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Title: Summary of AI 6.7.2.5 on Discovery and relay re/selection

Agenda Item: 6.7.2.5

Document for: Discussion and Decision

# Introduction

This contribution is to summarize all contributions from agenda item 6.7.2.5 on Discovery and relay re/selection.

# Discussion

## 2.1 Issues suggested to be agreed

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| Tdoc Num and name | Proposal | Company | Impact on which Spec | Rapporteur Comments |
| R2-2205610 Correction on SL discovery and UL prioritization | Observation 1. The sidelink process in clause 5.22.1.3.1a can be applied to sidelink discovery message transmission prioritization over uplink transmission.  Observation 2. UL process for SL/UL prioritization in clause 5.4.2.2 needs to be updated to cover sidelink discovery message transmission.  Proposal 1. RAN2 is asked to discuss and accept the proposed TP in Annex A for UL process to determine UL and NR sidelink discovery transmission prioritization.  - if there are both a sidelink grant for transmission of NR sidelink communication and configured grant(s) for transmission of V2X sidelink communication on SL-SCH as determined in clause 5.14.1.2.2 of TS 36.321 [22] at the time of the transmission, and either only the transmission of NR sidelink communication is prioritized as determined in clause 5.22.1.3.1a or only the transmission(s) of V2X sidelink communication is prioritized as determined in clause 5.14.1.2.2 of TS 36.321 [22] and the MAC entity is able to perform this UL transmission simultaneously with the prioritized transmission of NR sidelink communication or V2X sidelink communication; or  - if there is a sidelink grant for transmission of sidelink discovery at the time of the transmission, and if the transmission of sidelink discovery is not prioritized as determined in clause 5.22.1.3.1a, or there is a sidelink grant for transmission of sidelink discovery at the time of the transmission and the MAC entity is able to perform this UL transmission simultaneously with the tranmission of sidelink discovery:  NOTE 1: Among the UL transmissions where the MAC entity is able to perform the transmission of NR sidelink communication prioritized simultaneously, if there are more than one UL transmission which the MAC entity is not able to perform simultaneously, it is up to UE implementation whether this UL transmission is performed.  NOTE 2: Among the UL transmissions that the MAC entity is able to perform simultaneously with all transmission(s) of V2X sidelink communication prioritized, if there are more than one UL transmission which the MAC entity is not able to perform simultaneously, it is up to UE implementation whether this UL transmission is performed.  NOTE 3: Among the UL transmissions where the MAC entity is able to perform the transmission of NR sidelink communication prioritized simultaneously with all transmission(s) of V2X sidelink communication prioritized, if there are more than one UL transmission which the MAC entity is not able to perform simultaneously, it is up to UE implementation whether this UL transmission is performed.  NOTE 4: If there is configured grant(s) for transmission of V2X sidelink communication on SL-SCH as determined in clause 5.14.1.2.2 of TS 36.321 [22] at the time of the transmission, and the MAC entity is not able to perform this UL transmission simultaneously with the transmission(s) of V2X sidelink communication, and prioritization-related information is not available prior to the time of the transmission due to processing time restriction, it is up to UE implementation whether this UL transmission is performed.  NOTE X: Among the UL transmissions where the MAC entity is able to perform the transmission of sidelink discovery prioritized simultaneously, if there are more than one UL transmission which the MAC entity is not able to perform simultaneously, it is up to UE implementation whether this UL transmission is performed. | Samsung | TS 38.321 | As the discovery transmission is on PC5 it is straightforward that this UL/SL prioritization can be applied to SL discovery. |
| R2-2204769  Introduction of LCID for discovery message | **Table 6.2.4-1 Values of LCID for SL-SCH**   |  |  | | --- | --- | | **Index** | **LCID values** | | 0 | SCCH carrying PC5-S messages that are not protected | | 1 | SCCH carrying PC5-S messages "Direct Security Mode Command" and "Direct Security Mode Complete" | | 2 | SCCH carrying other PC5-S messages that are protected | | 3 | SCCH carrying PC5-RRC messages | | 4–19 | Identity of the logical channel | | 20–57 | Reserved | | 58 | SCCH carrying discovery message | | 59 | Sidelink Inter-UE Coordination Request | | 60 | Sidelink Inter-UE Coordination Information | | 61 | Sidelink DRX Command | | 62 | Sidelink CSI Reporting | | 63 | Padding | | CATT | TS 38.321 | Can be directly agreed or handled by related CR rapporteur. |

**Proposal 1-1: RAN2 to agree UL/SL prioritization rules in MAC specification should also consider SL discovery transmissions.**

