**3GPP TSG-** **RAN2 Meeting #121bis-e R2-2304189**

**Online, 17-26 April 2023**

**Agenda item:** 6.5.2

**Title:** Report of [AT121bis-e][425][Relay] Rel-17 relay CP CRs (Huawei)

**Source:** Huawei, HiSilicon

**Document for:** Discussion and decision

1. Introduction

This is the report of the following offline discussion.

* [AT121bis-e][425][Relay] Rel-17 relay CP CRs (Huawei)

 Scope: Check the proposals from R2-2304189 and conclude on the CRs. Can produce a merged CR for minor changes.

 Intended outcome: Report to CB session and agreeable CRs

 Deadline: Monday 2023-04-24 2359 UTC

2. Discussion

In R2-2304189, the following analysis and Rapp suggestion are given. This offline is to collect companies’ views on the proposals from R2-2304189.

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| --- | --- |
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## 2.1 Editorial changes in R2-2303156, R2-2303175, R2-2303176, R2-2303337, R2-2303385, R2-2303656, R2-2303739, R2-2303922

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| [**R2-2303156**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303156.zip) | Correction on Field Description of Common Resource Pool | CATT | In subclause 6.3.5, in the filed description of sl-TxPoolScheduling and sl-TxPoolSelectedNormal, change "transmit NR sidelink communication" to "perform NR sidelink transmission“ in order to include the NR sidelink discovery. |

**Proposal 3: The changes in R2-2303156 are agreeable, and can be merged into RRC miscellaneous CR.**

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| [**R2-2303175**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303175.zip) | Miscellaneous corrections to TS 38.331 for SL relay | ZTE Corporation, Sanechips | 1. In clause 5.8.13.2, add “discovery reception” in two sentences. Change “include” to “included”.
2. In clause 5.8.13.3, change “sl-RemoteUE-ConfigCommon” to “sl-PreconfigDiscConfig”.

Correct the IE name to *SL-FreqConfigCommon.* |

**Proposal 4: The changes in R2-2303175 are agreeable, and can be merged into RRC miscellaneous CR.**

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| [**R2-2303176**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303176.zip) | Corrections on sorting quantity of Event X1 for SL relay | ZTE Corporation, Sanechips | 1. In clause 5.5.5.3, add “or in the x1-Threshold2 (for eventX1)”. |

**Proposal 5: The change in R2-2303176 is agreeable, and can be merged into RRC miscellaneous CR.**

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| [**R2-2303337**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303337.zip) | Correction on PC5 RLC channel release trigger due to SL RLF | vivo | In clause 5.8.9.7.1., add the PC5 RLC channel release trigger due to SL RLF. |

**Proposal 6: The change in R2-2303337 is agreeable, and can be merged into RRC miscellaneous CR.**

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| [**R2-2303385**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303385.zip) | Corrections on UE handling of Layer 2 UE-to-NW relay configurations | Apple | 1. Added “RRCSetup” in 5.3.5.14 for PC5 RLC Channel configuration handling.2. Moved the handling of sl-UEIdentityRemote to a level-1 bullet In 5.3.5.16.3. Added the procedure text to release sl-L2RelayUE-Config, sl-L2RemoteUE-Config, PC5 Relay RLC channels, Uu Relay RLC channels in 5.3.8.3.4. Fixed the editorial issue in 5.3.10.3 for relay UE’s Uu RLF handling. |

Change #1, #4 are correct. The moderator suggests to merge the changes into one big miscellaneous CR.

Change #2 is related to the proposed changes in 3739, please see the Rapp’s suggestion there.

For change #3, the first two sentences are correct because UE needs to release RLC channels explicitly, but the last two sentences are not needed, because following the current style in the same clause, for configuration, *not store* seems to equal to *release*.

**Proposal 8: Change #1, Change #4 and the first two sentence of change #3 in R2-2303385 are agreeable, and can be merged into RRC miscellaneous CR.**

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| [**R2-2303656**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303656.zip) | Miscellaneous corrections to 38331 | Nokia, Nokia Shanghai Bell | 1. Clarified conditional statements
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Change #1 of adding separations between conditional “or”s is ok, and can be merged into miscellaneous CR.

Change #2 of removing “/” seems to be incorrect, because the current description is for two types of remote UEs, one is performing relay selection, and the other one is performing relay reselection.

Change #3 of merging the parallel conditions into a *neither..nor..* sentence seems misleading, so the moderator suggests to keep the current wording.

**Proposal 11: The first change of adding separations between conditional “or”s in R2-2303656 is agreeable and can be merged into RRC miscellaneous CR.**

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| [**R2-2303739**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303739.zip) | Correction on L2 U2N Relay Remote UE RRC procedure | Philips International B.V. | Change “*sl-SRAP-ConfigRemote*” in the above text to “*sl-L2RemoteUE-Config*”. |

**Proposal 12: The changes in R2-2303739 are agreeable, and can be merged into RRC miscellaneous CR.**

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| [**R2-2303922**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303922.zip) | Correction on role of a L2 U2N Remote UE | ASUSTeK | In sub-clause 5.8.9.3, the term “the UE is acting as L2 U2N Remote UE” is replaced by “the UE is capable of L2 U2N Remote UE”. |

The moderator understands the point, and suggest to change “is” to “was”, to echo the condition in 5.3.7, i.e. *1> upon detecting sidelink radio link failure by L2 U2N Remote UE in RRC\_CONNECTED, in accordance with clause 5.8.9.3;*.

**Proposal 13: RAN2 agree that “is” is to be replaced by “was” in the sentence “the UE is acting as L2 U2N Remote UE for the destination” in clause 5.8.9.3.**

Question 1: any objection/comments to P3, P4, P5, P6, P8, P11, P12, P13?

