3GPP TSG-RAN WG2 Meeting #117 Electronic R2-220xxxx

Online, 21 Feb – 03 Mar 2022

**Agenda item: 8.7.1**

**Source: Huawei, HiSilicon**

**Title: Report of [AT117-e][615][Relay] Relay running CR to 38.331 (Huawei)**

**Document for: Discussion and Decision**

# 1 Introduction

This document is the report of the following email discussion:

**[AT117-e][615][Relay] Relay running CR to 38.331 (Huawei)**

      Scope: Review and update the CR in R2-2202819.

      Intended outcome: Agreeable CR

      Deadline:  Tuesday 2022-03-01 1200 UTC

The discussion includes two phases.

* Phase I is to collect companies views on the resolutions to the existing stage 3 issues as captured in open issue list marking as “CR rapporteur handled”. The suggested deadline for companies' feedback: Monday W2, 2022-02-28 0800 UTC.
* Phase II is to update the CR according to phase I consensus and allow companies some time to review the updated CR. The deadline is Tuesday W2, 2022-03-01 1200 UTC.

The expected output of this discussion is the running CR including both of phase I and phase II consensus for agreement.

# 2 Contact Points

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# 3 Phase I discussion

**3.1 Resolutions to the existing open issues in RRC CR**

All the Editor’s Notes in the latest version of SL relay RRC running CR in R2-2201811 were captured in the open issue list R2-2201721. In R2-2202820, we discuss the open issues classified as “CR rapporteur handled” except the ones discussed in other offlines.

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| **Issue Index** | **Description** | **Suggested handling** | **Reason to add/remove the issue** | **Status** |
| O1.16 | [Open issue from tdoc R2-2201508] FFS on the definition of out-of-coverage UE in RRC CR | CR rapporteur handled | Due to the proposal in R2-2201508 related 38.331 stage-3 open issue:Proposal 8: Agree the update on 5.8.x3.3 Selection and reselection of NR sidelink U2N Relay UE in RRC running CR.We have the corresponding open issue | To be discussed in this offline |
| O1.17 | [FFS point from R2#116b agreement] Whether L3 relaying support is signalled implicitly or explicitly in SIB12. | CR rapporteur handled | Due to the agreement made in RAN2 #116b:Whether L3 relaying support is signalled implicitly by indicating the support of discovery, or signalled independently from support of discovery, can be discussed in stage 3 drafting.And due to the following EN in 331 running-CREditor’s Note: RAN2 to further discuss whether L3 relaying support is signalled via an explicit indication in SIB12.We have the corresponding open issue | Under-discussion in [Pre117-e][601][Relay] Discovery and relay re/selection. |
| O1.18 | [FFS point from R2#116b agreement]FFS on detailed signalling to differentiate between support of relay vs. non-relay discovery in SIB12. | CR rapporteur handled | Due to the agreement made in RAN2 #116b:The UE can determine from SIB12 whether the gNB supports relay discovery and/or non-relay discovery. Details (including whether SIB12 signalling can differentiate between support of relay vs. non-relay discovery and whether the support is indicated explicitly or implicitly) can be discussed as part of stage 3 CR drafting.We have the corresponding open issue | Under-discussion in [Pre117-e][601][Relay] Discovery and relay re/selection. |
| O4.05 | [FFS point from R2#116 agreement] Confirm the working assumption to use reconfigurationWithSync to indicate direct-to-indirect path switch | CR rapporteur handled | Due to the working assumption made in RAN2#116：Working assumption:The existing reconfigurationWithSync is used to indicate direct-to-indirect path switch to Remote UE.We have the corresponding open issue | To be discussed in this offline |
| O6.09 | [FFS point from R2#116 agreement] FFS on the signalling for the U2N Relay UE to determine to monitor POs for a U2N Remote UE in RRC\_CONNECTED state.  | CR rapporteur handled. | Due to the agreement made in RAN2 #116 and RAN2 #116bis:Recommendation 2-1 [23/24]: Paging message is forwarded by relay UE to remote UE by sending only the complete PagingRecord relevant to that remote UE.Recommendation 2-2 [18/24]: For Relay UE in RRC\_CONNECTED configured with paging CSS, RAN2 not pursue explicit signalling to indicate RRC-state of remote-UE. Further detail is left to RRC running-CR discussion.Recommendation 2-3 [20/23]: Use RRCReconfiguration for Network to carry paging message to the RRC\_CONNECTED relay UE in dedicated fashion.We have the corresponding open issue. | To be discussed in this offline |
| O6.12 | [Open issue from tdoc R2-2201508] FFS on the configuration of Uu RLC bearer for relaying service | CR rapporteur handled | Due to the proposal in R2-2201508 related 38.331 stage-3 open issue:Proposal 1: RAN2 to select one alternative to configure Uu RLC bearer for relaying service (i.e. the bearers associated with Uu SRAP):‐ Option 1: reusing existing RLC-BearerConfig, by handling the servedRadioBearer as 1a: modifying the condition as NW will only configure the field to a configured SRB or DRB i.e. non-relaying RLC channel. 1b: L2 U2N Relay UE ignoring the field.‐ Option 2: introducing new RLC configuration.We have the corresponding open issue | Under-discussion in [Pre117-e][605][Relay] Open issues on relay control plane procedures. |
| O6.13 | [Open issue from tdoc R2-2201508] FFS on the terminology of Uu/PC5 RLC channel would be used for L2 U2N Relay operation. | CR rapporteur handled | Due to the proposal in R2-2201508 related 38.331 stage-3 open issue:Proposal 2: The terminology of Uu/PC5 RLC channel would be used for L2 U2N Relay operation.We have the corresponding open issue. | To be discussed in this offline |
| O6.15 | [Open issue from tdoc R2-2201508 ]FFS on whether to use the same message (Remote InformationSidelink) for SIB request and Paging information provision, and same message (UuMessageTransferSidelink) for SIB forwarding and Paging delivery | CR rapporteur handled | Due to the proposal in R2-2201508 related 38.331 stage-3 open issue:Proposal 4: RAN2 to confirm that the same message (RemoteInformationSidelink) is used for SIB request and Paging information provision.Proposal 5: RAN2 to confirm that the same message (UuMessageTransferSidelink) is used for SIB forwarding and Paging delivery.I.e., the following Editor Notes in running CR 38.331 should be addressed.*Editor’s note: Updates would be needed if it is conclude two separate messagas for paging information and SIB request at later meetings.**Editor’s note: Updates would be needed if it is conclude two separate messagas for paging and SIB forwarding at later meetings.*We have the corresponding open issue. | To be discussed in this offline |
| O6.16 | [FFS point from R2#116 agreement] FFS value and name for T300-like, T301-like, T319-like | CR rapporteur handled | Due to the agreement made in RAN2 #116:Proposal 17: Remote UE uses different timers (FFS: value and/or name) for access (T300-like), resume (T319-like) and re-establishment (T301-like) compared to those for legacy Uu procedures [23/23]We have the corresponding open issue. | To be discussed in this offline |

