SLRelay Comments file

Template:

# Xnnn

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| Xnnn |  |  |  |  |  |  | vnnn | ToDo |

**[Description]**:

**[Proposed Change]**:

**[Comments]**:

# Z001

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| Z001 | NR\_SL\_relay\_multihop-Core | 1 | Single hop and multi-hop type differentiation | R2-25xxxxx | ZTE (Weiqiang Du) |  | V003 | ToDo |

**[Description]**: For below description, differentiation of single hop and multi-hop message is needed.

4> 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

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

**[Proposed Change]**: Adopt below change for all related conditions, will submit the RIL TP to show the necessary places if needed:

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

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

**[Comments]**:

# O500

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| O500 | NR\_SL\_relay\_multihop-Core | 1 | Last relay UE monitors PO based on *sl-PagingInfo-RemoteUE* or *sl-PagingInfo-RemoteUE-List* | R2-25xxxxx | OPPO (Bingxue Leng) |  | V004 | ToDo |

**[Description]**: Last relay UE should monitor PO for the downstream remote UEs based on the paging information in *sl-PagingInfo-RemoteUE* or *sl-PagingInfo-RemoteUE-List*

**[Proposed Change]**:

1> if the UE is acting as a L2 U2N Relay UE in case of single hop or L2 Last U2N Relay UE, for each of the *PagingRecord*, if any, included in the *Paging* message:

2> if the *ue-Identity* included in the *PagingRecord* in the *Paging* message matches the UE identity in *sl-PagingIdentityRemoteUE* included in *sl-PagingInfo-RemoteUE* or *sl-PagingInfo-RemoteUE-List* received in *RemoteUEInformationSidelink* message from a L2 U2N Remote UE or from a child L2 U2N Relay UE:

3> inititate the Uu Message transfer in sidelink to that UE as specified in 5.8.9.9;

**[Comments]**:

# Z002

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| Z002 | NR\_SL\_relay\_multihop-Core | 1 | RRC connection setup/resume initiation | R2-25xxxxx | ZTE (Weiqiang Du) |  | V003 | ToDo |

**[Description]**: As legacy, UE is allowed initiate RRC setup or resume to transmit L2 multihop relay discovery message if *sl-L2U2N-MH-Relay* is included in in SIB12..

**[Proposed Change]**: RAN2 is to agree that UE can initiate RRC Setup and Resume if network indicate support of MH, but corresponding pool is not configured, capture new condition in 5.3.3.1a and 5.3.13.1a as below:

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

**[Comments]**:

# O501

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| O501 | NR\_SL\_relay\_multihop-Core | 1 | Unnecessary differtiation of First U2N Relay and Intermediate U2N Relay |  | OPPO (Bingxue Leng) |  | V004 | ToDo |

**[Description]**: Based on the definition, First U2N Relay UE is also an Intermediate U2N Relay UE, so “the L2 First U2N Relay UE” can be removed to avoid misunderstanding.

**[Proposed Change]**:

The L2 U2N Remote UE or L2 Intermediate U2N Relay UE indicates to upper layers to trigger PC5 unicast link release with its connected parent L2 U2N Relay UE.

**[Comments]**:

# O502

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| O502 | NR\_SL\_relay\_multihop-Core | 1 | Clarification on the relationship between L2 U2N Relay UE and L2 Last U2N Relay UE |  | OPPO (Bingxue Leng) |  | V004 | ToDo |

**[Description]**: In the current RRC specification, for the procedures applicable to both single-hop U2N Relay UE and the Last Relay UE, sometimes it uses “L2 U2N Relay UE in case of single hop or the L2 Last U2N Relay UE”, sometimes it uses “L2 U2N Relay UE or the L2 Last U2N Relay UE”. The description should be aligned to avoid confusion

**[Proposed Change]**:

L2 U2N Relay UE in case of single hop or L2 Last U2N Relay UE

**[Comments]**:

# J001

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| J001 | NR\_SL\_relay\_multihop-Core | 1 | Add intermedia relay UE behavior for SRB1 in Remote UE Addition procedure |  | Sharp (LIU Lei) |  | V006 | ToDo |

**[Description]**: The SRAP spec has described how to determine egress RLC channel for SRB1, but RRC spec only includes the description applied for single hop relay UE and last relay UE. The behaviour of intermedia relay UE for SRB1 in Remote UE Addition procedure should be added.