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| **Companies** | **Yes or No** | **Comments** |
| OPPO | See comment | For P8Although we agree with the WF, yet for the reasoning“For change #3, the first two sentences are correct because UE needs to release RLC channels explicitly, but the last two sentences are not needed, because following the current style in the same clause, for configuration, *not store* seems to equal to *release*.”We understand the last two sentence is not just redundant, but wrong, since it hints the C-RNTI should be released (as a part of sl-L2RemoteUE-Config), which is not true.[Rapp] We think the current procedure text is clear that C-RNTI should be stored.3> store in the UE Inactive AS Context the *nextHopChainingCount* received in the *RRCRelease* message*,* the current KgNB and KRRCint keys, the ROHC state, the EHC context(s), the UDC state, the stored QoS flow to DRB mapping rules, the application layer measurement configuration, the C-RNTI used in the source PCell, the *cellIdentity* and the physical cell identity of the source PCell, the *spCellConfigCommon* within *ReconfigurationWithSync* of the NR PSCell (if configured) and all other parameters configured except for:- parameters within *ReconfigurationWithSync* of the PCell;- parameters within *ReconfigurationWithSync* of the NR PSCell, if configured;- parameters within *MobilityControlInfoSCG* of the E-UTRA PSCell, if configured;- *servingCellConfigCommonSIB*;- *sl-L2RelayUE-Config*, if configured;- *sl-L2RemoteUE-Config*, if configured; |
| vivo | No |  |
| Apple | See comment | For the 3rd change in P8, we have a similar understanding as the rapporteur, when “*sl-L2RemoteUE-Config*, if configured; “ is mentioned as not stored, it also applies to C-RNTI which is part of “sl-L2RemoteUE-Config”. We think C-RNTI will always be provided by NW in RRCReconfiguration, so it is OK for L2 remote UE to not store it. Otherwise, if storing C-RNTI is a normative INACITVE UE requirement, then we need to make a RAN2 agreement and change the current procedure text correspondingly. [Rapp] To clarify, the C-RNTI is provided in 3 ways to remote UE:1) via first RRC reconfiguration message after RRC setup/resume/reestablishment, i.e. sl-UEIdentityRemote in SL-L2RemoteUE-Config;2) via HO command/path switch command, i.e. newUE-Identity in ReconfigurationWithSync;3) via RRCRelease in case of 2-step resume, i.e. sl-UEIdentityRemote in SuspendConfig.And as reply to OPPO, the current spec already requires UE to store C-RNTI. |
| CATT | See comment | Object P13The UE is a L2 U2N Remote UE even if SL RLF is detected. Therefore, “is” is correct. If change to “was”, it can’t reflect the UE is acting as L2 U2N Remote UE currently.We prefer to keep the original wording in spec.**[ASUSTeK]** As pointed out in the corresponding CR, the current RRC spec has two definitions: (1) “is acting as L2 U2N Remote UE” that means there is a connection with the relay UE, and (2) “is capable of L2 U2N Remote UE” means no connection with any relay UE. If “is acting as” is still kept (after SL RLF detected i.e. no connection with relay UE) as CATT commented, this is not align with the definitions in other place in the spec. We are fine with “was” as rapporteur suggested, or we also accept “is capable of” instead.[Rapp] To me, the change reason is that in clause 5.8.9, after release the PC5 connection, the UE may not be called as remote UE. That is why I propose to change “is” to “was”.5.8.9.3 Sidelink radio link failure related actionsThe UE shall:1> upon indication from sidelink RLC entity that the maximum number of retransmissions for a specific destination has been reached; or......2> consider the PC5-RRC connection is released for the destination;2> indicate the release of the PC5-RRC connection to the upper layers for this destination (i.e. PC5 is unavailable);2> if UE is in RRC\_CONNECTED:3> if the UE is acting as L2 U2N Remote UE for the destination:4> initiate the RRC connection re-establishment procedure as specified in 5.3.7.... |
| ZTE |  | For the 3rd change in P8, since *not store* means *release*, as the yellow part said sidelink related configuration are not stored, it seems the blue and green part are not needed? Otherwise, there are many other SL configurations should be listed here?[Rapp] Honestly NOTE 2 is a bit vague to me, but since it is introduced for Rel-16 V2X communication which is between UEs without too much NW involvement, it should be OK. However, in L2 U2N relay operation, it’s important to align the configuration between network and remote/relay UEs, so it’s better to specify UE behavior clearer, similar to legacy Uu UEs. Therefore, blue part is needed. Then for the green part, we understand releasing configuration does not mean to release UP entities, thus prefer to keep the green part as well. |
| Ericsson  | Comment | On P4, 1st change, the addition seems to be redundant? The line above already talks about *discovery reception*“else if the cell chosen for NR sidelink discovery reception provides *SIB12*:”[Rapp] The corrections are to complete the sentence, so they are editorial and there would be no misunderstanding like you said. |
| Nokia | See comment | We think P13 is not correct. This step is performed when the actually is acting as a remote UE, this is not about UE capability.[Rapp] I agree it is not related to UE capacity. Please see the reply to CATT. |
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Summary

13 companies participate in the discussion.

3 companies (OPPO, Apple, ZTE) raise comments on P8. One company thinks the proposed changes are redundant, the moderator thinks they are not redundant and please the reply inline in the table. Two companies are discuss the storing of C-RNTI, for which the moderator thinks the current spec is clear that C-RNTI should be stored by all UEs including L2 Remote UEs, more details please see the inline reply. With the above clarification, P8 should be agreeable.

2 companies (CATT, Nokia) raise comments on P13. They think the proposed change is not correct. But the moderator understands the change is just to consider that after PC5 release, the remote UE may not be called as “is acting as remote UE”. But if companies have different views, we can postpone this change to next meeting to allow companies to double check.

1 company (Ericsson) comment on P4, and thinks the 1st change is not needed. The moderator understands the change is to complete the sentence. It is editorial but ok to have it.

For other proposals, there are no objection or comments.