The proposed resolutions are given below and most of the changes have been made in R2-2202819.

**[O1.16] OoC definition in relay (re)selection**

**Clarification on “has no serving cell”=?RRC\_IDLE**

**The intention is not to exclude inactive UE. When the normal Uu inactive UE moves out of the Uu coverage, it will enters RRC\_IDLE state. The first 1> is to cover the case that there is no Uu RSRP to determine if the UE can act as a remote UE, so it has no relation with the coverage of sidelink frequency.**

**Please note the description is not new, it was introduced in Rel-16 for SL communication for instance as below:**

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| 5.8.2 Conditions for NR sidelink communication operationThe UE shall perform NR sidelink communication operation only if the conditions defined in this clause are met:1> if the UE's serving cell is suitable (RRC\_IDLE or RRC\_INACTIVE or RRC\_CONNECTED); and if either the selected cell on the frequency used for NR sidelink communication operation belongs to the registered or equivalent PLMN as specified in TS 24.587 [57] or the UE is out of coverage on the frequency used for NR sidelink communication operation as defined in TS 38.304 [20] and TS 36.304 [27]; or1> if the UE's serving cell (RRC\_IDLE or RRC\_CONNECTED) fulfils the conditions to support NR sidelink communication in limited service state as specified in TS 23.287 [55]; and if either the serving cell is on the frequency used for NR sidelink communication operation or the UE is out of coverage on the frequency used for NR sidelink communication operation as defined in TS 38.304 [20] and TS 36.304 [27]; or1> if the UE has no serving cell (RRC\_IDLE); |

