**3GPP TSG-RAN WG2 Meeting #127 *Draft R2-2407790***

**Maastricht, Netherlands, Aug 19th – 23rd, 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  | **38.331** | **CR** | **4904** | **rev** | **1** | **Current version:** | **18.2.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:***  | Miscellaneous corrections for SL relay enhancements |
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| ***Source to WG:*** | Huawei, HiSilicon, OPPO, CATT, Apple, ZTE Corporation, Sanechips, Nokia, Philips International B.V., Sharp |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_SL\_relay\_enh-Core |  | ***Date:*** | 2024.08.19 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***Reason for change:*** | To capture the agreed changes discussed in RAN2#127 meeting for Rel-18 SL relay enhancements.  |
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| ***Summary of change:*** | Change #1: In 5.3.3.1a and 5.3.13.1a, * Add reception of *connectionForMP* as another exception for the NAS triggered RRC connection setup/resume;

Change #2: in 6.3.5,* Add *sl-FilterCoefficientU2U* and its corresponding parent fields, for SL RSRP L3 fitering during relay reselection;

Change #3: in 9.3, * Add *T400-U2U* in *SL-PreconfigurationNR*;

Change #4: In 5.8.9.1a.4, * Add “SRB0” for SRAP mapping configuration;

In other clauses, capture some editorial changes.**Impact analysis**Impacted functionality: MP operation, U2U operationImpacted architecture options: NR SAInter-operability: For change #2, * If the network implements the CR, but the UE does not, the UE does not understand *sl-FilterCoefficientU2U* and uses *sd-FilterCoefficientU2U* to perform L3 filtering on SL RSRP of the selected Relay UE during relay reselection, which should be the current UE behaviour.
* If the UE implements the CR, but the network does not, the network will not provide *sl-FilterCoefficientU2U*, the UE uses *sd-FilterCoefficientU2U* to perform L3 filtering on SL RSRP of the selected Relay UE during relay reselection, which should be the current UE behaviour.d
* There are no inter-operability issues, considering the above UE behaviour does not impact network.

For change #3, * It does not impact network;
* If one L2 U2U Remote UE implements the CR and uses a larger value of T400, but the peer L2 U2U Remote UE does not implement the CR and uses a smaller value of T400, there may be a higher possibility of E2E establishment failure, but it’s similar to the situation that different values of T400 are configured to SL UEs, which may happen even today. So it can be considered that there are no inter-operability issues.

For other changes, there are no inter-operability issues, considering the changes are either editorial or clarifications to the UE behaviour without impacting network or peer UE. |
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| ***Consequences if not approved:*** | Without the change, some errors remain in the specification. |
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| ***Clauses affected:*** | 4.2.2, 5.3.3.1a, 5.3.5.5.2, 5.3.5.15.1, 5.3.5.17.2.2, 5.3.5.17.3.3, 5.3.13.1a, 5.8.3.2, 5.8.8, 5.8.9.1.2, 5.8.9.1.3, 5.8.9.1a.3, 5.8.9.1a.4, 5.8.9.5, 5.8.9.7.2, 5.8.9.8.2, 5.8.15.3, 5.8.9.11.1, 6.3.5, 6.6.2, 9.3 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ... |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

Start of Change

### 4.2.2 Signalling radio bearers

"Signalling Radio Bearers" (SRBs) are defined as Radio Bearers (RBs) that are used only for the transmission of RRC and NAS messages. More specifically, the following SRBs are defined:

- SRB0 is for RRC messages using the CCCH logical channel (except SRB0 of L2 U2N Remote UE);

- SRB1 is for RRC messages (which may include a piggybacked NAS message) as well as for NAS messages prior to the establishment of SRB2, all using DCCH logical channel (except SRB1 of L2 U2N Remote UE);

- SRB2 is for NAS messages and for RRC messages which include logged measurement information, all using DCCH logical channel (except SRB2 of L2 U2N Remote UE). SRB2 has a lower priority than SRB1 and may be configured by the network after AS security activation;

- SRB3 is for specific RRC messages when UE is in (NG)EN-DC or NR-DC, all using DCCH logical channel;

- SRB4 is for RRC messages which include application layer measurement report information, all using DCCH logical channel. SRB4 has a lower priority than SRB1 and can only be configured by the network after AS security activation.

- SRB5 is for RRC messages which include application layer measurement report information, all using DCCH logical channel. SRB5 has a lower priority than SRB1 and SRB3 and can only be configured by the SN serving the SCG when the UE is in NR-DC, after AS security activation.

In downlink, piggybacking of NAS messages is used only for one dependant (i.e. with joint success/failure) procedure: bearer establishment/modification/release. In uplink piggybacking of NAS message is used only for transferring the initial NAS message during connection setup and connection resume.

NOTE 1: The NAS messages transferred via SRB2 are also contained in RRC messages, which however do not include any RRC protocol control information.

Once AS security is activated, all RRC messages on SRB1, SRB2, SRB3, SRB4 and SRB5, including those containing NAS messages, are integrity protected and ciphered by PDCP. NAS independently applies integrity protection and ciphering to the NAS messages, see TS 24.501 [23].

Split SRB is supported for all the MR-DC options as well as MP in both SRB1 and SRB2 (split SRB is not supported for SRB0, SRB3, SRB4 and SRB5).

For operation with shared spectrum channel access in FR1, SRB0, SRB1 and SRB3 are assigned with the highest priority Channel Access Priority Class (CAPC), (i.e. CAPC = 1) while CAPC for SRB2 is configurable.

For the NR sidelink L2 U2N relay operations not involved in MP, SRB0, SRB1, SRB2 of a L2 U2N Remote UE are not using Uu CCCH/DCCH logical channels. The SRB0, SRB1, SRB2 of a L2 U2N Remote UE are transmitted via the PC5 Relay RLC channels over PC5 and Uu Relay RLC channels over Uu.

Next Change

#### 5.3.3.1a Conditions for establishing RRC Connection for NR sidelink communication/discovery/V2X sidelink communication/MP operation

For NR sidelink communication/discovery, an RRC connection establishment is initiated only in the following cases:

1> if configured by upper layers to transmit NR sidelink communication and related data is available for transmission:

2> if the frequency on which the UE is configured to transmit NR sidelink communication is included in *sl-FreqInfoList*/*sl-FreqInfoListSizeExt* within *SIB12* provided by the cell on which the UE camps; and if the valid version of *SIB12* does not include *sl-TxPoolSelectedNormal* for the concerned frequency;

1> if configured by upper layers to transmit NR sidelink discovery and related data is available for transmission:

2> if the UE is configured by upper layers to transmit NR sidelink L2 U2N relay discovery messages and *sl-L2U2N-Relay* is included in *SIB12*; or

2> if the UE is configured by upper layers to transmit NR sidelink L3 U2N relay discovery messages and *sl-L3U2N-RelayDiscovery* is included in *SIB12*; or

2> if the UE is configured by upper layers to transmit NR sidelink non-relay discovery messages and *sl-NonRelayDiscovery* is included in *SIB12*:

3> if the frequency on which the UE is configured to transmit NR sidelink discovery is included in *sl-FreqInfoList* within *SIB12* provided by the cell on which the UE camps; and if the valid version of *SIB12* includes neither *sl-DiscTxPoolSelected* nor *sl-TxPoolSelectedNormal* for the concerned frequency;

For L2 U2N Relay UE in RRC\_IDLE, an RRC connection establishment is initiated in the following cases:

1> if any message is received from a L2 U2N Remote UE via SL-RLC0 as specified in 9.1.1.4 or SL-RLC1 as specified in 9.2.4; or

1> if *RemoteUEInformationSidelink* containing the *connectionForMP* is received from a L2 U2N Remote UE as specified in 5.8.9.8.3;

For V2X sidelink communication, an RRC connection is initiated only when the conditions specified for V2X sidelink communication in clause 5.3.3.1a of TS 36.331 [10] are met.

NOTE 1: Upper layers initiate an RRC connection (except if the RRC connection is initiated at the L2 U2N Relay UE upon reception of a message from a L2 U2N Remote UE via SL-RLC0 or SL-RLC1, or upon reception of *RemoteUEInformationSidelink* message containing the *connectionForMP*). The interaction with NAS is left to UE implementation.

For N3C relay UE in RRC\_IDLE, an RRC connection establishment is initiated when a N3C remote UE indicates it to enter RRC\_CONNECTED state.

NOTE 2: How/when the N3C remote UE to indicate N3C relay UE to enter RRC\_CONNECTED state is left to UE implementation, e.g. before reporting relay UE information with non-3GPP connection(s).

Next Change

##### 5.3.5.5.2 Reconfiguration with sync

The UE shall perform the following actions to execute a reconfiguration with sync.

1> if the AS security is not activated, perform the actions upon going to RRC\_IDLE as specified in 5.3.11 with the release cause '*other*' upon which the procedure ends;

1> stop timer T430 if running;

1> if no DAPS bearer is configured:

2> stop timer T310 for the corresponding SpCell, if running;

1> if this procedure is executed for the MCG:

2> if timer T316 is running;

3> stop timer T316;

3> if the UE supports RLF-Report for fast MCG recovery procedure as specified in TS 38.306 [26]:

4> set the *elapsedTimeT316* in the *VarRLF-Report* to the value of the elapsed time of the timer T316;

4> set the *pSCellId* in the *VarRLF-Report* to the global cell identity of the PSCell, if available, otherwise to the physical cell identity and carrier frequency of the PSCell;

3> else:

4> clear the information included in *VarRLF-Report*, if any;

2> resume MCG transmission, if suspended.

1> stop timer T312 for the corresponding SpCell, if running;

1> if *sl-PathSwitchConfig* is included:

2> apply the value of the *newUE-Identity* as the C-RNTI;

2> if *sl-IndirectPathMaintain* is not included in *reconfigurationWithSync*:

3> if the UE is L2 U2N remote UE at source side:

4> indicate to upper layer to trigger PC5 unicast link release with the source L2 U2N Relay UE;

3> consider the target L2 U2N Relay UE to be the one indicated by the *targetRelayUE-Identity* in the *sl-PathSwitchConfig*;

3> start timer T420 for the corresponding target L2 U2N Relay UE with the timer value set to *t420*, as included in the *sl-PathSwitchConfig*;

3> indicate to upper layer (to trigger the PC5 unicast link establishment) with the target L2 U2N Relay UE indicated by the *targetRelayUE-Identity*;

3> apply the default configuration of SL-RLC1 as defined in 9.2.4 for SRB1;

2> else:

3> consider the connected L2 U2N Relay UE on the indirect path as the target L2 U2N relay UE, and maintain the PC5 connection with the L2 U2N Relay UE;

1> else (*sl-PathSwitchConfig* is not included):

2> if this procedure is executed for the MCG or if this procedure is executed for an SCG not indicated as deactivated in the E-UTRA or NR RRC message in which the *RRCReconfiguration* message is embedded:

3> start timer T304 for the corresponding SpCell with the timer value set to *t304*, as included in the *reconfigurationWithSync*;

2> if the *frequencyInfoDL* is included:

3> consider the target SpCell to be one on the SSB frequency indicated by the *frequencyInfoDL* with a physical cell identity indicated by the *physCellId*;

2> else:

3> consider the target SpCell to be one on the SSB frequency of the source SpCell with a physical cell identity indicated by the *physCellId*;

2> if this procedure is performed due to an LTM cell switch execution:

3> start synchronising to the DL of the indicated LTM candidate cell, if no DL synchronization for the indicated LTM candidate cell has been already acquired;

2> else:

3> start synchronising to the DL of the target SpCell;

2> apply the specified BCCH configuration defined in 9.1.1.1 for the target SpCell;

2> acquire the *MIB* of the target SpCell, which is scheduled as specified in TS 38.213 [13];

2> if *NTN-Config* is configured for the target cell:

3> start timer T430 with the timer value set to *ntn-UlSyncValidityDuration* from the subframe indicated by *epochTime*, according to the target cell *NTN-Config*;

NOTE 1: The UE should perform the reconfiguration with sync as soon as possible following the reception of the RRC message triggering the reconfiguration with sync, which could be before confirming successful reception (HARQ and ARQ) of this message.

NOTE 2: The UE may omit reading the *MIB* if the UE already has the required timing information, or the timing information is not needed for random access, or if not needed for RACH-less initial UL transmission.

NOTE 2a: A UE with DAPS bearer does not monitor for system information updates in the source PCell.

2> If any DAPS bearer is configured:

3> create a MAC entity for the target cell group with the same configuration as the MAC entity for the source cell group;

3> for each DAPS bearer:

4> establish an RLC entity or entities for the target cell group, with the same configurations as for the source cell group;

4> establish the logical channel for the target cell group, with the same configurations as for the source cell group;

NOTE 2b: In order to understand if a DAPS bearer is configured, the UE needs to check the presence of the field *daps-Config* within the *RadioBearerConfig* IE received in *radioBearerConfig* or *radioBearerConfig2*.

3> for each SRB:

4> establish an RLC entity for the target cell group, with the same configurations as for the source cell group;

4> establish the logical channel for the target cell group, with the same configurations as for the source cell group;

3> suspend SRBs for the source cell group;

NOTE 3: Void

3> apply the value of the *newUE-Identity* as the C-RNTI in the target cell group;

3> configure lower layers for the target SpCell in accordance with the received s*pCellConfigCommon*;

3> configure lower layers for the target SpCell in accordance with any additional fields, not covered in the previous, if included in the received *reconfigurationWithSync.*

2> else:

3> reset the MAC entity of this cell group;

3> consider the SCell(s) of this cell group, if configured, that are not included in the *SCellToAddModList* in the *RRCReconfiguration* message, to be in deactivated state;

3> apply the value of the *newUE-Identity* as the C-RNTI for this cell group;

3> configure lower layers in accordance with the received s*pCellConfigCommon*;

3> if *rach-LessHO* is included:

4> configure lower layers in accordance with *rach-LessHO* for the target SpCell;

3> configure lower layers in accordance with any additional fields, not covered in the previous, if included in the received *reconfigurationWithSync.*

2> if the UE is acting as L2 U2N Remote UE at the source side:

3> if the *sl-IndirectPathMaintain* is not included in *reconfigurationWithSync*:

4> indicate upper layer to trigger PC5 unicast link release.

Upon L2 U2N Relay UE receiving *reconfigurationWithSync*, it either indicates to upper layers (to trigger PC5 unicast link release) or sends *NotificationMessageSidelink* message to the connected L2 U2N Remote UE(s) in accordance with 5.8.9.10.

NOTE 4: The MP direct path release is realized by direct-to-indirect path switch procedure (i.e. *sl-PathSwitchConfig* and *sl-indirectPathMaintain* included in *RRCReconfiguration* message), where MP is configured in source side.

Next Change

#####  5.3.5.15.1 General

The network configures the L2 U2N or U2U Relay UE with relay operation related configurations. For each connected L2 U2N or U2U Remote UE indicated in *sl-L2IdentityRemote*, the network provides the configuration parameters used for relaying.

The L2 U2N Relay UE shall:

1> if *sl-L2RelayUE-Config* is set to *setup*:

2> if the *sl-L2RelayUE-Config* contains the *sl-RemoteUE-ToReleaseList*:

3> perform the L2 U2N Remote UE release as specified in 5.3.5.15.2;

2> if the *sl-L2RelayUE-Config* contains the *sl-RemoteUE-ToAddModList*:

3> perform the L2 U2N Remote UE addition/modification as specified in 5.3.5.15.3;

1> else if *sl-L2RelayUE-Config* is set to *release*:

2> release the L2 U2N relay operation related configurations.

The L2 U2U Relay UE shall:

1> if *sl-L2RelayUE-Config* is set to *setup*:

2> if the *sl-L2RelayUE-Config* contains the *sl-U2U-RemoteUE-ToReleaseList*:

3> perform the L2 U2U Remote UE release as specified in 5.3.5.15.2;

2> if the *sl-L2RelayUE-Config* contains the *sl-U2U-RemoteUE-ToAddModList*:

3> perform the L2 U2U Remote UE addition/modification as specified in 5.3.5.15.3;

1> else if *sl-L2RelayUE-Config* is set to *release*:

2> release the L2 U2U relay operation related configurations.

Next Change

###### 5.3.5.17.2.2 SL indirect path specific configuration

The L2 U2N Remote UE shall:

1> if *sl-IndirectPathAddChange* is set to *setup*:

2> if the *sl-IndirectPathMaintain* is included in *reconfigurationWithSync*:

3> consider the source L2 U2N Relay UE to be the L2 U2N Relay UE on indirect path in MP operation;

2> else:

3> consider the UE indicated by the *sl-IndirectPathRelayUE-Identity* to be the (target) L2 U2N Relay UE and indicate to upper layer to trigger the PC5 unicast link establishment with the L2 U2N Relay UE;

3> start timer T421 for the corresponding L2 U2N Relay UE with the timer value set to *T421*;

3> if *reconfigurationWithSync* is not included in the same *RRCReconfiguration* message:

4> indicate to upper layer (to trigger the PC5 unicast link release) with the source L2 U2N Relay UE in case of SL indirect path change (i.e. a new L2 U2N Relay UE is indicated via *sl-IndirectPathRelayUE-Identity*);

1> else if *sl-IndirectPathAddChange* is set to *release*:

2> consider the SL indirect path is released and release the corresponding configurations;

2> indicate to upper layer (to trigger the PC5 unicast link release) with the L2 U2N Relay UE.