Thus the moderator understands the changes in P3, P4, P5, P6, P8, P11, P12 are agreeable and can be merged into misc RRC CR, and P13 is postponed. The following proposals are further given:

**Proposal 1: The following changes are agreeable, and can be merged into RRC miscellaneous CR.**

* **The changes in R2-2303156, R2-2303175, R2-2303176, R2-2303337, R2-2303739,**
* **Change #1, Change #4 and the first two sentence of change #3 in R2-2303385,**
* **Change#1 of adding separations between conditional “or”s in R2-2303656**

**Proposal 2: The change in R2-2303922 is postponed.**

## 2.2 38304 CR in R2-2303489

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| [**R2-2303489**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303489.zip) | Clarification on sidelink communication resource configuration used by OoC L2 Remote UE | Huawei, HiSilicon | In clause 8.1, * Clarify that when a L2 U2N Remote UE is out-of-coverage, the UE shall perform NR sidelink communication according to SIB12 received from the connected L2 U2N Relay UE, but not according to *SL-V2X-PreconfigurationNR*.
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The change is to clarify OoC L2 Remote UEs should use resource configuration in SIB12 other than pre-config for SL communication, which is in line with the previous RAN2 agreement.

**Proposal 10: The 38.304 CR in R2-2303489 is agreeable.**

Question 2: any objection/comments to P10?

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| **Companies** | **Yes or No** | **Comments** |
| vivo | No |  |
| Apple | See comments | We think there some more errors in this clause because “SL-V2X-PreconfigurationNR “ is not defined in 38.331 for NR SL. We need fix this problem too. |
| Nokia | No objection |  |
| Huawei, HiSilicon | No(Proponent) | We can update the CR to fix the issue raised by Apple. |
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Summary

13 companies participate in the discussion. No objection to the CR. One company pointed out anther editorial change, and suggest to fix the issue in the same CR.

**Proposal 3: The changes in R2-2303489 is agreeable. In addition, the CR is revised to fix the errors raised by Apple, i.e. change *SL-V2X-PreconfigurationNR* to *SL-PreconfigurationNR*.**

2.3 Discussion on paging cause forwarding (R2-2302593/2594)

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| **TDoc number** | TDoc title | Source | Change summary |
| [**R2-2302593**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302593.zip) | Corrections to paging monitoring via Relay UE | Samsung Electronics Co., Ltd | Proposal: Add PagingRecord-v1700 in UuMessageTransferSidelink message. L2 U2N Relay UE includes this when it receives paging cause for the L2 U2N Remote UE in paging message received from gNB. |
| [**R2-2302594**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302594.zip) | 38.331\_CR\_Corrections to paging monitoring via Relay UE | Samsung Electronics Co., Ltd | PagingRecord-v1700 is added in UuMessageTransferSidelink message. L2 U2N Relay UE includes this when it receives paging cause for the L2 U2N Remote UE in paging message received from gNB. |

The moderator understands the change is not essential. Paging cause was introduced for MUSIM in Rel-17 to assist UE on determining whether to response the paging at the cost of dropping the connection via other SIM. But whether a MUSIM UE supports this paging cause, how to use the paging cause, whether the UE needs to drop other connection to response the paging, etc. are all up to UE implementation, which means supporting paging cause is not an essential requirement for MUSIM UE. Then if a MUSIM UE accesses network via a Relay UE, it can still work without knowing the paging cause.

On the other hand, if forwarding paging cause is to be supported, only adding asn.1 in UuMessageTransferSidelink is not sufficient, as the Relay UE may not be a MUSIM UE and cannot comprehend the paging case.

In this case, not supporting paging cause forwarding in PC5 seems to be an easier way-forward in Rel-17.

**Proposal 2: RAN2 confirm that forwarding paging cause by L2 U2N Relay UE is not supported in Rel-17.**

Question 3.1: Do you agree that forwarding paging cause by L2 U2N Relay UE is not supported in Rel-17?

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| **Companies** | **Yes or No** | **Comments** |
| Xiaomi | Yes for the question, no for the CR, i.e. not support forwarding paging cause | MUSIM and U2N relay are both R17 features. This enhancement can be considered in R18 or future if there is such requirement. |
| vivo | Yes with comments | We tend to agree with rapporteur’s analysis that only adding asn.1 in *UuMessageTransferSidelink* may not be sufficient. However, we see some power saving benifit for a MUSIM UE acting as the L2 U2N Remote UE and thus rely on the L2 Relay UE to forward the paging record with the new paging cause. We are open to discuss whether and how to support forwarding paging cause by L2 U2N Relay UE e.g., in future release. |
| Samsung | No | We do not agree with Rapporteur’s comment that paging cause is non-essential feature for MUSIM UE. It was one of the key objective of MUSIM WI and useful for UE to make a decision on whether to respond to paging or not.We have earlier agree to forward the paging record and so all contents of paging record including paging cause should be forwarded.Regarding whether Relay UE is able to obtain the paging cause or not, this should not be an issue as paging cause is supported in Release 17. |
| Apple | Agree to not support in R17 | We think it is hard to solve cross-WI issue when both MUSIM and SL Relay are Rel-17 work. We can address this in R18 if possible. |
| CATT | Yes | Agree with rapporteur. The change is not essential. |
| ZTE | Yes | Agree with rapporteur not to support in R17. |
| Ericsson | Yes |  |
| LG | Yes | Agree with rapporteur. The change is not essential. |
| Nokia | Yes |  |
| MediaTek | Yes |  |
| Huawei, HiSilicon | Yes |  |

Question 3.2: Do you think any spec change to make? If yes, separate CR or merge into misc CR?