**Proposal 1-2: If Proposal 1-1 is agreed, further discuss whether the TP in R2-2205610 is agreeable.**

**Proposal 1-3: The TP in R2-2204769 (TS 38.321) to add definition of LCID for discovery is agreed.**

## 2.2 Issues suggested to be discussed

The following issues are

### 2.2.1 Relay Re/selection Requirement Conflict [M112]

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| Tdoc Num and name | Proposal | Company | Impact on which Spec | Rapporteur Comments |
| R2-2204587  Relay selection requirement conflict [M112][v208] | 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 suitable 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 preformed 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 when AS layer releases the the PC5-RRC connection with the currently selected U2N Relay UE as specified in clause 5.8.9.5; 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;  3> 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-FilterCoefficient-RSRP* in *SystemInformationBlockType12* (in coverage) or the preconfigured *sl-FilterCoefficient-RSRP* as defined in 9.3 (out of coverage), before using the SD-RSRP measurement results;  3> if the UE detects a candidate NR sidelink U2N Relay UE whose SD-RSRP exceeds *sl-RSRP-Thresh* by *sl-HystMin*:  4> perform cell selection in accordance with the cell selection process as specified in TS 38.304 [20], select a candidate NR sidelink U2N Relay UE for which SD-RSRP exceeds *sl-RSRP-Thresh* by *sl-HystMin*, or both;  NOTE 2: If multiple suitable candidate Relay UEs which meet all AS-layer & higher layer criteria are available, it is up to Remote UE implementation to choose one Relay UE. The details of the interaction with upper layers are up to UE implementation.  3> else:  4> consider no NR sidelink U2N Relay UE to be selected;  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 U2N Relay UEs are available, it is up to U2N Remote UE implementation to select either a cell or a U2N Relay UE. Furthermore, L3 U2N Remote UE’s selection on both cell and U2N Relay UE is also based on UE implementation. | MediaTek | TS 38.331 | In [Pre118-e][602], it is indicated as ‘To disc in May meeting’.  This issue can be discussed here in [610]. |

This contribution thinks that ‘The normative text within section 5.8.15.3 of TS38.331 says the L2 U2N Remote UE in in RRC\_IDLE or RRC\_INACTIVE shall select a new candidate relay UE always…, but the right behaviour is for the UE to evaluate whether suitable cells and/or relays are available, and apply the cell or relay selection procedure accordingly, with implementation freedom in case both are available’.

**Proposal 2-1: RAN2 to discuss whether the relay (re)selection procedure should be updated with adding cell (re)selection in the procedure text, and if yes, adopt the TP in R2-2204587 as baseline.**

### 2.2.2 Dedicated pool and shared pool prioritization for discovery MONITORING

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| Tdoc Num and name | Proposal | Company | Impact on which Spec | Rapporteur Comments |
| R2-2204636  Correction on [O042, O047-O049, O058-O060] | Reason for change:  3. [O058] The current description may lead to the result that sl-RxPool is used for reception of sidelink discovery even though sl-DiscRxPool is present, which is not the expected result.  5.8.13.2 Sidelink discovery monitoring  A UE capable of sidelink discovery that is configured by upper layers to monitor NR sidelink discovery messages shall:  1> if the frequency used for NR sidelink discovery is included in *sl-FreqInfoToAddModList* in *RRCReconfiguration* message and *sl-DiscConfig* is included in *RRCReconfiguration*; or if the frequency used for NR sidelink discovery is includedin *sl-FreqInfoList* included in *SIB12* and *sl-DiscConfigCommon* is included in *SIB12*:  2> if the UE is configured with *sl-DiscRxPool* for NR sidelink discovery reception included in *RRCReconfiguration* message with *reconfigurationWithSync* (i.e. handover):  3> configure lower layers to monitor sidelink control information and the corresponding data using the resource pool indicated by *sl-DiscRxPool* for NR sidelink discovery reception in *RRCReconfiguration*;  2> else if the UE is configured with *sl-RxPool* for NR sidelink discovery reception included in *RRCReconfiguration* message with *reconfigurationWithSync* (i.e. handover):  3> configure lower layers to monitor sidelink control information and the corresponding data using the resource pool indicated by *sl-RxPool* for NR sidelink discovery reception in *RRCReconfiguration*;  2> else if the cell chosen for NR sidelink discovery reception provides *SIB12*:  3> if *sl-DiscRxPool* for NR sidelink is included in *SIB12*:  4> configure lower layers to monitor sidelink control information and the corresponding data using the resource pool indicated by *sl-DiscRxPoo* for NR sidelink discovery reception *in SIB12*;  3> else if *sl-RxPool* for NR sidelink is included in *SIB12*:  4> configure lower layers to monitor sidelink control information and the corresponding data using the resource pool indicated by *sl-RxPool* for NR sidelink discovery reception *in SIB12*;  1> else:  2> if out of coverage on the concerned frequency for NR sidelink discovery:  3> if *sl-DiscRxPool* is included in *SL-PreconfigurationNR*:  4> configure lower layers to monitor sidelink control information and the corresponding data using the resource pool that were preconfigured by *sl-DiscRxPool* o for NR sidelink discovery reception in *SL-PreconfigurationNR*, asdefined in clause 9.3;  3> else:  4> configure lower layers to monitor sidelink control information and the corresponding data using the resource pool that were preconfigured by *sl-RxPool* for NR sidelink discovery reception in *SL-PreconfigurationNR*, asdefined in sub-clause 9.3; | OPPO | TS 38.331 | In [Pre118-e][602], it is indicated as ‘Prop agree’. But this issue is related to R2-2204675 and they can be discussed together. |
| R2-2204675  [V410][O058] Dedicated pool for discovery reception | Observation 1: Dedicated resource pool is prioritized for discovery monitoring over the shared resource pools.  Observation 2: For UEs under a same gNB, TX and RX have the same understanding whether to use dedicated resource pool for discovery, while the situation for different gNBs or pre-configuration is different which may lead UEs cannot discover each other.  Observation 3: For normal data transmission and reception, the UE just need to monitor the RX pools configured by network/pre-configuration, and how to configure appropriate RX pools to UE to not miss any transmission which is supposed to be received, is up to gNB implementation.  Proposal 1: RAN2 to discuss which option is the right understanding and do necessary specification modification accordingly:  Option-1: The UE should always prioritize to monitor dedicated resource pool for discovery once configured by network or pre-configuration. The dedicated pool should be a superset to cover all possible discovery transmission in different dedicated/shared pools, which can be left to gNB implementation.  Option-2: The UE should always monitor both dedicated and shared pool for discovery, considering there may be UEs under gNB that does not configure any dedicated resource pool for discovery.  Proposal 2: If option-1 is selected in Proposal 1, send an LS to RAN1 to confirm whether it is feasible to configure the dedicated discovery pool to be a superset to cover all possible discovery transmission in different dedicated/shared pools, considering the limitation on number of total RX pools. | vivo | TS 38.331 | See above. |