NOTE: The MP direct path addition is realized by indirect-to-direct path switch procedure (i.e. *ReconfigurationWithSync* included in *RRCReconfiguration* message), where *sl-IndirectPathAddChange* is set to *setup* in *RRCReconfiguration* message.

Next Change

###### 5.3.5.17.3.3 N3C relay UE configuration

The N3C relay UE shall:

1> if *n3c-IndirectPathConfigRelay* is set to *setup*:

2> if *n3c-MappingToReleaseList* is included:

3> perform N3C bearer mapping release as specified in 5.3.5.17.3.4.1;

2> if *n3c-MappingToAddModList* is included:

3> perform N3C bearer mapping addition/modification as specified in 5.3.5.17.3.4.2;

1> else if *n3c-IndirectPathConfigRelay* is set to *release*:

2> consider the indirect path with the remote UE is released and release the corresponding configuration.

Next Change

#### 5.3.13.1a Conditions for resuming RRC Connection for NR sidelink communication/discovery/V2X sidelink communication

For NR sidelink communication/discovery an RRC connection is resumed only in the following cases:

1> if configured by upper layers to transmit NR sidelink communication and related data is available for transmission:

2> if the frequency on which the UE is configured to transmit NR sidelink communication is included in *sl-FreqInfoList*/*sl-FreqInfoListSizeExt* within *SIB12* provided by the cell on which the UE camps; and if the valid version of *SIB12* does not include *sl-TxPoolSelectedNormal* for the concerned frequency;

1> if configured by upper layers to transmit NR sidelink discovery and related data is available for transmission:

2> if the UE is configured by upper layers to transmit NR sidelink L2 U2N relay discovery messages and *sl-L2U2N-Relay* is included in *SIB12*; or

2> if the UE is configured by upper layers to transmit NR sidelink L3 U2N relay discovery messages and *sl-L3U2N-RelayDiscovery* is included in *SIB12*; or

2> if the UE is configured by upper layers to transmit NR sidelink non-relay discovery messages and *sl-NonRelayDiscovery* is included in *SIB12*:

3> if the frequency on which the UE is configured to transmit NR sidelink discovery is included in *sl-FreqInfoList* within *SIB12* provided by the cell on which the UE camps; and if the valid version of *SIB12* does not include *sl-DiscTxPoolSelected* or *sl-TxPoolSelectedNormal* for the concerned frequency;

For L2 U2N Relay UE in RRC\_INACTIVE, an RRC connection establishment is resumed in the following cases:

1> if any message is received from the L2 U2N Remote UE via SL-RLC0 as specified in 9.1.1.4 or SL-RLC1 as specified in 9.2.4; or

1> if *RemoteUEInformationSidelink* containing the *connectionForMP* is received from a L2 U2N Remote UE as specified in 5.8.9.8.3;

For V2X sidelink communication an RRC connection resume is initiated only when the conditions specified for V2X sidelink communication in clause 5.3.3.1a of TS 36.331 [10] are met.

NOTE: Upper layers initiate an RRC connection resume (except if the RRC connection resume is initiated at the L2 U2N Relay UE upon reception of a message from a L2 U2N Remote UE via SL-RLC0 or SL-RLC1, or upon reception of *RemoteUEInformationSidelink* message containing the *connectionForMP*). The interaction with NAS is left to UE implementation.

Next Change

#### 5.8.3.2 Initiation

A UE capable of NR sidelink communication or NR sidelink discovery or NR sidelink U2N relay operation or NR sidelink U2U relay operation or NR sidelink positioning that is in RRC\_CONNECTED may initiate the procedure to indicate it is (interested in) receiving or transmitting NR sidelink communication or NR sidelink discovery or NR sidelink U2N relay operation or NR sidelink U2U relay operation or SL-PRS transmission/reception in several cases including upon successful connection establishment or resuming, upon change of interest, upon changing QoS profile(s), upon receiving *UECapabilityInformationSidelink* from the associated peer UE, upon RLC mode information updated from the associated peer UE or upon change to a PCell providing *SIB12* including *sl-ConfigCommonNR,* or upon change to a PCell providing *SIB23* including *sl-PosConfigCommonNR*. A UE capable of NR sidelink communication may initiate the procedure to request assignment of dedicated sidelink DRB configuration and transmission resources for NR sidelink communication transmission. A UE capable of NR sidelink communication may initiate the procedure to report to the network that a sidelink radio link failure, sidelink RRC reconfiguration failure or sidelink carrier failure has been declared. A UE capable of NR sidelink discovery may initiate the procedure to request assignment of dedicated resources for NR sidelink discovery transmission or NR sidelink discovery reception. A UE capable of U2N relay operation may initiate the procedure to report/update parameters for acting as U2N Relay UE or U2N Remote UE (including L2 U2N Remote UE's source L2 ID). A UE capable of U2U relay operation may initiate the procedure to report/update parameters for acting as U2U Relay UE or U2U Remote UE. A UE capable of NR sidelink positioning may initiate the procedure to request it is interested or no longer interested in either transmitting SL-PRS or receiving SL-PRS.

A UE capable of NR sidelink operation that is in RRC\_CONNECTED may initiate the procedure to report the sidelink DRX configuration received from the associated peer UE for NR sidelink unicast reception, upon accepting the sidelink DRX configuration from the associated peer UE. A UE capable of NR sidelink communication that is configured with *sl-ScheduledConfig* and is performing sidelink unicast transmission may initiate the procedure to report the sidelink DRX assistance information or the sidelink DRX configuration reject information received from the associated peer UE, upon receiving either of them from the associated peer UE. A UE capable of NR sidelink communication that is configured with *sl-ScheduledConfig* and is performing sidelink groupcast transmission may initiate the procedure to report the sidelink DRX on/off indication for the associated Destination Layer-2 ID. A UE capable of NR sidelink communication that is in RRC\_CONNECTED may initiate the procedure to report the frequency(ies) and Tx Profile associated with each QoS flow for NR sidelink groupcast or broadcast transmission. A UE capable of NR sidelink communication that is in RRC\_CONNECTED may initiate the procedure to report the frequency(ies) associated with each QoS flow for NR sidelink unicast transmission.

A UE capable of NR sidelink operation that is in RRC\_CONNECTED may initiate the procedure to report the Destination Layer-2 ID and QoS profile(s) associated with its interested service(s) that sidelink DRX is applied, for NR sidelink groupcast or broadcast reception.

Upon initiating this procedure, the UE shall:

1> if *SIB12* including *sl-ConfigCommonNR* is provided by the PCell:

2> ensure having a valid version of *SIB12* for the PCell;

2> if configured by upper layers to receive NR sidelink communication on the frequency included in *sl-FreqInfoList*/*sl-FreqInfoListSizeExt* in *SIB12* of the PCell:

3> if the UE did not transmit a *SidelinkUEInformationNR* message since last entering RRC\_CONNECTED state; or

3> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell not providing *SIB12* including *sl-ConfigCommonNR*; or

3> if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-RxInterestedFreqList*; or if the frequency configured by upper layers to receive NR sidelink communication on has changed since the last transmission of the *SidelinkUEInformationNR* message:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate the NR sidelink communication reception frequency of interest in accordance with 5.8.3.3;

2> else:

3> if the last transmission of the *SidelinkUEInformationNR* message included *sl-RxInterestedFreqList*:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate it is no longer interested in NR sidelink communication reception in accordance with 5.8.3.3;

2> if configured by upper layers to transmit non-relay NR sidelink communication on the frequency included in *sl-FreqInfoList*/*sl-FreqInfoListSizeExt* in *SIB12* of the PCell; or

2> if configured by upper layer to transmit NR sidelink L3 U2U relay communication on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-L3-U2U-RelayDiscovery*:

3> if the UE did not transmit a *SidelinkUEInformationNR* message since last entering RRC\_CONNECTED state; or

3> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell not providing *SIB12* including *sl-ConfigCommonNR*; or

3> if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-TxResourceReqList*; or if the information carried by the *sl-TxResourceReqList* has changed since the last transmission of the *SidelinkUEInformationNR* message:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate the NR sidelink communication transmission resources required by the UE in accordance with 5.8.3.3;

2> else:

3> if the last transmission of the *SidelinkUEInformationNR* message included *sl-TxResourceReqList*:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate it no longer requires NR sidelink communication transmission resources in accordance with 5.8.3.3;

2> if configured by upper layer to receive NR sidelink non-relay discovery messages on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-NonRelayDiscovery*:

3> if the UE did not transmit a *SidelinkUEInformationNR* message since last entering RRC\_CONNECTED state; or

3> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell not providing *SIB12* including *sl-ConfigCommonNR* or connected to a PCell providing *SIB12* but not including *sl-NonRelayDiscovery*; or

3> if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-RxInterestedFreqListDisc*; or if the frequency configured by upper layers to receive NR sidelink non-relay discovery messages on has changed since the last transmission of the *SidelinkUEInformationNR* message:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate the NR sidelink non-relay discovery reception frequency of interest in accordance with 5.8.3.3;

2> else:

3> if the last transmission of the *SidelinkUEInformationNR* message included *sl-RxInterestedFreqListDisc*:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate it is no longer interested in NR sidelink non-relay discovery messages reception in accordance with 5.8.3.3;

2> if configured by upper layer to receive NR sidelink L2 U2N relay discovery messages on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-L2U2N-Relay*; or if configured by upper layer to receive NR sidelink L3 U2N relay discovery messages on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-L3U2N-RelayDiscovery*; or

2> if configured by upper layer to receive NR sidelink L2 U2U relay discovery messages on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-L2-U2U-Relay*; or

2> if configured by upper layer to receive NR sidelink L3 U2U relay discovery messages on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-L3-U2U-RelayDiscovery*:

3> if the UE did not transmit a *SidelinkUEInformationNR* message since last entering RRC\_CONNECTED state; or

3> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell not providing *SIB12* including *sl-ConfigCommonNR*; or connected to a PCell providing *SIB12* but not including *sl-L2U2N-Relay* in case of L2 U2N relay operation; or connected to a PCell providing *SIB12* but not including *sl-L3U2N-RelayDiscovery* in case of L3 U2N relay operation; or

3> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell providing *SIB12* but not including *sl-L2-U2U-Relay* in case of L2 U2U relay operation; or

3> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell providing *SIB12* but not including *sl-L3-U2U-RelayDiscovery* in case of L3 U2U relay operation; or

3> if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-RxInterestedFreqListDisc*; or if the frequency configured by upper layers to receive NR sidelink relay discovery messages on has changed since the last transmission of the *SidelinkUEInformationNR* message:

4> if the UE is capable of U2N Relay UE, and if *SIB12* includes *sl-RelayUE-ConfigCommon*; or

4> if the UE is selecting a U2N Relay UE / has a selected U2N Relay UE, and if *SIB12* includes *sl-RemoteUE-ConfigCommon*; or

4> if the UE is capable of U2U Relay UE, and if *SIB12* includes *sl-RelayUE-ConfigCommonU2U*; or

4> if the UE is selecting a U2U Relay UE / has a selected U2U Relay UE, and if *SIB12* includes *sl-RemoteUE-ConfigCommonU2U*:

5> initiate transmission of the *SidelinkUEInformationNR* message to indicate the NR sidelink relay discovery reception frequency of interest in accordance with 5.8.3.3;

2> else:

3> if the last transmission of the *SidelinkUEInformationNR* message included *sl-RxInterestedFreqListDisc*:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate it is no longer interested in NR sidelink relay discovery messages reception in accordance with 5.8.3.3;

2> if configured by upper layer to transmit NR sidelink non-relay discovery messages on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-NonRelayDiscovery*:

3> if the UE did not transmit a *SidelinkUEInformationNR* message since last entering RRC\_CONNECTED state; or

3> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell not providing *SIB12* including *sl-ConfigCommonNR* or connected to a PCell providing *SIB12* but not including *sl-NonRelayDiscovery*; or

3> if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-TxResourceReqListDisc*; or if the information carried by the *sl-TxResourceReqListDisc* has changed since the last transmission of the *SidelinkUEInformationNR* message:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate the NR sidelink non-relay discovery messages resources required by the UE in accordance with 5.8.3.3;

2> else:

3> if the last transmission of the *SidelinkUEInformationNR* message included *sl-TxResourceReqListDisc*:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate it no longer requires NR sidelink non-relay discovery messages resources in accordance with 5.8.3.3;

2> if configured by upper layer to transmit NR sidelink L2 U2N relay discovery messages on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-L2U2N-Relay*; or if configured by upper layer to transmit NR sidelink L3 U2N relay discovery messages on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-L3U2N-RelayDiscovery*; or

2> if configured by upper layer to transmit NR sidelink L2 U2U relay discovery messages on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-L2-U2U-Relay*; or

2> if configured by upper layer to transmit NR sidelink L3 U2U relay discovery messages on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-L3-U2U-RelayDiscovery*:

3> if the UE did not transmit a *SidelinkUEInformationNR* message since last entering RRC\_CONNECTED state; or

3> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell not providing *SIB12* including *sl-ConfigCommonNR*; or connected to a PCell providing *SIB12* but not including *sl-L2U2N-Relay* in case of L2 U2N relay operation; or connected to a PCell providing *SIB12* but not including *sl-L3U2N-RelayDiscovery* in case of L3 U2N relay operation; or

3> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell providing *SIB12* but not including *sl-L2-U2U-Relay* in case of L2 U2U relay operation;

3> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell providing *SIB12* but not including *sl-L3-U2U-RelayDiscovery* in case of L3 U2U relay operation; or

3> if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-TxResourceReqListDisc*; or if the information carried by the *sl-TxResourceReqListDisc* has changed since the last transmission of the *SidelinkUEInformationNR* message:

4> if the UE is capable of U2N Relay UE, and if *SIB12* includes *sl-RelayUE-ConfigCommon*, and if the U2N Relay UE threshold conditions as specified in 5.8.14.2 are met; or

4> if the UE is selecting a U2N Relay UE / has a selected U2N Relay UE/ configured with measurement object associated to L2 U2N Relay UEs, and if *SIB12* includes *sl-RemoteUE-ConfigCommon*, and if the U2N Remote UE threshold conditions as specified in 5.8.15.2 are met; or

4> if the UE is capable of U2U Relay UE, and if *SIB12* includes *sl-RelayUE-ConfigCommonU2U*, and if the U2U Relay UE threshold conditions as specified in 5.8.16.2 are met; or

4> if the UE is selecting a U2U Relay UE / has a selected U2U Relay UE, and if *SIB12* includes *sl-RemoteUE-ConfigCommonU2U*, and if the U2U Remote UE threshold conditions as specified in 5.8.17.2 are met:

5> initiate transmission of the *SidelinkUEInformationNR* message to indicate the NR sidelink relay discovery messages resources required by the UE in accordance with 5.8.3.3;

2> else:

3> if the last transmission of the *SidelinkUEInformationNR* message included *sl-TxResourceReqListDisc*:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate it no longer requires NR sidelink relay discovery messages resources in accordance with 5.8.3.3;

2> if configured by upper layer to transmit NR sidelink L2 U2N relay communication on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-L2U2N-Relay*; or if configured by upper layer to transmit NR sidelink L3 U2N relay communication on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-L3U2N-RelayDiscovery*; or

2> if configured by upper layer to transmit NR sidelink L2 U2U relay communication on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-L2-U2U-Relay*:

3> if the UE did not transmit a *SidelinkUEInformationNR* message since last entering RRC\_CONNECTED state; or

3> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell not providing *SIB12* including *sl-ConfigCommonNR*; or connected to a PCell providing *SIB12* but not including *sl-L2U2N-Relay* in case of L2 U2N relay operation; or connected to a PCell providing *SIB12* but not including *sl-L3U2N-RelayDiscovery* in case of L3 U2N relay operation; or

3> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell providing *SIB12* but not including *sl-L2-U2U-Relay* in case of L2 U2U relay operation; or

3> if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-TxResourceReqL2U2N-Relay*; or if the information carried by the *sl-TxResourceReqL2U2N-Relay* has changed since the last transmission of the *SidelinkUEInformationNR* message; or if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-TxResourceReqL3U2N-Relay*; or if the information carried by the *sl-TxResourceReqL3U2N-Relay* has changed since the last transmission of the *SidelinkUEInformationNR* message; or