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| **Companies** | **Suggestions on spec change** | **separate CR or misc CR, any other comments** |
| Xiaomi | No change |  |
| vivo | See comments | We suggest to postpone the potential CR to future meetings, so that companies can have more time to think about whether and how the paging cause forwarding would work for MUSIM UEs involved in L2 relay operation. |
| Samsung | Agree | If companies need more time, we are ok to postpone to next meeting. |
| LG | No strong view | If other companies needs more time, it’s ok to postpone to the last meeting. |
| Nokia | No spec change is needed |  |
| Huawei, HiSilicon | No change | The asn.1 does not allow paging cause forwarding, which seems clear already. |

Summary

11 companies reply to the questions. 1/11 company support paging cause forwarding, others do not support it in Rel-17 and think no CR is needed. In this case, the moderator thinks we should follow majority view.

**Proposal 4: Forwarding paging cause by L2 U2N Relay UE is not supported in Rel-17.**

## 2.4 RRC CR on Uu reconfiguration failure of relay UE (R2-2303115)

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| [**R2-2303115**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303115.zip) | Correction on 38.331 | Xiaomi | Relay UE can send NotificationMessageSidelink to remote UE upon reconfiguration failure. It’s up to relay UE’s implementation how to set indicationType if the UE initiates transmission of the NotificationMessageSidelink message due to reconfiguration failure |

The moderator understands the change is not essential. In previous RAN2 meeting, there was extensive discussion on which failure cases can trigger Relay UE to notify Remote UE with the failure type. Majority companies were negative to adding more failure cases. Particularly, in RAN2#116bis meeting, based on R2-2111223 summary of AI 8.7.3.2 relay (re)selection, E. Uu RRC reconfiguration failure has been discussed but not been agreed. Thus the moderator suggests not to open the same discussion after Rel-17 completion for a long time.

**Proposal 2:** [**R2-2303115**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303115.zip) **is not pursued.**

Question 4.1: Do you agree that Relay UE’s RRC reconfiguration failure does not trigger notification message?

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| **Companies** | **Yes or No** | **Comments** |
| Xiaomi | No for the question, Yes for the CR i.e. up to relay UE’s implementation to send notification message upon reconfiguration failure | In current spec, relay UE can either send notification or release the PC5 unicast connection upon RLF. We believe reconfiguration failure case is similar to the existing failure case and similar principle shall be followed. Because if remote UE is in RRC\_IDLE or RRC\_INACTIVE, the PC5 unicast link doesn’t need to be released. The advantage of the notification message is the remote UE can make appropriate decision, e.g. whether to perform relay reselection or RRC reestablishment, according to its RRC state.Relay UE can reuse the existing failure indication by implementation upon reconfiguration failure. Remote UE can decide whether to perform relay reselection or reestablishment according to its RRC state. |
| vivo | Yes with comments | We agree that there is no need to trigger notification message for Relay UE’s RRC reconfiguration failure.Moreover, according to current TS 38.331 in clause 5.3.5.8, the Relay UE’s RRC reconfiguration failure can trigger Relay UE actions going to RRC\_IDLE or performing RRC re-establishment, as highlighted in yellow as below:3> if AS security has not been activated:4> perform the actions upon going to RRC\_IDLE as specified in 5.3.11, with release cause 'other'3> else if AS security has been activated but SRB2 and at least one DRB or multicast MRB or, for IAB, SRB2, have not been setup:4> perform the actions upon going to RRC\_IDLE as specified in 5.3.11, with release cause 'RRC connection failure';3> else:4> initiate the connection re-establishment procedure as specified in 5.3.7, upon which the reconfiguration procedure ends;And as specified in 5.3.7 or 5.3.11, the Relay UE will perform cell selection. We are wondering whether the existing *indicationType* as *relayUE-CellReselection* is enough to cover both the cell selection and cell re-selection cases. In such way, the specification impact can be simplified a lot. For example: 5.8.9.10.3 Actions related to transmission of *NotificationMessageSidelink* messageThe U2N Relay UE shall set the indication type as follows:1> if the UE initiates transmission of the *NotificationMessageSidelink* message due to Uu RLF:2> set the *indicationType* as *relayUE-Uu-RLF*;1> else if the UE initiates transmission of the *NotificationMessageSidelink* message due to reconfiguration with sync:2> set the *indicationType* as *relayUE-HO*;1> else if the UE initiates transmission of the *NotificationMessageSidelink* message due to cell reselection or cell selection:2> set the *indicationType* as *relayUE-CellReselection*;1> if the UE initiates transmission of the *NotificationMessageSidelink* message due to Uu RRC connection establishment/Resume failure:2> set the *indicationType* as *relayUE-Uu-RRC-Failure*;1> submit the *NotificationMessageSidelink* message to lower layers for transmission. |
| Apple | Agree with Rapp | This has been discussed before. |
| OPPO | Agree with Rapp | Actually we do not see reconfiguration failure as a typical case to handle in real network, yet more a tool for IoDT test. It should not happen frequently in real network, and thus no need to optimize for it seriously.  |
| CATT | No strong view |  |
| ZTE | Agree with Rapp |  |
| Ericsson | Yes | Need not include all possible failure cases.  |
| LG | Agree with Rapp | We discussed before. |
| Nokia | Agree with Rapp |  |
| MediaTek | Agree with Rapp |  |
| Huawei, HiSilicon | Yes |  |

If P2 can be agreed, regarding potential spec change, the moderator found the following relay UE behavior has been captured in the RRC spec:

* Upon RLF, Uu HO, RRC connection establishment/resume failure or RRC reject, the relay UE determines whether to indicate upper layers (to trigger PC5 unicast link release) or send Notification message to the connected L2 U2N Remote UE(s).
* Once RRC reestablishment is triggered, the relay UE releases SRAP, releases sl-L2RelayUE-Config, But there is no explicit PC5 unicast link handling for other failure cases than RLF.

In this case, the moderator suggest to clarify that relay UE will release the PC5 unicast link used for relaying upon RRC reestablishment triggered for the **other failure** cases **than RLF** which has been covered already in 5.3.10.