For now, in the specification, the dedicated resource pool is prioritized for discovery monitoring over the shared resource pools. In R2-2204675, it was questioned that whether this dedicated discovery pool should be prioritized when configured by gNB or pre-configuration, because it is not sure that the dedicated pool would be a superset to cover all possible discovery transmission in different dedicated/shared pools (which may be the assumption for normal data reception) and therefore needs to be confirmed.

**Proposal 2-2: RAN2 to discuss whether UE shall only monitor dedicated discovery RX pool(s) when performing discovery reception operation if the UE is (pre-)configured with dedicated discovery RX pool(s), and if yes, adopt the TP on [O058] in R2-2204636 as baseline.**

### 2.2.3 Resource pool selection procedure for discovery

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| Tdoc Num and name | Proposal | Company | Impact on which Spec | Rapporteur Comments |
| R2-2204768  Correlation on Resource Pool Selection for Discovery Message | 1> if the MAC entity has selected to create a selected sidelink grant corresponding to transmissions of multiple MAC PDUs, and SL data is available in a logical channel:  2> if the MAC entity has not selected a pool of resources allowed for the logical channel:  3> if SL data is available in the logical channel for sidelink discovery:  4> if *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon* is configured according to TS 38.331 [5]:  5> select the *sl-DiscTxPoolSelected* configured in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon* for the transmission of sidelink discovery message;  4> else:  5> select any pool of resources among the configured pools of resources;  3> else if *sl-HARQ-FeedbackEnabled* is set to *enabled* for the logical channel:  4> select any pool of resources configured with PSFCH resources among the pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon,* if configured.  3> else:  4> select any pool of resources among the pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon,* if configured.  2> perform the TX resource (re-)selection check on the selected pool of resources as specified in clause 5.22.1.2; | CATT | TS 38.321 | Can be discussed. |

Rapporteur thinks that it can be discussed whether the selection of discovery pool should be specified in MAC specification.

**Proposal 2-3: RAN2 to discuss whether resource pool selection procedure for discovery should be specified in MAC specification, and if yes, to further discuss whether the TP in R2-2204768 is agreeable.**

### 2.2.4 Uu Threshold for discovery MONITORING

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| Tdoc Num and name | Proposal | Company | Impact on which Spec | Rapporteur Comments |
| R2-2205345 Sidelink discovery operation - monitoring and transmission | Proposal 1: Confirm that a UE monitoring for NR sidelink discovery messages is acting as either an NR sidelink U2N Relay UE or an NR U2N sidelink Remote UE and meets the threshold conditions specified in 5.8.14.2 and 5.8.15.2 respectively. CR text could look as follows.  5.8.13.2 Sidelink discovery monitoring  A UE capable of acting as an NR sidelink U2N Relay UE or an NR U2N sidelink Remote UE meeting the threshold conditions specified in 5.8.14.2 and 5.8.15.2 respectively for sidelink discovery and ~~that~~ is configured by upper layers to monitor NR sidelink discovery messages shall: | Xiaomi | TS 38.331 | Can be discussed. |

The key issue here is that it is not clear whether the threshold to make a UE qualified for being a remote or relay UE, by controlling its discovery transmission, can also be used to determine whether a UE can MONITOR the discovery message. Rapporteur understands that this issue needs to be discussed because we don’t have explicit agreement to restrict the discovery reception by the Uu threshold configuration. However as 5.8.13.2 seems both cover relay and non-relay discovery, the condition to be specified just below this clause seems not appropriate.