3> if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-TxResourceReqL2-U2U*; or if the information carried by the *sl-TxResourceReqL2-U2U* has changed since the last transmission of the *SidelinkUEInformationNR* message; or

3> if configured by upper layers not to transmit either NR sidelink L2 U2N relay communication or NR sidelink L3 U2N relay communication, and if the last transmission of the *SidelinkUEInformationNR* message includes both *sl-TxResourceReqL2U2N-Relay* and *sl-TxResourceReqL3U2N-Relay*:

4> if the UE is capable of U2N Relay UE; or

4> if the UE is selecting a U2N Relay UE / has a selected U2N Relay UE; or

4> if the UE is capable of L2 U2U Relay UE; or

4> if the UE is selecting a L2 U2U Relay UE / has a selected L2 U2U Relay UE:

5> initiate transmission of the *SidelinkUEInformationNR* message to indicate the NR sidelink relay communication transmission resources required by the UE in accordance with 5.8.3.3;

2> else:

3> if the last transmission of the *SidelinkUEInformationNR* message included *sl-TxResourceReqL2U2N-Relay* or *sl-TxResourceReqL3U2N-Relay* or *sl-TxResourceReqL2-U2U*:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate it no longer requires NR sidelink relay communication transmission resources in accordance with 5.8.3.3;

2> if configured by upper layers to perform NR sidelink reception on the frequency included in *sl-FreqInfoList*/*sl-FreqInfoListSizeExt* in *SIB12* of the PCell and if *sl-DRX-ConfigCommonGC-BC* is included in *SIB12-IEs*:

3> if the UE received a sidelink DRX configuration in the *RRCReconfigurationSidelink* message for NR sidelink unicast reception from the associated peer UE and the UE accepted the sidelink DRX configuration:

4> if the UE did not transmit a *SidelinkUEInformationNR* message since last entering RRC\_CONNECTED state; or

4> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell not providing *SIB12* including *sl-DRX-ConfigCommonGC-BC*; or

4> if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-RxDRX-ReportList*; or if the information carried by *sl-RxDRX-ReportList* has changed since the last transmission of the *SidelinkUEInformationNR* message:

5> initiate transmission of the *SidelinkUEInformationNR* message to report the sidelink DRX configuration in accordance with 5.8.3.3;

3> else:

4> if the last transmission of the *SidelinkUEInformationNR* message included *sl-RxDRX-ReportList*:

5> initiate transmission of the *SidelinkUEInformationNR* message to indicate the sidelink DRX configuration is no longer used in accordance with 5.8.3.3;

3> if the UE is performing NR sidelink groupcast or broadcast reception and is interested in a service that sidelink DRX is applied:

4> if the UE did not transmit a *SidelinkUEInformationNR* message since last entering RRC\_CONNECTED state; or

4> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell not providing *SIB12* including *sl-DRX-ConfigCommonGC-BC*; or

4> if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-RxInterestedGC-BC-DestList*; or if the information carried by *sl-RxInterestedGC-BC-DestList* has changed since the last transmission of the *SidelinkUEInformationNR* message:

5> initiate transmission of the *SidelinkUEInformationNR* message to report the Destination Layer-2 ID and QoS profile(s) associated with the service(s) in accordance with 5.8.3.3;

3> else:

4> if the last transmission of the *SidelinkUEInformationNR* message included *sl-RxInterestedGC-BC-DestList*:

5> initiate transmission of the *SidelinkUEInformationNR* message to indicate it is no longer interested in the service that sidelink DRX is applied in accordance with 5.8.3.3;

2> if configured by upper layers to perform NR sidelink transmission on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell and *if sl-DRX-ConfigCommonGC-BC* is included in *SIB12-IEs* andif the UE is configured with *sl-ScheduledConfig*:

3> if the UE received a sidelink DRX assistance information or a sidelink DRX configuration reject information from the associated peer UE for NR sidelink unicast transmission:

4> if the UE did not transmit a *SidelinkUEInformationNR* message since last entering RRC\_CONNECTED state; or

4> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell not providing *SIB12* including *sl-DRX-ConfigCommonGC-BC*; or

4> if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-DRX-InfoFromRxList*, or *sl-FailureList*; or if the information carried by *sl-DRX-InfoFromRxList,* or *sl-FailureList* has changed since the last transmission of the *SidelinkUEInformationNR* message:

5> initiate transmission of the *SidelinkUEInformationNR* message to report the sidelink DRX assistance information or the sidelink DRX configuration reject information in accordance with 5.8.3.3;

NOTE: After including the SL-DRX reject information in *sl-FailureList* in the last transmission ofthe *SidelinkUEInformationNR* message, it is up to UE implementation to consider another sidelink DRX rejection of a new SL DRX configuration from the same associated peer UE as "change" of *sl-FailureList.*

3> if the UE is performing NR sidelink groupcast transmission:

4> if the UE did not transmit a *SidelinkUEInformationNR* message since last entering RRC\_CONNECTED state; or

4> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell not providing *SIB12* including *sl-DRX-ConfigCommonGC-BC*; or

4> if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-DRX-Indication*; or if the information carried by *sl-DRX-Indication* has changed since the last transmission of the *SidelinkUEInformationNR* message:

5> initiate transmission of the *SidelinkUEInformationNR* message to report sidelink DRX on/off indication for the corresponding destination in accordance with 5.8.3.3;

1> if *SIB23* including *sl-PosConfigCommonNR* is provided by the PCell:

2> ensure having a valid version of *SIB23* for the PCell;

2> if configured to perform SL-PRS measurement on the frequency included in *sl-FreqInfoList* in *SIB23* of the PCell:

3> if the UE did not transmit a *SidelinkUEInformationNR* message since last entering RRC\_CONNECTED state; or

3> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell not providing *SIB23* including *sl-PosConfigCommonNR*; or

3> if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-PosRxInterestedFreqList*; or if the frequency configured to receive SL-PRS has changed since the last transmission of the *SidelinkUEInformationNR* message:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate the frequency of interest for SL-PRS reception in accordance with 5.8.3.3;

2> else:

3> if the last transmission of the *SidelinkUEInformationNR* message included *sl-PosRxInterestedFreqList*:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate it is no longer interested in SL-PRS reception in accordance with 5.8.3.3;

2> if configured to transmit SL-PRS on the frequency included in *sl-FreqInfoList* in *SIB23* of the PCell:

3> if the UE did not transmit a *SidelinkUEInformationNR* message since last entering RRC\_CONNECTED state; or

3> if since the last time the UE transmitted a *SidelinkUEInformationNR* message the UE connected to a PCell not providing *SIB23* including *sl-PosConfigCommonNR*; or

3> if the last transmission of the *SidelinkUEInformationNR* message did not include *sl-PosTxResourceReqList*; or if the information carried by the *sl-PosTxResourceReqList* has changed since the last transmission of the *SidelinkUEInformationNR* message:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate the NR sidelink positioning transmission resources required by the UE in accordance with 5.8.3.3;

2> else:

3> if the last transmission of the *SidelinkUEInformationNR* message included *sl-PosTxResourceReqList*:

4> initiate transmission of the *SidelinkUEInformationNR* message to indicate it no longer requires NR sidelink positioning transmission resources in accordance with 5.8.3.3;

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### 5.8.8 Sidelink communication transmission

A UE capable of NR sidelink communication that is configured by upper layers to transmit NR sidelink communication and has related data to be transmitted shall:

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

2> if the frequency used for NR sidelink communication is included in *sl-FreqInfoToAddModList*/*sl-FreqInfoToAddModListExt* 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 acting as U2U Relay UE is performing U2U Relay Communication with integrated Discovery as specified in TS 23.304[65] and *sl-DiscConfig* is included in *RRCReconfiguration*, and if the NR sidelink U2U Relay UE threshold conditions for integrated Discovery as specified in 5.8.16.2 are met based on *sl-RelayUE-ConfigU2U*; or

4> if the UE capable of U2U Remote UE is performing U2U Relay Communication with integrated Discovery as specified in TS 23.304[65] and *sl-DiscConfig* is included in *RRCReconfiguration*, and if the NR sidelink U2U Remote UE threshold conditions for integrated Discovery as specified in 5.8.17.2 are met based on *sl-RemoteUE-ConfigU2U*; or

4> if the UE is performing NR sidelink communication other than U2U Relay Communication with integrated Discovery:

NOTE 0: For U2U Relay UE, it can be up to UE implementation on cross-layer interaction for the AS layer condition check for Direct Communication Request message with integrated discovery forwarding.

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

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

6> 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

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

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

6> else:

7> configure lower layers to perform the sidelink resource allocation mode 1 for NR sidelink communication;

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

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

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

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

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

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

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

7> configure lower layers to perform the sidelink resource allocation mode 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;

3> else:

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

5> if the UE acting as U2U Relay UE is performing U2U Relay communication with integrated Discovery as specified in TS 23.304[65], and if the NR sidelink U2U Relay UE threshold conditions for integrated Discovery as specified in 5.8.16.2 are met based on *sl-RelayUE-ConfigCommonU2U* in *SIB12*; or

5> if the UE capable of U2U Remote UE is performing U2U Relay Communication with integrated Discovery as specified in TS 23.304[65], and if the NR sidelink U2U Remote UE threshold conditions for integrated Discovery as specified in 5.8.17.2 are met based on *sl-RemoteUE-ConfigCommonU2U* in *SIB12*; or

5> if the UE is performing NR sidelink communication other than U2U Relay Communication with integrated Discovery:

6> 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:

7> configure lower layers to perform the sidelink resource allocation mode 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];

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

7> 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

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

8> configure lower layers to perform the sidelink resource allocation mode 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> if the UE acting as U2U Relay UE is performing U2U Relay communication with integrated Discovery as specified in TS 23.304[65], and if the NR sidelink U2U Relay UE threshold conditions for integrated Discovery as specified in 5.8.16.2 are met based on *sl-RelayUE-PreconfigU2U* in *SidelinkPreconfigNR*; or

3> if the UE capable of U2U Remote UE is performing U2U Relay Communication with integrated Discovery as specified in TS 23.304[65], and if the NR sidelink U2U Remote UE threshold conditions for integrated Discovery as specified in 5.8.17.2 are met based on *sl-RemoteUE-PreconfigU2U* in *SidelinkPreconfigNR*; or

3> if the UE is performing NR sidelink communication other than U2U Relay Communication with integrated Discovery:

4> configure lower layers to perform the sidelink resource allocation mode 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* in *SidelinkPreconfigNR* for the concerned frequency.

NOTE 1: The UE continues to use resources configured in *rrc-ConfiguredSidelinkGrant* (while T310 is running) until it is released (i.e. until T310 has expired). The UE does not use sidelink configured grant type 2 resources while T310 is running.

NOTE 2: In case of RRC reconfiguration with sync, the UE uses resources configured in *rrc-ConfiguredSidelinkGrant* (while T304 on the MCG is running) if provided by the target cell.

NOTE 3: It is up to UE implementation to determine, in accordance with TS 38.321[3], which resource pool to use if multiple resource pools are configured, and which resource allocation scheme is used in the AS based on UE capability (for a UE in RRC\_IDLE/RRC\_INACTIVE) and the allowed resource schemes *sl-AllowedResourceSelectionConfig* in the resource pool configuration.

NOTE 4: In case that the network does not provide resource pools in *SIB12*, a UE which is out of coverage, will be unable to obtain sidelink resources to send the first UL RRC message.

If configured to perform sidelink resource allocation mode 2, the UE capable of NR sidelink communication that is configured by upper layers to transmit NR sidelink communication shall perform resource selection operation according to *sl-AllowedResourceSelectionConfig* on all pools of resources which may be used for transmission of the sidelink control information and the corresponding data. The pools of resources are indicated by *SidelinkPreconfigNR*, *sl-TxPoolSelectedNormal* in *sl-ConfigDedicatedNR*, or *sl-TxPoolSelectedNormal* in *SIB12* for the concerned frequency, as configured above.

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##### 5.8.9.1.2 Actions related to transmission of *RRCReconfigurationSidelink* message

The UE shall set the contents of *RRCReconfigurationSidelink* message as follows:

1> for each sidelink DRB that is to be released, according to clause 5.8.9.1a.1.1, due to configuration by *sl-ConfigDedicatedNR,* *SIB12*, *SidelinkPreconfigNR*, by upper layers, or due to end-to-end sidelink DRB release:

2> set the entryincluded in the *slrb-ConfigToReleaseList* corresponding to the sidelink DRB;

1> for each sidelink DRB that is to be established or modified, according to clause 5.8.9.1a.2.1, due to receiving *sl-ConfigDedicatedNR,* *SIB12* or *SidelinkPreconfigNR*:

2> if the sidelink DRB is a per-hop sidelink DRB (i.e. the UE is performing NR sidelink communication with a peer UE without via a L2 U2U Relay UE):

3> if a sidelink DRB is to be established:

4> assign a new logical channel identity for the logical channel to be associated with the sidelink DRB and set *sl-MAC-LogicalChannelConfigPC5* in the *SLRB-Config* to include the new logical channel identity;

3> set the *SLRB-Config* included in the *slrb-ConfigToAddModList*, according to the received *sl-RadioBearerConfig* and *sl-RLC-BearerConfig* corresponding to the sidelink DRB;

2> else if the sidelink DRB is an end-to-end sidelink DRB (i.e. the UE is acting as a L2 U2U Remote UE, and configure peer L2 U2U Remote UE with end-to-end SDAP and PDCP):

3> set the *SLRB-Config* (excluding *sl-RLC-ConfigPC5* and *sl-MAC-LogicalChannelConfigPC5*) included in the *slrb-ConfigToAddModList*, according to the received *sl-RadioBearerConfig* corresponding to the sidelink DRB;

1> for each additional sidelink RLC bearer that is to be released, according to clause 5.8.9.1a.5.1, due to configuration by *sl-ConfigDedicatedNR*, *SIB12*, *SidelinkPreconfigNR* or by upper layers:

2> set the entry included in the *sl-RLC-BearerToReleaseList* corresponding to the additional sidelink RLC bearer;

1> for each additional sidelink RLC bearer that is to be established or modified, according to clause 5.8.9.1a.6.1, due to receiving *sl-ConfigDedicatedNR*, *SIB12* or *SidelinkPreconfigNR*:

2> if an additional sidelink RLC bearer is to be established:

3> assign a new logical channel identity for the logical channel to be associated with the additional sidelink RLC bearer and set *sl-MAC-LogicalChannelConfigPC5* in the *SL-RLC-BearerConfig* to include the new logical channel identity;

2> set the *SL-RLC-BearerConfig* included in the *sl-RLC-BearerToAddModList*, according to the received *sl-RadioBearerConfig* and *sl-RLC-BearerConfig* corresponding to the additional sidelink RLC bearer;

1> for each carrier that is to be released, according to clause 5.8.9.1b.1.1:

2> include the corresponding sidelink carrier in the *sl-CarrierToReleaseList*;

1> for each carrier that is to be added, according to clause 5.8.9.1b.2.1:

2> include the corresponding sidelink carrier in the *sl-CarrierToAddModList*;

1> set the *sl-MeasConfig* as follows:

2> If the frequency used for NR sidelink communication is included in *sl-FreqInfoToAddModList*/*sl-FreqInfoToAddModListExt* in *sl-ConfigDedicatedNR* within *RRCReconfiguration* message or included in *sl-ConfigCommonNR* within SIB12:

3> if UE is in RRC\_CONNECTED:

4> set the *sl-MeasConfig* according to stored NR sidelink measurement configuration information for this destination;

3> if UE is in RRC\_IDLE or RRC\_INACTIVE:

4> set the *sl-MeasConfig* according to stored NR sidelink measurement configuration received from *SIB12*;

2> else:

3> set the *sl-MeasConfig* according to the *sl-MeasPreConfig* in *SidelinkPreconfigNR*;

1> set the *sl-LatencyBoundIUC-Report;*

1> start timer T400 for the destination;

1> set the *sl-CSI-RS-Config*;

1> set the *sl-LatencyBoundCSI-Report*;

1> set the *sl-ResetConfig*;

NOTE 1: Whether/how to set the parameters included in *sl-LatencyBoundIUC-Report*, *sl-CSI-RS-Config*, *sl-LatencyBoundCSI-Report* and *sl-ResetConfig* is up to UE implementation.

1> set the *sl-DRX-ConfigUC-PC5* as follows:

2> If the frequency used for NR sidelink communication is included in *sl-FreqInfoToAddModList*/*sl-FreqInfoToAddModListExt* in *sl-ConfigDedicatedNR* within *RRCReconfiguration* message or included in *sl-ConfigCommonNR* within *SIB12*:

3> if UE is in RRC\_CONNECTED and if *sl-ScheduledConfig* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*:

4> set the *sl-DRX-ConfigUC-PC5* according to stored NR sidelink DRX configuration information for this destination;

NOTE 2: If UE is in RRC\_IDLE or in RRC\_INACTIVE or out of coverage, or in RRC\_CONNECTED and *sl-UE-SelectedConfig* is included in *sl-ConfigDedicatedNR* within *RRCReconfiguration*, it is up to UE implementation to set the *sl-DRX-ConfigUC-PC5*.