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| A L2/L3 U2N Relay UE shall:1> upon detecting radio link failure:2> it either indicates to upper layers (to trigger PC5 unicast link release) or sends Notification message to the connected L2/L3 U2N Remote UE(s) in accordance with 5.8.9.10. |

Then the potential change to RRC spec could be:

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| 5.3.7.2 InitiationThe UE initiates the procedure when one of the following conditions is met:1> upon detecting radio link failure of the MCG and *t316* is not configured, in accordance with 5.3.10; or1> upon detecting radio link failure of the MCG while SCG transmission is suspended, in accordance with 5.3.10; or1> upon detecting radio link failure of the MCG while PSCell change or PSCell addition is ongoing, in accordance with 5.3.10; or1> upon detecting radio link failure of the MCG while the SCG is deactivated, in accordance with 5.3.10; or1> upon re-configuration with sync failure of the MCG, in accordance with clause 5.3.5.8.3; or1> upon mobility from NR failure, in accordance with clause 5.4.3.5; or1> upon integrity check failure indication from lower layers concerning SRB1 or SRB2, except if the integrity check failure is detected on the *RRCReestablishment* message; or1> upon an RRC connection reconfiguration failure, in accordance with clause 5.3.5.8.2; or1> upon detecting radio link failure for the SCG while MCG transmission is suspended, in accordance with clause 5.3.10.3 in NR-DC or in accordance with TS 36.331 [10] clause 5.3.11.3 in NE-DC; or1> upon reconfiguration with sync failure of the SCG while MCG transmission is suspended in accordance with clause 5.3.5.8.3; or1> upon SCG change failure while MCG transmission is suspended in accordance with TS 36.331 [10] clause 5.3.5.7a; or1> upon SCG configuration failure while MCG transmission is suspended in accordance with clause 5.3.5.8.2 in NR-DC or in accordance with TS 36.331 [10] clause 5.3.5.5 in NE-DC; or1> upon integrity check failure indication from SCG lower layers concerning SRB3 while MCG is suspended; or1> upon T316 expiry, in accordance with clause 5.7.3b.5; or1> upon detecting sidelink radio link failure by L2 U2N Remote UE in RRC\_CONNECTED, in accordance with clause 5.8.9.3; or1> upon reception of *NotificationMessageSidelink* including *indicationType* by L2 U2N Remote UE in RRC\_CONNECTED, in accordance with clause 5.8.9.10; or1> upon PC5 unicast link release indicated by upper layer at L2 U2N Remote UE in RRC\_CONNECTED.NOTE 0: It is up to UE implementation whether to initiate the procedure while T346g is running.Upon initiation of the procedure, the UE shall:1> stop timer T310, if running;.......................1> release *sl-L2RelayUE-Config*, if configured;1> release *sl-L2RemoteUE-Config*, if configured;1> release the SRAP entity, if configured;1> if the UE is acting as L2 U2N Relay UE:2> if the reestablishment of the RRC connection is not due to radio link failure in accordance with 5.3.10:3> indicate upper layers to trigger PC5 unicast link release for the PC5 unicast links(s) connected with the L2 U2N Remote UE(s);1> if the UE is acting as L2 U2N Remote UE:2> if the PC5-RRC connection with the U2N Relay UE is determined to be released:3> indicate upper layers to trigger PC5 unicast link release;3> perform either cell selection in accordance with the cell selection process as specified in TS 38.304 [20], or relay selection as specified in clause 5.8.15.3, or both;2> else (i.e., maintain the PC5 RRC connection):3> consider the connected L2 U2N Relay UE as suitable and perform actions as specified in clause 5.3.7.3a;NOTE 1: It is up to Remote UE implementation whether to release or keep the current PC5 unicast link.1> else:2> if the UE is capable of L2 U2N Remote UE:3> perform either cell selection as specified in TS 38.304 [20], or relay selection as specified in clause 5.8.15.3, or both;2> else:3> perform cell selection in accordance with the cell selection process as specified in TS 38.304 [20].NOTE 2: For L2 U2N Remote UE, if both a suitable cell and a suitable relay are available, the UE can select either one based on its implementation. |

Question 4.2: Do you agree to clarify in RRC spec that Relay UE will release the PC5 unicast link used for relaying upon RRC reestablishment triggered by the failure cases other than RLF?

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| --- | --- | --- |
| **Companies** | **Yes or No** | **separate CR or misc CR, any other comments** |
| Xiaomi | Comments | In current spec, relay UE can either send notification or release the PC5 unicast connection upon RLF. We believe similar principle shall be followed. Because if remote UE is in RRC\_IDLE or RRC\_INACTIVE, the PC5 unicast link doesn’t need to be released. The advantage of the notification message is the remote UE can make appropriate decision, e.g. whether to perform relay reselection, according to its RRC state.If we only rely on upper layer release, relay UE shall only release the PC5 unicast connection with the remote UE in RRC\_CONNECTED. In addition to the RRC reestablishment, relay UE may also enter IDLE upon reconfiguration failure. The unicast connection shall also be released for the remote UE in RRC\_CONNECTED. Following change is suggested,1> if the UE is acting as L2 U2N Relay UE:2> if the RRC connection is released or re-established not due to radio link failure in accordance with 5.3.10, and;2> the connected L2 U2N Remote UE(s) is in RRC\_CONNECTED:3> indicate upper layers to trigger PC5 unicast link release for the PC5 unicast links(s) connected with the L2 U2N Remote UE(s);Considering above modification is relatively large, we think it’s better to allow relay UE to send notification in such case by implementation. |
| vivo | No | As explained in Question 2.1, the Relay UE’s RRC reconfiguration failure can trigger either Relay UE actions going to RRC\_IDLE or performing RRC re-establishment. But the suggested change by the the moderator can only address the RRC re-establishment case. So our proposed TP in Quesion 2.1 is preferred. |
| CATT | No | There are three branches for L2 U2N Relay UE reestablishment:Case 1: success on the same cell.Case 2: success on the different cell.Case 3: reestablishment failure.For case 1, the PC5 connection between remote UE and relay UE should be kept.For case 2, relay UE should send NotificationMessageSidelink with cause “relayUE-CellReselection”For case 3, relay UE should send NotificationMessageSidelink with cause “relayUE-Uu-RRC-Failure”Therefore, all cases can be covered by current specification. |
| LG | No | The current spec already include this operation implicitly. When relay UE determines to be release, whatever rrcreestablishment failure or other reasons, the relay UE can indicate to the upper for PC5 link release.  |
| Nokia | Postpone | It is not clear for us which scenario(s) are covered by this change. We need more time to check it. |
| MediaTek | No |  |
| Huawei, HiSilicon | Yes | But we are ok with postpone. |

