RP***Indicates the number of symbols for PSCCH in a dedicated SL PRS resource pool. |

| ***SL-PRS-PowerControl* field descriptions** |
| --- |
| ***dl-P0-SL-PRS*** Indicates P0 value for DL pathloss based open loop power control for SL PRS transmission in dedicated SL PRS resource pool. |
| ***dl-Alpha-SL-PRS***Indicates alpha value for DL pathloss based open loop power control for SL PRS transmission in dedicated SL PRS resource pool.  |
| ***sl-P0-SL-PRS***Indicates P0 value for SL pathloss based open loop power control for SL PRS transmission in dedicated SL PRS resource pool. |
| ***sl-Alpha-SL-PRS***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.  |

*Next Change*

– *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-PRS-RSRP-v18xy RSRP-Range

}

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

-- TAG-SL-REPORTCONFIGLIST-STOP

-- ASN1STOP

Editor’s Note: RAN1 parameter list indicates receiving UE need to provide SL-PRS based RSRP for OLPC. However, it is not stated if a trigger would be needed. Thus rapporteur would like to keep this as FFS on whether the trigger is necessary or not.

| ***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 met 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 clauses 5.8.10.4.2 and 5.8.10.4.3, respectively. |

| ***SL-PeriodicalReportConfig* 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. |

*Next Change*

– *MeasurementReportSidelink*

The *MeasurementReportSidelink* message is used for the indication of measurement results of NR sidelink.

Signalling radio bearer: SL-SRB3

RLC-SAP: AM

Logical channel: SCCH

Direction: UE to UE

***MeasurementReportSidelink* message**

-- ASN1START

-- TAG-MEASUREMENTREPORTSIDELINK-START

MeasurementReportSidelink ::= SEQUENCE {

 criticalExtensions CHOICE {

 measurementReportSidelink-r16 MeasurementReportSidelink-r16-IEs,

 criticalExtensionsFuture SEQUENCE {}

 }

}

MeasurementReportSidelink-r16-IEs ::= SEQUENCE {

 sl-measResults-r16 SL-MeasResults-r16,

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 nonCriticalExtension SEQUENCE{} OPTIONAL

}

SL-MeasResults-r16 ::= SEQUENCE {

 sl-MeasId-r16 SL-MeasId-r16,

 sl-MeasResult-r16 SL-MeasResult-r16,

 ...

}

SL-MeasResult-r16 ::= SEQUENCE {

 sl-ResultDMRS-r16 SL-MeasQuantityResult-r16 OPTIONAL,

 ...

}

SL-MeasQuantityResult-r16 ::= SEQUENCE {

 sl-RSRP-r16 RSRP-Range OPTIONAL,

 ...,

 [[

 sl-Rsrp-Dedicated-SL-PRS-RP-r18 INTEGER (0..13) OPTIONAL

 ]]

}

SL-MeasResultListRelay-r17 ::= SEQUENCE (SIZE (1..maxNrofRelayMeas-r17)) OF SL-MeasResultRelay-r17

SL-MeasResultRelay-r17 ::= SEQUENCE {

 cellIdentity-r17 CellAccessRelatedInfo,

 sl-RelayUE-Identity-r17 SL-SourceIdentity-r17,

 sl-MeasResult-r17 SL-MeasResult-r16,

 ...

}

-- TAG-MEASUREMENTREPORTSIDELINK-STOP

-- ASN1STOP

|  |
| --- |
| ***MeasurementReportSidelink* field descriptions** |
| ***sl-MeasId***Identifies the sidelink measurement identity for which the reporting is being performed. |
| ***sl-MeasResult***Measured RSRP results of a unicast destination. |
| ***sl-Rsrp-Dedicated-SL-PRS-RP***Measured SL PRS-based filtered RSRP. |

*Next Change*

– *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-PBPS-CPS-Config-r17 SetupRelease { SL-PBPS-CPS-Config-r17 } OPTIONAL, -- Need M

 sl-InterUE-CoordinationConfig-r17 SetupRelease { SL-InterUE-CoordinationConfig-r17 } OPTIONAL -- Need M

]],

 [[

sl-PrsResources-Shared-SL-PRS-RP-r18 SL-PrsResources-Shared-SL-PRS-RP-r18 OPTIONAL, -- Need M

numSym-SL-PRS-2ndStageSCI-r18 INTEGER (1 … 4) OPTIONAL, -- Need M

sl-SCI-based-SL-PRS-Tx-Trigger-SCI2-D-r18 BOOLEAN 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

 ...,

 [[

 dl-P0-PSSCH-PSCCH-r17 INTEGER (-202..24) OPTIONAL, -- Need M

 sl-P0-PSSCH-PSCCH-r17 INTEGER (-202..24) OPTIONAL, -- Need S

 dl-P0-PSFCH-r17 INTEGER (-202..24) OPTIONAL -- Need M

]]

}

SL-PrsResources-Shared-SL-PRS-RP-r18::= SEQUENCE {

sl-PRS-ResourceID INTEGER (0...16) OPTIONAL, -- Need M

mNumberOfSymbols-r18 INTEGER {1..9} OPTIONAL, -- Need M

nCombSize-r18 ENUMERATED{n2,n4,n6} OPTIONAL, -- Need M

sl-PRS-starting-symbol-r18 INTEGER (4...12) OPTIONAL, -- Need M

sl-PRS-comb-offset-r18 INTEGER(1..5) 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*. The unit is meter. |
| ***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-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-FilterCoefficient***This field indicates the filtering coefficient for long-term measurement and reference signal power derivation used for sidelink open-loop power control. |
| ***sl-InterUE-CoordinationConfig***Indicates the configured sidelink inter-UE coordination parameters. |
| ***sl-NumSubchannel***Indicates the number of subchannels in the corresponding resource pool, which consists of contiguous PRBs only. |
| ***sl-PBPS-CPS-Config***Indicates the allowed resource allocation schemes of full sensing only, partial sensing only, random resource selection only, or any combination(s), and the related configuration for power saving resource allocation schemes. This field is absent for *sl-TxPoolExceptional*. |
| ***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-PrsResources-Shared-SL-PRS-RP***Indicates SL PRS resources in a slot of shared SL PRS resource pool via the (pre-)configuration of tuples (number of symbols, combsize) as defined in TS 38.214 []. |
| ***numSym-SL-PRS-2ndStageSCI***Indicates the number symbols to be assumed for SL PRS in determining the number of coded modulation symbols for second stage SCI in a slot of a shared SL PRS resource pool. |
| ***sl-SCI-based-SL-PRS-Tx-Trigger-SCI2-D***Indicates presence of a bit-field in SCI format 2-D to trigger SL-PRS transmission by a receiving UE. |

| ***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** |
| --- |
| ***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 TS 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. When *sl-P0-PSSCH-PSCCH-r17* is configured, the UE ignores *sl-P0-PSSCH-PSCCH-r16*. |
| ***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. When *dl-P0-PSSCH-PSCCH-r17* is configured, the UE ignores *dl-P0-PSSCH-PSCCH-r16*.A Remote UE which is out of coverage, considers downlink pathloss based power control is disabled for PSCCH/PSSCH when *dl-P0-PSSCH-PSCCH* is configured. |
| ***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. When *dl-P0-PSFCH-r17* is configured, the UE ignores *dl-P0-PSFCH-r16.* 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.A Remote UE which is out of coverage, considers downlink pathloss based power control is disabled for PSFCH when *dl-P0-PSFCH* is configured. |

| ***SL-MinMaxMCS-Config* field descriptions** |
| --- |
| ***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. |