1> for each PC5 Relay RLC channel that is to be released due to configuration by *sl-ConfigDedicatedNR*:

2> set the *SL-RLC-ChannelID* corresponding to the PC5 Relay RLC channel in the *sl-RLC-ChannelToReleaseListPC5*;

1> for each PC5 Relay RLC channel that is to be established or modified due to receiving *sl-ConfigDedicatedNR*:

2> if a PC5 Relay RLC channel is to be established:

3> assign a new logical channel identity for the logical channel to be associated with the PC5 Relay RLC channel and set *sl-MAC-LogicalChannelConfigPC5* in the *SL-RLC-ChannelConfigPC5* to include the new logical channel identity;

2> set the *SL-RLC-ChannelConfigPC5* included in the *sl-RLC-ChannelToAddModListPC5* according to the received *SL-RLC-ChannelConfig* corresponding to the PC5 Relay RLC channel, including setting *sl-RLC-ChannelID-PC5* to the same value of *sl-RLC-ChannelID* received in *SL-RLC-ChannelConfig*;

1> if the UE is operating as a L2 U2N Relay UE:

2> if the destination UE is a L2 U2N Remote UE that requested the SFN-DFN offset in a previous *RemoteUEInformationSidelink* message:

3> if the SFN-DFN offset has changed since a previous transmission of the *RRCReconfigurationSidelink* message, or no previous transmission of the *RRCReconfigurationSidelink* message has occurred since the reception of the *RemoteUEInformationSidelink* message:

4> set the *sl-SFN-DFN-Offset* according to the relation between the SFN timeline of the PCell and the DFN timeline;

1> if the UE is acting as L2 U2U Relay UE, and if the procedure is initiated to configure local ID pair to a connected L2 U2U Remote UE:

2> if the local ID pair is to be assigned or modified for an end-to-end PC5 connection, and if the per-hop PC5-RRC connection with this L2 U2U Remote UE and the per-hop PC5-RRC connection with its peer L2 U2U Remote UE are successfully established:

3> include an entry in *sl-LocalID-PairToAddModList*, and set the fields as below:

4> set *sl-RemoteUE-L2Identity* to the source L2 ID of this L2 U2U Remote UE, and set *sl-RemoteUE-LocalIdentity* to include the new local UE ID assigned to this L2 U2U Remote UE, in the *SL-SRAP-ConfigPC5*;

4> set *sl-PeerRemoteUE-L2Identity* to the destination L2 ID of the peer L2 U2U Remote UE, and set *sl-PeerRemoteUE-LocalIdentity* to include the new local UE ID assigned to the peer L2 U2U Remote UE, in the *SL-SRAP-ConfigPC5*;

1> if the UE is acting as L2 U2U Remote UE (i.e. Tx UE) and is in RRC\_IDLE or in RRC\_INACTIVE or out of coverage, and if the procedure is initiated to add/modify the first hop PC5 Relay RLC channel of an end-to-end sidelink DRB to the connected L2 U2U Relay UE (i.e. Rx UE), based on configuration in *SIB12* or *SidelinkPreconfigNR*; or

1> if the UE is acting as L2 U2U Relay UE (i.e. Tx UE) and is in RRC\_IDLE or in RRC\_INACTIVE or out of coverage, and if the procedure is initiated to add/modify the second hop PC5 Relay RLC channel to the connected L2 U2U Remote UE (i.e. Rx UE) based on configuration in *SIB12* or *SidelinkPreconfigNR*:

2> if a PC5 Relay RLC channel is to be established:

3> assign a new RLC channel ID and set *sl-RLC-ChannelID-PC5* in the *SL-RLC-ChannelConfigPC5* to include the new RLC channel ID;

3> assign a new logical channel identity for the logical channel to be associated with the PC5 Relay RLC channel and set *sl-MAC-LogicalChannelConfigPC5* in the *SL-RLC-ChannelConfigPC5* to include the new logical channel identity;

2> if the UE is in RRC\_IDLE or in RRC\_INACTIVE:

3> set the *SL-RLC-ChannelConfigPC5* included in the *sl-RLC-ChannelToAddModListPC5* according to the *SL-RLC-BearerConfig* derived based on the per-hop QoS of the end-to-end SLRB according to *sl-RLC-BearerConfigList* in *SIB12*;

2> else if the UE is out of coverage:

3> set the *SL-RLC-ChannelConfigPC5* included in the *sl-RLC-ChannelToAddModListPC5* according to the *SL-RLC-BearerConfig* derived based on the per-hop QoS of the end-to-end SLRB according to *sl-RLC-BearerPreConfigList* in *SidelinkPreconfigNR*;

1> if the UE is acting as L2 U2U Remote UE (i.e. Tx UE) and is in RRC\_IDLE or in RRC\_INACTIVE or out of coverage, and the procedure is initiated to release the first hop PC5 Relay RLC channel of an end-to-end sidelink DRB to the connected L2 U2U Relay UE (i.e. Rx UE) according to clause 5.8.9.7.1; or

1> if the UE is acting as L2 U2U Relay UE (i.e. Tx UE) and is in RRC\_IDLE or in RRC\_INACTIVE or out of coverage, and the procedure is initiated to release the second hop PC5 Relay RLC channel of an end-to-end sidelink DRB to the connected L2 U2U Remote UE (i.e. Rx UE) according to clause 5.8.9.7.1:

2> set the *SL-RLC-ChannelID* corresponding to the PC5 Relay RLC channel in the *s**l-RLC-ChannelToReleaseListPC5*.

NOTE 3: Void.

The UE shall submit the *RRCReconfigurationSidelink* message to lower layers for transmission.

Next Change

##### 5.8.9.1.3 Reception of an *RRCReconfigurationSidelink* by the UE

The UE shall perform the following actions upon reception of the *RRCReconfigurationSidelink*:

1> if the *RRCReconfigurationSidelink* includes the *sl-ResetConfig*:

2> perform the sidelink reset configuration procedure as specified in 5.8.9.1.10;

1> if the *RRCReconfigurationSidelink* includes the *slrb-ConfigToReleaseList*:

2> for each entryvalue included in the *slrb-ConfigToReleaseList* that is part of the current UE sidelink configuration;

3> perform the sidelink DRB release procedure, according to clause 5.8.9.1a.1;

1> if the *RRCReconfigurationSidelink* includes the *slrb-ConfigToAddModList*:

2> for each *slrb-PC5-ConfigIndex* value included in the *slrb-ConfigToAddModList* that is not part of the current UE sidelink configuration:

3> if *sl-MappedQoS-FlowsToAddList* is included:

4> apply the *SL-PQFI* included in *sl-MappedQoS-FlowsToAddList*;

3> perform the sidelink DRB addition procedure, according to clause 5.8.9.1a.2;

2> for each *slrb-PC5-ConfigIndex* value included in the *slrb-ConfigToAddModList* that is part of the current UE sidelink configuration:

3> if *sl-MappedQoS-FlowsToAddList* is included:

4> add the *SL-PQFI* included in *sl-MappedQoS-FlowsToAddList* to the corresponding sidelink DRB;

3> if *sl-MappedQoS-FlowsToReleaseList* is included:

4> remove the *SL-PQFI* included in *sl-MappedQoS-FlowsToReleaseList* from the corresponding sidelink DRB;

3> if the sidelink DRB release conditions as described in clause 5.8.9.1a.1.1 are met:

4> perform the sidelink DRB release procedure according to clause 5.8.9.1a.1.2;

3> else if the sidelink DRB modification conditions as described in clause 5.8.9.1a.2.1 are met:

4> perform the sidelink DRB modification procedure according to clause 5.8.9.1a.2.2;

1> if the *RRCReconfigurationSidelink* includes the *sl-RLC-BearerToReleaseList*:

2> for each entry value included in the *sl-RLC-BearerToReleaseList* that is part of the current UE sidelink configuration;

3> perform the additional sidelink RLC bearer release procedure, according to clause 5.8.9.1a.5;

1> if the *RRCReconfigurationSidelink* includes the *sl-RLC-BearerToAddModList*:

2> for each *SL-RLC-BearerConfigIndex* value included in the *sl-RLC-BearerToAddModList* that is not part of the current UE sidelink configuration:

3> perform the additional sidelink RLC bearer addition procedure, according to clause 5.8.9.1a.6;

2> for each *SL-RLC-BearerConfigIndex* value included in the *sl-RLC-BearerToAddModList* that is part of the current UE sidelink configuration:

3> perform the additional sidelink RLC bearer modification procedure, according to clause 5.8.9.1a.6;

1> if the *RRCReconfigurationSidelink* includes the *sl-CarrierToReleaseList*:

2> for each entry value included in the *sl-CarrierToReleaseList* that is part of the current UE sidelink configuration;

3> perform the sidelink carrier release procedure, according to clause 5.8.9.1b.1;

1> if the *RRCReconfigurationSidelink* includes the *sl-CarrierToAddModList*:

2> for each *sl-CarrierId* value included in the *sl-CarrierToAddModList* that is not part of the current UE sidelink configuration:

3> perform the sidelink carrier addition procedure, according to clause 5.8.9.1b.2;

1> if the *RRCReconfigurationSidelink* message includes the *sl-MeasConfig*:

2> perform the sidelink measurement configuration procedure as specified in 5.8.10;

1> if the *RRCReconfigurationSidelink* message includes the *sl-CSI-RS-Config*:

2> apply the sidelink CSI-RS configuration;

1> if the *RRCReconfigurationSidelink* message includes the *sl-LatencyBoundCSI-Report*:

2> apply the configured sidelink CSI report latency bound;

1> if the *RRCReconfigurationSidelink* includes the *sl-RLC-ChannelToReleaseListPC5*:

2> for each *SL-RLC-ChannelID* value included in the *sl-RLC-ChannelToReleaseListPC5* that is part of the current UE sidelink configuration;

3> perform the PC5 Relay RLC channel release procedure, according to clause 5.8.9.7.1;

1> if the *RRCReconfigurationSidelink* includes the *sl-RLC-ChannelToAddModListPC5*:

2> for each *sl-RLC-ChannelID-PC5* value included in the *sl-RLC-ChannelToAddModListPC5* that is not part of the current UE sidelink configuration:

3> perform the PC5 Relay RLC channel addition procedure, according to clause 5.8.9.7.2;

2> for each *sl-RLC-ChannelID-PC5* value included in the *sl-RLC-ChannelToAddModListPC5* that is part of the current UE sidelink configuration:

3> perform the PC5 Relay RLC channel modification procedure according to clause 5.8.9.7.2;

1> if the *RRCReconfigurationSidelink* message includes the *sl-DRX-ConfigUC-PC5*; and

1> if the UE accepts the *sl-DRX-ConfigUC-PC5*:

2> configure lower layers to perform sidelink DRX operation according to *sl-DRX-ConfigUC-PC5* for the associated destination as defined in TS 38.321 [3];

1> if the *RRCReconfigurationSidelink* message includes the *sl-LatencyBoundIUC-Report*:

2> apply the configured sidelink IUC report latency bound;

1> if the *RRCReconfigurationSidelink* message includes the *sl-LocalID-PairToAddModList*:

2> configure SRAP entity to perform NR sidelink L2 U2U relay operation accordingly for the end-to-end PC5 connection with the peer L2 U2U Remote UE as defined in TS 38.351 [65];

1> if the UE is unable to comply with (part of) the configuration included in the *RRCReconfigurationSidelink* (i.e. sidelink RRC reconfiguration failure):

2> continue using the configuration used prior to the reception of the *RRCReconfigurationSidelink* message;

2> set the content of the *RRCReconfigurationFailureSidelink* message;

3> submit the *RRCReconfigurationFailureSidelink* message to lower layers for transmission;

1> if the *RRCReconfigurationSidelink* message includes the *sl-SFN-DFN-Offset*:

2> if the *sl-SFN-DFN-Offset* is set to *setup*:

3> apply the configured SFN-DFN time offset;

2> if the *sl-SFN-DFN-Offset* is set to *release*:

3> release the received *sl-SFN-DFN-Offset*;

1> else:

2> set the content of the *RRCReconfigurationCompleteSidelink* message;

3> if the UE rejects the sidelink DRX configuration *sl-DRX-ConfigUC-PC5* received from the peer UE:

4> include the *sl-DRX-ConfigReject* in the *RRCReconfigurationCompleteSidelink* message;

4> consider no sidelink DRX to be applied for the corresponding sidelink unicast communication;

3> submit the *RRCReconfigurationCompleteSidelink* message to lower layers for transmission;

NOTE 1: When the same logical channel is configured with different RLC mode by another UE, the UE handles the case as sidelink RRC reconfiguration failure.

NOTE 2: It is up to the UE implementation whether or not to indicate the rejection to the peer UE for a received sidelink DRX configuration.

NOTE 3: When UE transmits SL-PRS in dedicated SL-PRS resource pool, the sidelink DRX configuration is not applied.

Next Change

5.8.9.1a.1.2 Sidelink DRB release operations

For each sidelink DRB, whose sidelink DRB release conditions are met as in clause 5.8.9.1a.1.1, the UE capable of NR sidelink communication that is configured by upper layers to perform NR sidelink communication shall:

1> for groupcast and broadcast; or

1> for unicast, if the sidelink DRB release was triggered after the reception of the *RRCReconfigurationSidelink* message; or

1> for unicast, after receiving the *RRCReconfigurationCompleteSidelink* message, if the sidelink DRB release was triggered due to the configuration received within the *sl-ConfigDedicatedNR,* *SIB12*, *SidelinkPreconfigNR* or indicated by upper layers:

2> release the PDCP entity for NR sidelink communication associated with the sidelink DRB;

2> if SDAP entity for NR sidelink communication associated with this sidelink DRB is configured:

3> indicate the release of the sidelink DRB to the SDAP entity associated with this sidelink DRB (TS 37.324 [24], clause 5.3.3);

2> release SDAP entities for NR sidelink communication, if any, that have no associated sidelink DRB as specified in TS 37.324 [24] clause 5.1.2;

1> for groupcast and broadcast; or

1> for unicast, after receiving the *RRCReconfigurationCompleteSidelink* message, if the sidelink DRB release was triggered due to the configuration received within the *sl-ConfigDedicatedNR*:

2> for each *sl-RLC-BearerConfigIndex* included in the received *sl-RLC-BearerToReleaseList*/*sl-RLC-BearerToReleaseListSizeExt* that is part of the current UE sidelink configuration:

3> release the RLC entity and the corresponding logical channel for NR sidelink communication, associated with the *sl-RLC-BearerConfigIndex*.

1> if the sidelink DRB is a per-hop sidelink DRB (i.e. the UE is performing NR sidelink communication with a peer UE without via a L2 U2U Relay UE):

2> for unicast, if the sidelink DRB release was triggered due to the reception of the *RRCReconfigurationSidelink* message; or

2> for unicast, after receiving the *RRCReconfigurationCompleteSidelink* message, if the sidelink DRB release was triggered due to the configuration received within the *SIB12*, *SidelinkPreconfigNR* or indicated by upper layers:

3> release the RLC entity and the corresponding logical channel for NR sidelink communication associated with the sidelink DRB;

3> perform the sidelink UE information procedure in clause 5.8.3 for unicast if needed.

1> if the sidelink radio link failure is detected for a specific destination:

2> release the PDCP entity, RLC entity and the logical channel of the sidelink DRB for the specific destination.

1> if the UE is acting as a L2 U2U Remote UE, and if the end-to-end sidelink DRB release is triggered by end-to-end PC5 connection failure due to per-hop PC5 link failure, in accordance with clause 5.8.9.3a:

2> release the PDCP entity(ies) of the end-to-end sidelink DRB(s) for the specific end-to-end PC5 connection;

1> if the sidelink DRB is an end-to-end sidelink DRB in L2 U2U relay operation:

2> perform the PC5 Relay RLC channel release according to 5.8.9.7.1, if there is no other end-to-end sidelink DRB(s) associated with this RLC channel and the PC5 Relay RLC channel is not released yet;

2> if the UE is acting as a source L2 U2U Remote or L2 U2U Relay UE and is in RRC\_CONNECTED:

3> reconfigure the SRAP entity for the sidelink DRB, in accordance with the *sl-SRAP-ConfigU2U* received in *RRCReconfiguration* message, if included;

2> else if the UE is acting as a source L2 U2U Remote UE or L2 U2U Relay and is in RRC\_IDLE or RRC\_INACTIVE, or is out of coverage:

3> remove the mapping between the end-to-end sidelink DRB and the egress PC5 Relay RLC channel, and reconfigure the SRAP entity.