Summary

11 companies reply to the questions. 1/11 company support that Relay UE’s RRC reconfiguration failure triggers notification message, others do not support it. But companies have different views on whether to have a CR to clarify spec. In this case, the moderator suggest RAN2 first confirm Relay UE’s RRC reconfiguration failure does not trigger notification message, and whether a CR is needed can be discussed in next meeting based on company contributions.

**Proposal 5: Relay UE’s RRC reconfiguration failure does not trigger notification message.**

## 2.5 Correction on remote UE’s behavior upon SIB1 reception (R2-2303983)

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| [**R2-2303983**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303983.zip) | Correction on remote UE’s behavior upon SIB1 reception | Xiaomi | If UE is U2N remote UE, UE can apply the SIB1 configuration regardless of the legacy UL/DL conditions. |

The moderator agree with the intention. But according to the procedural text, another issue is with the change, it seems the remote UE needs to apply the Uu L1 configuration. Thus the moderator tends to think adding a NOTE to clarify that a L2 U2N Remote UE can disregard the serving cell UL/DL configuration in SIB1.

**Proposal 14: The intention of** [**R2-2303983**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303983.zip) **is agreeable. RAN2 to discuss whether to add a NOTE in 5.2.2.4.2, to clarify upon reception of the SIB1, a L2 U2N Remote UE can disregard the Uu L1 UL/DL configurations of the serving cell.**

Question 5.1: any objection/comments to P14?

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| --- | --- | --- |
| **Companies** | **Yes or No** | **Comments** |
| OPPO | Not sure | One thing we would like to bring to companies attention is the NS-value check, since for that we do not have UE capability bits, so hard for network to verify but can only rely on UE's check as in the current spec upon SIB1 acquisition. If we remove this step, we are wondering whether there would be HO failure when the network would like to handover this UE to another cell, which originally access the network via relay, but later to switch to direct path in another cell, due to NS-value reason. We are open to hear the view from others. To Xiaomi’s question below: we do not think the NS-value setting of network side is a per-cell setting.. yet as said, we are open to hear the view from others.  |
| Xiaomi |  | To OPPO’s question, we don’t think NS check should be applicable for remote UE accessing NW via relay. Also, seems such HO failure may also exist for non-remote UE, if NW is not aware of the UE’s NS capability and the target cell’s NS value may not be supported by UE. |
| vivo | No | For the HO failure case mentioned by OPPO, we share similar view that it’s not relay specific issue and doesn’t need to be addressed here.  |
| Apple | See comment | We support to add a NOTE to exclude OOC remote UE from L1 operations if infeasible.  |
| CATT | No strong view |  |
| ZTE |  | Prefer a NOTE. |
| LG | No strong view |  |
| Nokia | No |  |
| MediaTek | No |  |
| Huawei, HiSilicon | No | We do not see why this is relevant to HO, because during HO the UE is not required to check if the configuration in SIB aligns with its capability, the network should ensure that the configuration in HO command comply the UE capability, otherwise reconfiguration failure happens. |

Question 5.2: if the intention of R2-2303983 is agreeable, regarding the spec change, do you agree to add a NOTE in 5.2.2.4.2, to clarify upon reception of the SIB1, a L2 U2N Remote UE disregards the frequency, bandwidth, etc, and does not apply Uu L1 UL/DL configurations of the serving cell?

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| --- | --- | --- |
| **Companies** | **Suggestions on spec change** | **separate CR or misc CR, any other comments** |
| Xiaomi | No NOTE | We understand the NOTE may not be needed. Because the UE would only apply the supported Uu L1 UL/DL configuration, so configuration failure can be avoided. This can be left to UE implementation. |
| vivo | OK with NOTE |  |
| Apple | OK with NOTE |  |
| OPPO |  | Seems proponent (Xiaomi) changed the mind? If so, we do not see why the current spec cannot work, and thus no need to add either the NOTE or normative change.Xiaomi: I understand rapp suggest to add NOTE on top of the proposed change, saying remote UE can disregard the Uu L1 configuration in SIB. It’s not against the CR.OPPO: Oh sorry for the mis-interpretation.. From our perspective, without the change, nothing broken, so neither is needed (regardless how companies interpret the NS-value issue).[Rapp] Sorry for confusion, but the original P14 proposes to add a NOTE instead of the proposed changes in R2-2303983, because even with the changes the remote UEs are still required to apply Uu configurations.  |
| Nokia | Yes, OK to add a NOTE |  |
| Huawei, HiSilicon | A NOTE is sufficient | Separate CR or misc CR are both ok to us |

Summary

10 companies reply to the questions. It seems all companies agree to the intention that remote UEs do not need to check Uu frequency, bandwidth (FFS NS-value) and do not need to apply Uu L1/L2 configuration, but different views expressed on whether this should be clarified e.g. by NOTE/procedural text. In this case, the moderator suggest to postpone the discussion and allow companies to think more.