*Next Change*

6.4 RRC multiplicity and type constraint values

– Multiplicity and type constraint definitions

-- ASN1START

-- TAG-MULTIPLICITY-AND-TYPE-CONSTRAINT-DEFINITIONS-START

maxAdditionalRACH-r17 INTEGER ::= 256 -- Maximum number of additional RACH configurations.

maxAI-DCI-PayloadSize-r16 INTEGER ::= 128 --Maximum size of the DCI payload scrambled with ai-RNTI

maxAI-DCI-PayloadSize-1-r16 INTEGER ::= 127 --Maximum size of the DCI payload scrambled with ai-RNTI minus 1

maxBandComb INTEGER ::= 65536 -- Maximum number of DL band combinations

maxBandsUTRA-FDD-r16 INTEGER ::= 64 -- Maximum number of bands listed in UTRA-FDD UE caps

maxBH-RLC-ChannelID-r16 INTEGER ::= 65536 -- Maximum value of BH RLC Channel ID

maxBT-IdReport-r16 INTEGER ::= 32 -- Maximum number of Bluetooth IDs to report

maxBT-Name-r16 INTEGER ::= 4 -- Maximum number of Bluetooth name

maxCAG-Cell-r16 INTEGER ::= 16 -- Maximum number of NR CAG cell ranges in SIB3, SIB4

maxTwoPUCCH-Grp-ConfigList-r16 INTEGER ::= 32 -- Maximum number of supported configuration(s) of {primary PUCCH group

 -- config, secondary PUCCH group config}

maxTwoPUCCH-Grp-ConfigList-r17 INTEGER ::= 16 -- Maximum number of supported configuration(s) of {primary PUCCH group

 -- config, secondary PUCCH group config} for PUCCH cell switching

maxCBR-Config-r16 INTEGER ::= 8 -- Maximum number of CBR range configurations for sidelink communication

 -- congestion control

maxCBR-Config-1-r16 INTEGER ::= 7 -- Maximum number of CBR range configurations for sidelink communication

 -- congestion control minus 1

maxCBR-Config-Dedicated-SL-PRS-RP-r18 INTEGER ::= 8 -- Maximum number of CBR ranges for dedicated SL PRS resource poolmaxCBR-Level-r16 INTEGER ::= 16 -- Maximum number of CBR levels

maxCBR-Level-1-r16 INTEGER ::= 15 -- Maximum number of CBR levels minus 1

maxCBR-Level-Dedicated-SL-PRS-RP-r18 INTEGER ::= 16 -- Maximum number of CBR levels for dedicated SL PRS resource pool