**Proposal 2-4: RAN2 to discuss whether the Uu threshold conditions are also used to control whether a UE shall MONITOR discovery messages for relay operation, and if yes, to further discuss whether the TP in R2-2205345 is agreeable.**

### 2.2.5 Support of groupcast for discovery

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| Tdoc Num and name | Proposal | Company | Impact on which Spec | Rapporteur Comments |
| R2-2205963  Correction on Groupcast transmission mode support for sidelink discovery | Reason for change: RAN2 agreed the below proposals for Sidelink relay and non-relay discovery.  *Proposal 8: The same PDCP data PDU format as SL-SRB0 is used for sidelink discovery message (SL-SRB4), and the SDU type field is not used for SL-SRB4.*  *Proposal 7: RLC UM mode is used for SL-SRB4.*  *Proposal 10: The transmitting PDCP/RLC entity establishment for SL-SRB4 is requested by upper layer, e.g., if the transmission of PC5 discovery message for a specific destination is requested by upper layers, establish the corresponding PDCP/RLC entity for PC5 discovery message.*  *Proposal 5.1: [20/20] HARQ feedback is not supported for SL discovery transmission.*  Sidleink groupcast transmission mode requires HARQ, and since it was agreed that discovery transmission does not have HARQ feedback support, groupcast cannot be used for sidelink discovery.  SA2 TS 23.304 only defines that the upper layer indicating that a message is for SL discovery to AS layer. It does not include the transmission mode. Therefore, AS layer needs to have a consistent cast type for the SL Discovery message. Otherwise, Rx UEs would not be able to receive the discovery messages properly.  a) RX\_Next\_Reassembly – UM receive state variable  This state variable holds the value of the earliest SN that is still considered for reassembly. It is initially set to 0. For groupcast and broadcast of NR sidelink communication or for SL-SRB4 for broadcast based Relay discovery, it is initially set to the SN of the first received UMD PDU containing an SN. For the receiving UM RLC entity configured for MCCH or MTCH, it is up to UE implementation to set the initial value of RX\_Next\_Reassembly to a value before RX\_Next\_Highest.  b) RX\_Timer\_Trigger – UM *t-Reassembly* state variable  This state variable holds the value of the SN following the SN which triggered *t-Reassembly*.  c) RX\_Next\_Highest– UM receive state variable  This state variable holds the value of the SN following the SN of the UMD PDU with the highest SN among received UMD PDUs. It serves as the higher edge of the reassembly window. It is initially set to 0. For groupcast and broadcast of NR sidelink communication or for SL-SRB4 for broadcast based Relay discovery, it is initially set to the SN of the first received UMD PDU containing an SN. For the receiving UM RLC entity configured for MCCH or MTCH, it is initially set to the SN of the first received UMD PDU containing an SN. | Qualcomm | TS 38.322 | Can discuss |

This contribution thinks that ‘*Sidelink groupcast transmission mode requires HARQ, and since it was agreed that discovery transmission does not have HARQ feedback support, groupcast cannot be used for sidelink discovery’*. Rapporteur understands that it seems unnecessary to have this restriction for discovery messages to use groupcast. Also, this issue could be further checked with SA2, if preferred by companies.

**Proposal 2-5: RAN2 to discuss whether groupcast can be used for discovery transmission, and if no, adopt the TP in R2-2205963 as baseline.**

### 2.2.6 Support of configured grant for discovery

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| Tdoc Num and name | Proposal | Company | Impact on which Spec | Rapporteur Comments |
| R2-2205356  Discussion on MAC functionality for discovery | Proposal 1: RAN2 to confirm whether SL CG is supported for discovery message transmission, leave the MAC specification as it is and add the RRC specification change as proposed by [1].  Proposal 2: If it is confirmed that SL CG is not supported for discovery message transmission, the changes to MAC specification in Annex should be agreed. 5.22.1.4.1.2 Selection of logical channels The MAC entity shall for each SCI corresponding to a new transmission:  1> if *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon* is configured according to TS 38.331 [5]:  2> if the new transmission is associated with a sidelink grant in *sl-DiscTxPoolSelected* or *sl-DiscTxPoolScheduling* configured in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon*:  3> select a Destination associated with sidelink discovery as specified in TS 23.304 [26], having at least one of the logical channel with the highest priority, among the logical channels that satisfy all the following conditions for the SL grant associated to the SCI:  4> SL data is available for transmission; and  4> *SBj* > 0, in case there is any logical channel having *SBj* > 0.  2> else: | Huawei | TS 38.321 | In current MAC specification the SL CG is supported for discovery. According to the discussion there is no such agreement and thus can be discussed/confirmed. |