**Proposal 1: Agree the update on 5.8.x3.3 Selection and reselection of NR sidelink U2N Relay UE in RRC CR.**

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| 5.8.x3.3 Selection and reselection of NR sidelink U2N Relay UEA UE capable of NR sidelink U2N Remote UE operation that is configured by upper layers to search for a NR sidelink U2N Relay UE shall:1> if the UE has no serving cell (RRC\_IDLE)~~out of coverage [FFS the definition of OOC], as defined in TS 38.304 [20], clause 8.2~~; or1> if ~~the serving frequency is used for NR sidelink communication and~~ 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*:*~~Editor’s Note: For L2 Remote UE, the definition/meaning of OoC for NR sidelink discovery/communication needs alignment between TS38.304 and TS38.331.~~* 2> if the UE does not have a selected NR sidelink U2N Relay UE; or.... |

**[O4.05] Confirm the working assumption to use reconfigurationWithSync to indicate direct-to-indirect path switch**

**Proposal 2: Keep the existing change in RRC CR of reusing** ***ReconfigurationWithSync* to indicate direct-to-indirect path switch.**

**[06.09] FFS on the signalling for the Connected U2N Relay UE to determine whether to monitor POs for a remote UE based on PC5-RRC signalling received from the remote UE**

For this issue, the rapporteur adds more thinking about the whole procedure of paging monitoring based on existing RAN2 agreements:

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| RAN2 agreements:* For L2 relay UE in RRC\_CONNECTED and L2 remote UE(s) in RRC\_IDLE/RRC\_INACTIVE, we specify signalling for delivery of the remote UE’s paging through dedicated RRC message. Network implementation decision whether to use it (or keep the relay UE on BWP with CSS).
* Relay UE in RRC\_CONNECTED, if configured with paging CSS, can determine whether to monitor POs for a remote UE based on PC5-RRC signalling received from the remote UE. FFS on the signalling contents and for the case of idle/inactive relay UE.
* Recommendation 2-2 [18/24]: For Relay UE in RRC\_CONNECTED configured with paging CSS, RAN2 not pursue explicit signalling to indicate RRC-state of remote-UE. Further detail is left to RRC running-CR discussion.
* Recommendation 1-1c (modified): For SIB-update in case of RRC\_IDLE/RRC\_INACTIVE remote UE(s), rely on relay UE to send updated SIB(s) to remote UE, no new signalling is to be introduced [17/23]. For SIB-update in case of RRC\_CONNECTED remote UE(s), rely on network to send updated SIB(s) when they are updated, no further restriction in specification [15/23]. Remote UE de-configure SI-request w.r.t relay UE implicitly when entering into RRC\_CONNECTED state [10/13].
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The rapporteur understand from network perspective, it can either keep the relay UE on BWP with CSS or use dedicated RRC message to carry paging message. Then in Relay UE side, it can only expect the dedicated RRC signalling of paging message when there is no CSS on its active BWP, in other cases, it has to monitor paging message for the Remote UE after receiving the paging related info in *RemoteUEInformationSidelink*.

From remote UE’s perspective, according to the agreement made in RAN2 #116bis, RRC state of remote UE will not be exchanged explicitly via PC5-RRC regarding SIB/paging forwarding for idle/inactive remote UE. Instead, it was agreed that remote UE should de-configure the requested SIB when entering RRC\_CONNECTED state to inform relay UE stop SIB forwarding. The rapporteur understands the same handling should apply to paging case as well.

**To sum up, the complete paging monitoring procedure should be below:**

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| 1. In remote UE side, the idle/inactive remote UE indicates paging related info to the relay UE in *RemoteUEInformationSidelink*; and when entering connected state it de-configures/releases the paging relate info to relay UE.
2. In relay UE side,
* upon reception of paging related info from a remote UE, it shall:
* if the relay UE is in idle/inactive state, it shall monitor paging message in Uu interface for the Remote UEs;
* else if the relay UE is in connected state, and if it is configured with CSS on active BWP, it shall monitor paging message in Uu interface for the Remote UEs
* else if the relay UE is in connected state, and if it is NOT configured with CSS on active BWP, it shall report remote UE’s paging UE ID to network, and expect the paging message to be sent in the dedicated RRC message in Uu interface.
* after the paging related info released by the remote UE, the relay UE should release the paging UE ID to network if it has reported the info to network, e.g. by updating SUI.
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**Revised Proposal 3: For paging monitoring, the procedure in above box should be captured in RRC CR.**