**[Proposed Change]**:

1> for each *sl-L2IdentityRemote* value included in the *sl-RemoteUE-ToAddModList* that is not part of the current UE configuration (L2 U2N Remote UE Addition):

2> configure the parameters to SRAP entity in accordance with the *sl-SRAP-ConfigRelay* or *sl-SRAP-ConfigRelay-ToAddModList* if applicable;

2> for L2 U2N Relay UE in case of single hop or L2 Last U2N Relay UE:

3> if SRB1 is included in *sl-MappingToAddModList*, and *sl-EgressRLC-ChannelPC5* is configured:

4> release SL-RLC1, if established;

4> associate the PC5 Relay RLC channel as indicated by *sl-EgressRLC-ChannelPC5* with SRB1;

3> else: (i.e. SRB1 is not included in *sl-MappingToAddModList*, or SRB1 is included in *sl-MappingToAddModList*, but *sl-EgressRLC-ChannelPC5* is not configured)

4> if SL-RLC1 is not established:

5> apply the default configuration of SL-RLC1 as specified in clause 9.2.4 and associate it with the SRB1;

2> for L2 Intermediate U2N Relay UE:

3> if SRB1 is included in *sl-MappingToAddModList*, and *sl-EgressRLC-Channel-DL* is configured:

4> release SL-RLC1, if established;

4> associate the PC5 Relay RLC channel as indicated by *sl-EgressRLC-Channel-DL* with SRB1;

3> else: (i.e. SRB1 is not included in *sl-MappingToAddModList*, or SRB1 is included in *sl-MappingToAddModList*, but *sl-EgressRLC-Channel-DL* is not configured)

4> if SL-RLC1 is not established:

5> apply the default configuration of SL-RLC1 as specified in clause 9.2.4 and associate it with the SRB1;

**[Comments]**:

# Z003

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| Z003 | NR\_SL\_relay\_multihop-Core | 1 | SUI initiation for MH | R2-25xxxxx | ZTE (Weiqiang Du) |  | V003 | ToDo |

**[Description]**: As legacy, My understanding is that for each condition for *sl-L2U2N-Relay*, there should be a corresponding new condition for *sl-L2U2N-MH-Relay*. Will submit the CR to show all the necessary changes, if needed.

**[Proposed Change]**:In clause 5.8.3.3, review all conditions of *sl-L2U2N-Relay*, and create new conditions for *sl-L2U2N-MH-Relay* correspondingly, if necessary, for example:

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

**[Comments]**:

# O503

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| O503 | NR\_SL\_relay\_multihop-Core | 1 | SUI initiation for discovery transmission resource requesting | R2-25xxxxx | OPPO (Bingxue Leng) |  | V004 | ToDo |

**[Description]**: In legacy, the SUI for discovery transmission resource requesting is initiated if discovery transmission condition is met (as specified in clause 5.8.13.3), i.e., the threshold condition, this should be followed in multo-hop U2N Relay. For MH-U2N Relay, the following condition is defined:

For the last relay UE, 1) Uu lower bound is defined (same value as single-hop U2N Relay UE); 2) PC5 threshold is defined for Model-B respond message transmission if there is no PC5 connection with the child node;

For the intermediate relay UE, 1) Uu upper bound is defined (same value as single-hop U2N Remote UE); 2) PC5 threshold is defined for Model-B solicitation message transmission.

**[Proposed Change]**:

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

4> if the UE is capable of Last U2N Relay UE, and if *SIB12* includes *sl-RelayUE-ConfigCommon*, and if the Last U2N Relay UE UE threshold condition as specified in 5.8.14.2 are met when the UE has the PC5 connection with the Child UE; Or if the UE is capable of Last U2N Relay UE, and if *SIB12* includes *sl-RelayUE-ConfigCommon* and *sl-RelayUE-ConfigCommonMH*, and if the Last U2N Relay UE UE threshold condition as specified in 5.8.14.2 and 5.8.XX.2 are met when the UE has no PC5 connection with the Child UE; or

4> if the UE is capable of Intermediate U2N Relay UE, and if *SIB12* includes *sl-RemoteUE-ConfigCommon*, and if the U2N Remote UE threshold conditions as specified in 5.8.15.2 are met when the UE has the PC5 connection with the Parent UE; Or if the UE is capable of Intermediate U2N Relay UE, and if SIB12 includes *sl-RemoteUE-ConfigCommon* and *sl-RelayUE-ConfigCommonMH*, and if the U2N Remote UE threshold conditions as specified in 5.8.15.2 and Intermediate Relay UE threshold as specified in 5.8.XX.2 are both met when the UE has no PC5 connection with the Parent UE; or

**[Comments]**:

# Z004

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| Z004 | NR\_SL\_relay\_multihop-Core | 1 | Source L2 ID report | R2-25xxxxx | ZTE (Weiqiang Du) |  | V003 | ToDo |

**[Description]**: In legacy, for D2I path switch, remote UE will report it’s source L2 ID to network, so that network can send SRAP configuration to target relay UE before remote UE switch to target path.

**[Proposed Change]**: Suggest RAN2 to agree MH remote UE will report it’s own SRC L2 ID to network and capture below text:

3> if *SIB12* includes *sl-L2U2N-Relay* or *sl-L2U2N-MH-Relay* and the UE is capable of L2 U2N remote UE:

4> include *sl-SourceIdentityRemoteUE* corresponding to the upstream direction and set it to the source identity configured by upper layer for NR sidelink L2 U2N relay communication transmission;

**[Comments]**:

# Z005

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| Z005 | NR\_SL\_relay\_multihop-Core | 1 | Paging ID report | R2-25xxxxx | ZTE (Weiqiang Du) |  | V003 | ToDo |

**[Description]**: In legacy, relay UE will report paging ID information of it’s connected remote UE, each paging ID is associated to L2 ID of connected remote UE. For MH relay, relay UE may also receives the more than one unconnected child UE’s paging information from it’s connected child UE, all these paging information will be associated to connected child UE’s L2 ID. In last RAN2 meeting, we have agreed to introduce a paging ID list in PC5 remote UE information message to solve this issue. We think same rule shall be applied in SUI message.