In RAN2 #116e, it was agreed:

*Proposal 1: In this release, for L2 U2N relay, remote UE can’t be configured to use CG type 1 of RA Mode 1 if relay connection has been setup*

So, for the case that remote UE transmitting relay discovery message after connection with relay, CG type 1 cannot be used. For relay UE, there seems no any restriction on using mode-1.

But for other cases, e.g., remote UE transmitting relay discovery message BEFORE connection with relay, or UE transmitting non-relay discovery message, discussion is needed.

**Proposal 2-6: RAN2 to discuss whether SL CG is supported for 1) non-relay discovery message transmission and 2) relay discovery message transmission by remote UE before connection with relay, and if both no, adopt the TP in R2-2205356 as baseline.**

## 2.3 Issues suggested to be handled by CR rapporteur

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| Tdoc Num and name | Proposal | Company | Impact on which Spec | Rapporteur Comments |
| R2-2204992 | 8.1 NR sidelink communication, and V2X sidelink communication, and NR sidelink discovery  The UE may transmit or receive NR sidelink communication if it fulfils the condition(s) defined in TS 38.331 [3], clause 5.8.2. When UE is in-coverage for sidelink operation as defined in clause 8.2, the UE may perform NR sidelink communication according to *SystemInformationBlockType12,* and when out-of-coverage for sidelink, the UE may perform NR sidelink communication according to *SL-V2X-PreconfigurationNR* or according to *SystemInformationBlockType12* of the cell on the frequency which provides inter-carrier NR sidelink configuration, as specified in TS 38.331 [3]. The UE shall not perform NR sidelink communication according to *SL-V2X-PreconfigurationNR* if the UE detects a cell providing NR sidelink configuration or inter-carrier NR sidelink configuration for the frequency UE is interested to perform NR sidelink communication on.  The UE may transmit or receive V2X sidelink communication if it fulfills the condition(s) defined in TS 36.331[6], clause 5.10.1d. When UE is in-coverage for sidelink operation as defined in clause 8.2, the UE may perform V2X sidelink communication according to *SystemInformationBlockType13/SystemInformationBlockType14* of the cell on an NR frequency.  The U2N Remote UE, the U2N Relay UE, or both may transmit or receive NR sidelink relay discovery (i.e., as specified in TS 23.304 [22]) if it fulfills the condition(s) defined in TS 38.331 [3].  8.2 Cell selection and reselection for Sidelink  The requirements defined in this clause for sidelink operation apply for UEs in RRC\_IDLE, RRC\_INACTIVE and in RRC\_CONNECTED. | OPPO | TS 38.304 | For the first change it seems ok to directly agree. For the second one, rapporteur understands by deleting ‘including relay’, it won’t make the readers to be aware that this section includes relay operation. Maybe better to change to ‘including both sidelink relay and non-relay operations’ |
| R2-2205114  Reduction of some parts of selection of logical channels in SL Relay | 5.22.1.4.1.2 Selection of logical channels  The MAC entity shall for each SCI corresponding to a new transmission:  ~~1> if~~ *~~sl-BWP-DiscPoolConfig~~* ~~or~~ *~~sl-BWP-DiscPoolConfigCommon~~* ~~is configured according to TS 38.331 [5]:~~   1. 1> if the new transmission is associated with a sidelink grant in *sl-DiscTxPoolSelected o*r *sl-DiscTxPoolScheduling* configured in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon*:   2> select a Destination asssociated with sidelink disovery as specified in TS 23.304 [x1] , having at least one of the logical channel with the highest priority, among the logical channels that satisfy all the following conditions for the SL grant associated to the SCI:  3> SL data is available for transmission; and  3> *SBj* > 0, in case there is any logical channel having *SBj* > 0; and  3> *sl-configuredGrantType1Allowed*, if configured, is set to *true* in case the SL grant is a Configured Grant Type 1; and  3> *sl-AllowedCG-List*, if configured, includes the configured grant index associated to the SL grant; and   1. 2~~> else:~~   ~~3> select a Destination associated with one of unicast, groupcast and broadcast (excluding the Destinaiton(s) associated with sidelink discovery as specified in TS 23.304 [x1]) , having at least one of the MAC CE and the logical channel with the highest priority, among the logical channels that satisfy all the following conditions and MAC CE(s), if any, for the SL grant associated to the SCI:~~  ~~4> SL data is available for transmission; and~~  ~~4>~~ *~~SBj~~* ~~> 0, in case there is any logical channel having~~ *~~SBj~~* ~~> 0; and~~  ~~4>~~ *~~sl-configuredGrantType1Allowed~~*~~, if configured, is set to~~ *~~true~~* ~~in case the SL grant is a Configured Grant Type 1; and~~  ~~4>~~ *~~sl-AllowedCG-List~~*~~, if configured, includes the configured grant index associated to the SL grant; and~~  ~~4>~~ *~~sl-HARQ-FeedbackEnabled~~* ~~is set to~~ *~~disabled~~*~~, if PSFCH is not configured for the SL grant associated to the SCI.~~  1> else:   1. 2> select a Destination associated to one of unicast, groupcast and broadcast(excluding the Destinaiton(s) associated with sidelink discovery as specified in TS 23.304 [x1]), having at least one of the MAC CE and the logical channel with the highest priority, among the logical channels that satisfy all the following conditions and MAC CE(s), if any, for the SL grant associated to the SCI:   3> SL data is available for transmission; and  3> *SBj* > 0, in case there is any logical channel having *SBj* > 0; and  3> *sl-configuredGrantType1Allowed*, if configured, is set to *true* in case the SL grant is a Configured Grant Type 1; and  3> *sl-AllowedCG-List*, if configured, includes the configured grant index associated to the SL grant; and  3> *sl-HARQ-FeedbackEnabled* is set to *disabled*, if PSFCH is not configured for the SL grant associated to the SCI.  NOTE 1: If multiple Destinations have the logical channels satisfying all conditions above with the same highest priority or if multiple Destinations have either the MAC CE and/or the logical channels satisfying all conditions above with the same priority as the MAC CE, which Destination is selected among them is up to UE implementation. | LG | TS 38.321 | Just for polishing the procedure text of LCH selection for discovery. Can be handled by CR rapporteur. |
| R2-2205345 Sidelink discovery operation - monitoring and transmission | Proposal 3: clarify the originator of SIB12 in the case where the concerned frequency for NR sidelink discovery operation does not provide SIB12, for the case of NR sidelink discovery reception and NR sidelink discovery transmission.  For, 5.8.13.2 Sidelink discovery monitoring …  2> else if for the cell chosen for NR sidelink discovery reception ~~provides~~ *SIB12* is provided:  And for, 5.8.13.3 Sidelink discovery transmission …  2> else if for the cell chosen for NR sidelink discovery transmission ~~provides~~ *SIB12* is provided | Xiaomi | TS 38.331 | The intention to clarify the cell definition for remote UE is OK as remote UE is actually out of coverage. The wording can be left to CR rapporteur. |