Next Change

5.8.9.1a.2.1 Sidelink DRB addition/modification conditions

For NR sidelink communication, a sidelink DRB addition is initiated only in the following cases:

1> if any sidelink QoS flow is (re)configured by *sl-ConfigDedicatedNR*, *SIB12*, *SidelinkPreconfigNR* and is to be mapped to one sidelink DRB*,* which is not established; or

1> if any sidelink QoS flow is (re)configured by *RRCReconfigurationSidelink* and isto be mapped to a sidelink DRB, which is not established;

1> if any sidelink QoS flow is (re)configured by source L2 U2U Remote UE and is mapped to an end-to-end sidelink DRB for transmission when the UE is acting as L2 U2U Relay UE;

The above conditions also apply to L2 U2U Remote UE for end-to-end sidelink DRB addition. For L2 U2U Relay UE, an end-to-end sidelink DRB addition is initiated only in the case it receives new end-to-end sidelink DRB information from the source L2 U2U Remote UE as in clause 5.8.9.11.3.

For NR sidelink communication, a sidelink DRB modification is initiated only in the following cases:

1> if any of the sidelink DRB related parameters is changed by *sl-ConfigDedicatedNR*, *SIB12*, *SidelinkPreconfigNR* or *RRCReconfigurationSidelink* for one sidelink DRB*,* which is established;

The above conditions also apply to L2 U2U Remote UE for end-to-end sidelink DRB modification. For L2 U2U Relay UE, an end-to-end sidelink DRB modification is initiated only in the case it receives updated end-to-end sidelink DRB information from the source L2 U2U Remote UE as in clause 5.8.9.11.3.

Next Change

5.8.9.1a.2.2 Sidelink DRB addition/modification operations

For the sidelink DRB, whose sidelink DRB addition conditions are met as in clause 5.8.9.1a.2.1, the UE capable of NR sidelink communication that is configured by upper layers to perform NR sidelink communication shall:

1> for groupcast and broadcast; or

1> for unicast, if the sidelink DRB addition was triggered due to the reception of the *RRCReconfigurationSidelink* message; or

1> for unicast, after receiving the *RRCReconfigurationCompleteSidelink* message, if the sidelink DRB addition was triggered due to the configuration received within the *sl-ConfigDedicatedNR,* *SIB12*, *SidelinkPreconfigNR* or indicated by upper layers:

2> if an SDAP entity for NR sidelink communication associated with the destination and the cast type of the sidelink DRB does not exist:

3> establish an SDAP entity for NR sidelink communication as specified in TS 37.324 [24] clause 5.1.1;

2> (re)configure the SDAP entity in accordance with the *sl-SDAP-ConfigPC5* received in the *RRCReconfigurationSidelink* or *sl-SDAP-Config* received in *sl-ConfigDedicatedNR*, *SIB12*, *SidelinkPreconfigNR*, associated with the sidelink DRB;

2> establish a PDCP entity for NR sidelink communication and configure it in accordance with the *sl-PDCP-ConfigPC5* received in the *RRCReconfigurationSidelink* or *sl-PDCP-Config* received in *sl-ConfigDedicatedNR,* *SIB12*, *SidelinkPreconfigNR*, associated with the sidelink DRB;

2> for a per-hop sidelink DRB (i.e. the UE is performing NR sidelink communication with a peer UE without via a L2 U2U Relay UE):

3> establish a RLC entity for NR sidelink communication and configure it in accordance with the *sl-RLC-ConfigPC5* received in the *RRCReconfigurationSidelink* or *sl-RLC-Config* received in *sl-ConfigDedicatedNR,* *SIB12*, *SidelinkPreconfigNR*, associated with sidelink DRB;

3> if this procedure was due to the reception of a *RRCReconfigurationSidelink* message:

4> configure the MAC entity with a logical channel in accordance with the *sl-MAC-LogicalChannelConfigPC5* received in the *RRCReconfigurationSidelink* associated with the sidelink DRB, and perform the sidelink UE information procedure in clause 5.8.3 for unicast if needed;

3> else if this procedure was due to the reception of a *RRCReconfigurationCompleteSidelink* message:

4> configure the MAC entity with a logical channel associated with the sidelink DRB, in accordance with the *sl-MAC-LogicalChannelConfig* received in the *sl-ConfigDedicatedNR*, *SIB12*, *SidelinkPreconfigNR;*

3> else (i.e. for groupcast/broadcast):

4> configure the MAC entity with a logical channel associated with the sidelink DRB, in accordance with the *sl-MAC-LogicalChannelConfig* received in the *sl-ConfigDedicatedNR*, *SIB12*, *SidelinkPreconfigNR* and assign a new LCID to this logical channel.

1> for an end-to-end sidelink DRB (i.e. the UE is acting as L2 U2U Remote UE or L2 U2U Relay UE):

2> if the UE is in RRC\_CONNECTED:

3> (re)configure the SRAP entity for the sidelink DRB, in accordance with the *sl-SRAP-ConfigU2U* included in *RRCReconfiguration*;

2> else if the UE is in RRC\_IDLE or RRC\_INACTIVE, or out of coverage:

3> perform the PC5 Relay RLC channel addition/modification as specified in clause 5.8.9.7.2 if needed, according to the derived PC5 Relay RLC channel configuration as described in clause 5.8.9.11;

3> consider the PC5 Relay RLC channel applying the derived PC5 Relay RLC channel configuration as the egress PC5 Relay RLC channel;

3> configure the egress PC5 Relay RLC channel for this end-to-end sidelink DRB to SRAP;

NOTE 1: When a sidelink DRB addition is due to the configurationby *RRCReconfigurationSidelink*, it is up to UE implementation to select the sidelink DRB configuration as necessary transmitting parameters for the sidelink DRB, from the received *sl-ConfigDedicatedNR* (if in RRC\_CONNECTED), *SIB12* (if in RRC\_IDLE/INACTIVE), *SidelinkPreconfigNR* (if out of coverage) with the same RLC mode as the one configured in *RRCReconfigurationSidelink*.

For the sidelink DRB, whose sidelink DRB modification conditions are met as in clause 5.8.9.1a.2.1, the UE capable of NR sidelink communication that is configured by upper layers to perform NR sidelink communication shall:

1> for groupcast and broadcast; or

1> for unicast, if the sidelink DRB modification was triggered due to the reception of the *RRCReconfigurationSidelink* message; or

1> for unicast, after receiving the *RRCReconfigurationCompleteSidelink* message, if the sidelink DRB modification was triggered due to the configuration received within the *sl-ConfigDedicatedNR,* *SIB12* or *SidelinkPreconfigNR*:

2> reconfigure the SDAP entity of the sidelink DRB, in accordance with the *sl-SDAP-ConfigPC5* received in the *RRCReconfigurationSidelink* or *sl-SDAP-Config* received in *sl-ConfigDedicatedNR,* *SIB12*, *SidelinkPreconfigNR*, if included;

2> reconfigure the PDCP entity of the sidelink DRB, in accordance with the *sl-PDCP-ConfigPC5* received in the *RRCReconfigurationSidelink* or *sl-PDCP-Config* received in *sl-ConfigDedicatedNR,* *SIB12*, *SidelinkPreconfigNR*, if included;

2> reconfigure the RLC entity of the sidelink DRB, in accordance with the *sl-RLC-ConfigPC5* received in the *RRCReconfigurationSidelink* or *sl-RLC-Config* received in *sl-ConfigDedicatedNR,* *SIB12*, *SidelinkPreconfigNR*, if included;

2> reconfigure the logical channel of the sidelink DRB, in accordance with the *sl-MAC-LogicalChannelConfigPC5* received in the *RRCReconfigurationSidelink* or *sl-MAC-LogicalChannelConfig* received in *sl-ConfigDedicatedNR,* *SIB12*, *SidelinkPreconfigNR*, if included;

1> for an end-to-end sidelink DRB (i.e. the UE is acting as L2 U2U Remote UE or L2 U2U Relay UE):

2> if the UE is in RRC\_CONNECTED:

3> reconfigure the SRAP entity for the sidelink DRB, in accordance with the *sl-SRAP-ConfigU2U* received in *RRCReconfiguration* message, if included;

2> else if the UE is in RRC\_IDLE or RRC\_INACTIVE, or out of coverage:

3> if the derived PC5 Relay RLC channel configuration of this end-to-end sidelink DRB as described in clause 5.8.9.11 is changed:

4> if there is no other end-to-end sidelink DRB(s) associated with this RLC channel:

5> perform the PC5 Relay RLC channel release as specified in 5.8.9.7.1 or 5.8.9.7.2;

4> else:

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

4> consider the PC5 Relay RLC channel applying the PC5 Relay RLC channel configuration as the egress PC5 relay RLC channel;

4> reconfigure the SRAP entity with the the egress PC5 Relay RLC channel for the end-to-end sidelink DRB.

Next Change

##### 5.8.9.1a.3 Sidelink SRB release

The UE shall:

1> if a PC5-RRC connection release for a specific destination is requested by upper layers or AS layer; or

1> if the sidelink radio link failure is detected for a specific destination:

2> release the PDCP entity, RLC entity and the logical channel of the sidelink SRB for PC5-RRC message of the specific destination;

2> consider the PC5-RRC connection is released for the destination.

1> if PC5-S transmission for a specific destination is terminated in upper layers:

2> release the PDCP entity, RLC entity and the logical channel of the sidelink SRB(s) for PC5-S message of the specific destination if any;

1> if discovery transmission for a specific destination is terminated in upper layers:

2> release the PDCP entity, RLC entity and the logical channel of the sidelink SRB4 for discovery message of the specific destination;

1> if an end-to-end PC5-RRC connection release/failure is detected:

2> if the UE is acting L2 U2U Remote UE:

3> release the PDCP entity of the end-to-end sidelink SRB for the end-to-end PC5 connection;

2> release the association between the end-to-end sidelink SRB and the egress PC5 Relay RLC channel, and reconfigure SRAP configuration.

Next Change

##### 5.8.9.1a.4 Sidelink SRB addition

The UE shall:

1> if transmission of PC5-S message for a specific destination is requested by upper layers for sidelink SRB:

2> establish PDCP entity, RLC entity and the logical channel of a sidelink SRB for PC5-S message if needed, as specified in clause 9.1.1.4;

2> if in coverage on the frequency used for the NR sidelink communication as defined in TS 38.304 [20]:

3> indicate the allowed carrier(s) for the RLC bearer of the SRB before the reception of initial *RRCReconfigurationCompleteSidelink* message which confirms SL CA carrier(s) addition as indicated in *sl-FreqInfoList*, to lower layer;

2> else:

3> indicate the allowed carrier for the RLC bearer of the SRB before the reception of initial *RRCReconfigurationCompleteSidelink* message which confirms SL CA carrier(s) addition as indicated in *sl-PreconfigFreqInfoList*, to lower layer;

1> if transmission of discovery message for a specific destination is requested by upper layers for sidelink SRB:

2> establish PDCP entity, RLC entity and the logical channel of a sidelink SRB4 for discovery message, as specified in clause 9.1.1.4;

1> if a PC5-RRC connection establishment for a specific destination is indicated by upper layers:

2> establish PDCP entity, RLC entity and the logical channel of a sidelink SRB for PC5-RRC message of the specific destination if needed, as specified in clause 9.1.1.4;

2> consider the PC5-RRC connection is established for the destination;

2> if in coverage on the frequency used for the NR sidelink communication as defined in TS 38.304 [20]:

3> indicate the allowed carrier(s) for the RLC bearer of the SRB before the reception of initial *RRCReconfigurationCompleteSidelink* message which confirms SL CA carrier(s) addition, as indicated in *sl-FreqInfoList*, to lower layer;

2> else:

3> indicate the allowed carrier for the RLC bearer of the SRB before the reception of initial *RRCReconfigurationCompleteSidelink* message which confirms SL CA carrier(s) addition as specified in clause 5.8.9.1.9, as indicated in *sl-PreconfigFreqInfoList*, to lower layer;

1> for end-to-end SRB 0/1/2/3:

2> if the UE is acting L2 U2U Remote UE:

3> consider the SL-U2U-RLC as specified in clause 9.1.1.4 as the egress PC5 Relay RLC channel;

4> associate this end-to-end sidelink SRB with the SL-U2U-RLC and configure the mapping between the end-to-end sidelink SRB and the egress PC5 Relay RLC channel to SRAP.

Next Change

#### 5.8.9.5 Actions related to PC5-RRC connection release requested by upper layers

The UE initiates the procedure when upper layers request the release of the PC5-RRC connection as specified in TS 24.587 [57] or TS 24.554 [72]. The UE shall not initiate the procedure for power saving purposes.

The UE shall:

1> if the PC5-RRC connection release for the specific destination is requested by upper layers:

2> discard the NR sidelink communication related configuration of this destination;

2> release the DRBs of this destination if configured, in according to clause 5.8.9.1a.1;

2> release the SRBs of this destination, in according to clause 5.8.9.1a.3;

2> release the PC5 Relay RLC channels if configured, in according to clause 5.8.9.7.1;

2> reset the sidelink specific MAC of this destination except for end-to-end PC5-RRC connection in L2 U2U relay operation.

2> consider the PC5-RRC connection is released for the destination;

2> if the UE is acting as MP remote UE, and this destination identifies a connected MP relay UE:

3> if neither MCG transmission nor indirect path transmission is suspended:

4> initiate the indirect path failure information procedure as specified in 5.7.3c to report indirect path failure;

3> else if T301 is not running:

4> initiate the RRC connection re-establishment procedure as specified in 5.3.7;

2> if the UE is acting as L2 U2U Remote UE, and this destination identifies a connected L2 U2U Relay UE:

3> consider the end-to-end PC5 connection failure for the end-to-end PC5 connection(s) over the per-hop PC5 link established with the L2 U2U Relay UE;

3> initiate the end-to-end PC5 connection failure related actions as specified in 5.8.9.3a;

2> if the UE is acting as L2 U2U Relay UE, and this destination identifies a connected L2 U2U Remote UE:

3> consider the end-to-end PC5 connection failure for the end-to-end PC5 connection(s) over the per-hop PC5 link established with the L2 U2U Remote UE;

3> send *NotificationMessageSidelink* message to the peer L2 U2U Remote UE(s) for the end-to-end PC5 connection(s) in accordance with 5.8.9.10;

3> initiate the end-to-end PC5 connection failure related actions as specified in 5.8.9.3b;

Next Change

##### 5.8.9.7.2 PC5 Relay RLC channel addition/modification

Upon PC5-RRC connection establishment between the L2 U2N Relay UE and L2 U2N Remote UE, the L2 U2N Relay UE shall:

1> establish a SRAP entity as specified in TS 38.351 [66], if no SRAP entity has been established;

1> apply RLC specified configuration of SL-RLC0 as specified in clause 9.1.1.4:

1> apply RLC default configuration of SL-RLC1 as defined in clause 9.2.4 if the L2 U2N Relay UE is in RRC\_IDLE/INACTIVE state;

Upon PC5-RRC connection establishment between two UEs for L2 U2U relay operation UE shall:

1> establish a SRAP entity as specified in TS 38.351 [66], if no SRAP entity has been established;

1> apply RLC specified configuration of *SL-U2U-RLC* as specified in clause 9.1.1.4;

For L2 U2U Relay operation in RRC\_IDLE/RRC\_INACTVE or out of coverage, the PC5 Relay RLC channel addition/modification can be triggered due to the addition/modification/release of the end-to-end SL DRB(s). The source L2 U2U Remote UE and L2 U2U Relay UE derive the configuration for the corresponding PC5 Relay RLC channel based on SIB12/Preconfiguration, as follows:

- The source L2 U2U Remote UE derives the configuration for the PC5 Relay RLC channel(s) between the source L2 U2U Remote UE and L2 U2U relay UE (i.e. the first hop PC5 Relay RLC channel(s)), by aggregating the QoS profile(s) of the QoS flow(s) with split QoS information of the first hop into a per-SLRB level QoS profile for each end-to-end Sidelink DRB as described in clause 5.8.9.11.4, and considering the *SL-RLC-BearerConfig* (linked to the *SL-RadioBearerConfig* which matches the per-SLRB level QoS profile) as the first hop PC5 Relay RLC channel configuration.

- The L2 U2U Relay UE derives the configuration for the PC5 Relay RLC channel(s) between L2 U2U relay UE and the target L2 U2U Remote UE (i.e. the second hop PC5 Relay RLC channel(s)), by aggregating the QoS profile(s) of the QoS flow(s) with split QoS information of the second hop into a per-SLRB level QoS profile for each end-to-end Sidelink DRB as described in clause 5.8.9.11.3, and considering the *SL-RLC-BearerConfig* (linked to the *SL-RadioBearerConfig* which matches the per-SLRB level QoS profile) as the second hop PC5 Relay RLC channel configuration.