*End of Changes. Below Appendix has RAN1 parameter list*

## Appendix

### RAN1 parameter list relevant to RRC spec

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **WI code** | **Sub-feature group** | **RAN1 specification** | **Section** | **RAN2 Parent IE** | **RAN2 ASN.1 name** | **Parameter name in the spec** | **New or existing?** | **Parameter name in the text** | **Description** | **Value range** | **Default value aspect** | **Per (UE, cell, TRP, …)** | **Required for initial access or IDLE/INACTIVE** | **Specification** | **Comment** |
| NR\_pos\_enh2-Core | SL PRS sequence generation | 38,211 |   |   |   | sl-PRS-SequenceID | New |   | This field specifies the sequence Id used to initialize cinit value used in pseudo random generator for generation of SL PRS sequence for transmission on a given SL PRS Resource.The field may be provided to a Tx UE by higher layers - details up to RAN2, including consideration of Tx UE’s own higher layer.The field is also provided to Rx UE via SLPP~~/LPP~~. | {0, 1, …, 4095} |   | Per UE | No | FFS for RAN2 WG for Tx UEThe field is also provided to Rx UE via ~~37.355 or~~ 38.355 ~~(up to RAN2)~~. | Working assumption• For SL PRS sequence generation, the parameter is defined as below:o n\_{ID,seq}^{SL-PRS} is provided by higher layers to a Tx UE § Details on higher layers, including consideration of Tx UE’s own higher layer, are up to RAN2§ The higher layer parameter is provided to an Rx UE via LPP/SLPP.§ FFS: If (pre-)configured for a resource pool and use of SL PRS for sensing is supported, is based on 12 LSB bits CRC of PSCCH associated with the SL PRSo Otherwise (i.e., if not provided by higher layers), is based on 12 LSB bits CRC of PSCCH associated with the SL PRSAgreementThe following working assumption is confirmed without the FFS bullet as below:For SL PRS sequence generation, the parameter n\_"ID,seq" ^"SL-PRS" is defined as below:n\_"ID,seq" ^"SL-PRS" is provided by higher layers to a Tx UE Details on higher layers, including consideration of Tx UE’s own higher layer, are up to RAN2The higher layer parameter is provided to an Rx UE via ~~LPP/~~SLPP.~~FFS: If (pre-)configured for a resource pool and use of SL PRS for sensing is supported, n\_"ID,seq" ^"SL-PRS" is based on 12 LSB bits CRC of PSCCH associated with the SL PRS~~Otherwise (i.e., if not provided by higher layers), n\_"ID,seq" ^"SL-PRS" is based on 12 LSB bits CRC of PSCCH associated with the SL PRS |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38,214 |   |   |   | sl-TimeResource | New |   | This field indicates the bitmap of the SL PRS dedicated resource pool, which is defined by repeating the bitmap with a periodicity during a SFN or DFN cycle. | BIT STRING (10 .. 160) |   | Per dedicated resource pool | Yes | ~~FFS for RAN2 WG~~38.331 | AgreementFor a dedicated resource pool for positioning:• The set of slots that belong to a resource pool is determined in the same way as for legacy SL communication pool (i.e. see section 8 of 38.214).AgreementFor a dedicated resource pool for positioning:• No additional slots are needed to be supported |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38,214 |   |   |   | ~~sl-StartRB~~sl-StartRB-Subchannel-Dedicated-SL-PRS-RP | New |   | This field indicates the lowest RB index of the SL PRS dedicated resource pool with respect to the lowest RB index of a SL BWP. | ~~TBD~~INTEGER (0...265) |   | Per dedicated resource pool | Yes | ~~FFS for RAN2 WG~~38.331 | AgreementFor the PSCCH configuration in a dedicated resource pool,• A PSCCH is mapped in a single subchannel similar to shared resource pool and:o the resource pool is (pre-)configured with the size of a subchannel in PRBs and the number of subchannels, and follow the legacy PSCCH mapping to resources of NR SL.§ FFS: whether to add additional values for the subchannel (pre-)configurationo the PSCCH in the ith subchannel is associated with the ith SL-PRS resource IDo Note: if the number of subchannels is larger than the (pre-)configured number of SL PRS resources, then subchannels with index larger than or equal to the (pre-)configured number of SL PRS resources are not mapped to any resource |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38,214 |   |   |   | sl-RB-Number | New |   | This field indicates the number of PRBs in the corresponding SL PRS dedicated resource pool, which consists of contiguous PRBs only. | ~~TBD~~INTEGER(10..275) |   | Per dedicated resource pool | Yes | ~~FFS for RAN2 WG~~38.331 |   |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38.214, 38.211 |   |   |   | sl-PrsResources-Dedicated-SL-PRS-RP | New |   | Indicates SL PRS resources in a slot of dedicated SL PRS resource pool via the (pre-)configuration of tuple: {SL PRS Resource ID, (M, N) pattern, starting symbol, comb offset} where 'M' (L\_"SL-PRS" in RAN1 specs) is number of symbols in a SL PRS resource and 'N' (K\_"comb" ^"SL-PRS" in RAN1 specs) is comb size for the SL PRS resource | SL PRS Resource ID: INTEGER(0..11)(M, N) patterns: {1, 2}, {2, 2}, {2, 4}, {4, 4}, {6, 6}, and combinations with N \in {2, 4, 6} and M \in {3, 4, .., 9} where M > Nstarting symbol:INTEGER(4..12)comb offset:INTEGER(0..(N-1)) |   | Per dedicated resource pool | Yes | 38,331 | AgreementFor a dedicated resource pool, explicit (pre-)configuration of SL PRS resources in a slot includes:• SL PRS Resource ID, (M, N) pattern, starting symbol, comb offset.• FFS: constraints to the (pre-)configuration to address potential AGC issues |
| NR\_pos\_enh2-Core | SL PRS configuration in a shared resource pool | 38.214, 38.211 |   |   |   | sl-PrsResources-Shared-SL-PRS-RP | New |   | Indicates SL PRS resources in a slot of shared SL PRS resource pool via the (pre-)configuration of tuple: {SL PRS Resource ID, (M, N) pattern, comb offset} where 'M' (L\_"SL-PRS" in RAN1 specs) is number of symbols in a SL PRS resource and 'N' (K\_"comb" ^"SL-PRS" in RAN1 specs) is comb size for the SL PRS resource | SL PRS Resource ID: INTEGER(0..16)(M, N) patterns: {1, 1}, {1, 2}, {2, 1}, {2, 2}, {2, 4}, {4, 1}, {4, 2}, {4, 4}comb offset:INTEGER(0..(N-1)) |   | Per shared resource pool | Yes | 38,331 | Working assumptionFor a shared resource pool,• Explicit (pre-)configuration of SL PRS resources in a slot, applicable for an indicated frequency domain allocation, includes:o SL PRS Resource ID, (M, N) pattern, comb offset.• For a given value of ‘M’, SL PRS resource is mapped to the last consecutive ‘M’ SL symbols in the slot that can be used for SL PRS, i.e., taking into consideration multiplexing with PSSCH DMRS, PT-RS, CSI-RS, PSFCH, gap symbols, AGC symbols, PSCCH in the slot• The maximum number of SL PRS resources in a slot of a shared resource pool that can be (pre-)configured is FFS. |
| NR\_pos\_enh2-Core | SL PRS configuration in a shared resource pool | 38,212 |   |   |   | numSym-SL-PRS-2ndStageSCI | New |   | Indicates the number symbols to be assumed for SL PRS in determining the number of coded modulation symbols for second stage SCI in a slot of a shared SL PRS resource pool. | INTEGER (1 … 4) |   | Per shared resource pool | Yes | 38,331 | AgreementWith regards to PSSCH and SL-PRS TDMed multiplexing, when determining the number of coded modulation symbols generated for 2nd-stage SCI transmission, symbols with SL-PRS are excluded when calculating {M\_sc^SCI2 (l),l=0,1,2⋯,N\_symbol^PSSCH-1},Alt. 1: based on a value (pre-)configured in the resource pool for this purpose (new parameter).FFS: possible values (to be decided when discussing RRC parameters) |
| NR\_pos\_enh2-Core | SL PRS Power Control | 38,213 |   |   |   | dl-P0-SL-PRS | New |   | P0 for DL pathloss based open loop power control for SL PRS transmission in dedicated SL PRS resource pool. | INTEGER(-202..24) |   | Per dedicated resource pool, e.g., in SL-Pos-DedicatedResourcePool | Yes | 38,331 | AgreementThe OLPC framework defined for PSSCH/PSCCH is considered as a starting point for OLPC for SL PRS.AgreementFor the SL PRS open-loop power control, a UE can be configured to use DL pathloss (between TX UE and gNB) only, SL pathloss (between TX UE and RX UE) only, or both DL pathloss and SL pathloss.• The same principle as for PSSCH power control is applied for deciding which (i.e., SL, DL, or SL and DL) pathloss to use.• FFS: SL pathloss reference for open-loop power control for SL PRS. |
| NR\_pos\_enh2-Core | SL PRS Power Control | 38,213 |   |   |   | dl-Alpha-SL-PRS | New |   | \alpha value for DL pathloss based open loop power control for SL PRS transmission in dedicated SL PRS resource pool. | {alpha0, alpha04, alpha05, alpha06, alpha07, alpha08, alpha09, alpha1} |   | Per dedicated resource pool, e.g., in SL-Pos-DedicatedResourcePool | Yes | 38,331 | AgreementThe OLPC framework defined for PSSCH/PSCCH is considered as a starting point for OLPC for SL PRS.AgreementFor the SL PRS open-loop power control, a UE can be configured to use DL pathloss (between TX UE and gNB) only, SL pathloss (between TX UE and RX UE) only, or both DL pathloss and SL pathloss.• The same principle as for PSSCH power control is applied for deciding which (i.e., SL, DL, or SL and DL) pathloss to use.• FFS: SL pathloss reference for open-loop power control for SL PRS. |