**[06.13] Terminology of Uu/PC5 RLC channel**

**Proposal 4: The terminology of Uu/PC5 RLC channel would be used for L2 U2N Relay operation.**

**[06.15] Whether to use the same message (RemoteInformationSidelink) for SIB request and Paging information provision and same message (UuMessageTransferSidelink) for SIB forwarding and Paging delivery**

**Proposal 5: Keep the existing PC5-RRC message of *RemoteUEInformationSidelink* to include both of requested SIB and paging related info, and keep the existing PC5-RRC message of *UuMessageTransferSidelink* to include both of forwarded SIB and paging record.**

**[06.16] FFS value and name for T300-like, T301-like, T319-like**

About the legacy T300, T301 and T319, it is the common understanding that more time is needed for the two-hop access (i.e. remote UE accessing network via relay) than one-hop legacy access. But there is no clear consensus on whether new value is enough or new timer name is needed.

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| RAN2 agreements:* Remote UE uses different timers (FFS: value and/or name) for access (T300-like), resume (T319-like) and re-establishment (T301-like) compared to those for legacy Uu procedures [22/23]
* Introduce new fields in SIB1 for T300-like/T319-like/T301-like timers to be used by L2 remote UE. For these timers, on top of existing stop conditions as for the legacy timers, add extra stop condition for relayed scenario, i.e., “the (re)selected relay becomes unsuitable” for T300-like timer, “relay (re)selection” for T319-like timer, and “the (re)selected relay becomes unsuitable” for T301-like timer. FFS whether the legacy stop-condition of “when the selected cell becomes unsuitable” is still applicable to T301.
 |

In the current RRC running CR, there is a new field added to configure the separate timer value to the remote UE, but not touching the timer name, this is because except the timer value as well as additional stop condition of relay (re)selection, all the other handling of the timer for remote UE is the same with legacy. Reuse the legacy timer name with new configuration of timer value would be the most straightforward way to do the change, while defining new timer value will create unnecessary complexity in the spec which is also different to future proof and maintenance.

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| --- | --- | --- | --- | --- |
| SIB1 ::= SEQUENCE { cellSelectionInfo SEQUENCE { q-RxLevMin Q-RxLevMin, q-RxLevMinOffset INTEGER (1..8) OPTIONAL, -- Need S q-RxLevMinSUL Q-RxLevMin OPTIONAL, -- Need R q-QualMin Q-QualMin OPTIONAL, -- Need S q-QualMinOffset INTEGER (1..8) OPTIONAL -- Need S } OPTIONAL, -- Cond Standalone cellAccessRelatedInfo CellAccessRelatedInfo, connEstFailureControl ConnEstFailureControl OPTIONAL, -- Need R si-SchedulingInfo SI-SchedulingInfo OPTIONAL, -- Need R servingCellConfigCommon ServingCellConfigCommonSIB OPTIONAL, -- Need R ims-EmergencySupport ENUMERATED {true} OPTIONAL, -- Need R eCallOverIMS-Support ENUMERATED {true} OPTIONAL, -- Need R ue-TimersAndConstants UE-TimersAndConstants OPTIONAL, -- Need R uac-BarringInfo SEQUENCE { uac-BarringForCommon UAC-BarringPerCatList OPTIONAL, -- Need S uac-BarringPerPLMN-List UAC-BarringPerPLMN-List OPTIONAL, -- Need S uac-BarringInfoSetList UAC-BarringInfoSetList, uac-AccessCategory1-SelectionAssistanceInfo CHOICE { plmnCommon UAC-AccessCategory1-SelectionAssistanceInfo, individualPLMNList SEQUENCE (SIZE (2..maxPLMN)) OF UAC-AccessCategory1-SelectionAssistanceInfo } OPTIONAL -- Need S } OPTIONAL, -- Need R useFullResumeID ENUMERATED {true} OPTIONAL, -- Need R lateNonCriticalExtension OCTET STRING OPTIONAL, nonCriticalExtension SIB1-v1610-IEs OPTIONAL}...UE-TimersAndConstants ::= SEQUENCE { t300 ENUMERATED {ms100, ms200, ms300, ms400, ms600, ms1000, ms1500, ms2000}, t301 ENUMERATED {ms100, ms200, ms300, ms400, ms600, ms1000, ms1500, ms2000}, t310 ENUMERATED {ms0, ms50, ms100, ms200, ms500, ms1000, ms2000}, n310 ENUMERATED {n1, n2, n3, n4, n6, n8, n10, n20}, t311 ENUMERATED {ms1000, ms3000, ms5000, ms10000, ms15000, ms20000, ms30000}, n311 ENUMERATED {n1, n2, n3, n4, n5, n6, n8, n10}, t319 ENUMERATED {ms100, ms200, ms300, ms400, ms600, ms1000, ms1500, ms2000}, ..., [[ t300-RemoteUE-r17 ENUMERATED {ms100, ms200, ms300, ms400, ms600, ms1000, ms1500, ms2000} OPTIONAL, -- Need S t301-RemoteUE-r17 ENUMERATED {ms100, ms200, ms300, ms400, ms600, ms1000, ms1500, ms2000} OPTIONAL, -- Need S t319-RemoteUE-r17 ENUMERATED {ms100, ms200, ms300, ms400, ms600, ms1000, ms1500, ms2000} OPTIONAL -- Need S ]]}