The UE shall:

1> if the PC5 Relay RLC channel addition/modification was triggered due to the reception of the *RRCReconfigurationSidelink* message; or

1> after receiving the *RRCReconfigurationCompleteSidelink* message, if the PC5 Relay RLC channel addition/modification was triggered due to the configuration received within the *sl-ConfigDedicatedNR*; or

1> after receiving the *RRCReconfigurationCompleteSidelink* message, if the PC5 Relay RLC channel addition/modification was triggered for an end-to-end sidelink DRB based on the configuration in *SIB12* or *SidelinkPreconfigNR*:

2> if the current configuration contains a PC5 Relay RLC channel with the received *sl-RLC-ChannelID* or *sl-RLC-ChannelID-PC5*; or

2> if the configuration in *SIB12* or *SidelinkPreconfigNR* has updated, based on which the PC5 Relay RLC channel is derived:

3> reconfigure the sidelink RLC entity in accordance with the received *sl-RLC-Config* or *sl-RLC-ConfigPC5*;

3> reconfigure the sidelink MAC entity with a logical channel in accordance with the received *sl-MAC-LogicalChannelConfig* or *sl-MAC-LogicalChannelConfigPC5*;

2> else (a PC5 Relay RLC channel with the received *sl-RLC-ChannelID* or *sl-RLC-ChannelID-PC5* was not configured before):

3> establish a sidelink RLC entity in accordance with the received *sl-RLC-Config* (in *sl-ConfigDedicatedNR*, or *SIB12*, or *SidelinkPreconfigNR*) or *sl-RLC-ConfigPC5*;

3> configure the sidelink MAC entity with a logical channel in accordance with the received *sl-MAC-LogicalChannelConfig* or *sl-MAC-LogicalChannelConfigPC5*.

Next Change

##### 5.8.9.8.2 Actions related to transmission of *RemoteUEInformationSidelink* message

When entering RRC\_IDLE or RRC\_INACTIVE, or upon change in any of the information in the *RemoteUEInformationSidelink* while in RRC\_IDLE or RRC\_INACTIVE, the L2 U2N Remote UE shall:

1> if the UE has SIB request information to provide (e.g. the UE has not stored a valid version of a SIB, in accordance with clause 5.2.2.2.1, of one or several required SIB(s) in accordance with clause 5.2.2.1 and the requested SIB has not been indicated in *RemoteUEInformationSidelink* message to the L2 U2N Relay UE before):

2> include *sl-RequestedSIB-List* in the *RemoteUEInformationSidelink* to indicate the requested SIB(s);

1> if the UE has not stored a valid version, in accordance with clause 5.2.2.2.1, of one or several posSIB(s) that the UE requires for a positioning operation, and the requested posSIB has not been indicated in *RemoteUEInformationSidelink* message to the L2 U2N Relay UE before, and the connected L2 U2N relay UE set*posSIB-ForwardingSupported* to *supported*:

2> include *sl-RequestedPosSIB-List* in the *RemoteUEInformationSidelink* to indicate the requested posSIB(s);

1> if the UE needs the SFN-DFN offset based on the request from upper layers and the connected L2 U2N relay UE set *sfn-DFN-OffsetSupported* to *supported*:

2> set *sl-SFN-DFN-OffsetRequested* to *true*;

1> if the UE has paging related information to provide (e.g. the UE has not sent *sl-PagingInfo-RemoteUE* in the *RemoteUEInformationSidelink* message to the L2 U2N Relay UE before),set *sl-PagingInfo-RemoteUE* as follows:

2> if the L2 U2N Remote UE is in RRC\_IDLE:

3> include *ng-5G-S-TMSI* in the *sl-PagingIdentityRemoteUE*;

3> if the UE specific DRX cycle is configured by upper layer, set *sl-PagingCycleRemoteUE* to the value of UE specific Uu DRX cycle configured by upper layer*;*

2> else if the L2 U2N Remote UE is in RRC\_INACTIVE:

3> include *ng-5G-S-TMSI* and *fullI-RNTI* in the *sl-PagingIdentityRemoteUE*;

3> if the UE specific DRX cycle is configured by upper layer,

4> set *sl-PagingCycleRemoteUE* to the minimum value of UE specific Uu DRX cycles (configured by upper layer and configured by RRC)*;*

3> else:

4> set *sl-PagingCycleRemoteUE* to the value of UE specific DRX cycle configured by RRC;

1> submit the *RemoteUEInformationSidelink* message to lower layers for transmission;

When entering RRC\_CONNECTED, if L2 U2N remote UE had sent *sl-RequestedSIB-List*, *sl-RequestedPosSIB-List*, and/or *sl-PagingInfo-RemoteUE,* the L2 U2N Remote UE shall:

1> set the *sl-RequestedSIB-List* to the value *release* if requested before;

1> set the *sl-RequestedPosSIB-List* to the value *release* if requested before;

1> set the *sl-PagingInfo-RemoteUE* to the value *release* if sent before;

1> submit the *RemoteUEInformationSidelink* message to lower layers for transmission;

Upon any change in the need of SFN-DFN offset while in RRC\_CONNECTED, the L2 U2N Remote UE shall:

1> if the UE needs the SFN-DFN offset based on the request from upper layers and the connected L2 U2N relay UE set *sfn-DFN-OffsetSupported* to *supported*:

2> set *sl-SFN-DFN-OffsetRequeste*d to *true*;

1> submit the *RemoteUEInformationSidelink* message to lower layers for transmission;

The L2 U2N Remote UE in RRC\_CONNECTED shall:

1> if the UE is configured with *sl-IndirectPathAddChange* set to *setup*, and not configured with split SRB1 with duplication:

2> include *connectionForMP*;

2> submit the *RemoteUEInformationSidelink* message to lower layers for transmission;

The L2 U2U Remote UE shall:

1> upon end-to-end PC5-RRC connection release; or

1> upon end-to-end PC5-RRC connection failure due to T400 expiry or integrity check failure of SL-SRB2 or SL-SRB3:

2> include *sl-DestinationIdentityRemoteUE*;

2> submit the *RemoteUEInformationSidelink* message to lower layers for transmission;

Next Change

#### 5.8.15.3 Selection and reselection of NR sidelink U2N Relay UE

A UE capable of NR sidelink U2N Remote UE operation that is configured by upper layers to search for a NR sidelink U2N Relay UE shall:

1> if the UE has no serving cell; or

1> if the RSRP measurement of the cell on which the UE camps (for L2 and L3 U2N Remote UE in RRC\_IDLE or RRC\_INACTIVE)/ the PCell (for L3 U2N Remote UE in RRC\_CONNECTED) is below *threshHighRemote* within *sl-RemoteUE-Config*:

2> if the UE does not have a selected NR sidelink U2N Relay UE; or

2> if the UE has a selected NR sidelink U2N Relay UE, and SL-RSRP of the currently selected NR sidelink U2N Relay UE is available and is below *sl-RSRP-Thresh*; or

2> if the UE has a selected NR sidelink U2N Relay UE, and SL-RSRP of the currently selected NR sidelink U2N Relay UE is not available, and SD-RSRP of the currently selected U2N Relay UE is below *sl-RSRP-Thresh*; or

NOTE 1: U2N Remote UE uses SL-RSRP measurements for relay reselection trigger evaluation when there is data transmission from U2N Relay UE to U2N Remote UE, and it is left to UE implementation whether to use SL-RSRP or SD-RSRP for relay reselection trigger evaluation in case of no data transmission from U2N Relay UE to U2N Remote UE. If SD-RSRP is used, the discovery procedure will be performed between the U2N Remote UE and the selected U2N Relay UE.

2> if the UE has a selected NR sidelink U2N Relay UE, and upper layers indicate not to use the currently selected NR sidelink U2N Relay UE; or

2> if the UE has a selected NR sidelink U2N Relay UE, and upper layers request the release of the PC5-RRC connection; or

2> if the UE has a selected NR sidelink U2N Relay UE, and sidelink radio link failure is detected on the PC5-RRC connection with the current U2N Relay UE as specified in clause 5.8.9.3:

3> perform NR sidelink discovery procedure as specified in clause 5.8.13 in order to search for candidate NR sidelink U2N Relay UEs;

4> when evaluating the one or more detected NR sidelink U2N Relay UEs, apply layer 3 filtering as specified in 5.5.3.2 across measurements that concern the same U2N Relay UE ID and using the *sl-FilterCoefficientRSRP* in *SIB12* (if in RRC\_IDLE/INACTIVE), the *sl-FilterCoefficientRSRP* in *sl-ConfigDedicatedNR* (if in RRC\_CONNECTED) or the preconfigured *sl-FilterCoefficientRSRP* as defined in 9.3 (out of coverage), before using the SD-RSRP measurement results;

4> consider a candidate NR sidelink U2N Relay UE for which SD-RSRP exceeds *sl-RSRP-Thresh* by *sl-HystMin* has met the AS criteria;

3> if the UE detects any suitable NR sidelink U2N Relay UE(s):

4> consider one of the available suitable NR sidelink U2N relay UE(s) can be selected;

NOTE 2: A candidate NR sidelink U2N Relay UE which meets all AS layer criteria defined in 5.8.15.3 and higher layer criteria defined in TS 23.304 [65] can be regarded as suitable NR sidelink U2N Relay UE by the NR sidelink U2N Remote UE. If multiple suitable NR sidelink U2N Relay UEs are available, it is up to Remote UE implementation to choose one NR sidelink U2N Relay UE. The details of the interaction with upper layers are up to UE implementation.

NOTE 3: For L2 U2N Remote UEs in RRC\_IDLE/INACTIVE and L3 U2N Remote UEs, the cell (re)selection procedure and relay (re)selection procedure run independently. If both suitable cells and suitable NR sidelink U2N Relay UEs are available, it is up to NR sidelink U2N Remote UE implementation to select either a cell or a NR sidelink U2N Relay UE. Furthermore, L3 U2N Remote UE's selection on both cell and NR sidelink U2N Relay UE is also based on UE implementation.

3> else:

4> consider no NR sidelink U2N Relay UE to be selected.

Next Change

##### 5.8.9.11.1 General



Figure 5.8.9.11.1-1: Sidelink UE information procedure

The purpose of this procedure is to transfer the UE information between a Remote UE and a Relay UE in sidelink. The L2 U2U Remote UE informs its end-to-end QoS information to its connected L2 U2U Relay UE in the *UEInformationRequestSidelink* message, and the L2 U2U Relay UE delivers the split QoS information of the first-hop to the Remote UE in the *UEInformationResponseSidelink* message.

Next Change

### 6.3.5 Sidelink information elements

<unrelated part is omitted>

#### – *SL-ConfigDedicatedNR*

The IE *SL-ConfigDedicatedNR* specifies the dedicated configuration information for NR sidelink communication/discovery/positioning.

*SL-ConfigDedicatedNR* information element

-- ASN1START

-- TAG-SL-CONFIGDEDICATEDNR-START

SL-ConfigDedicatedNR-r16 ::= SEQUENCE {

 sl-PHY-MAC-RLC-Config-r16 SL-PHY-MAC-RLC-Config-r16 OPTIONAL, -- Need M

 sl-RadioBearerToReleaseList-r16 SEQUENCE (SIZE (1..maxNrofSLRB-r16)) OF SLRB-Uu-ConfigIndex-r16 OPTIONAL, -- Need N

 sl-RadioBearerToAddModList-r16 SEQUENCE (SIZE (1..maxNrofSLRB-r16)) OF SL-RadioBearerConfig-r16 OPTIONAL, -- Need N

 sl-MeasConfigInfoToReleaseList-r16 SEQUENCE (SIZE (1..maxNrofSL-Dest-r16)) OF SL-DestinationIndex-r16 OPTIONAL, -- Need N

 sl-MeasConfigInfoToAddModList-r16 SEQUENCE (SIZE (1..maxNrofSL-Dest-r16)) OF SL-MeasConfigInfo-r16 OPTIONAL, -- Need N

 t400-r16 ENUMERATED {ms100, ms200, ms300, ms400, ms600, ms1000, ms1500, ms2000} OPTIONAL, -- Need M

 ...,

 [[

 sl-PHY-MAC-RLC-Config-v1700 SetupRelease { SL-PHY-MAC-RLC-Config-v1700 } OPTIONAL, -- Need M

 sl-DiscConfig-r17 SetupRelease { SL-DiscConfig-r17} OPTIONAL -- Need M

 ]],

 [[

 sl-DiscConfig-v1800 SL-DiscConfig-v1800 OPTIONAL -- Need M

 ]],

 [[

 sl-DiscConfig-v18xx SL-DiscConfig-v18xx OPTIONAL -- Need M

 ]]

}

SL-DestinationIndex-r16 ::= INTEGER (0..maxNrofSL-Dest-1-r16)

SL-PHY-MAC-RLC-Config-r16::= SEQUENCE {

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

 sl-UE-SelectedConfig-r16 SetupRelease { SL-UE-SelectedConfig-r16 } OPTIONAL, -- Need M

 sl-FreqInfoToReleaseList-r16 SEQUENCE (SIZE (1..maxNrofFreqSL-r16)) OF SL-Freq-Id-r16 OPTIONAL, -- Need N

 sl-FreqInfoToAddModList-r16 SEQUENCE (SIZE (1..maxNrofFreqSL-r16)) OF SL-FreqConfig-r16 OPTIONAL, -- Need N

 sl-RLC-BearerToReleaseList-r16 SEQUENCE (SIZE (1..maxSL-LCID-r16)) OF SL-RLC-BearerConfigIndex-r16 OPTIONAL, -- Need N

 sl-RLC-BearerToAddModList-r16 SEQUENCE (SIZE (1..maxSL-LCID-r16)) OF SL-RLC-BearerConfig-r16 OPTIONAL, -- Need N

 sl-MaxNumConsecutiveDTX-r16 ENUMERATED {n1, n2, n3, n4, n6, n8, n16, n32} OPTIONAL, -- Need M

 sl-CSI-Acquisition-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

 sl-CSI-SchedulingRequestId-r16 SetupRelease {SchedulingRequestId} OPTIONAL, -- Need M

 sl-SSB-PriorityNR-r16 INTEGER (1..8) OPTIONAL, -- Need R

 networkControlledSyncTx-r16 ENUMERATED {on, off} OPTIONAL -- Need M

}

SL-PHY-MAC-RLC-Config-v1700 ::= SEQUENCE {

 sl-DRX-Config-r17 SL-DRX-Config-r17 OPTIONAL, -- Need M

 sl-RLC-ChannelToReleaseList-r17 SEQUENCE (SIZE (1..maxSL-LCID-r16)) OF SL-RLC-ChannelID-r17 OPTIONAL, -- Cond L2U2N

 sl-RLC-ChannelToAddModList-r17 SEQUENCE (SIZE (1..maxSL-LCID-r16)) OF SL-RLC-ChannelConfig-r17 OPTIONAL, -- Cond L2U2N

 ...,

 [[

 sl-RLC-BearerToAddModListSizeExt-v1800 SEQUENCE (SIZE (1..maxSL-LCID-r16)) OF SL-RLC-BearerConfig-r16 OPTIONAL, -- Need N

 sl-RLC-BearerToReleaseListSizeExt-v1800 SEQUENCE (SIZE (1..maxSL-LCID-r16)) OF SL-RLC-BearerConfigIndex-v1800 OPTIONAL, -- Need N

 sl-FreqInfoToAddModListExt-v1800 SEQUENCE (SIZE (1..maxNrofFreqSL-r16)) OF SL-FreqConfigExt-v1800 OPTIONAL, -- Need N

 sl-LBT-SchedulingRequestId-r18 SetupRelease {SchedulingRequestId} OPTIONAL, -- Need M

 sl-SyncFreqList-r18 SEQUENCE (SIZE (1..maxNrofFreqSL-r16)) OF SL-Freq-Id-r16 OPTIONAL, -- Need M

 sl-SyncTxMultiFreq-r18 ENUMERATED {true} OPTIONAL, -- Need R

 sl-MaxTransPowerCA-r18 P-Max OPTIONAL, -- Need R

 sl-SCCH-CarrierSetConfig-r18 SetupRelease {SL-SCCH-CarrierSetConfigList-r18} OPTIONAL, -- Need M

 sl-PRS-SchedulingRequestId-r18 SetupRelease {SchedulingRequestId} OPTIONAL -- Need M

 ]]

}

SL-DiscConfig-r17::= SEQUENCE {

 sl-RelayUE-Config-r17 SetupRelease { SL-RelayUE-Config-r17} OPTIONAL, -- Cond L2RelayUE

 sl-RemoteUE-Config-r17 SetupRelease { SL-RemoteUE-Config-r17} OPTIONAL -- Cond L2RemoteUE

}

SL-DiscConfig-v1800 ::= SEQUENCE {

 sl-RelayUE-ConfigU2U-r18 SetupRelease { SL-RelayUE-ConfigU2U-r18} OPTIONAL, -- Cond U2URelayUE

 sl-RemoteUE-ConfigU2U-r18 SetupRelease { SL-RemoteUE-ConfigU2U-r18} OPTIONAL -- Cond U2URemoteUE