| NR\_pos\_enh2-Core | SL PRS Power Control | 38,213 |   |   |   | sl-P0-SL-PRS | New |   | P0 for SL pathloss based open loop power control for SL PRS transmission in dedicated SL PRS resource pool. | INTEGER(-202..24) |   | Per dedicated resource pool, e.g., in SL-Pos-DedicatedResourcePool | Yes | 38,331 | AgreementThe OLPC framework defined for PSSCH/PSCCH is considered as a starting point for OLPC for SL PRS.AgreementFor the SL PRS open-loop power control, a UE can be configured to use DL pathloss (between TX UE and gNB) only, SL pathloss (between TX UE and RX UE) only, or both DL pathloss and SL pathloss.• The same principle as for PSSCH power control is applied for deciding which (i.e., SL, DL, or SL and DL) pathloss to use.• FFS: SL pathloss reference for open-loop power control for SL PRS. |
| NR\_pos\_enh2-Core | SL PRS Power Control | 38,213 |   |   |   | sl-Alpha-SL-PRS | New |   | \alpha value for SL pathloss based open loop power control for SL PRS transmission in dedicated SL PRS resource pool. | {alpha0, alpha04, alpha05, alpha06, alpha07, alpha08, alpha09, alpha1} |   | Per dedicated resource pool, e.g., in SL-Pos-DedicatedResourcePool | Yes | 38,331 | AgreementThe OLPC framework defined for PSSCH/PSCCH is considered as a starting point for OLPC for SL PRS.AgreementFor the SL PRS open-loop power control, a UE can be configured to use DL pathloss (between TX UE and gNB) only, SL pathloss (between TX UE and RX UE) only, or both DL pathloss and SL pathloss.• The same principle as for PSSCH power control is applied for deciding which (i.e., SL, DL, or SL and DL) pathloss to use.• FFS: SL pathloss reference for open-loop power control for SL PRS. |
| NR\_pos\_enh2-Core | SL PRS Power Control | 38,213 |   |   |   | sl-Rsrp-Dedicated-SL-PRS-RP | New |   | SL PRS-based filtered RSRP reported by a receiving UE. Filtering coefficient reuses sl-FilterCoefficient. | SL-RSRP-Range: INTEGER(0 ..13) |   | For a unicast Tx/Rx |   | 38.331 (PC5-RRC) | AgreementFor SL pathloss-based OLPC for SL PRS in unicast, filtered RSRP is reported by a receiving UE.AgreementFor a dedicated SL PRS resource pool, SL PRS is used as the pathloss reference for OLPC for SL PRS (Option 1 from RAN1 #112bis-e and RAN1 #113 meetings). |
| NR\_pos\_enh2-Core | ~~SL positioning RA~~SL PRS configuration in a dedicated resource pool | 38,214 |   |   |   | sl-Pos-AllowedResourceSelectionConfig | New |   | Allowed resource allocation method configured per resource pool | c1: only sensing allowedc2: only random resource seleciton allowedc3: sensing and random resource selection allowed |   | Per dedicated resource pool | Yes | 38,331 | AgreementConfirm the working assumption: Sensing-based and random selection can be allowed in the same resource pool.• Note: It is possible to (pre-)configure a resource pool to exclusively use sensing-based resource allocation. |
| NR\_pos\_enh2-Core | ~~SL positioning RA~~SL PRS configuration in a dedicated resource pool | 38,214 |   |   |   | reservationPeriodAllowed-Dedicated-SL-PRS-RP | New |   | Set of possible resource reservation period in the unit of ms allowed in the resource pool. Up to 16 values can be configured per resource pool. | Ref: Periodicities for legacy SL communication and the ones defined for DL-PRS |   | Per dedicated resource pool | ~~TBD~~Yes | 38,331 | AgreementFor Scheme 2, in a dedicated resource pool, • Multiple L1 SL-PRS priority are allowed in a resource pool• A SL PRS resource within the resource selection window is used as a candidate resource• with regards the reservation interval of SL-PRS, it is provided by UE’s higher layers with values TBD. The set of values is (pre-)configured.o Use the periodicities available for legacy SL communication and the ones defined for DL-PRS as a starting point.• with regards to the resource (re)-selection procedureo support re-evaluation & pre-emption for SL-PRS using the Rel-16 re-evaluation and pre-emption respectively as a starting point.  |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38,214 |   |   |   | sl-SensingWindow-Dedicated-SL-PRS-RP | New |   | Parameter that indicates the start of the sensing window for SL PRS in a dedicated resource pool. | ENUMERATED {ms100, ms1100} |   | Per dedicated SL PRS resource pool | Yes | 38,331 | Agreement• For Scheme 2, in a dedicated resource pool, with regards to the sensing window length:o Use the legacy (pre-)configuration with values (100 msec, 1100 msec) |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38,214 |   |   |   | sl-TxPercentageList-Dedicated-SL-PRS-RP | New |   | List of minimum Tx percentage (list per priority) | SEQUENCE (SIZE (8)) OF SL-TxPercentageConfig-Dedicated-SL-PRS-RP |   | Per dedicated SL PRS resource pool | Yes | 38,331 | Agreement• For Scheme 2, in a dedicated resource pool, for the initial S-RSRP threshold & stepsize, target resource ratio X(%), reuse the legacy values from NR sidelink.  |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38,214 |   |   |   | sl-TxPercentageConfig-Dedicated-SL-PRS-RP | New |   | List of minimum Tx percentage (sl-TxPercentage-Dedicated-SL-PRS-R) per priority (sl-Priority-Dedicated-SL-PRS-RP) | sl-TxPercentage-Dedicated-SL-PRS-RP (INTEGER (1..8)) and sl-Priority-Dedicated-SL-PRS-RP (ENUMERATED {p20, p35, p50}) |   | Per dedicated SL PRS resource pool | Yes | 38,331 | Agreement• For Scheme 2, in a dedicated resource pool, for the initial S-RSRP threshold & stepsize, target resource ratio X(%), reuse the legacy values from NR sidelink.  |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38,214 |   |   |   | sl-SCI-based-SL-PRS-Tx-Trigger-SCI1-B | New |   | Indicates presence of a bit-field in SCI format 1-B to trigger SL-PRS transmission by a receiving UE.  | true or false |   | Per dedicated SL PRS resource pool | Yes | 38,331 | Working assumptionIn Scheme 2, with regards to the triggering of SL-PRS, for the SCI-based triggering, the SL-PRS request, in either SCI-1B or SCI-2D, is an explicit field• If (pre-)configured per resource pool, then 1 bit is used, otherwise, it is 0 bits |
| NR\_pos\_enh2-Core | SL PRS configuration in a shared resource pool | 38,214 |   |   |   | sl-SCI-based-SL-PRS-Tx-Trigger-SCI2-D | New |   | Indicates presence of a bit-field in SCI format 2-D to trigger SL-PRS transmission by a receiving UE.  | true or false |   | Per shared SL PRS resource pool | Yes | 38,331 | Working assumptionIn Scheme 2, with regards to the triggering of SL-PRS, for the SCI-based triggering, the SL-PRS request, in either SCI-1B or SCI-2D, is an explicit field• If (pre-)configured per resource pool, then 1 bit is used, otherwise, it is 0 bits |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38,214 |   |   |   | sl-NumSubchannel-Dedicated-SL-PRS-RP | New |   | Indicates the number of subchannels in the corresponding resource pool, which consists of contiguous PRBs only. | INTEGER (1..27) |   | Per dedicated SL PRS resource pool | Yes | 38,331 | AgreementFor the PSCCH configuration in a dedicated resource pool,• A PSCCH is mapped in a single subchannel similar to shared resource pool and:o the resource pool is (pre-)configured with the size of a subchannel in PRBs and the number of subchannels, and follow the legacy PSCCH mapping to resources of NR SL.§ FFS: whether to add additional values for the subchannel (pre-)configurationo the PSCCH in the ith subchannel is associated with the ith SL-PRS resource IDo Note: if the number of subchannels is larger than the (pre-)configured number of SL PRS resources, then subchannels with index larger than or equal to the (pre-)configured number of SL PRS resources are not mapped to any resource |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38,214 |   |   |   | sl-SubchannelSize-Dedicated-SL-PRS-RP | New |   | Indicates size of a subchannel for PSCCH in number of RBs. | ENUMERATED {n10, n12, n15, n20, n25, n50, n75, n100} |   | Per dedicated SL PRS resource pool | Yes | 38,331 | AgreementFor the PSCCH configuration in a dedicated resource pool,• A PSCCH is mapped in a single subchannel similar to shared resource pool and:o the resource pool is (pre-)configured with the size of a subchannel in PRBs and the number of subchannels, and follow the legacy PSCCH mapping to resources of NR SL.