**Proposal 3: R2-2204992 (TS 38.304), R2-2205114(TS 38.321), and TP of P3 in R2-2205345(TS 38.331), can be handled by related CR rapporteur.**

## 2.4 Issues suggested to be de-prioritized

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tdoc Num and name | Proposal | Company | Impact on which Spec | Rapporteur Comments |
| R2-2205357  Assisting L2 Remote UE to correctly evaluate threshold condition | Observation 1: For L2 relay, the cell on which the UE camps is the L2 relay UE’s Pcell or camped cell in the specified threshold conditions.  Observation 2: Only with NCI of the Relay UE’s Pcell/camped cell, Remote UE cannot measure the Uu RSRP easily.  Proposal 1: Add the ARFCN and the PCI of Pcell/camped cell in the RRC container of the discovery message from the L2 relay UE to help remote UE evaluate the leaving threshold.  ***SL-AccessInfo-L2U2N* information elements**  -- ASN1START  -- TAG-SL-ACCESSINFO-L2U2N-START  NR-Sidelink-DiscoveryMessage DEFINITIONS AUTOMATIC TAGS ::= -- Rapp created new ASN.1 module here. FFS if should be like this  BEGIN  IMPORTS  CellAccessRelatedInfo,  PhysCellId,  ARFCN-Value  FROM NR-RRC-Definitions;  SL-AccessInfo-L2U2N-r17 ::= SEQUENCE {  cellAccessRelatedInfo-r17 CellAccessRelatedInfo OPTIONAL, -- Need R  l2relayUuCellinfo-r17 ::= SEQUENCE {  physCellId-r17 PhysCellId,  carrierFreq-r17 ARFCN-Value  } OPTIONAL, -- Cond L2RelayUE  ...  }  END  -- TAG-SL-ACCESSINFO-L2U2N-STOP  -- ASN1STOP | Huawei | TS 38.331 | Rapporteur understands that the remote UE should always measure the cell for which the remote UE is actually in coverage to justify the leaving condition. Even if the relay’s serving cell needs to be measured, current measurement rules served for cell (re)selection procedure can already work.  Meanwhile, this change has ASN.1 impact. Therefore rapporteur thinks it can be de-prioritized. |

