**3GPP TSG-RAN WG2 Meeting #131 R2-250xxxx**

**Bengaluru, India, August 25th – 29th, 2025**

**Agenda Item: 8.13.1**

**Source: Huawei, HiSilicon**

**Title: Comment collection for Main RRC (TS 38.331) running CR for NR Sidelink Multihop Relay**

**Document for:**

# 1 Introduction

This paper collects comments for Main RRC (TS 38.331) running CR for NR Sidelink Multihop Relay

* [Post130][406][Relay] Rel-19 relay main CR to 38.331 (Huawei)

Scope: Update the CR in R2-2504271 to take into account agreements of RAN2#130.

Intended outcome: Endorsed draft CR for merge with output of [Post130][402] before RAN2#131

Deadline: June 20th

Please fill in the contact information in the table below

|  |  |  |
| --- | --- | --- |
| **Company** | **Contact Person** | **Email Address** |
| ASUSTeK | Lider Pan | lider\_pan@asus.com |
| OPPO | Bingxue Leng | lengbingxue@oppo.com |
| LG | Seoyoung Back | Seoyoung.back@lge.com |
|  |  |  |
|  |  |  |

# 2 Comments for the running CR

This section is used to collect comments for the running CR in Main RRC (TS 38.331) running CR for NR Sidelink Multihop Relay