§ FFS: whether to add additional values for the subchannel (pre-)configurationo the PSCCH in the ith subchannel is associated with the ith SL-PRS resource IDo Note: if the number of subchannels is larger than the (pre-)configured number of SL PRS resources, then subchannels with index larger than or equal to the (pre-)configured number of SL PRS resources are not mapped to any resource |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38.214, 38.212 |   |   |   | sl-MaxNumPerReserve-Dedicated-SL-PRS-RP | New |   | Indicates the maximum number of SL PRS reservations that can be indicated by an SCI. | ENUMERATED {n2, n3} |   | Per dedicated SL PRS resource pool | Yes | 38,331 | AgreementIn the dedicated resource pool for positioning, with regards to the SCI for SL-PRS, information carried in SCI for SL-PRS should at least include:• Field 1: SL-PRS priority - 3 bits• Field 2: Source ID – Up to resource pool (pre-)configuration 12 or 24 bits • Field 3: Destination ID - 24 bits• Field 4: Cast type – 2 bits• Field 5: Resource reservation period - Ceil(log2(Number of candidate values in (pre-)configuration))o Alt. 5.1: Up to 16 values• Field 6: Time resource assignment for SL-PRS future reservationso 1 or 2 max future slots within 32 slots – 5 bits or 9 bits, based on the maximum number of the (pre-)configured future reservations• Field 7: SL-PRS resource ID (s) for the future 1 or 2 reservations o Number of bits: § In case of max number of future reservations is (pre-)configured to 2: [2\*Ceil(log2(Number of SL-PRS resources in (pre-)configuration))]§ In case of max number of future reservations is (pre-)configured to 1: Ceil(log2(Number of SL-PRS resources in (pre-)configuration))• Field 8: SL-PRS request – 0 or 1 bit• Field 9: Reserved bits – up to (pre-)configuration  |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38.214, 38.212 |   |   |   | sl-NumReservedBits-SCI1B-Dedicated-SL-PRS-RP | New |   | Indicates the number of reserved bits in SCI format 1-B. |  INTEGER (0..20)  |   | Per dedicated SL PRS resource pool | Yes | 38,331 | AgreementIn the dedicated resource pool for positioning, with regards to the SCI for SL-PRS, information carried in SCI for SL-PRS should at least include:• Field 1: SL-PRS priority - 3 bits• Field 2: Source ID – Up to resource pool (pre-)configuration 12 or 24 bits • Field 3: Destination ID - 24 bits• Field 4: Cast type – 2 bits• Field 5: Resource reservation period - Ceil(log2(Number of candidate values in (pre-)configuration))o Alt. 5.1: Up to 16 values• Field 6: Time resource assignment for SL-PRS future reservationso 1 or 2 max future slots within 32 slots – 5 bits or 9 bits, based on the maximum number of the (pre-)configured future reservations• Field 7: SL-PRS resource ID (s) for the future 1 or 2 reservations o Number of bits: § In case of max number of future reservations is (pre-)configured to 2: [2\*Ceil(log2(Number of SL-PRS resources in (pre-)configuration))]§ In case of max number of future reservations is (pre-)configured to 1: Ceil(log2(Number of SL-PRS resources in (pre-)configuration))• Field 8: SL-PRS request – 0 or 1 bit• Field 9: Reserved bits – up to (pre-)configuration  |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38,212 |   |   |   | sl-SRC-ID-Len-Dedicated-SL-PRS-RP | New |   | Indicates the number of bits used for the source ID in SCI format 1-B. |  ENUMERATED {n12, n24} |   | Per dedicated SL PRS resource pool | Yes | 38,331 | AgreementIn the dedicated resource pool for positioning, with regards to the SCI for SL-PRS, information carried in SCI for SL-PRS should at least include:• Field 1: SL-PRS priority - 3 bits• **Field 2: Source ID – Up to resource pool (pre-)configuration 12 or 24 bits** • Field 3: Destination ID - 24 bits• Field 4: Cast type – 2 bits• Field 5: Resource reservation period - Ceil(log2(Number of candidate values in (pre-)configuration))o Alt. 5.1: Up to 16 values• Field 6: Time resource assignment for SL-PRS future reservationso 1 or 2 max future slots within 32 slots – 5 bits or 9 bits, based on the maximum number of the (pre-)configured future reservations• Field 7: SL-PRS resource ID (s) for the future 1 or 2 reservations o Number of bits: § In case of max number of future reservations is (pre-)configured to 2: [2\*Ceil(log2(Number of SL-PRS resources in (pre-)configuration))]§ In case of max number of future reservations is (pre-)configured to 1: Ceil(log2(Number of SL-PRS resources in (pre-)configuration))• Field 8: SL-PRS request – 0 or 1 bit• Field 9: Reserved bits – up to (pre-)configuration  |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38,214 |   |   |   | sl-CBR-PriorityTxConfigList-Dedicated-SL-PRS-RP | New |   | Indicates the mapping between SL-PRS transmission parameter (such as transmission power, etc.) sets by using the indexes of the configurationsin sl-CBR-SL-PRS-TxConfigList, CBR ranges by using the indexes to the entry of the CBR range configurations in sl-CBR-SL-PRS-RangeConfigList, and priority ranges. It also indicatesthe default SL-PRS transmission parameters to be used when CBR measurement results are not available. | SEQUENCE (SIZE (1..8)) OF SL-PriorityTxConfigIndex-Dedicated-SL-PRS-RP |   | Per dedicated SL PRS resource pool | Yes | 38,331 | AgreementIn Scheme 2, with regards to the congestion control for SL PRS: • SL-PRS congestion processing time: based on both SCS and UE capability, similar to legacy• The maximum number of CBR ranges for SL positioning is 8• Number of CBR levels is 16• CBR measurement for SL PRS can be reported to gNB FFS: Whether it is needed to be reported to LMF or another UE |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38,214 |   |   |   | maxCBR-Level-Dedicated-SL-PRS-RP | New |   | Maximum number of CBR levels for dedicated SL PRS resource pool | 16 |   | Per dedicated SL PRS resource pool | Yes | 38,331 | AgreementIn Scheme 2, with regards to the congestion control for SL PRS: • SL-PRS congestion processing time: based on both SCS and UE capability, similar to legacy• The maximum number of CBR ranges for SL positioning is 8• Number of CBR levels is 16• CBR measurement for SL PRS can be reported to gNB FFS: Whether it is needed to be reported to LMF or another UE |
| NR\_pos\_enh2-Core | SL PRS configuration in a dedicated resource pool | 38,214 |   |   |   | maxCBR-Config-Dedicated-SL-PRS-RP | New |   | Maximum number of CBR ranges for dedicated SL PRS resource pool | 8 |   | Per dedicated SL PRS resource pool | Yes | 38,331 | AgreementIn Scheme 2, with regards to the congestion control for SL PRS: • SL-PRS congestion processing time: based on both SCS and UE capability, similar to legacy• The maximum number of CBR ranges for SL positioning is 8• Number of CBR levels is 16• CBR measurement for SL PRS can be reported to gNB FFS: Whether it is needed to be reported to LMF or another UE |
| NR\_pos\_enh2-Core | PSCCH in dedicated resource pool | 38,214 |   |   |   | timeResourcePSCCH-Dedicated-SL-PRS-RP | New |   | This field indicates the number of symbols for PSCCH in a dedicated SL PRS resource pool. | 2 or 3 symbols |   | Per dedicated resource pool | Yes | ~~FFS for RAN2 WG~~38.331 | AgreementIn a dedicated resource pool, with regards to the PSCCH, reuse the PSCCH channel structure of SL communications, at least with regards to the following aspects:• The first PSCCH symbol is mapped to the 2nd symbol available for SL transmissions in a slot o Note: 1st symbol available for SL transmissions in a slot is for PSCCH AGC similar to legacy• PSCCH DM-RS in the slot is being reused from legacy• The number of PSCCH symbol(s) is (pre-)configured to (down-select at RAN1#114): o Alt. 1: 2 or 3 symbols (same as legacy)o Alt. 3: 1, or 2 or 3 symbols• The number of PRBs is (pre-)configured using the legacy valueso FFS: reconsider if 1-symbol PSCCH is supportedAgreementFor PSCCH configuration in a dedicated resource pool,• The number of PSCCH symbol(s) is (pre-)configured to 2 or 3 symbols (same as legacy) |
| NR\_pos\_enh2-Core | PSCCH in dedicated resource pool | 38,214 |   |   |   | freqResourcePSCCH-Dedicated-SL-PRS-RP | New |   | This field indicates the number of PRBs for PSCCH in a dedicated SL PRS resource pool. | 10, 12 15, 20, 25 |   | Per dedicated resource pool | Yes | ~~FFS for RAN2 WG~~38.331 | AgreementIn a dedicated resource pool, with regards to the PSCCH, reuse the PSCCH channel structure of SL communications, at least with regards to the following aspects:• The first PSCCH symbol is mapped to the 2nd symbol available for SL transmissions in a slot o Note: 1st symbol available for SL transmissions in a slot is for PSCCH AGC similar to legacy• PSCCH DM-RS in the slot is being reused from legacy• The number of PSCCH symbol(s) is (pre-)configured to (down-select at RAN1#114): o Alt. 1: 2 or 3 symbols (same as legacy)o Alt. 3: 1, or 2 or 3 symbols• The number of PRBs is (pre-)configured using the legacy valueso FFS: reconsider if 1-symbol PSCCH is supported |