**[Proposed Change]**: RAN2 is to agree to introduce a paging ID list in *SL-TxResourceReqL2U2N-Relay-r17*.

**[Comments]**:

# Z006

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| Z006 | NR\_SL\_relay\_multihop-Core | 1 | UE type in SUI message | R2-25xxxxx | ZTE (Weiqiang Du) |  | V003 | ToDo |

**[Description]**: For intermediate relay UE, it has both relay UE and remote UE functionality. In SUI message, UE should report the requirements of discovery message and set the UE type to remote UE or relay UE. How intermediate relay UE set the UE type in *sl-TxResourceReqListDisc* is not clear.

4> include *sl-TxResourceReqListDisc* and set its fields (if needed) as follows for each destination for which it requests network to assign NR sidelink discovery messages resource:

\*\*\*\*

5> if the UE is acting as L2/L3 U2U Relay UE:

6> include *ue-TypeU2U* and set it to *relayUE*;

5> if the UE is acting as L2/L3 U2U Remote UE:

6> include *ue-TypeU2U* and set it to *remoteUE*;

**[Proposed Change]**:

Solution1: Clarify that intermediate relay UE will use different L2 ID for remote UE discovery and relay UE discovery, which may need double check with SA2.

Solution2: If it is possible that UE use same L2 ID for remote UE and relay UE discovery, a new UE type is needed.

**[Comments]**:

# Z007

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| Z007 | NR\_SL\_relay\_multihop-Core | 1 | Paging info list reception handling | R2-25xxxxx | ZTE (Weiqiang Du) |  | V003 | ToDo |

**[Description]**:operation related to sl-PagingInfo-RemoteUE-List is missing in clause 5.8.9.8.3

**[Proposed Change]**:

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

3> if the *sl-PagingInfo-RemoteUE or sl-PagingInfo-RemoteUE-List* is set to *setup*:

4> monitor the *Paging* message at the L2 U2N Remote UE's paging occasion calculated according to *sl-PagingIdentityRemoteUE* and *sl-PagingCycleRemoteUE* included in *sl-PagingInfo-RemoteUE*;

3> else (the *sl-PagingInfo-RemoteUEor sl-PagingInfo-RemoteUE-List* is set to *release*):

4> stop monitoring the *Paging* message at the L2 U2N Remote UE's paging occasion;

4> release the received paging information in *sl-PagingInfo-RemoteUE*;

2> else:

3> if the *sl-PagingInfo-RemoteUEor sl-PagingInfo-RemoteUE-List* is set to *setup*:

4> include the received *sl-PagingIdentityRemoteUE* in *SidelinkUEInformationNR* message and perform Sidelink UE information transmission in accordance with 5.8.3;

3> else (the *sl-PagingInfo-RemoteUE or sl-PagingInfo-RemoteUE-List* is set to *release*):

4> initiate transmission of the *SidelinkUEInformationNR* message to release the *sl-PagingIdentityRemoteUE* in *SidelinkUEInformationNR* message in accordance with 5.8.3;

4> release the received paging information in *sl-PagingInfo-RemoteUE*;

**[Comments]**:

# O504

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| O504 | NR\_SL\_relay\_multihop-Core | 1 | For Intermediate relay UE, the Paging/SIB associated with the downstream remote UEs may comes from Parent instead of the network | R2-25xxxxx | OPPO (Bingxue Leng) |  | V004 | ToDo |

**[Description]**: The Paging/SIB/posSIB acquisition at the Intermediate Relay UE, it may from the Parent UE instead of the network.

**[Proposed Change]**:

1> upon receiving *Paging* message related to the connected L2 U2N Remote UE or the Child UE from network (including *Paging* message within *RRCReconfiguration* message) or Parent UE;

1> upon acquisition of the SIB(s) requested by the connected L2 U2N Remote UE or by the Child UE (as indicated in *sl-RequestedSIB-List* in the *RemoteUEInformationSidelink*) or upon receiving the updated SIB(s) from network or Parent UE which has been requested by the connected L2 U2N Remote UE or by the Child UE;

1> upon acquisition of the posSIB(s) requested by the connected L2 U2N Remote UE or by the Child UE (as indicated in *sl-RequestedPosSIB-List* in the *RemoteUEInformationSidelink*) or upon receiving the updated posSIB(s) from network or Parent UE which have been requested by the connected L2 U2N Remote UE or by the Child UE;

1> upon unsolicited SIB1 forwarding to the connected L2 U2N Remote UE or by the Child UE or upon receiving the updated *SIB1* from network or Parent UE;

For each associated L2 U2N Remote UE or for each associated Child UE, the L2 U2N Relay UE shall set the contents of *UuMessageTransferSidelink* message as follows:

1> include *sl-PagingDelivery* if the *Paging* message received from network or Parent UE containing the *ue-Identity* of the L2 U2N Remote UE;

**[Comments]**:

# O505

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| O505 | NR\_SL\_relay\_multihop-Core | 1 | Whether sl-PagingDelivery in multi-hop case needs to be a list for multipe child UEs | R2-25xxxxx | OPPO (Bingxue Leng) |  | V004 | ToDo |

**[Description]**: It is agreed the Paging request can be a list for signalling efficiency. The same logic can be followd for the Paging delivery in UuMessageTransfer.