**Proposal 4: R2-2205357 (TS 38.331) is an optimization and is de-prioritized.**

## 2.5 Issues suggested to be handled in [Pre118-e][602]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tdoc Num and name | Proposal | Company | Impact on which Spec | Rapporteur Comments |
| R2-2204564  [V353][Z652] Discussion and corrections on CBR measurements for NR SL discovery | Proposal 1: RAN2 confirms that the CBR measurement is supported for NR SL discovery transmission.  Proposal 2: If Proposal 1 is agreed, RAN2 confirms that for a UE configured to transmit both NR SL discovery and NR SL communication, the existing CBR measurement procedure for NR SL communication in 5.5.3 can be directly reused, in case shared TX pool(s) are configured only.  Proposal 3: If Proposal 1 is agreed, CBR measurement reporting is supported for an RRC\_CONNECTED UE configured to transmit only NR SL discovery, and the UE shall measure the CBR for the pool(s) within tx-PoolMeasToAddModList (which may include not only pools in sl-DiscTxPoolSelected even if configured).  Proposal 4: In addition to the pools in Proposal 3, if a UE is configured to perform NR SL discovery only or is configured with dedicated discovery TX pool(s), RAN2 discusses how the UE determines additional pools where it needs to perform CBR measurements as well:  - Opt 1: Introduce specified UE behaviour;  - Opt 2: Leave it to UE implementation.  Proposal 5a: If RAN2 agrees Opt. 1 in Proposal 4, the UE, if in mode-1, shall perform CBR measurements on the pools in sl-TxPoolScheduling and sl-TxPoolExceptional (whichever configured).  Proposal 5b: If RAN2 agrees Opt.1 in Proposal 4, the UE, if in mode-2, shall:  - if sl-DiscTxPoolSelected is configured, perform CBR measurements on the pools in sl-DiscTxPoolSelected and sl-TxPoolExceptional (if configured);  - else, perform CBR measurements on the pools in sl-TxPoolSelectedNormal, sl-TxPoolSelectedNormalPS and sl-TxPoolExceptional (whichever configured). | vivo | TS 38.331 | ‘Prop agree’ as indicated in [Pre118-e][602].  Can be discussed/agreed in [Pre118-e][602]. |
| R2-2204636  Correction on discovery for L23 U2N Relay [O042, O047-O049, O058-O060] | **Reason for change:**  1. [O042] In SUI, the reporting for SL Tx entry in R16 is not restricted to non-relay case, so the related steps would run for relay case as well, which duplicates the steps afterwards specifically for relay case.  2. [O047, O048, O049] The level-3 conditions miss the restriction on gNB capability for L2 and L3 relay.  4. [O059] The current description may lead to the result that sl-TxPoolSelectedNormal is used for sensing result availability check even though sl-DiscTxPoolSelected is present, which is not the expected result.  5. [O060] The current description may lead to the result that sl-TxPoolSelectedNormal is used even though sl-DiscTxPoolSelected is present, which is not the expected result. | OPPO | TS 38.331 | ‘Prop agree’ as indicated in [Pre118-e][602].  Can be discussed/agreed in [Pre118-e][602]. |
| R2-2205063 Correction on the Sidelink discovery transmission | **Reason for change:**  For mode 2 UE, it decides whether exceptional pool or normal pool should be used based on the availability of sensing result of normal pool. Moreover, for the normal pool, when sl-DiscTxPoolSelected is configured, the mode 2 UE should use the dedicated discovery resource pool instead of sl-TxPoolSelectedNormal pool.  In Section 5.8.13.3, one of the conditions for the usage of exceptional resource pool is “if a result of sensing on the resources configured in sl-DiscTxPoolSelected or sl-TxPoolSelectedNormal for NR sidelink discovery transmission on the concerned frequency included in sl-ConfigDedicatedNR within RRCReconfiguration is not available in accordance with TS 38.214”. This condition may cause misuse of sl-TxPoolExceptional resource pool. Actually, following scenarios may happen:  1)the sensing result of sl-DiscTxPoolSelected is available while the sensing result of sl-TxPoolSelectedNormal is not available. In this case, the sl-DiscTxPoolSelected can be used.  2) the sensing result of sl-DiscTxPoolSelected is not available while the sensing result of sl-TxPoolSelectedNormal is available. In this case, the sl-TxPoolExceptional should be used.  As we can see, the current conditions for the usage of exceptional resource pool may cuase misuse of sidelink resource pool for discovery transmission. It is necessary to separate the sensing result checking of sl-DiscTxPoolSelected and sl-TxPoolSelectedNormal into two conditions. | ZTE | TS 38.331 | Related to Z657.  ‘Prop agree’ as indicated in [Pre118-e][602].  Can be discussed/agreed in [Pre118-e][602]. |