### RAN1 agreements

**Agreement**

Regarding Scheme 1 SL-PRS resource allocation, a transmitting UE receives a SL-PRS resource allocation signaling from the network. Consider one or more of the following options:

* (updated in RAN1 112 agreement)Opt. 2: through Dynamic grant, or through configured grant type 1/type 2 from gNB
* Up to further discussion which one or more of these shall be applicable

**Agreement**

With regards to the SL Positioning resource allocation, for SL Positioning resource (pre-)configuration in a shared resource pool with Rel-16/17/18 sidelink communication (if supported), backward compatibility with legacy Rel-16/17 UEs should be ensured.

**Agreement**

For SL-PRS transmission, either dedicated resource pool(s) or shared resource pool(s) or both can be (pre-)configured in the only SL BWP of a carrier.

* A UE can be (pre-)configured with one or more dedicated SL resource pools.
* A UE can be (pre-)configured with one or more shared SL resource pools.

**Agreement**

With regards to the SCI signaling in a shared resource pool, in addition to SL PRS transmission, the UE transmits

* Opt. 1: SCI1-A & a 2nd stage SCI format are used for SL-PRS indication
* FFS: Details including a new or existing 2nd stage SCI

**Agreement**

With regards to the SCI signaling in a shared resource pool,

* Support a new format for 2nd stage SCI.
	+ FFS how to indicate the new 2nd stage SCI format
* FFS: If a 2nd stage SCI indicates both SL-PRS and SL-SCH, the cast type, destination ID, source ID are shared.