**[Proposed Change]**:

1> include *sl-PagingDelivery/ sl-PagingDelivery-List* if the *Paging* message(s) received from network or Parent UE containing the *ue-Identity* of the L2 U2N Remote UE(s);

**[Comments]**:

# O506

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| O506 | NR\_SL\_relay\_multihop-Core | 1 | Notification trigger at the Intermediate Relay UE | R2-25xxxxx | OPPO (Bingxue Leng) |  | V004 | ToDo |

**[Description]**: RRC connection failure case is also applicable to Intermediate Relay UE. Consideirng many trigger conditions for single hop can be reused for multihop, we can capture the trigger conditions together instead of duplicated capturing of the trigger conditions.

**[Proposed Change]**:

##### 5.8.9.10.2 Initiation

The Relay UE may initiate the procedure when one of the following conditions is met:

1> if the UE is acting as U2N Relay UE:

2> upon Uu RLF as specified in 5.3.10;

2> upon reception of an *RRCReconfiguration* including the *reconfigurationWithSync*;

2> upon cell reselection;

2> upon L2 U2N Relay UE's or Last U2N Relay UE’s RRC connection failure including RRC connection reject as specified in 5.3.3.5 and 5.3.13.10, and T300 expiry as specified in 5.3.3.7, and RRC resume failure as specified in 5.3.13.5;

2> upon relay reselection;

2> upon cell selection;

2> upon PC5 RLF with its parent relay UE;

2> upon reception of an *NotificationMessageSidelink* from the parent while in RRC\_CONNECTED;

1> if the UE is acting as L2 U2U Relay UE:

2> upon detection of PC5 RLF for the hop between the L2 U2U Relay UE and L2 U2U Remote UE as specified in 5.8.9.3;

2> upon PC5-RRC connection release for the per-hop link between the L2 U2U Relay UE and L2 U2U Remote UE as specified in 5.8.9.5;

Note 1: The Notification Message may not be sent by an Intermediate U2N relay UE in RRC\_IDLE or RRC\_INACTIVE to its child UEs if the relay reselection or cell selection does not cause the change of the serving cell.

##### 5.8.9.10.3 Actions related to transmission of *NotificationMessageSidelink* message

The Relay UE shall set the indication type as follows:

1> if the UE is acting as U2N Relay UE:

2> if the UE initiates transmission of the *NotificationMessageSidelink* message due to Uu RLF:

3> set the *indicationType* as *relayUE-Uu-RLF*;

2> else if the UE initiates transmission of the *NotificationMessageSidelink* message due to reconfiguration with sync:

3> set the *indicationType* as *relayUE-HO*;

2> else if the UE initiates transmission of the *NotificationMessageSidelink* message due to cell reselection:

3> set the *indicationType* as *relayUE-CellReselection*;

2> if the UE initiates transmission of the *NotificationMessageSidelink* message due to Uu RRC connection establishment/Resume failure:

3> set the *indicationType* as *relayUE-Uu-RRC-Failure*;

2> if the UE initiates transmission of the *NotificationMessageSidelink* message due to relay reselection:

3> set the *indicationType* as *relayUE-RelayReselection*;

2> else if the UE initiates transmission of the *NotificationMessageSidelink* message due to cell selection:

3> set the *indicationType* as *relayUE-CellSelection*;

2> else if the UE initiates transmission of the *NotificationMessageSidelink* message due to PC5 RLF with its parent Relay UE:

3> set the *indicationType* as *relayUE-PC5-RLF*;

2> else if the UE initiates transmission of the *NotificationMessageSidelink* message upon reception of the *NotificationMessageSidelink* message from the parent relay UE:

3> set the *indicationType* as received from the parent relay UE;

2> submit the *NotificationMessageSidelink* message to lower layers for transmission.

**[Comments]**:

# O507

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| O507 | NR\_SL\_relay\_multihop-Core | 1 | Missing Notification trigger at the intermediate relay UE | R2-25xxxxx | OPPO (Bingxue Leng) |  | V004 | ToDo |

**[Description]**:PC5 link release case is missed, and for the Notification reception from the parent, seems no reason to only restrict to CONNECTED case.