**Proposal 6: The CR in R2-2303983 is postponed.**

## 2.6 Correction on SRB0 handling when UE is acting as L2 U2N Remote UE (R2-2303338)

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| [**R2-2303338**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303338.zip) | Correction on SRB0 handling when UE is acting as L2 U2N Remote UE | vivo | In clause 5.3.3.2, 5.3.7.3a and 5.3.13.2, remove the sentence of “2> apply the SDAP configuration and PDCP configuration as specified in 9.1.1.2 for SRB0;”. |

The moderator understands the changes are not essential, because in the table of CCCH configuration, the value of SDAP/PDCP configuration is “not used”, then the current spec is not wrong at least. In fact, the sentence of “2> apply the SDAP configuration and PDCP configuration as specified in 9.1.1.2 for SRB0;” was added to address companies’ comment that how to handle SDAP/PDCP should be same to legacy Uu SRB0 via CCCH during CR drafting.

**Proposal 7:** [**R2-2303338**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303115.zip) **is not pursued.**

Question 5: any objection/comments to P7?

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| --- | --- | --- |
| **Companies** | **Yes or No** | **Comments** |
| vivo | See comments | Proponent. But we are ok to follow majority views. |
| Apple | Agree with Rapp |  |
| CATT | Agree with Rapp |  |
| LG | Agree with Rapp |  |
| Nokia | Agree with Rapp |  |
| MediaTek | Agree with Rapp |  |
|  |  |  |

Summary

No companies object the original P7.

**Proposal 7: R2-2303338 is not pursued.**

## 2.7 Discussion on SRAP configuration in RRCReestablishment (R2-2303386)

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| [**R2-2303386**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303386.zip) | Discussion on SRAP configuration in RRCReestablishment | Apple | Observation 1 In Rel-17, RRCReestablishment is unable to override the default SRAP configuration and the UE will continue to use SL-RLC1 as egress PC5 Relay RLC channel for SRB1.Observation 2 When the SRAP configuration in RRCReestablishment is processed by L2 U2N remote UE, the UE will either encounter a configuration error or do nothing.Then, we have the following proposals:Proposal 1 RAN2 confirm that SRAP configuration for SRB1 in RRCReestablishement is not needed for L2 U2N remote UE.Proposal 2 RAN2 consider to correct this problem with either 1) remove “the SRAP configuration used for the SRB1” in the field description of SL-L2RemoteUE-Config of RRCReestablishment message; or 2) Add the procedure text to let remote UE to ignore the SRAP configuration in RRCReestablishment message. |

The moderator understands this CR is to align with previous RAN2 agreement that dedicated configuration of SL-RLC1 for SRB1 is removed from RRCReestablishment message which was neglected somehow in the CR update. Thus the moderator suggests to go with 1) remove “the SRAP configuration used for the SRB1” in the field description of SL-L2RemoteUE-Config of RRCReestablishment message. But for the detailed wording, “SRAP configuration” can be kept and “the SRB1” can be removed, as the SRAP-Config needs to be present to include local ID.

**Proposal 9: RAN2 agree that “the SRAP configuration used for the SRB1” is to be removed from the field description of SL-L2RemoteUE-Config of RRCReestablishment message.**

Question 7: Do you agree that “for the SRB1” is to be removed from the field description of SL-L2RemoteUE-Config of RRCReestablishment message?

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| --- | --- | --- |
| **Companies** | **Suggestions on spec change** | **separate CR or misc CR, any other comments** |
| OPPO | But if we simply remove ‘for the SRB1’, it seems to say the SRAP configuration can be applicable to bearers other than SRB1, which is not the real intention, we can simply say something like the SRAP configuration is limited to C-RNTI configuration in this release. Or we are also OK if no change at all, since it may end up with a useless signaling, but still nothing broken..[Rapp] You mean local ID but not C-RNTI, right? |  |
| Xiaomi | We understand this can be guaranteed by NW implementation, i.e. not include the SRAP configuration for SRB1 in RRCReestablishment message. No change is needed.[Rapp] But RAN2 already agreed that SRB1 is not configured in RRCReestablishment message, we should stick to the agreement and make spec clear on it, otherwise different UE interpretation may happen. |  |
| vivo | There is a bit confusion because in the Question 7 it’s proposed to remove “for the SRB1”. While In the above Proposal 9 it’s proposed to remove “the SRAP configuration used for the SRB1”.As to our preference, we prefer the moderator’s suggestion in Proposal 9. |  |
| Apple | We are fine with P9 to remove “the SRAP configuration used for the SRB1”. This makes clear that SL-RLC1 override will not happen in RRCREseatablishment message, as RAN2 agreed during ASN.1 review. Since this is a simple fix of the FD, we think we should go ahead and remove this unncessaey text. | Misc CR is fine. |
| CATT | Change the field description of SL-L2RemoteUE-Config of RRCReestablishment message to “The network configures only the local UE ID and C-RNTI for the L2 U2N remote UE”[Rapp] There is no configuration of C-RNTI in RRCReestablishment message, because it would be configured in the first RRCReconfiguration message. | Misc CR |
| ZTE | Agree with CATT’s TP.1. Only local ID in SRAP-config is needed, then just say local ID.
2. C-RNTI is missing in the original field description.

[Rapp] Please see the reply to CATT above. |  |
| LG | We think no change is ok. It can be NW implementation whether to configure SRB1 in SRAP. Or even if it is configured, it will be useless information.[Rapp] But RAN2 already agreed that SRB1 is not configured in RRCReestablishment message, we should stick to the agreement and make spec clear on it, otherwise different UE interpretation may happen. |  |
| Nokia | We are OK with the changes proposed in P9 |  |
| Huawei, HiSilicon | Agree with P9, i.e. Change the field description of SL-L2RemoteUE-Config of RRCReestablishment message to “The network configures only the SRAP configuration for local UE ID” |  |

Summary

9 companies reply to the questions. The discussion on C-RNTI is confusing, because it is configured in the first RRCReconfiguration message but not RRCReestablishment. Other than that, there seems no challenge that the proposed change is not correct. In order to ensure that UE and NW have the same understanding on what configuration can be present, the moderator suggest to agree the change.