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| ***UE-TimersAndConstants* field descriptions** |
| ***t300-RemoteUE***Indicates the timer value of T300 used by L2 U2N Remote UE. If the field is absent, the timer value indicated in t300 applies to L2 U2N Remote UE. |
| ***t301-RemoteUE***Indicates the timer value of T301 used by L2 U2N Remote UE. If the field is absent, the timer value indicated in t301 applies to L2 U2N Remote UE. |
| ***t319-RemoteUE***Indicates the timer value of T319 used by L2 U2N Remote UE. If the field is absent, the timer value indicated in t319 applies to L2 U2N Remote UE. |

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Based on above, the current change can enable different timer value to be configured to remote UE, meanwhile keep the spec simple and more maintainable. Thus it is proposed to keep the change.

**Proposal 6: Keep the existing change in RRC CR of introducing new fields of “t300-RemoteUE-r17” “t301-RemoteUE-r17” “t319-RemoteUE-r17” to configure Remote UE with the separate timer value.**

Considering the above proposals are quite straightforward, the rapporteur see no need to ask companies to confirm the proposals one by one. Instead, companies can leave comments in the following table if they have serious concerns to the proposals. If it is the case, please indicate your reason of disagree and the proposed change.

**Table 1: Comments on the above proposal 1-6 for the existing open issues in RRC CR.**

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| Company | Proposals you disagree | Comments and proposed change |
| OPPO | P1 | This change seems to treat out-of-coverage as RRC\_IDLE, which to me is not correct, i.e., OOC != IDLE. And our understanding is that the OOC definition in 304 does not considering cross-carrier case (but just limited to intra-carrier case), which is the status since LTE, so no big need to revise that, we can simply follow the legacy way (as in R16) to clarify the inter-carrier case.[Rapp] The intention is not to exclude inactive UE. When the normal Uu inactive UE moves out of the Uu coverage, it will enters RRC\_IDLE state. The first 1> is to cover the case that there is no Uu RSRP to determine if the UE can act as a remote UE, so it has no relation with the coverage of sidelink frequency. Please also see the clarification added in discussion part. |
| OPPO | P3 | We do not think the explicit RRC state claiming is needed in the procedure text, since it has been removed from signalling already. I.e., the following text is sufficient1. In remote UE side, the idle/inactive remote UE indicates paging related info to the relay UE in *RemoteUEInformationSidelink*; ~~and when entering connected state it de-configures/releases the paging relate info to relay UE~~.
2. In relay UE side,
* upon reception of paging related info from a remote UE, it shall:
* if the ~~relay UE is in idle/inactive state~~ paging related info is configured, it shall monitor paging message in Uu interface for the Remote UEs;
* else ~~if the relay UE is in connected state~~, ~~and~~
	+ if it is configured with CSS on active BWP, it shall monitor paging message in Uu interface for the Remote UEs
	+ else ~~if the relay UE is in connected state, and if it is NOT configured with CSS on active BWP,~~ it shall report remote UE’s paging UE ID to network, and expect the paging message to be sent in the dedicated RRC message in Uu interface.