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| **Company** | **Issue** | **Suggestion** |
| ASUSTeK | In section 3.1, the term “**Last** U2N Relay UE” is defined, while “U2N **Last** Relay UE” is used in related procedures e.g. 5.3.5.3, 5.3.7.2, 5.3.10.3, …etc. | Suggest to align the terms.  [Rapp] Updated in the CR with the change marks R2#130 |
| ASUSTeK | In our understanding, section 5.8.15 should also cover the behavior of the intermediate U2N Relay UE in case of multi-hop U2N Relay. Otherwise, the behavior of the intermediate U2N Relay UE is missing. | If the previous understanding correct, we suggest to mimic the wording in 5.8.14.1 to make this clear e.g.: 5.8.15.1 General This procedure is used by a UE supporting NR sidelink U2N Remote UE operation in case of single hop or by a UE supporting NR sidelink U2N Intermediate Relay UE operation in case of multi hop configured by upper layers to transmit NR sidelink discovery messages to evaluate AS layer conditions. The procedure is also used to perform selection and reselection of NR sidelink U2N Relay UEs.  5.8.15.2 NR Sidelink U2N Remote UE threshold conditions  A UE capable of NR sidelink U2N Remote UE operation or U2N Intermediate Relay UE operation shall:  …  [Rapp] Your understanding is correct. However, we have this already covered in the note below in 5.8.15.2.  NOTE X First U2N Relay UE and Intermediate U2N Relay UE first connects to the network via the parent U2N Relay UE(s) acting as a U2N Remote UE after checking the Remote UE threshold conditions above  An alternative approach is to indicate these roles in the definitions of Intermediate U2N Relay UE and First U2N Relay UE. This would eliminate the need to modify procedure texts or field descriptions in multiple sections. Editor’s notes have been included under Section 3.1 to clarify this point |
| ASUSTeK | We are wondering the implication of NOTE X in 5.8.15.2. Does it imply the U2N Relay UE shall not transmit NR sidelink discovery message if it cannot connect to the network via any parent U2N Relay UE or what? | Suggest rewording to clarify.  [Rapp] The intention of the note is to clarify that the First U2N Relay UE and Intermediate U2N Relay UE connect to the network via their parent U2N Relay UE(s), acting in the role of a U2N Remote UE. Consequently, they will perform the discovery procedure as a remote UE after checking the Remote UE threshold conditions. |
| ASUSTeK | It was agreed in RAN2#130, an intermediate relay UE can act as a remote UE simultaneously. **RAN2#130 also agreed to clarify in the normative text that the UE can be a relay and remote UE simultaneously** (to be determined case by case where it needs to be documented). In our understanding, if IE *sl-SRAP-ConfigRelayList* is included, *sl-L2IdentityRemote* in *SL-RemoteUE-ToAddMod* indicates the L2 ID of the directly connected child UE, which acts as both a U2N Remote UE and an Intermediate U2N Relay UE for indirectly connected child UE in the multi hop case. | We think this IE is a proper place to clarify this point so as to make the structure of IE *SL-RemoteUE-ToAddMod* easier to understand e.g.:  ***sl-SRAP-ConfigRelay-ToAddModList***  List of SRAP configuration for each indirectly connected child UEs in the multi hop case. If this IE is included, *sl-L2IdentityRemote* in *SL-RemoteUE-ToAddMod* indicates the L2 ID of a directly connected child UE, which acts as both a U2N Remote UE and an Intermediate U2N Relay UE (for indirectly connected child UE) in the multi hop case.  [Rapp] There is no need to clarify the two roles of the Intermediate Relay UE within the field descriptions, as these roles will be captured either in the definitions section (Clause 3.1) or in the Stage 2 specification, as suggested in the editor’s note in Section 3.1. |
| ASUSTeK | Some correction is needed in the new field descriptions:  ***sl-SRAP-ConfigRelay-ToAddModList***  List of SRAP configuration for each indirectly connected child UEs in the multi hop case  ***sl-SRAP-ConfigRelay-ToReleaseList***  List of SRAP configuration be released for each indirectly connected child UEs in the multi hop case | Text proposal:  ***sl-SRAP-ConfigRelay-ToAddModList***  List of SRAP configuration for each indirectly connected child UE~~s~~ in the multi hop case.  ***sl-SRAP-ConfigRelay-ToReleaseList***  List of SRAP configuration be released for each indirectly connected child UE~~s~~ in the multi hop case.  [Rapp] Updated in the CR with the change marks R2#130 |
| ASUSTeK | According to clause 5.8.9.9.X, the *UuMessageTransferSidelink* message can also be transmitted by the L2 **Intermediate** U2N Relay UE. But, the description in the clauses 5.8.9.9.1 and 5.8.9.9.2 only considers the *UuMessageTransferSidelink* message can be sent by the L2 U2N **Last** Relay UE (in case of multi hop). | Suggest to clarify that the L2 **Intermediate** U2N Relay UE can also send the *UuMessageTransferSidelink* message in case of multi hop in clauses 5.8.9.9.1 and 5.8.9.9.2.  [Rappo] The L2 Intermediate U2N Relay UE or L2 First U2N Relay UE shall forward the UuMessageTransferSidelink message downstream only upon receiving it from the connected L2 U2N Parent Relay UE. Therefore, it is not necessary to include the Intermediate U2N Relay UE as a sender of this message in Clauses 5.8.9.9.1 and 5.8.9.9.2. |
| OPPO | In 5.8.9.1.1, whether to support SFN-DFN offset indication for positioning in MH relay needs to be discussed first since we are not sure it is feasible due to:  If each intermediate relay just forward the value from the last relay, the value is an incorrect value;  Seems also not feasible for each intermediate relay to modify this value since it may not have the direct Uu signal. | Suggest to first discuss whether to support positioning/SFN-DFN offset in MH relay  [Rapp] Editor Note below is added to discuss this aspect further.  Editor’s Note – It is FFS whether passing the SFN-DFN offset at the L2 U2N Relay UE or at the L2 Last U2N Relay UE can be supported in a multi-hop scenario. The current assumption in the CR is that the SFN-DFN offset provided at the L2 U2N Relay UE or L2 Last U2N Relay UE can be forwarded by intermediate U2N Relay UEs within the multi-hop relay chain. |
| OPPO | In 5.8.9.8.2, for the following NOTE:  Note: An intermediate UE that can acquire SI requested by a child node by directly obtaining the SI on Uu (while in coverage of the same cell as the last relay UE) is consider to have stored a valid version of a SIB in accordance with clause 5.2.2.2.1. | We understand this note is not correct and also not needed regarding how for the intermediate relay UE to determine whether has valid version of SIB, i.e.,  - in the sentence of above normative text “the UE has not stored a valid version of a SIB, in accordance with clause 5.2.2.2.1”, the validity is checked according to 5.2.2.2.1, which is already clear and includes the SIB directly or indirectly obtained from NW.  - in the NOTE, it is restricted to the directly obtained SIB from the NW, which means the indirectly obtained SIBs at the intermediate relay are considered invalid, which we understand is not correct.  [Rapp] We can remove it for now as can be misunderstood that indirectly obtained SIBs at the intermediate relay are considered invalid and check if any further clarification is needed. |