**Proposal 8: Agree the change from “The network configures only the SRAP configuration used for the SRB1 and local UE ID” to “The network configures only the SRAP configuration for local UE ID” in the field description of SL-L2RemoteUE-Config of RRCReestablishment message, which can be merged into RRC miscellaneous CR.**

## 2.8 Correction on Cell Barring for L2 U2N Remote UE (R2-2304066)

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| [**R2-2304066**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304066.zip) | Correction on Cell Barring for L2 U2N Remote UE | Ericsson España S.A. | Section 5.2* Added a clause for when *sl-L2U2N-Relay-r17* is not included in SIB12
 |

The proposal is to let Remote UE consider the cell not indicating *sl-L2U2N-Relay-r17* in SIB12 as barred, which implies the Remote UE is able to receive SIB12 from Relay UE. The moderator thinks the issue is invalid because according to current spec connected relay UE/UE performing direct discovery can only send SUI to request discovery resource/configuration when network indicates support of relay/non-relay discovery in SIB12 in clause 5.8.3.2, which means discovery is not allowed when network does not support discovery.

**Proposal 15: R2-2304066 is not pursued.**

Question 8.1: any objection/comments to P15?

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| --- | --- | --- |
| **Companies** | **Yes or No** | **Comments** |
| Xiaomi |  | If L2 relay is not supported, L2 relay capable UE shall not act as relay and not forward SIB.  |
| vivo | No | Share similar view with moderator. |
| CATT | No | The case is not present. The UE can’t act as L2 U2N relay UE when the serving cell does not support L2 U2N relay.  |
| Ericsson | See comments | I guess this change is not complete. The clarification and explanation pointed out by the rapp in Q8.2 is precisely what we are after. There should be clarification for when the network does not support discovery as currently these conditions are only used for SUI transmissions.  |
| LG | No | If the serving gNB does not support L2 U2N relay operation, the relay capable UE cannot act as relay UE.  |
| Nokia | NO | We agree with the rapp |
| MediaTek | No |  |
|  |  |  |

However after checking the current RRC spec, the network indications (i.e. *sl-L2U2N-Relay-r17*, *sl-L3U2N-RelayDiscovery* and *sl-NonRelayDiscovery*) in SIB12 are only used for SUI transmission, but not for idle/inactive UE. There is the same issue for sl-L3U2N-RelayDiscovery and sl-NonRelayDiscovery, thus some clarifications are needed. But the moderator would like to check companies’ views.

Question 8.2: Do you agree to clarify in RRC spec that idle/inactive UE cannot perform discovery when network does not support discovery (i.e. *sl-L2U2N-Relay-r17*, *sl-L3U2N-RelayDiscovery* and *sl-NonRelayDiscovery* is not included in SIB12)?

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| --- | --- | --- |
| **Companies** | **Yes or No** | **separate CR or misc CR, any other comments** |
| Xiaomi | Yes | The root cause is the discovery resource pool for relay and non-relay discovery are the same. So, NW can’t control UE use the resource pool for relay or non-relay discovery. But we think it’s straight forward to reuse the existing indication for IDLE/INACTIVE UE to decide whether to perform relay or non-relay discovery. |
| vivo | Yes |  |
| Apple  | Yes |  |
| CATT | No.  | It is not described in the specification what UE does not do. |
| ZTE | Yes |  |
| Ericsson | Yes | This is precisely what we wanted to clarify.  |
| LG | Yes | I think we’ve discussed before. |
| Nokia | Comments | We do not see clearly what clarification is needed |
| Huawei, HiSilicon | Yes |  |

Summary

All companies agree that the change on cell bar in R2-2304066 is not needed or not the right intention, but there is no consensus on whether we need to clarify in RRC spec that idle/inactive UE cannot perform discovery when network does not support discovery (i.e. *sl-L2U2N-Relay-r17*, *sl-L3U2N-RelayDiscovery* and *sl-NonRelayDiscovery* is not included in SIB12), which can be discussed in next meeting based on company contributions.

**Proposal 9: R2-2304066 is not pursued.** **Can discuss whether to clarify in RRC spec that idle/inactive UE cannot perform discovery when network does not support discovery (i.e. *sl-L2U2N-Relay-r17*, *sl-L3U2N-RelayDiscovery* and *sl-NonRelayDiscovery* is not included in SIB12) in next meeting.**

# 3. Conclusion

**Proposal 1: The following changes are agreeable, and can be merged into RRC miscellaneous CR.**

* **The changes in R2-2303156, R2-2303175, R2-2303176, R2-2303337, R2-2303739,**
* **Change #1, Change #4 and the first two sentence of change #3 in R2-2303385,**
* **Change#1 of adding separations between conditional “or”s in R2-2303656**

**Proposal 2: The change in R2-2303922 is postponed.**

**Proposal 3: The changes in R2-2303489 is agreeable. In addition, the CR is revised to fix the errors raised by Apple, i.e. change *SL-V2X-PreconfigurationNR* to *SL-PreconfigurationNR*.**

**Proposal 4: Forwarding paging cause by L2 U2N Relay UE is not supported in Rel-17.**

**Proposal 5: Relay UE’s RRC reconfiguration failure does not trigger notification message.**

**Proposal 6: The CR in R2-2303983 is postponed.**

**Proposal 7: R2-2303338 is not pursued.**

**Proposal 8: Agree the change from “The network configures only the SRAP configuration used for the SRB1 and local UE ID” to “The network configures only the SRAP configuration for local UE ID” in the field description of SL-L2RemoteUE-Config of RRCReestablishment message, which can be merged into RRC miscellaneous CR.**

**Proposal 9: R2-2304066 is not pursued.** **Can discuss whether to clarify in RRC spec that idle/inactive UE cannot perform discovery when network does not support discovery (i.e. *sl-L2U2N-Relay-r17*, *sl-L3U2N-RelayDiscovery* and *sl-NonRelayDiscovery* is not included in SIB12) in next meeting.**