[Rapp] Not sure I misunderstood something, but if the remote UE does not release the paging related info when entering connected state in your proposed change, the relay UE needs to continue the paging monitoring even though no paging will go for this connected remote UE? [OPPO] we did not try to say “the remote UE does not release the paging related info when entering connected state”, i.e., we agree the paging related info should be deconfigured upon entering connected state. Our point is just no need to mention the RRC state explicitly in the spec. if the comment is on the “~~and when entering connected state it de-configures/releases the paging relate info to relay UE~~”, we are fine to keep it.And for the other changes in relay UE side, the relay UE will have the paging related info in any case, no way to enter the “else” branch.[OPPO] with reverting the deletion of “~~and when entering connected state it de-configures/releases the paging relate info to relay UE~~”, should be OK? |
| OPPO | P4 | Although we understand the intention of Rapp, we observe that “RLC bearer” were used in legacy spec as well for sidelink, would this lead to a change to legacy spec?[Rapp] No, there is no intention to change legacy spec. in [Pre117-e][605], majority support to introduce new signalling of Uu/PC5 RLC configuration for relay case, then the terminology of “Uu/PC5 RLC channel” will be applied to the relaying RLC bearers only.[OPPO] Our comment is w.r.t the description in R2-2202820Regarding terminology of Uu/PC5 RLC channel, both **RLC channel** and **RLC bearer** are used during discussion on bearer mapping. Although we do not see much difference between the two terminologies, it may improve the readability of specifications by choosing a Relay specific terminology to differentiate legacy Uu/PC5 RLC bearer and Relay/Remote UE’s Uu/PC5 RLC bearer sometimes. In this sense, **RLC channel** seems better and it is already used in stage 2 running CR and SRAP specification.i.e., the usage of RLC bearer (as already in legacy spec) can be avoided anyway, But we do not have strong view here, i.e., we are OK to rely on RRC-rapp to adopt the proper wording. |
| Qualcomm | P1 | Same view as OPPO. The current text is not technique correct (i.e., IDLE==out of coverage). And we also suggest 331 rapporteur to align with 304 rapporteur.[Rapp] Please see the reply to OPPO and also the added clarification in discussion part. |
| Qualcomm | P3 | We prefer Rapporteur previous version, which is clearer and aligned with the wording of agreements. Although we understand some company may not want to have explicit RRC state in spec, we are not sure whether RAN2 have sufficient time to confirm there is no issue if removing all RRC state related text. At this late stage, we prefer to first make spec technique correct, instead of discussing how to make the procedure work by removing RRC state. |
| Qualcomm | P4 | We think it is related to offline#620. In current spec, “Uu/PC5 RLC channel” is identified by LCID. Then, if it is agreed to use Uu/PC5 RLC channel ID instead in offline#620, it may cause confusion if we keep using “Uu/PC5 RLC channel”. [Rapp] Please see the reply to OPPO on P4. |
| Qualcomm | P6 | 1. Although the current way may work, we suggest Rapporteur to check view of Rapporteur of 38.331 and 36.331, because current 38.331 and 36.331 don’t use this style (i.e., t3xx-Remote\_\*)
2. Current field description is not sufficient. At least, it should be clarified that the remote UE shall ignore the legacy one.

[Rapp] Ok, we can make the clarification that the remote UE ignore the legacy one somewhere, it would be reflected in the phase II CR update. |
| MediaTek | P3 | We have the same understanding as OPPO for the wording. Meanwhile, for the revised P3, maybe the highlighted part is not needed since when Remote UE goes to connected, the network should be aware of it and then there may be no need for Relay UE to update this. after the paging related info released by the remote UE, the relay UE should release the paging UE ID to network if it has reported the info to network, e.g. by updating SUI.[Rapp] Please see the reply to OPPO on P3. For the part highlighted in green, I am not sure if network is aware of which remote UE moves to connected state from idle. Because in Uu, the gNB cannot associate a connected UE with idle UE ID (e.g. paging UE ID).  |
| Xiaomi | P1 | We agree with rapp the OoC in relay is not the same as NR sidelink communication. In sidelink, the OoC is determined by the availability of cellular coverage on sidelink frequency. The related text of 38.304 is quoted as below,

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| If the UE detects at least one cell on the frequency which UE is configured to perform NR sidelink communication on fulfilling the S criterion in accordance with clause 8.2.1, it shall consider itself to be in-coverage for NR sidelink communication on that frequency. If the UE cannot detect any cell on that frequency meeting the S criterion, it shall consider itself to be out-of-coverage for NR sidelink communication on that frequency. |