}

SL-SCCH-CarrierSetConfigList-r18 ::= SEQUENCE (SIZE (1..maxNrofSL-CarrierSetConfig-r18)) OF SL-SCCH-CarrierSetConfig-r18

SL-SCCH-CarrierSetConfig-r18 ::= SEQUENCE {

 sl-DestinationList-r18 SEQUENCE (SIZE (1..maxNrofSL-Dest-r16)) OF SL-DestinationIdentity-r16,

 sl-SRB-Identity-r18 SEQUENCE (SIZE (1..3)) OF SRB-Identity,

 sl-AllowedCarrierFreqSet1-r18 SEQUENCE (SIZE (1..maxNrofFreqSL-r16)) OF INTEGER (1..maxNrofFreqSL-r16),

 sl-AllowedCarrierFreqSet2-r18 SEQUENCE (SIZE (1..maxNrofFreqSL-r16)) OF INTEGER (1..maxNrofFreqSL-r16)

}

SL-DiscConfig-v18xx ::= SEQUENCE {

 sl-RemoteUE-ConfigExtU2U-r18 SetupRelease { SL-RemoteUE-ConfigExtU2U-r18} OPTIONAL -- Cond U2URemoteUE

}

-- TAG-SL-CONFIGDEDICATEDNR-STOP

-- ASN1STOP

| *SL-ConfigDedicatedNR* field descriptions |
| --- |
| ***sl-LBT-SchedulingRequestId***Indicates the scheduling request configuration applicable for Sidelink consistent LBT failure report, as specified in TS 38.321 [3]. |
| ***sl-MaxTransPowerCA***The maximum total transmit power to be used by the UE across all sidelink carriers. |
| ***sl-MeasConfigInfoToAddModList***This field indicates the RSRP measurement configurations for unicast destinations to add and/or modify. |
| ***sl-MeasConfigInfoToReleaseList***This field indicates the RSRP measurement configurations for unicast destinations to remove. |
| ***sl-PHY-MAC-RLC-Config***This field indicates the lower layer sidelink radio bearer configurations. |
| ***sl-RadioBearerToAddModList***This field indicates one or multiple sidelink radio bearer configurations to add and/or modify. This field is not configured to the PC5 connection used for L2 U2N relay operation. |
| ***sl-RadioBearerToReleaseList***This field indicates one or multiple sidelink radio bearer configurations to remove. This field is not configured to the PC5 connection used for L2 U2N relay operation. |

| *SL-PHY-MAC-RLC-Config* field descriptions |
| --- |
| ***networkControlledSyncTx***This field indicates whether the UE shall transmit synchronisation information (i.e. become synchronisation source). Value *on* indicates the UE to transmit synchronisation information while value *off* indicates the UE to not transmit such information. |
| ***sl-DRX-Config***This field indicates the sidelink DRX configuration(s) for unicast, groupcast and/or broadcast communication, as specified in TS 38.321 [3]. |
| ***sl-MaxNumConsecutiveDTX***This field indicates the maximum number of consecutive HARQ DTX before triggering sidelink RLF. Value n1 corresponds to 1, value n2 corresponds to 2, and so on. |
| ***sl-FreqInfoToAddModList, sl-FreqInfoToAddModListExt***This field indicates the NR sidelink communication configuration on some carrier frequency (ies) to add and/or modify. If the network includes *sl-FreqInfoToAddModListExt*, it includes the same number of entries, and listed in the same order, as in *sl-FreqInfoToAddModList*. |
| ***sl-FreqInfoToReleaseList***This field indicates the NR sidelink communication configuration on some carrier frequency (ies) to remove. In this release, only one entry can be configured in the list. |
| ***sl-RLC-BearerToAddModList, sl-RLC-BearerToAddModListSizeExt***This field indicates one or multiple sidelink RLC bearer configurations to add and/or modify. |
| ***sl-RLC-BearerToReleaseList, sl-RLC-BearerToReleaseListSizeExt***This field indicates one or multiple sidelink RLC bearer configurations to remove. |
| ***sl-RLC-ChannelToAddModList***This field indicates one or multiple PC5 Relay RLC Channel configurations to add and/or modify. Each PC5 Relay RLC channel configuration provided by network to L2 U2N Relay UE is uniquely associated with one L2 U2N Remote UE. |
| ***sl-RLC-ChannelToReleaseList***This field indicates one or multiple PC5 Relay RLC Channel configurations to remove. |
| ***sl-ScheduledConfig***Indicates the configuration for UE to transmit NR sidelink communication based on network scheduling. This field is not configured simultaneously with sl-UE-SelectedConfig. This field is not configured to a L2 U2N Remote UE. |
| ***sl-UE-SelectedConfig***Indicates the configuration used for UE autonomous resource selection. This field is not configured simultaneously with *sl-ScheduledConfig*. |
| ***sl-CSI-Acquisition***Indicates whether CSI reporting is enabled in sidelink unicast. If the field is absent, sidelink CSI reporting is disabled. |
| ***sl-CSI-SchedulingRequestId***If present, it indicates the scheduling request configuration applicable for Sidelink CSI Reporting MAC CE and Sidelink DRX Command MAC CE, as specified in TS 38.321 [3]. |
| ***sl-PRS-SchedulingRequestId***If present, it indicates the scheduling request configuration applicable for Sidelink PRS Request MAC CE, as specified in TS 38.321 [3]. |
| ***sl-SSB-PriorityNR***This field indicates the priority of NR sidelink SSB transmission and reception. |
| ***sl-SyncFreqList***Indicates a list of candidate carrier frequencies that can be used for the synchronisation of NR sidelink communication. |
| ***sl-SyncTxMultiFreq***Indicates that the UE transmits S-SSB on multiple carrier frequencies for NR sidelink communication. If this field is absent, the UE transmits S-SSB only on the synchronisation carrier frequency. |

| *SL-SCCH-CarrierSetConfig* field descriptions |
| --- |
| ***sl-AllowedCarrierFreqSet1, sl-AllowedCarrierFreqSet2***Indicates the set of carrier frequencies applicable for the transmission of the MAC SDUs from the sidelink SRB logical channels whose associated destination is included in sl-destinationList. If present, network ensures *sl-AllowedCarrierFreqSet1* and *sl-AllowedCarrierFreqSet2* do not include the same carrier frequency. The value 1 corresponds to the frequency of first entry in *sl-FreqInfoList* broadcast in *SIB12*, the value 2 corresponds to the frequency of first entry in *sl-FreqInfoListSizeExt* broadcast in *SIB12*, the value 3 corresponds to the frequency of second entry in *sl-FreqInfoListSizeExt* broadcast in *SIB12* and so on. |
| ***sl-DestinationList***This field indicates the list of destination identify that the *sl-AllowedCarrierFreqSet1* and *sl-AllowedCarrierFreqSet2* apply. Only destination identity for unicast link can be included in this field. |
| ***sl-SRB-Identity***This field indicates the list of sidelink SRB identities that the *sl-AllowedCarrierFreqSet1* and *sl-AllowedCarrierFreqSet2* apply. |

|  |  |
| --- | --- |
| Conditional Presence | Explanation |
| *L2RelayUE* | For L2 U2N Relay UE, the field is optionally present, Need M. Otherwise, it is absent. |
| *L2RemoteUE* | For L2 U2N Remote UE, the field is optionally present, Need M. Otherwise, it is absent. |
| *L2U2N* | The field is optional present for L2 U2N or L2 U2U Relay UE and L2 U2N or L2 U2U Remote UE, need N. Otherwise, it is absent. |
| *U2URelayUE* | For U2U Relay UE, the field is optionally present, Need M. Otherwise, it is absent. |
| *U2URemoteUE* | For U2U Remote UE, the field is optionally present, Need M. Otherwise, it is absent. |

Next Change

#### *– SL-RemoteUE-ConfigU2U*

The IE *SL-RemoteUE-ConfigU2U* specifies the threshold configuration information for NR sidelink U2U Remote UE.

*SL-RemoteUE-ConfigU2U* information element

-- ASN1START

-- TAG-SL-REMOTEUE-CONFIGU2U-START

SL-RemoteUE-ConfigU2U-r18::= SEQUENCE {

 sl-RSRP-ThreshU2U-r18 SL-RSRP-Range-r16 OPTIONAL, -- Need R

 sl-HystMinU2U-r18 Hysteresis OPTIONAL, -- Cond SL-RSRP-ThreshU2U

 sd-RSRP-ThreshU2U-r18 SL-RSRP-Range-r16 OPTIONAL, -- Need R

 sd-FilterCoefficientU2U-r18 FilterCoefficient OPTIONAL, -- Need R

 sd-HystMinU2U-r18 Hysteresis OPTIONAL -- Cond SD-RSRP-ThreshU2U

}

SL-RemoteUE-ConfigExtU2U-r18::= SEQUENCE {

 sl-FilterCoefficientU2U-r18 FilterCoefficient OPTIONAL, -- Need R

 ...

}

-- TAG-SL-REMOTEUE-CONFIGU2U-STOP

-- ASN1STOP

| *SL-RemoteUE-ConfigU2U* field descriptions |
| --- |
| ***sl-RSRP-ThreshU2U***Indicates the threshold of SL-RSRP for a U2U Remote UE to perform Relay UE selection/ reselection. The U2U remote UE applies the value of this field to evaluate AS layer conditions on direct PC5 link with the peer U2U Remote UE to trigger relay selection, and evaluate AS layer conditions on U2U relay link with U2U Relay UE to trigger relay reselection. |
| ***sl-FilterCoefficientU2U***Specifies L3 filter coefficient for SL-RSRP measurement results from L1 filter. |
| ***sd-RSRP-ThreshU2U***Indicates the threshold of SD-RSRP for a U2U Remote UE to perform discovery and Relay UE selection/ reselection. For discovery, the U2U Remote UE applies the value of this field to evaluate AS layer conditions to decide whether to respond the discovery message when performing the U2U Relay Discovery with Model B as specified in TS 23.304 [65]. For relay selection and reselection, the U2U remote UE applies the value of this field to evaluate AS layer conditions on direct PC5 link to trigger relay selection, and evaluate AS layer conditions on U2U relay link to trigger relay reselection. The target U2U remote UE applies the value of this field to evaluate AS layer conditions trigger relay selection when performing U2U relay communication with integrated Discovery as specified in TS 23.304 [65].  |
| ***sd-FilterCoefficientU2U***Specifies L3 filter coefficient for SD-RSRP measurement results from L1 filter, and for SL-RSRP measurement. |

|  |  |
| --- | --- |
| Conditional Presence | Explanation |
| *SL-RSRP-ThreshU2U* | This field is mandatory present if *sl-RSRP-ThreshU2U* is included. Otherwise, the field is absent, Need R. |
| *SD-RSRP-ThreshU2U* | This field is mandatory present if *sd-RSRP-ThreshU2U* is included. Otherwise, the field is absent, Need R. |

Next Change

6.6.2 Message definitions

<unrelated part is omitted>

#### – *RRCReconfigurationSidelink*

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

Signalling radio bearer: SL-SRB3

RLC-SAP: AM

Logical channel: SCCH

Direction: UE to UE

*RRCReconfigurationSidelink* message

-- ASN1START

-- TAG-RRCRECONFIGURATIONSIDELINK-START

RRCReconfigurationSidelink ::= SEQUENCE {

 rrc-TransactionIdentifier-r16 RRC-TransactionIdentifier,

 criticalExtensions CHOICE {

 rrcReconfigurationSidelink-r16 RRCReconfigurationSidelink-r16-IEs,

 criticalExtensionsFuture SEQUENCE {}

 }

}

RRCReconfigurationSidelink-r16-IEs ::= SEQUENCE {

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

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

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

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

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

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

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 nonCriticalExtension RRCReconfigurationSidelink-v1700-IEs OPTIONAL

}

RRCReconfigurationSidelink-v1700-IEs ::= SEQUENCE {

 sl-DRX-ConfigUC-PC5-r17 SetupRelease { SL-DRX-ConfigUC-r17 } OPTIONAL, -- Need M

 sl-LatencyBoundIUC-Report-r17 SetupRelease { SL-LatencyBoundIUC-Report-r17 } OPTIONAL, -- Need M

 sl-RLC-ChannelToReleaseListPC5-r17 SEQUENCE (SIZE (1..maxSL-LCID-r16)) OF SL-RLC-ChannelID-r17 OPTIONAL, -- Need N

 sl-RLC-ChannelToAddModListPC5-r17 SEQUENCE (SIZE (1..maxSL-LCID-r16)) OF SL-RLC-ChannelConfigPC5-r17 OPTIONAL, -- Need N

 nonCriticalExtension RRCReconfigurationSidelink-v1800-IEs OPTIONAL

}

RRCReconfigurationSidelink-v1800-IEs ::= SEQUENCE {

 sl-SFN-DFN-Offset-r18 SetupRelease { SL-SFN-DFN-Offset-r18 } OPTIONAL, -- Need M

 sl-CarrierToAddModList-r18 SEQUENCE (SIZE (1..maxNrofFreqSL-1-r18)) OF SL-CarrierConfig-r18 OPTIONAL, -- Need N

 sl-CarrierToReleaseList-r18 SEQUENCE (SIZE (1..maxNrofFreqSL-1-r18)) OF SL-CarrierId-r18 OPTIONAL, -- Need N

 sl-RLC-BearerToAddModList-r18 SEQUENCE (SIZE(1..maxNrofSLRB-r16)) OF SL-RLC-BearerConfig-r18 OPTIONAL, -- Need N

 sl-RLC-BearerToReleaseList-r18 SEQUENCE (SIZE(1..maxNrofSLRB-r16)) OF SL-RLC-BearerConfigIndex-r18 OPTIONAL, -- Need N

 sl-LocalID-PairToAddModList-r18 SEQUENCE (SIZE (1..maxNrofSL-Dest-r16)) OF SL-SRAP-ConfigPC5-r18 OPTIONAL, -- Need N

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

SL-CarrierConfig-r18 ::= SEQUENCE {

 sl-CarrierId-r18 SL-CarrierId-r18,

 sl-OffsetToCarrier-r18 INTEGER (0..2199),

 subcarrierSpacing-r18 SubcarrierSpacing,

 carrierBandwidth-r18 INTEGER (1..maxNrofPhysicalResourceBlocks),

 sl-AbsoluteFrequencyPointA-r18 ARFCN-ValueNR

}

SL-CarrierId-r18 ::= INTEGER (1..maxNrofFreqSL-1-r18)

SL-RLC-BearerConfig-r18 ::= CHOICE {

 srb SEQUENCE {

 sl-SRB-IdentityWithDuplication INTEGER (1..3),

 sL-RLC-BearerConfigIndex-r18 SL-RLC-BearerConfigIndex-r18,

 ...

 },

 drb SEQUENCE {

 slrb-PC5-ConfigIndex-r18 SLRB-PC5-ConfigIndex-r16,

 sL-RLC-BearerConfigIndex-r18 SL-RLC-BearerConfigIndex-r18,

 sl-RLC-ConfigPC5-r18 SL-RLC-ConfigPC5-r16 OPTIONAL, -- Need M

 sl-MAC-LogicalChannelConfigPC5-r18 SL-LogicalChannelConfigPC5-r16 OPTIONAL, -- Need M

 ...

 }

}

SL-RLC-BearerConfigIndex-r18 ::= INTEGER (1..maxSL-LCID-r16)

SL-LatencyBoundIUC-Report-r17::= INTEGER (3..160)

SLRB-Config-r16::= SEQUENCE {

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

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

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

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

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

 ...

}

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

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

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

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

 sl-SDAP-Header-r16 ENUMERATED {present, absent},

 ...

}

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

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

 sl-OutOfOrderDelivery-r16 ENUMERATED { true } OPTIONAL, -- Need R

 ...

}

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

 sl-AM-RLC-r16 SEQUENCE {

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

 ...

 },

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

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

 ...

 },

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

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

 ...

 }

}

SL-LogicalChannelConfigPC5-r16 ::= SEQUENCE {

 sl-LogicalChannelIdentity-r16 LogicalChannelIdentity,

 ...,

 [[

 sl-LogicalChannelIdentity-v1800 INTEGER (33..38) OPTIONAL -- Need M

 ]]

}

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

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

 sl-CSI-RS-FreqAllocation-r16 CHOICE {

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

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

 } OPTIONAL, -- Need M

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

 ...

}

SL-RLC-ChannelConfigPC5-r17::= SEQUENCE {

 sl-RLC-ChannelID-PC5-r17 SL-RLC-ChannelID-r17,

 sl-RLC-ConfigPC5-r17 SL-RLC-ConfigPC5-r16 OPTIONAL, -- Need M

 sl-MAC-LogicalChannelConfigPC5-r17 SL-LogicalChannelConfigPC5-r16 OPTIONAL, -- Need M

 ...