**Proposal 5: R2-2204564, R2-2204636 (except [O058]), R2-2205063 are to be discussed in [Pre118-e][602].**

# Conclusion

**[to be agreed]**

**Proposal 1-1: RAN2 to agree UL/SL prioritization rules in MAC specification should also consider SL discovery transmissions.**

**Proposal 1-4: RAN2 to agree that resource pool selection procedure for discovery should be specified in MAC specification and this procedure is applicable to both single MAC PDU case and multiple MAC PDU case.**

**[to be discussed]**

**to be discussed**

**Proposal 2-1: RAN2 to discuss whether the relay (re)selection procedure should be updated with adding cell (re)selection in the procedure text, and if yes, adopt the TP in R2-2204587 as baseline.**

**Proposal 2-2: RAN2 to discuss whether UE shall only monitor dedicated discovery RX pool(s) when performing discovery reception operation if the UE is (pre-)configured with dedicated discovery RX pool(s), and if yes, adopt the TP on [O058] in R2-2204636 as baseline.**

**Proposal 2-3: If Proposal 1-4 is agreed, RAN2 to further discuss whether the TP in R2-2204768 is agreeable, or we introduce a dedicated sub-clause for TX pool selection.**

**Proposal 2-4: RAN2 to discuss whether the Uu threshold conditions are also used to control whether a UE shall MONITOR discovery messages for relay operation, and if yes, to further discuss whether the TP in R2-2205345 is agreeable.**

**Proposal 2-5: RAN2 to discuss whether groupcast can be used for discovery transmission, and if no, adopt the TP in R2-2205963 as baseline.**

**Proposal 2-6: RAN2 to discuss whether SL CG is supported for 1) non-relay discovery message transmission and 2) relay discovery message transmission by relay/remote UE before remote UE connection with relay UE, and if both no, adopt the TP in R2-2205356 as baseline.**

**Proposal 2-7: RAN2 to discuss whether CBR should be measured for discovery in dedicated and/or shared pool, and if yes, adopt the TP in R2-2204564 as baseline.**

**[others]**

**Proposal 3: R2-2204992 (TS 38.304), R2-2205114(TS 38.321), and TP of P3 in R2-2205345(TS 38.331), can be handled by related CR rapporteur.**

**Proposal 4: R2-2205357 (TS 38.331) is an optimization and is de-prioritized.**

**Proposal 5: R2-2204636 (except [O058]), R2-2205063 are to be discussed in [Pre118-e][602].**

Reference

1. R2-2204564 [V353][Z652] Discussion and corrections on CBR measurements for NR SL discovery vivo discussion
2. R2-2204587 Relay selection requirement conflict [M112][v208] MediaTek Inc. discussion Rel-17 NR\_SL\_relay-Core
3. R2-2204636 Correction on [O042, O047-O049, O058-O060] OPPO draftCR Rel-17 38.331 17.0.0 F NR\_SL\_relay-Core
4. R2-2204675 [V410][O058] Dedicated pool for discovery reception vivo discussion
5. R2-2204767 Discussion on Resource Pool Selection for Discovery Message CATT discussion Rel-17 NR\_SL\_relay-Core
6. R2-2204768 Correlation on Resource Pool Selection for Discovery Message CATT draftCR Rel-17 38.321 17.0.0 F NR\_SL\_relay-Core
7. R2-2204769 Introduction of LCID for discovery message CATT draftCR Rel-17 38.321 17.0.0 F NR\_SL\_relay-Core
8. R2-2204992 Correction to support non-relay discovery OPPO draftCR Rel-17 38.304 17.0.0 NR\_SL\_relay-Core
9. R2-2205063 Correction on the Sidelink discovery transmission ZTE, Sanechips CR Rel-17 38.331 17.0.0 3036 - F NR\_SL\_relay-Core
10. R2-2205114 Reduction of some parts of selection of logical channels in SL Relay (38.321 running CR) LG Electronics France CR Rel-17 38.321 17.0.0 1254 - F NR\_SL\_relay-Core
11. R2-2205345 Sidelink discovery operation - monitoring and transmission Beijing Xiaomi Mobile Software draftCR Rel-17 38.331 17.0.0 F NR\_SL\_relay-Core
12. R2-2205357 Assisting L2 Remote UE to correctly evaluate threshold condition Huawei, HiSilicon discussion Rel-17 NR\_SL\_relay-Core
13. R2-2205610 Correction on SL discovery and UL prioritization Samsung discussion Rel-17 NR\_SL\_relay-Core
14. R2-2205963 Correction on Groupcast transmission mode support for sidelink discovery Qualcomm Incorporated draftCR Rel-17 38.322 17.0.0 C NR\_SL\_relay-Core
15. R2-2205356 Discussion on MAC functionality for discovery Huawei, HiSilicon discussion Rel-17 NR\_SL\_relay-Core