But in Relay, the OoC should be determined by the availability of cellular coverage on any frequency, not just sidelink frequency. Otherwise, remote UE may select relay UE even it’s in good coverage of NW on frequency other than sidelink frequency. But we also think the ‘(RRC\_IDLE)’ in the first bullet should be removed, since it may be confusing.[Rapp] Please see the clarification on why only IDLE is here added in discussion part. I am ok to remove it, seems it creates a lot of confusion…  |
| Ericsson | P1 | Even with the clarification from the Rapporteur, still we think that what is propose create confusion and may be misleading. |
| Ericsson | P3 | We also agree with OPPO regarding the wording. Also, we are not sure about he statements from Rapporteur of “*am not sure if the network is always aware when a remote UE moves to connected state from idle.*” Isn’t is so that the network is always aware of the RRC state of its UEs? We are a bit confused…Another comment we have on the procedural text wording, is that the text should be more aligned with the RRC TS terminology. Not sure if “In remote UE side” and “In relay UE side” is a nice terminology to use. Also, good to refer to RRC messages or field whenever possible (as OPPO mentioned in his suggested text). |
| Ericsson | P4 | In Uu we don’t have RLC channel but instead RLC bearer. At least for Uu we should keep the same terminology as, in practise, we are not creating anything new but just a configuration that is tailored for relay. In this sense, calling it RLC channel would be a NBC change with respect to legacy.Better to align with what we already have rather than creating new (confusing) terminology. |
| Ericsson | P6 | Similar comment from QC. Instead of adding the new timer in *ue-TimersAndConstants* it would be better to create a new *ue-TimersAndConstants-SL-Relay* and include the new timer there. This is because ue-TimersAndConstantsis optional.In this case we don’t need to capture in the spec that a UE should ignore legacy fields that are mandatory (a very bad practise that we already did for the timer T304 in the reconfigurationwithsync. |
| CATT | P1 | We propose to change the description of OOC to “1> if the UE ~~has no serving~~ can’t found a suitable cell ~~(RRC\_IDLE)out of coverage [FFS the definition of OOC], as defined in TS 38.304 [20], clause 8.2~~; or” |
| vivo | P1 | We are ok with rapporteur’s intention to add normative text for OoC definition in relay (re)selection. To address the confusion raised by above companies, we suggest to some changes on top of existing text.**Change #1**: remove RRC\_IDLE and change “serving” cell to “suitable” cell, similar view as CATT commented.**Change #2**: keep the reference and make sure it’s correct, i.e., this is not the OoC definition for sidelink operation in 8.2, but rather the legacy OoC definition for cell camping in clause 4.5. For example: 1> if the UE has no suitable cell ~~(RRC\_IDLE)~~, as defined in TS 38.304 [20], clause 4.5 |
| vivo | P6 | For the name, we share the view as Ericsson, i.e., to create a new *ue-TimersAndConstants-SL-Relay* and include the timers with new values there.For the value, it seems that they are copied from the existing values of legacy T300, T301 and T319. We understand that the agreement to introduce new timers is due to the existing timer value may be not enough for L2 relay scenario. And thus we suggest to double the existing values considering two hop, or alternatively at least some new values longer than the existing values should be introduced.In addition, it’s noticeable that all timers are put in SIB1 but the SIB1 size limitation may be a problem in some deployment as below in TS 38.331.*NOTE: The physical layer imposes a limit to the maximum size a SIB can take. The maximum SIB1 or SI message size is 2976 bits.*So, we suggest to move them from SIB1 to SIB12 as SIB12 is necessary for sidelink relay and currently the SIB12 segmentation mechanism can avoid the size limitation issue as SIB1. |

**3.2 Anything missing**

Companies are encouraged to review the RRC CR submitted in R2-2202819 and add the new identified issue or suggestions to improve CR quantity.