}

SL-SFN-DFN-Offset-r18 ::= SEQUENCE {

 sl-FrameOffset-r18 INTEGER (0..1023),

 sl-SubframeOffset-r18 INTEGER (0..9),

 sl-SlotOffset-r18 INTEGER (0..31)

}

SL-SRAP-ConfigPC5-r18 ::= SEQUENCE {

 sl-PeerRemoteUE-L2Identity-r18 SL-DestinationIdentity-r16 OPTIONAL, -- Need M

 sl-PeerRemoteUE-LocalIdentity-r18 INTEGER (0..255) OPTIONAL, -- Need M

 sl-RemoteUE-L2Identity-r18 SL-SourceIdentity-r17 OPTIONAL, -- Need M

 sl-RemoteUE-LocalIdentity-r18 INTEGER (0..255) OPTIONAL, -- Need M

 ...

}

-- TAG-RRCRECONFIGURATIONSIDELINK-STOP

-- ASN1STOP

|  |
| --- |
| *RRCReconfigurationSidelink* field descriptions |
| ***sl-AbsoluteFrequencyPointA***Absolute frequency of the reference resource block (Common RB 0). Its lowest subcarrier is also known as Point A. |
| ***sl-CarrierToAddModList***Indicate the carrier(s) to be added/modified for transmission by UE transmitting *RRCReconfigurationSidelink* message, corresponding to the frequency in *sl-FreqInfoListSizeExt* broadcast in *SIB12* or corresponding to the frequency in *sl-PreconfigFreqInfoListSizeExt* in *SL-PreconfigurationNR*. |
| ***sl-CarrierToReleaseList***Indicate the carrier(s) to be released for the transmission by UE transmitting *RRCReconfigurationSidelink* message. |
| ***sl-CSI-RS-FreqAllocation***Indicates the frequency domain position for sidelink CSI-RS. |
| ***sl-CSI-RS-FirstSymbol***Indicates the position of first symbol of sidelink CSI-RS. |
| ***sl-DRX-ConfigUC-PC5***Indicates the NR sidelink DRX configuration for unicast communication, as specified in TS 38.321 [3] |
| ***sl-LatencyBoundCSI-Report***Indicates the latency bound of SL CSI report from the associated SL CSI triggering in terms of number of slots. |
| ***sl-LatencyBoundIUC-Report***Indicates the latency bound of SL Inter-UE coordination report from the associated SL Inter-UE coordination explicit request triggering in terms of number of slots. |
| ***sl-LocalID-PairToAddModList***Indicate a list of local ID pair which is assigned for one end-to-end PC5 connection by the L2 U2U Relay UE. |
| ***sl-LogicalChannelIdentity***Indicates the identity of the sidelink logical channel, as specified in TS 38.321 [3], clause 6.2.4. If the *sl-LogicalChannelIdentity-v1800* is present, the UE shall ignore the *sl-LogicalChannelIndentity-r16* field. |
| ***sl-MappedQoS-FlowsToAddList***Indicate the QoS flows to be mapped to the configured sidelink DRB. Each entry is indicated by the *SL-PQFI*, which is used between UEs, as defined in TS 23.287 [55]. |
| ***sl-MappedQoS-FlowsToReleaseList***Indicate the QoS flows to be released from the configured sidelink DRB. Each entry is indicated by the *SL-PQFI*, which is used between UEs, as defined in TS 23.287 [55]. |
| ***sl-MeasConfig***Indicates the sidelink measurement configuration for the unicast destination. |
| ***sl-OffsetToCarrier***Offset in frequency domain between Point A (lowest subcarrier of common RB 0) and the lowest usable subcarrier on this carrier in number of PRBs (using the subcarrierSpacing defined for this carrier). The maximum value corresponds to 275\*8-1. See TS 38.211 [16], clause 4.4.2. |
| ***sl-OutOfOrderDelivery***Indicates whether or not outOfOrderDelivery specified in TS 38.323 [5] is configured. This field should be either always present or always absent, after the sidelink radio bearer is established. |
| ***sl-PDCP-SN-Size***Indicates the PDCP SN size of the configured sidelink DRB. |
| ***sl-Resetconfig***Indicates that the full configuration should be applicable for the *RRCReconfigurationSidelink* message. |
| ***sl-RLC-BearerToAddModList***Indicate the additional Sidelink RLC bearer to be added / modified for the configured sidelink SRB/DRB. |
| ***sl-RLC-BearerToReleaseList***Indicate the additional Sidelink RLC bearer to be released for the configured sidelink SRB/DRB. |
| ***sl-SDAP-Header***Indicates whether or not a SDAP header is present on this sidelink DRB. |
| ***sl-SFN-DFN-Offset***Indicates the SFN-DFN offset to be used for determining the SFN timeline based on the DFN timeline. |
| ***sl-SRB-IdentityWithDuplication***Indicate the sidelink SRB for which duplication is configured. |
| ***slrb-PC5-ConfigIndex***Indicates the identity of the configuration of a sidelink DRB. In case of L2 U2U relay, only value 4-31 can be signaled for an end-to-end sidelink DRB, and all other values are reserved. |

|  |
| --- |
| *SL-SRAP-ConfigPC5* field descriptions |
| ***sl-RemoteUE-LocalIdentity***Indicates the local UE ID of the L2 U2U Remote UE used in SRAP as specified in TS 38.351 [66]. |
| ***sl-RemoteUE-L2Identity***Indicates the Source L2 ID of the L2 U2U Remote UE as specified in TS 23.304 [65]. |
| ***sl-PeerRemoteUE-LocalIdentity***Indicates the local UE ID of the peer L2 U2U Remote UE used in SRAP as specified in TS 38.351 [66]. |
| ***sl-PeerRemoteUE-L2Identity***Indicates the destination L2 ID identifying the peer L2 U2U Remote UE as specified in TS 23.304 [65]. |

Next Change

#### – *UEInformationResponseSidelink*

The *UEInformationResponseSidelink* message is used to deliver UE information in sidelink, e.g. the split QoS information for L2 U2U Relay operation.

Signalling radio bearer: SL-SRB3

RLC-SAP: AM

Logical channel: SCCH

Direction: L2 U2U Relay UE to L2 U2U Remote UE

*UEInformationResponseSidelink* message

-- ASN1START

-- TAG-UEINFORMATIONRESPONSESIDELINK-START

UEInformationResponseSidelink-r18 ::= SEQUENCE {

 rrc-TransactionIdentifier-r18 RRC-TransactionIdentifier,

 criticalExtensions CHOICE {

 ueInformationResponseSidelink-r18 UEInformationResponseSidelink-r18-IEs,

 criticalExtensionsFuture SEQUENCE {}

 }

}

UEInformationResponseSidelink-r18-IEs ::= SEQUENCE {

 sl-SplitQoS-InfoListPC5-r18 SEQUENCE (SIZE (1.. maxNrofSL-QFIs-r16)) OF SL-SplitQoS-InfoPC5-r18 OPTIONAL, -- Need N

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

SL-SplitQoS-InfoPC5-r18 ::= SEQUENCE {

 sl-QoS-FlowIdentity-r18 SL-QoS-FlowIdentity-r16,

 sl-SplitPacketDelayBudget-r18 INTEGER (0..1023)

}

-- TAG-UEINFORMATIONRESPONSESIDELINK-STOP

-- ASN1STOP

|  |
| --- |
| *UEInformationResponseSidelink* field descriptions |
| ***sl-SplitQoS-InfoListPC5***Indicates the split PDB on the first PC5 hop between L2 U2U Relay UE and the L2 U2U Remote UE for a list of QoS flow indicated by *sl-QoS-FlowIdentity* for one or more end-to-end PC5 connections. *sl-SplitPacketDelayBudget* indicates upper bound value for the delay that a packet may experience expressed in unit of 0.5ms. |

Next Change

## 9.3 Sidelink pre-configured parameters

<unrelated part is omitted>

#### *SL-PreconfigurationNR*

The IE *SL-PreconfigurationNR* includes the sidelink pre-configured parameters used for NR sidelink communication. Need codes or conditions specified for subfields in *SL-PreconfigurationNR* do not apply.

*SL-PreconfigurationNR* information elements

-- ASN1START

-- TAG-SL-PRECONFIGURATIONNR-START

SL-PreconfigurationNR-r16 ::= SEQUENCE {

 sidelinkPreconfigNR-r16 SidelinkPreconfigNR-r16,

 ...

}

SidelinkPreconfigNR-r16 ::= SEQUENCE {

 sl-PreconfigFreqInfoList-r16 SEQUENCE (SIZE (1..maxNrofFreqSL-r16)) OF SL-FreqConfigCommon-r16 OPTIONAL,

 sl-PreconfigNR-AnchorCarrierFreqList-r16 SL-NR-AnchorCarrierFreqList-r16 OPTIONAL,

 sl-PreconfigEUTRA-AnchorCarrierFreqList-r16 SL-EUTRA-AnchorCarrierFreqList-r16 OPTIONAL,

 sl-RadioBearerPreConfigList-r16 SEQUENCE (SIZE (1..maxNrofSLRB-r16)) OF SL-RadioBearerConfig-r16 OPTIONAL,

 sl-RLC-BearerPreConfigList-r16 SEQUENCE (SIZE (1..maxSL-LCID-r16)) OF SL-RLC-BearerConfig-r16 OPTIONAL,

 sl-MeasPreConfig-r16 SL-MeasConfigCommon-r16 OPTIONAL,

 sl-OffsetDFN-r16 INTEGER (1..1000) OPTIONAL,

 t400-r16 ENUMERATED{ms100, ms200, ms300, ms400, ms600, ms1000, ms1500, ms2000} OPTIONAL,

 sl-MaxNumConsecutiveDTX-r16 ENUMERATED {n1, n2, n3, n4, n6, n8, n16, n32} OPTIONAL,

 sl-SSB-PriorityNR-r16 INTEGER (1..8) OPTIONAL,

 sl-PreconfigGeneral-r16 SL-PreconfigGeneral-r16 OPTIONAL,

 sl-UE-SelectedPreConfig-r16 SL-UE-SelectedConfig-r16 OPTIONAL,

 sl-CSI-Acquisition-r16 ENUMERATED {enabled} OPTIONAL,

 sl-RoHC-Profiles-r16 SL-RoHC-Profiles-r16 OPTIONAL,

 sl-MaxCID-r16 INTEGER (1..16383) DEFAULT 15,

 ...,

 [[

 sl-DRX-PreConfigGC-BC-r17 SL-DRX-ConfigGC-BC-r17 OPTIONAL,

 sl-TxProfileList-r17 SL-TxProfileList-r17 OPTIONAL,

 sl-PreconfigDiscConfig-r17 SL-RemoteUE-Config-r17 OPTIONAL

 ]],

 [[

 sl-PreconfigFreqInfoListSizeExt-v1800 SEQUENCE (SIZE (1..maxNrofFreqSL-1-r18)) OF SL-FreqConfigCommon-r16 OPTIONAL,

 sl-RLC-BearerConfigListSizeExt-v1800 SEQUENCE (SIZE (1..maxSL-LCID-r16)) OF SL-RLC-BearerConfig-r16 OPTIONAL,

 sl-SyncFreqList-r18 SEQUENCE (SIZE (1..maxNrofFreqSL-r16)) OF SL-Freq-Id-r16 OPTIONAL,

 sl-SyncTxMultiFreq-r18 ENUMERATED {true} OPTIONAL,

 sl-PreconfigDiscConfig-v1800 SL-PreconfigDiscConfig-v1800 OPTIONAL,

 sl-PosPreconfigFreqInfoList-r18 SEQUENCE (SIZE (1..maxNrofFreqSL-r16)) OF SL-FreqConfigCommon-r16 OPTIONAL

 ]],

 [[

 t400-U2U-r18 ENUMERATED {ms200, ms400, ms600, ms800, ms1200, ms2000, ms3000, ms4000} OPTIONAL

 ]]

}

SL-TxProfileList-r17 ::= SEQUENCE (SIZE (1..256)) OF SL-TxProfile-r17

SL-TxProfile-r17 ::= ENUMERATED {drx-Compatible, drx-Incompatible, spare6, spare5, spare4, spare3,spare2, spare1}

SL-PreconfigGeneral-r16 ::= SEQUENCE {

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

 reservedBits-r16 BIT STRING (SIZE (2)) OPTIONAL,

 ...

}

SL-RoHC-Profiles-r16 ::= SEQUENCE {

 profile0x0001-r16 BOOLEAN,

 profile0x0002-r16 BOOLEAN,

 profile0x0003-r16 BOOLEAN,

 profile0x0004-r16 BOOLEAN,

 profile0x0006-r16 BOOLEAN,

 profile0x0101-r16 BOOLEAN,

 profile0x0102-r16 BOOLEAN,

 profile0x0103-r16 BOOLEAN,

 profile0x0104-r16 BOOLEAN

}

SL-PreconfigDiscConfig-v1800 ::= SEQUENCE {

 sl-RelayUE-PreconfigU2U-r18 SL-RelayUE-ConfigU2U-r18,

 sl-RemoteUE-PreconfigU2U-r18 SL-RemoteUE-ConfigU2U-r18

}

-- TAG-SL-PRECONFIGURATIONNR-STOP

-- ASN1STOP

| *SL-PreconfigurationNR* field descriptions |
| --- |
| ***sl-DRX-PreConfig-GC-BC***This field indicates the sidelink DRX configuration for groupcast and broadcast communication, as specified in TS 38.321 [3]. |
| ***sl-OffsetDFN***Indicates the timing offset for the UE to determine DFN timing when GNSS is used for timing reference. Value 1 corresponds to 0.001 milliseconds, value 2 corresponds to 0.002 milliseconds, and so on. If the field is absent, no offset is applied. |
| ***sl-PosPreconfigFreqInfoList***This field indicates the NR sidelink positioning carrier frequencies of SL-PRS dedicated resource pool for SL-PRS transmission and reception. In this release, only one entry of *SL-FreqConfigCommon* is included in the list. |
| ***sl-PreconfigDiscConfig***This field indicates the configuration for discovery message transmission used by NR sidelink U2N Remote UE, used by NR sidelink U2U Relay UE or used by NR sidelink U2U Remote UE.  |
| ***sl-PreconfigEUTRA-AnchorCarrierFreqList***This field indicates the EUTRA anchor carrier frequency list, which can provide the NR sidelink communication configuration. |
| ***sl-PreconfigFreqInfoList, sl-PreconfigFreqInfoListSizeExt***This field indicates the NR sidelink communication and/ or NR sidelink discovery configuration some carrier frequency(ies). In this release, only one *SL-FreqConfig* can be configured in *sl-PreconfigFreqInfoList*. More entries of SL-FreqConfig can be configured in *sl-PreconfigFreqInfoListSizeExt*.. |
| ***sl-PreconfigNR-AnchorCarrierFreqList***This field indicates the NR anchor carrier frequency list, which can provide the NR sidelink communication configuration. |
| ***sl-RadioBearerPreConfigList***This field indicates one or multiple sidelink radio bearer configurations. |
| ***sl-RLC-BearerPreConfigList, sl-RLC-BearerPreConfigListSizeExt***This field indicates one or multiple sidelink RLC bearer configurations. |
| ***sl-RoHC-Profiles***This field indicates the supported RoHC profiles for NR sidelink communications. |
| ***sl-SSB-PriorityNR***This field indicates the priority of NR sidelink SSB transmission and reception. |
| ***sl-SyncFreqList***Indicates a list of candidate carrier frequencies that can be used for the synchronisation of NR sidelink communication. For *SL-Freq-Id-r16*, the value 1 corresponds to the frequency of first entry in *sl-PreconfigFreqInfoList*, the value 2 corresponds to the frequency of first entry in *sl-PreconfigFreqInfoListSizeExt*, the value 3 corresponds to the frequency of second entry in *sl-PreconfigFreqInfoListSizeExt* and so on. |
| ***sl-SyncTxMultiFreq***Indicates that the UE transmits S-SSB on multiple carrier frequencies for NR sidelink communication. If this field is absent, the UE transmits S-SSB only on the synchronisation carrier frequency. |
| ***sl-TxProfileList***List of one or multiple Tx profiles, indicating the compatibility of supporting SL DRX as specified in TS 38.321 [3]. Value *drx-Compatible* means SL DRX is supported, and value *drx-Incompatible* means SL DRX is not supported. It is up to the UE implementation whether/how to apply this field. |
| ***t400***Indicates the value for timer T400 as described in clause 7.1. Value *ms100* corresponds to 100 ms, value *ms200* corresponds to 200 ms and so on. |
| ***t400-U2U***Indicates the value for timer T400 to be applied for end-to-end PC5 connection in sidelink U2U relay operation as described in clause 7.1. Value *ms200* corresponds to 200 ms, value *ms400* corresponds to 400 ms and so on. |

End of Changes