**Agreement**

In a shared resource pool, SL-PRS, associated PSCCH and PSSCH scheduled by the PSCCH are included in the same slot:

* The PSSCH is used for 2nd SCI and SL-SCH
	+ Note: the UE may not have data available for transmission. Up to RAN2 how to define the specification support for this case.

**Agreement**

For the shared resource pool, reuse the existing IUC signaling of both Scheme 1 and Scheme 2.

* SL-PRS transmissions are treated as any other legacy transmission for SL communication when considering IUC information exchanges.

**Conclusion**

For Rel-18 sidelink positioning:

* For the dedicated resource pool, IUC signalling is not supported
* Do not support that a UE can reserve a SL-PRS resource for the transmission of another UE

**Conclusion**

Do not support ACK/NACK feedback for SL-PRS or lower-layer feedback-based retransmissions in Release 18.

Agreement

For SL-PRS transmissions without periodic reservation, the maximum number of reservations signaled in an SCI is

* (pre-)configurable with a value of 2 or 3, which is similar with Rel-16 sidelink.

This is applicable to both shared and dedicated resource pool and both scheme 1 and scheme 2

Agreement

In a shared resource pool, when PSSCH and SL-PRS are multiplexed in the same slot, they share the same source ID, destination ID, cast type fields.

Agreement

In a shared resource pool,

To indicate the SCI format 2-D, the reserved state of the “2nd-stage SCI format” field (Codepoint “11”) in SCI format 1-A is used

**Conclusion**

For Scheme 2 SL-PRS resource allocation, with regards to the congestion control for a shared RP, CBR and CR mechanisms from Rel.16 NR SL are reused.

* Add this agreement in the LS related to the priority handling

Agreement

With regards to the shared resource pool for positioning, suggest to the editors to align the terminology used as:

* “shared SL PRS resource pool” defined in 38.214 as shown below:

A sidelink resource pool which can be used for transmission of both SL PRS and PSSCH will be referred to as shared SL PRS resource pool.

**Agreement**

In Scheme 2, with regards to the triggering of SL-PRS, support one or both of the following options:

* Option 1: Support SL-PRS transmission triggering at the physical layer by the UE’s own higher layers.
	+ Note: this also includes higher layer triggering from another UE
* Option 2: Support UE-A to request UE-B to transmit SL-PRS via lower layer signaling sent by UE-A.
	+ FFS: Whether lower-layer signaling is SCI or SL MAC-CE

**Agreement**

In Scheme 2, with regards to the triggering of SL-PRS,

* Support SL-PRS transmission triggering at the physical layer by the UE’s own higher layers
* Working assumption: Support UE-A to request UE-B to transmit SL-PRS via lower layer signaling sent by UE-A.
	+ Up to UE-B’s own higher layers to transmit SL-PRS in response to the lower layer request from UE-A
	+ FFS: Lower layer signaling corresponds to SCI, MAC-CE, or SL-PRS

**Agreement**

In Scheme 2, with regards to the triggering of SL-PRS, confirm the related WA for shared and dedicated resource pools.

* With regards to the lower-layer signalling, support SCI associated with SL-PRS transmission
	+ FFS: whether this is enabled by (pre)configuration

FFS: to support also SL-PRS

Agreement

In Scheme 2, with regards to the SCI-based triggering of SL-PRS, the following WA is confirmed:

|  |
| --- |
| Working assumptionIn Scheme 2, with regards to the triggering of SL-PRS, for the SCI-based triggering, the SL-PRS request, in either SCI-1B or SCI-2D, is an explicit field* If (pre-)configured per resource pool, then 1 bit is used, otherwise, it is 0 bits
 |

**Agreement**

A dedicated SL-PRS resource pool is (pre-)configured in the only SL BWP of a carrier.

**Agreement**

For a dedicated resource pool for SL positioning, only a single stage SCI is used. PSCCH and associated SL-PRS are TDMed in the same slot.

* FFS: whether SL-PRS can be transmitted in a slot without associated PSCCH

**Agreement**

PSSCH is not included in dedicated resource pool for SL positioning.

**Agreement**

PSFCH is not included in dedicated resource pool for SL positioning.

**Agreement**

In a dedicated resource pool, with regards to the PSCCH, reuse the PSCCH channel structure of SL communications, at least with regards to the following aspects:

* the first PSCCH symbol is mapped to the 2nd symbol available for SL transmissions in a slot
	+ Note: 1st symbol available for SL transmissions in a slot is for PSCCH AGC similar to legacy
* PSCCH DM-RS in the slot is being reused from legacy
* The number of PSCCH symbol(s) is (pre-)configured to (down-select at RAN1#114):
	+ Alt. 1: 2 or 3 symbols (same as legacy)
	+ Alt. 3: 1, or 2 or 3 symbols
* The number of PRBs is (pre-)configured using the legacy values
	+ FFS: reconsider if 1-symbol PSCCH is supported

Agreement

For dedicated resource pool, with regards to the SL-PRS configuration and/or SL-PRS time assignment information, support Alt. 3.1, i.e.

* support a one-to-one mapping relationship between a PSCCH resource and an associated SL-PRS resource in the same slot.
	+ Note: In this case, there is no need of an explicit signaling of which SL PRS resource for the same slot
	+ Note: Same number of PSCCH resource(s) and SL-PRS resource(s)

Agreement

For PSCCH configuration in a dedicated resource pool,

* (pre-)configure the number of PRBs of a PSCCH in the resource pool:
	+ Alt. 1: One parameter for all PSCCHs

Agreement

For PSCCH configuration in a dedicated resource pool,

* The number of PSCCH symbol(s) is (pre-)configured to 2 or 3 symbols (same as legacy)

Agreement

* For Scheme 2, in a dedicated resource pool, with regards to the sensing window length:
	+ Use the legacy (pre-)configuration with values (100 msec, 1100 msec)
* For Scheme 2, in a dedicated resource pool, for the initial S-RSRP threshold & stepsize, target resource ratio X(%), reuse the legacy values from NR sidelink.

Agreement

For Scheme 2 SL-PRS resource allocation, with regards to the congestion control for a dedicated RP, the following modifications are supported:

* **Modification 1:** For the definition of SL PRS CR and CBR:

Alt. 2: redefine CBR/CR by considering the SL-PRS resource allocation/configuration.