**[Proposed Change]**:

##### 5.8.9.10.2 Initiation

The Relay UE may initiate the procedure when one of the following conditions is met:

1> if the UE is acting as U2N Relay UE or Last U2N Relay UE:

2> upon Uu RLF as specified in 5.3.10;

2> upon reception of an *RRCReconfiguration* including the *reconfigurationWithSync*;

2> upon cell reselection;

2> upon L2 U2N Relay UE's or Last U2N Relay UE’s RRC connection failure including RRC connection reject as specified in 5.3.3.5 and 5.3.13.10, and T300 expiry as specified in 5.3.3.7, and RRC resume failure as specified in 5.3.13.5;

1> if the UE is acting as Intermediate U2N Relay UE:

2> upon relay reselection;

2> upon cell selection;

2> upon PC5 RLF or PC5-RRC connection release with its parent relay UE;

2> upon reception of an *RRCReconfiguration* including the *reconfigurationWithSync*;

2> upon reception of an *NotificationMessageSidelink* from the parent;

1> if the UE is acting as L2 U2U Relay UE:

2> upon detection of PC5 RLF for the hop between the L2 U2U Relay UE and L2 U2U Remote UE as specified in 5.8.9.3;

2> upon PC5-RRC connection release for the per-hop link between the L2 U2U Relay UE and L2 U2U Remote UE as specified in 5.8.9.5;

Note 1: The Notification Message may not be sent by an Intermediate U2N relay UE in RRC\_IDLE or RRC\_INACTIVE to its child UEs if the relay reselection or cell selection does not cause the change of the serving cell.

##### 5.8.9.10.3 Actions related to transmission of *NotificationMessageSidelink* message

The Relay UE shall set the indication type as follows:

1> if the UE is acting as U2N Relay UE or Last U2N Relay UE:

2> if the UE initiates transmission of the *NotificationMessageSidelink* message due to Uu RLF:

3> set the *indicationType* as *relayUE-Uu-RLF*;

2> else if the UE initiates transmission of the *NotificationMessageSidelink* message due to reconfiguration with sync:

3> set the *indicationType* as *relayUE-HO*;

2> else if the UE initiates transmission of the *NotificationMessageSidelink* message due to cell reselection:

3> set the *indicationType* as *relayUE-CellReselection*;

2> if the UE initiates transmission of the *NotificationMessageSidelink* message due to Uu RRC connection establishment/Resume failure:

3> set the *indicationType* as *relayUE-Uu-RRC-Failure*;

1> if the UE is acting as Intermediate U2N Relay UE:

2> if the UE initiates transmission of the *NotificationMessageSidelink* message due to relay reselection:

3> set the *indicationType* as *relayUE-RelayReselection*;

2> else if the UE initiates transmission of the *NotificationMessageSidelink* message due to cell selection:

3> set the *indicationType* as *relayUE-CellSelection*;

2> else if the UE initiates transmission of the *NotificationMessageSidelink* message due to PC5 RLF or PC5-RRC connection release with its parent Relay UE:

3> set the *indicationType* as *relayUE-PC5-RLF*;

2> else if the UE initiates transmission of the *NotificationMessageSidelink* message due to reconfiguration with sync:

3> set the *indicationType* as *relayUE-HO*;

2> else if the UE initiates transmission of the *NotificationMessageSidelink* message upon reception of the *NotificationMessageSidelink* message from the parent relay UE:

3> set the *indicationType* as received from the parent relay UE;

2> submit the *NotificationMessageSidelink* message to lower layers for transmission.

**[Comments]**:

# O508

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| O508 | NR\_SL\_relay\_multihop-Core | 1 | Discovery transmission condition | R2-25xxxxx | OPPO (Bingxue Leng) |  | V004 | ToDo |

**[Description]**: In legacy, for discovery transmission, the threshold condition (for both Uu and PC5) are checked for each discovery transmission. For MH-U2N Relay, the following condition is defined and should be captured in the specification properly:

For the last relay UE, 1) Uu lower bound is defined (same value as single-hop U2N Relay UE); 2) PC5 threshold is defined for Model-B respond message transmission if there is no PC5 connection with the child node;

For the intermediate relay UE, 1) Uu upper bound is defined (same value as single-hop U2N Remote UE); 2) PC5 threshold is defined for Model-B solicitation message transmission.

**[Proposed Change]**:

A UE capable of NR sidelink discovery that is configured by upper layer to transmit NR sidelink discovery message shall:

1> if the frequency used for NR sidelink discovery is included in *sl-FreqInfoToAddModList* in *sl-ConfigDedicatedNR* within *RRCReconfiguration* message; or if the frequency used for NR sidelink discovery is includedin *sl-FreqInfoList* within *SIB12*:

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

3> if the UE is acting as NR sidelink U2N Relay UE and *sl-DiscConfig* is included in *RRCReconfiguration*, and if the NR sidelink U2N Relay UE conditions as specified in 5.8.14.2 are met based on *sl-RelayUE-Config*; or

3> if the UE is selecting NR sidelink U2N Relay UE / has a selected NR sidelink U2N Relay UE/ configured with measurement object associated to L2 U2N Relay UEs in both single hop or multi hop case and *sl-DiscConfig* is included in *RRCReconfiguration*, and if the NR sidelink U2N Remote UE threshold conditions as specified in 5.8.15.2 are met based on *sl-RemoteUE-Config*; or