**Table 2: Comments on other parts apart from the existing open issues in RRC CR.**

|  |  |  |  |
| --- | --- | --- | --- |
| Company | Section | Issues identified | Proposed change |
| Xiaomi | 6.2.2 | In the CR, SL-TxResourceReqList-v17xy is introduced to provide both remote UE and relay UE related information. However, as in R16, the SL-TxResourceReq is used to provide peer UE’s information, i.e. remote UE in U2N relay. The maximum length of this list is maxNrofSL-Dest-r16, which stands for Maximum number of destination for NR sidelink communication. If relay UE’s information is also included in this IE, it will occupy one entry of the list, which would reduce the maximum number of communication UEs for relay UE. | Define separate IE out of SL-TxResourceReqList-v17xy to include relay UE information, e.g. relay UE source ID and sl-LocalIdentity-Request-r17.[Rapp] I understand this was discussed in [Pre117-e][604][Relay] Open issues on relay adaptation layer (OPPO), for sure the CR will be updated according to the conclusions made in the offline. |
| Xiaomi | 6.2.2 | In the CR, SL-TxResourceReqList-v17xy is introduced to request both discovery and communication transmission resource. The maximum length of this list is maxNrofSL-Dest-r16. However, maxNrofSL-Dest-r16 stands for Maximum number of destination for NR sidelink communication. Discovery is not included in the definition, which may result in confusion. Similar issue exists in maxNrofSL-Dest-1-r16. | Update the definition of maxNrofSL-Dest-r16 and maxNrofSL-Dest-1-r16 to include both communication and discovery.[Rapp] True. Some existing description for SL communication should be extended to cover discovery as well. This will be considered when we update the CR in phase II. |
| ASUSTeK | 5.8.9.3 | It is possible that SL RLF may occur to a PC5 unicast link for SL communication with other UE.The current procedural text does not check whether the destination with SL RLF is the relay UE. The RRC connection re-establishment procedure should be initiated only when SL RLF occurs on the relay UE. We suggest to correct it.  | The condition check should consider if the destination with SL RLF is the relay UE. For example:2> if UE is in RRC\_CONNECTED:3> if the UE is connected with a L2 U2N Relay UE via PC5-RRC connection (i.e. the UE is a L2 U2N Remote UE) and the specific destination is the L2 U2N Relay UE:4> initiate the RRC connection re-establishment procedure as specified in 5.3.7.3> else:4> perform the sidelink UE information for NR sidelink communication procedure, as specified in 5.8.3.3; |
| ASUSTeK | 5.3.7.3a | According to the procedural text, when T311 is running and a suitable relay UE is selected, the UE applies the SL-RLC0 configuration. The UE may have applied the CCCH configuration before applying the SL-RLC0 configuration. In this case, the lower layer of the UE has both RLC entity for SRB0 and RLC entity for SL-RLC0. The UE should have single RLC entity at a time for sending the *RRCReestablishmentRequest* message. | We suggest to add release of RLC entity for SRB0 in clause 5.3.7.3a:Upon selecting a suitable L2 U2N Relay UE, the L2 U2N Remote UE shall:…1> release RLC entity for SRB0; |
| ASUSTeK | 5.3.7.3 | According to the procedural text, when T311 is running and a suitable cell is selected, the UE applies the CCCH configuration. The UE may have applied the SL-RLC0 configuration before applying the CCCH configuration. In this case, the lower layer of the UE has both RLC entity for SRB0 and RLC entity for SL-RLC0. The UE should have single RLC entity at a time for sending the *RRCReestablishmentRequest* message. | We suggest to add release of RLC entity for SL-RLC0 in clause 5.3.7.3:Upon selecting a suitable NR cell, the UE shall:…1> release RLC entity for SL-RLC0; |
| ASUSTeK | 6.3.5 | The agreement on sidelink resource allocation mode configuration for L2 U2N remote UE (i.e. the U2N Remote UE can only be configured to use resource allocation mode 2 for data to be relayed) was not reflected in the endorsed RRC running CR. |

| *SL-PHY-MAC-RLC-Config* field descriptions |
| --- |
| *…* |
| ***sl-ScheduledConfig***Indicates the configuration for UE to transmit NR sidelink communication based on network scheduling. This field is not configured simultaneously with sl-UE-SelectedConfig. For L2 U2N relay, this field cannot be configured to a U2N Remote UE. |
| ***sl-UE-SelectedConfig***Indicates the configuration used for UE autonomous resource selection. This field is not configured simultaneously with *sl-ScheduledConfig*. For L2 U2N relay, only this field can be configured to a U2N Remote UE. |
| ***…*** |

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3.2 Phase II discussion

TBD

# 4 Conclusion

# 5 References

1. R2-2202819 Introduction of SL relay Huawei, HiSilicon CR Rel-17 38.331 16.7.0 2910 - B NR\_SL\_relay-Core
2. R2-2202820 Stage3 open issues handling for RRC CR Huawei, HiSilicon discussion Rel-17 NR\_SL\_relay-Core