Agreement

For Scheme 2 SL-PRS resource allocation, with regards to the congestion control for a dedicated RP, the following modifications are supported:

* **Modification 2**: For the evaluation of RSSI used in the CBR definition:
	+ SL-RSSI is measured on a slot configured for transmission of PSCCH and SL-PRS
	+ A single SL-RSSI is measured on symbols with both SL-PRS and PSCCH

Agreement

For Scheme 2 SL-PRS resource allocation, with regards to the congestion control for a dedicated RP, the following modifications are supported:

* For the CR and CBR measurement time window size,
	+ it can be separately configured for a dedicated resource pool and could take the legacy values

Agreement

In Scheme 2,

* For a dedicated resource pool for positioning,
	+ congestion control can restrict at least the following range of parameters for SL PRS configuration per resource pool by CBR and priority:
		- Maximum SL PRS transmission power
		- Maximum Number of SL PRS (re-)transmissions
		- Discuss further the following four SL PRS transmission parameters:
			* Minimum Periodicity of SL PRS
			* Maximum Number of SL PRS resources in a slot
			* Maximum comb-size of a SL PRS resource in a slot
			* Maximum Number of OFDM symbols of a SL PRS resource in a slot
	+ For congestion control similar to legacy, the CR limits are (pre)-configured per priority in a resource pool
		- Note: Similar to SL communication how to achieve the CR limit is left to UE implementation.
* For a shared resource pool for positioning, the SL PRS can share the same restriction of PSSCH without specific enhancement in addition to what is already specified.

Agreement

In the dedicated resource pool for positioning, with regards to the SCI for SL-PRS, information carried in SCI for SL-PRS should at least include:

* Field 1: SL-PRS priority - 3 bits
* Field 2: Source ID – Up to resource pool (pre-)configuration 12 or 24 bits
* Field 3: Destination ID - 24 bits
* Field 4: Cast type – 2 bits
* Field 5: Resource reservation period - Ceil(log2(Number of candidate values in (pre-)configuration))
	+ Alt. 5.1: Up to 16 values
* Field 6: Time resource assignment for SL-PRS future reservations
	+ 1 or 2 max future slots within 32 slots – 5 bits or 9 bits, based on the maximum number of the (pre-)configured future reservations
* Field 7: SL-PRS resource ID (s) for the future 1 or 2 reservations
	+ Number of bits:
		- In case of max number of future reservations is (pre-)configured to 2: [2\*Ceil(log2(Number of SL-PRS resources in (pre-)configuration))]
		- In case of max number of future reservations is (pre-)configured to 1: Ceil(log2(Number of SL-PRS resources in (pre-)configuration))
* Field 8: SL-PRS request – 0 or 1 bit

Field 9: Reserved bits – up to (pre-)configuration

Agreement

In Scheme 2, with regards to the congestion control for SL PRS:

* SL-PRS congestion processing time: based on both SCS and UE capability, similar to legacy
* The maximum number of CBR ranges for SL positioning is 8
* Number of CBR levels is 16
* CBR measurement for SL PRS can be reported to gNB

FFS: Whether it is needed to be reported to LMF or another UE

Agreement

For Scheme 2, in dedicated resource pools, with regards to the procedure for determining the subset of resources to be reported to higher layers, when triggering the resource (re-)selection procedure, the higher layers provide the following parameters for candidate SL-PRS transmission(s):

* resource pool from which to report SL-PRS resources
* Priority
* Delay budget
* Reservation period
* List of resources for pre-emption and re-evaluation
* Set of SL-PRS resource ID (s) which can include all (pre-)configured SL-PRS resource IDs

Agreement

For Scheme 2, in dedicated resource pools, with regards to the pre-emption,

* + - Pre-emption can be enabled/disabled by resource pool (pre)configuration using the same (pre-)configuration parameters as SL communications
		- Reuse the legacy mechanism from SL communications with regards to SL-PRS priority-based comparison
			* The priority of SL-PRS to be transmitted is compared with the priority of SL-PRS reserved by other UEs.
		- A resource for pre-emption checking is defined in terms of a sub-channel for PSCCH and the associated SL-PRS resource in a slot

Agreement

In resource allocation in scheme 1, for a dedicated resource pool

* in the DCI, introduce at least the following fields:
	+ Resource pool index – number of bits same to SL communications
	+ Time gap - 3 bits
	+ SCI format 1-B fields:
		- Time resource assignment for SL-PRS future reservation(s)
		- SL-PRS resource ID (s) for the future 1 or 2 reservations
	+ SL-PRS resource ID for the first SL-PRS transmission
	+ Configuration index – number of bits same to SL communications
	+ Padding bits, if required
* For configured grant type 1 resource allocation,
* RRC is used for indicating at least the following:
	+ Info-1: the periodicity,
	+ Info-2: the slot offset relative to a logical slot defined by Info-3,
	+ Info-3: SFN used for determination of the slot offset,
	+ Info-4: Resource pool index
	+ Info-5: Time resource assignment for SL-PRS future reservation(s)
	+ Info-6: SL-PRS resource ID (s) for the future 1 or 2 reservations
	+ Info-7: SL-PRS resource ID for the first SL-PRS transmission
* For configured grant type 2 resource allocation,
* RRC is used for indicating at least the following:
	+ Info 1: the periodicity
	+ ~~[Info 2: the slot offset relative to the DCI]~~

DCI is used for the activation/release of the configured grant resources

Agreement

With regards to the dedicated resource pool for positioning, suggest to the editors to align the terminology used as:

* “Dedicated SL PRS resource pool” defined in 38.214 as shown below:
	+ A sidelink resource pool which can be used for transmission of SL PRS and cannot be used for transmission of PSSCH will be referred to as dedicated SL PRS resource pool.

Agreement

* With regards to the SL PRS Channel Occupancy Ratio (SL PRS CR):
	+ Sidelink PRS Channel Occupancy Ratio (SL PRS CR) evaluated at slot *n* is defined as the total number of SL PRS resources in the dedicated SL PRS resource pool used for its transmissions in slots [*n-a*, *n-1*] and granted in slots [*n*, *n+b*] divided by the total number of configured SL PRS resources in the transmission pool over [*n-a*, *n+b*].
* With regards to the SL PRS Channel Busy Ratio (SL PRS CBR):

SL PRS Channel Busy Ratio (SL PRS CBR) measured in slot n is defined as the number of SL PRS resources in the dedicated SL PRS resource pool whose SL PRS RSSI measured by the UE exceed a (pre-)configured threshold sensed over a SL PRS-CBR measurement window [n-a, n-1], wherein a is equal to 100 or 100·2µ slots, according to [sl-TimeWindowSizeCBR-positioning] divided by the total number of the configured sidelink PRS resources in the transmission pool over [n-a, n-1].