3> if the UE is acting as Last U2N Relay UE and *sl-DiscConfig* is included in *RRCReconfiguration*, and if the Last U2N Relay UE conditions as specified in 5.8.14.2 are met based on *sl-RelayUE-Config* when the UE has the PC5 connection with the Child UE; Or if the UE acting as Last U2N Relay UE is sending Discovery Response message with Model B as specified in TS 23.304 [65], and if *sl-DiscConfig* is included in *RRCReconfiguration,* and if the Last U2N Relay UE UE threshold condition as specified in 5.8.14.2 and 5.8.XX.2 are met based on *sl-RelayUE-ConfigCommon* and *sl-RelayUE-ConfigCommonMH* when the UE has no PC5 connection with the Child UE; or

3> if the UE is acting as Intermediate U2N Relay UE and *sl-DiscConfig* is included in *RRCReconfiguration*, and if the U2N Remote UE threshold conditions as specified in 5.8.15.2 are met based on *sl-RemoteUE-ConfigCommon* when the UE has the PC5 connection with the Parent UE; Or if the UE acting as Intermediate U2N Relay UE is sending Discovery Solicitation message with Model B as specified in TS 23.304 [65] and *sl-DiscConfig* is included in *RRCReconfiguration*, and if the U2N Remote UE threshold conditions as specified in 5.8.15 are met based on *sl-RemoteUE-ConfigCommon* and the NR sidelink multi-hop relay threshold conditions as specified in 5.8.x.2 are met based on *sl-RelayUE-ConfigMH*; or…

2> else if the cell chosen for NR sidelink discovery transmission provides *SIB12*:

3> if the UE is acting as NR sidelink U2N Relay UE and *sl-DiscConfigCommon* is included in *SIB12*, and if the NR sidelink U2N Relay UE threshold conditions as specified in 5.8.14.2 are met based on *sl-RelayUE-ConfigCommon* in *SIB12*; or

3> if the UE is selecting NR sidelink U2N Relay UE / has a selected NR sidelink U2N Relay UE in both single hop or multi hop case and *sl-DiscConfigCommon* is included in *SIB12*, and if the NR sidelink U2N Remote UE threshold conditions as specified in 5.8.15.2 are met based on *sl-RemoteUE-ConfigCommon* in *SIB12*; or

3> if the UE is acting as Last U2N Relay UE and *sl-DiscConfigCommon* is included in *SIB12*, and if the Last U2N Relay UE conditions as specified in 5.8.14.2 are met based on *sl-RelayUE-Config* when the UE has the PC5 connection with the Child UE; Or if the UE acting as Last U2N Relay UE is sending Discovery Response message with Model B as specified in TS 23.304 [65], and if *sl-DiscConfig* is included in *RRCReconfiguration,* and if the Last U2N Relay UE UE threshold condition as specified in 5.8.14.2 and 5.8.XX.2 are met based on *sl-RelayUE-ConfigCommon* and *sl-RelayUE-ConfigCommonMH* when the UE has no PC5 connection with the Child UE; or

3> if the UE acting as Intermediate U2N Relay UE has an established PC5 link with the selected parent U2N Relay UE, and if the NR sidelink U2N Remote UE threshold conditions as specified in 5.8.15.2 are met based on *sl-RemoteUE-ConfigCommon* in *SIB12*; or

3> if the UE acting as Intermediate U2N Relay UE is sending Discovery Solicitation message with Model B as specified in TS 23.304 [65] and *sl-DiscConfigCommon* is included in *SIB12*, and if the U2N Remote UE threshold conditions as specified in 5.8.15 are met based on *sl-RemoteUE-ConfigCommon* and if the NR sidelink multi-hop relay threshold conditions as specified in 5.8.x.2 are met based on *sl-RelayUE-ConfigCommonMH*; or

…

1> else if out of coverage on the concerned frequency for NR sidelink discovery:

2> if the UE is acting as L3 U2N Relay UE; or

2> if the UE is selecting NR sidelink U2N Relay UE / has a selected NR sidelink U2N Relay UE in both single hop or multi hop case and if the NR sidelink U2N Remote UE threshold conditions as specified in 5.8.15.2 are met based on *sl-PreconfigDiscConfig* in *SidelinkPreconfigNR*; or

2> if the UE acting as Intermediate U2N Relay UE has an established PC5 link with the selected parent U2N Relay UE, and if the NR sidelink U2N Remote UE threshold conditions as specified in 5.8.15.2 are met based on *sl-PreconfigDiscConfig* in *SidelinkPreconfigNR*; or

2> if the UE acting as Intermediate U2N Relay UE is sending Discovery Solicitation message with Model B as specified in TS 23.304 [65] and if the NR sidelink U2N Remote UE threshold conditions as specified in 5.8.15.2 are met based on *sl-PreconfigDiscConfig* in *SidelinkPreconfigNR* and if the NR sidelink multi-hop relay threshold conditions as specified in 5.8.x.2 are met based on *sl-PreconfigDiscConfig* in *SidelinkPreconfigNR*; or

**[Comments]**:

# O509

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| O509 | NR\_SL\_relay\_multihop-Core | 1 | No Discovery Solicitation Response message type |  | OPPO (Bingxue Leng) |  | V004 | ToDo |

**[Description]**: No Discovery Solicitation Response message type, so “Response” should be removed

**[Proposed Change]**:

1> if the threshold conditions for sending the Discovery Solicitation message with Model B Discovery specified in this clause were previously not met:

**[Comments]**:

# Z008

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| Z008 | NR\_SL\_relay\_multihop-Core | 1 | Upper bound for intermediate relay UE | R2-25xxxxx | ZTE (Weiqiang Du) |  | V003 | ToDo |

**[Description]**: RAN2 agreed that “*The network can configure an upper bound of Uu RSRP for the UE to operate as an intermediate relay UE. If the upper bound is not configured, there is no threshold, but this does not override the previous agreement.*”. I believe this should be a new separate Uu threshold for intermediate relay UE, but corresponding new threshold is missing

**[Proposed Change]**: Introduce a new separate Uu threshold for intermediate relay UE.

**[Comments]**:

# Z009

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| Z009 | NR\_SL\_relay\_multihop-Core | 1 | Prioritization between last relay UE and intermediate relay UE | R2-25xxxxx | ZTE (Weiqiang Du) |  | V003 | ToDo |

**[Description]**: In case the Uu threshold for intermediate relay UE and last relay UE is not configured or only Uu threshold for last relay UE is configured, we think UE should prioritize to operate as a last relay UE

**[Proposed Change]**: Capture in normative text to say that if both conditions for last relay UE operation and intermediate relay UE operation are met, UE shall prioritize to act as a last relay UE.

**[Comments]**:

# O510

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| O510 | NR\_SL\_relay\_multihop-Core | 1 | Clarification on how to understand the Paging message included in dedicatedPagingDelivery | R2-25xxxxx | OPPO (Bingxue Leng) |  | V004 | ToDo |

**[Description]**: It is described in the field description of dedicatedPagingDelivery: This field is used to transfer Paging message for the associated L2 U2N Remote UE or for the associated child UE to the L2 U2N Relay UE or to L2 Last U2N Relay UE in RRC\_CONNECTED. While it is not clear about how to understand the Paging message included in dedicatedPagingDelivery:

1/If only the directly connected remote UE’s Paging message can be include, then new IE for delivering of the indirectly connected remote UE’s paging is needed;

2/If both directly and indirectly connected remote UE’s Paging message can be included, the “or for the associated child UE” can be removed and rely on associated L2 U2N Remote UE to cover both directly and indirectly connected remote UEs

**[Proposed Change]**: The second option is preferred:

***dedicatedPagingDelivery***

This field is used to transfer *Paging* message for the associated L2 U2N Remote UE to the L2 U2N Relay UE in case of single hop or to L2 Last U2N Relay UE in RRC\_CONNECTED.

**[Comments]**:

# X500

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| X500 | SLRelay | 1 | U2N Relay UE needs clarification |  | Xiaomi (Shuai) |  | V005 | ToDo |

**[Description]**: Should add “in case of single hop” to avoid confusion. Due to “U2N Relay UE” is only referred to single-hop case, and Last U2N Relay UE is only referred to multi-hop case.

**[Proposed Change]**: See below change.

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

**[Comments]**:

# X501

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| X501 | SLRelay | 1 | SI request determination |  | Xiaomi (Xing Yang) |  | V005 | ToDo |

**[Description]**:

The intermediate relay UE shall also request the SIBs requested by child UE.

**[Proposed 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 or L2 Intermediate U2N Relay 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 or SIB(s) requested by child UE and the requested SIB has not been indicated in *RemoteUEInformationSidelink* message to the parent L2 U2N Relay UE before):

**[Comments]**:

# X502

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| X502 | SLRelay | 1 | Definition of Paging information is not clear |  | Xiaomi (Shuai) |  | V005 | ToDo |

**[Description]**: In clause 5.8.9.8.2, legacy paging information usually indicates paging message, while paging information here means paging monitoring parameter or paging information request, thus need to clarify.

**[Proposed Change]**: See below change.

2> if any *sl-PagingInfo-RemoteUE-List* or *sl-PagingInfo-RemoteUE* is received from the Child UE:

3> include the received paging information in the *sl-PagingInfo-RemoteUE-List*;

**[Comments]**:

# X503

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| X503 | SLRelay | 1 | Figure needs to be revised |  | Xiaomi (Shuai) |  | V005 | ToDo |

**[Description]**: Figure 5.8.9.8.1-1 should be revised to align with the below text “This procedure is used by a U2N Relay UE to send notification to the connected U2N Remote UE or to the connected child UE”.

**[Proposed Change]**: See below change.



Figure 5.8.9.8.1-1: Notification message in sidelink

This procedure is used by a U2N Relay UE to send notification to the connected U2N Remote UE or to the connected child UE, or used by a L2 U2U Relay UE to send notification to the L2 U2U Remote UE for an end-to-end PC5 connection when condition(s) as specified in 5.8.9.10.2 is met for the hop between the L2 U2U Relay UE and the peer L2 U2U Remote UE.

**[Comments]**:

# X504

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| X504 | SLRelay | 1 | Missed words |  | Xiaomi (Shuai) |  | V005 | ToDo |

**[Description]**: In clause 5.8.9.10.2, “relay UE” is missed after “parent”.

**[Proposed Change]**: See below change.

2> upon reception of an *RRCReconfiguration* including the *reconfigurationWithSync*;

2> upon reception of an *NotificationMessageSidelink* from the parent relay UE while in RRC\_CONNECTED;

**[Comments]**:

# J002

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| J002 | NR\_SL\_relay\_multihop-Core | 1 | Remove First U2N Relay UE in field description for *SL-RelayUE-ConfigMH* |  | Sharp (LIU Lei) |  | V006 | ToDo |

**[Description]**: First U2N Relay UE is immeterdiate U2N Relay UE, “First U2N Relay UE” in field description for *SL-RelayUE-ConfigMH* can be removed.

**[Proposed Change]**:

– SL-RelayUE-ConfigMH

The IE *SL-RelayUE-ConfigMH* specifies the threshold configuration information for NR sidelink Last U2N Relay UE or Intermediate U2N Relay UE.

*SL-RelayUE-ConfigMH* information element

-- ASN1START

-- TAG-SL-RELAYUE-CONFIGMH-START

SL-RelayUE-ConfigMH-r19::= SEQUENCE {

sd-RSRP-ThreshDiscConfigMH-r19 SL-RSRP-Range-r16,

sd-hystMaxRelayMH-r19 Hysteresis

}

-- TAG-SL-RELAYUE-CONFIGMH-STOP

-- ASN1STOP

| *SL-RelayUE-ConfigMH* field descriptions |
| --- |
| ***sd-RSRP-ThreshDiscConfigMH***  Indicates the threshold of SD-RSRP for an Last U2N Relay UE or Intermediate U2N Relay UE to evaluate AS layer conditions for discovery. The Last U2N relay UE applies the value of this field to evaluate AS layer conditions to decide whether to respond to the discovery solicitation message when performing the multi hop U2N Relay Discovery with Model B as specified in TS 23.304 [65]. The Intermediate U2N relay UE applies the value of this field to evaluate AS layer conditions to decide whether to forward the discovery solicitation message when performing the multi hop U2N Relay Discovery with Model B as specified in TS 23.304 [65]. |

**[Comments]**:

# X505

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| X505 | SLRelay | 1 | Wrong IE name |  | Xiaomi (Xing Yang) |  | V005 | ToDo |

**[Description]**:

The pre-fix of ‘mh-indicationType-r19’ should be removed to align with legacy IE names. Otherwise, the procedure text shall differentiate the two IEs.

**[Proposed Change]**:

## 6.6 PC5 RRC messages

=================================NEXT CHANGE=======================================

6.6.2 Message definitions

#### – *NotificationMessageSidelink*

The *NotificationMessageSidelink* message is used to send notification message from U2N Relay UE to the connected U2N Remote UE or from U2U Relay UE to the connected U2U Remote UE.

Signalling radio bearer: SL-SRB3

RLC-SAP: AM

Logical channel: SCCH

Direction: U2N Relay UE to U2N Remote UE or U2N Parent UE to U2N Child UE or U2U Relay UE to U2U Remote UE

*NotificationMessageSidelink* message

-- ASN1START

-- TAG-NOTIFICATIONMESSAGESIDELINK-START

NotificationMessageSidelink-r17 ::= SEQUENCE {

criticalExtensions CHOICE {

notificationMessageSidelink-r17 NotificationMessageSidelink-r17-IEs,

criticalExtensionsFuture SEQUENCE {}

}

}

NotificationMessageSidelink-r17-IEs ::= SEQUENCE {

indicationType-r17 ENUMERATED {

relayUE-Uu-RLF, relayUE-HO, relayUE-CellReselection,

relayUE-Uu-RRC-Failure

} OPTIONAL, -- Need N

lateNonCriticalExtension OCTET STRING OPTIONAL,

nonCriticalExtension NotificationMessageSidelink-v1800-IEs OPTIONAL

}

NotificationMessageSidelink-v1800-IEs ::= SEQUENCE {

sl-IndicationType-r18 ENUMERATED {relayUE-PC5-RLF, spare1} OPTIONAL, -- Need N

sl-DestinationIdentityRemoteUE-r18 SL-DestinationIdentity-r16 OPTIONAL, -- Need N

nonCriticalExtension NotificationMessageSidelink-v19xy-IEs OPTIONAL

}

NotificationMessageSidelink-v19xy-IEs ::= SEQUENCE {

indicationType-r19 ENUMERATED {

relayUE-RelayReselection,

relayUE-CellSelection

} OPTIONAL, -- Need N

nonCriticalExtension SEQUENCE {} OPTIONAL

}

-- TAG-NOTIFICATIONMESSAGESIDELINK -STOP

-- ASN1STOP

**[Comments]**:

Instructions:

1. Copy the template RIL comments fields above (including the Heading Xnnn)
2. Paste the RIL comments fields at its position while **respecting the order of the RILs in the Review file (i.e. keep the order of the spec).**
3. Fill in the fields, see R19 ASN.1 Guideline.
4. Companies may comment whether they agree or disagree.
5. Can copy spec text and use Word “Track changes”, etc.
6. Do not delete text added by other companies.