| OPPO | For clause 5.8.9.8.X, is it correct understanding that based on this clause, the intermediate relay will forward each received SIB/Paging request from child UE transparently (W/O checking/combining the request)? Our understanding based on the following agreement in last R2 meeting is each intermediate relay UE will based on the request/need of all the child UEs and itself to determine/generate the requested SIB/Paging list to its parent, which means the Paging/SIB request/respond is always a per-hop mechanism.  For the SIB requested by child node, if the SIB has not been included in SIB request in parent link, if IDLE/INACTIVE intermediate relay UE obtain the requested SIB via Uu interface or unsolicited SIB1 forwarding and CAN respond SIB request of child UE, adopt legacy condition(“if the UE has SIB request information to provide”) to determine SIB request in parent link is needed or not. Applicability of this legacy language to the multihop case to be documented in RRC. | No new section is needed, each intermediate relay UE can   * follow 5.8.9.8.3 for the request reception/5.8.9.9.2 for the response transmission as a relay * and follow 5.8.9.8.2 for the request transmission/5.8.9.9.3 response reception as a remote   [Rapp] Clause 5.8.9.8.X is deleted in the updated version of the CR. |
| OPPO | In 5.8.9.10.3, for the notification triggered by relay reselection, we understand the trigger event can be “PC5 link release triggered by relay reselection” to avoid the new cause value. | Suggest the following rewording or add an FFS on how to capture the trigger event  2> else if the UE initiates transmission of the *NotificationMessageSidelink* message due to PC5 link release with the parent Relay triggered by Relay reselection:  3> set the indicationType as FFS ;  [Rapp] Since PC5 link release with the parent is handled by upper layers, there is no need to address this case in the AS layer. In any case, the Relay UE will perform relay reselection if the PC5 link release is triggered by upper-layer procedures. Setting the indication type e.g as *relayUE-RelayReselection* to reflect its own action will be more appropriate. |
| OPPO | In 5.8.13.3, for in coverage case the PC5 threshold condition should be satisfied on top of Uu threshold condition, i.e., the Uu threshold condition should be satisfied in all the cases | 3> if the UE acting as Intermediate U2N Relay UE is sending Discovery Solicitation message with Model B as specified in TS 23.304 [65] and *sl-DiscConfigCommon* is included in *SIB12*, and if both the NR sidelink multi-hop relay threshold conditions as specified in 5.8.x.2 and the NR sidelink U2N Remote UE threshold conditions as specified in 5.8.15.2 are met based on *sl-RelayUE-ConfigCommonMH* and *sl-RemoteUE-ConfigCommon* in SIB12; or  [Rapp] If there is no PC5 connection with the parent, the candidate Intermediate Relay UE can still forward the Discovery Solicitation Message without checking the Uu threshold. Checking of the Uu threshold will be done when it connects to the network ie acting as a remote UE. Therefore, duplicating the Uu threshold check is not necessary. |
| OPPO | In 5.8.13.3, for out of coverage case the Uu threshold condition still needs to be checked (same as the R17 Remote UE behavior) | 2> if the UE acting as Intermediate U2N Relay UE has an established PC5 link with the selected parent U2N Relay UE and if the NR sidelink U2N Remote UE threshold conditions as specified in 5.8.15.2 are met based on *sl-RemoteUE-ConfigCommon* in *SIB12*; or  2> if the UE acting as Intermediate U2N Relay UE is sending Discovery Solicitation message with Model B as specified in TS 23.304 [65] and if both the NR sidelink multi-hop relay threshold conditions as specified in 5.8.x.2 and the NR sidelink U2N Remote UE threshold conditions as specified in 5.8.15.2 are met based on *sl-PreconfigDiscConfig* in *SidelinkPreconfigNR*; or  [Rapp] Checking of the Uu threshold will be done when it connects to the network ie acting as a remote UE. Therefore, duplicating the Uu threshold check is not necessary. |
| OPPO | In 5.8.15.3, the following NOTE on prioritize the connected relay UE, we understand the NOTE is not needed and this should be fully up to UE implementation based on the agreement in last R2 meeting. This is because it is not appropriate to simply say UE should prioritize RRC connected relay since relay selection is based on multiple parameters, i.e., hop count/accumulated QoS/root relay info..., e.g., remote UE may want to select the RRC idle relay with smaller hop count or better QoS  NOTE X: The L2 U2N Remote UE will prioritize the selection or reselection of suitable NR sidelink U2N Relay UE that is in RRC\_CONNECTED state, based on the RRC state information included in the Discovery Message container. | Suggest to remote the NOTE  [Rappo] We can soften the wording in the note to say that the UE “may” prioritize the selection or reselection of suitable NR sidelink U2N Relay UE that is in RRC\_CONNECTED. However it is free to choose path trough RRC\_IDLE UE if the service can tolerate the connection setup latency. |
| LG | In 4.2.2, the description parts of “L2 First U2N Relay UE or of L2 Intermediate U2N Relay UE” can be replaced just “L2 Intermediate U2N Relay UE”. Is there special reason to be described “First U2N Relay UE or Intermediate U2N Relay UE”? First U2N Relay UE is also intermediate Relay UE based on the definition.  The same principle can be applied to the subclause 5.3.3.3 Note3, 5.3.3.4, 5.3.7.2 | We think only using “L2 intermediate U2N Relay UE” is enough. Suggest that describing just “L2 Intermediate U2N Relay UE” instead of “L2 First U2N Relay UE or of L2 Intermediate U2N Relay UE”.  [Rapp] Yes, there was a valid reason to distinguish between the First and Intermediate Relay UEs in Clause 4.2.2. Without this clarification, it would be ambiguous—particularly regarding whether the First Relay UE is permitted to utilize SRB0, SRB1, and SRB2. In my view, it is therefore preferable to explicitly specify all relevant relay types, rather than using a single general term such as 'L2 Intermediate U2N Relay UE'.  However, given that similar views favouring the use of the general term were expressed offline—primarily to minimize the extent of changes—we can proceed with the majority view.  These sections are updated in the CR with the change marks R2#130. |
| LG | In 5.2.2.2.1, we think the phrase “A L2 U2N Remote UE or L2 Intermediate U2N Relay UE”, it can be replaced just “L2 U2N Remote UE”. In 38.300, it is specified clearly that intermediate Relay UE acts as remote UE. We want not to be changed too much the legacy spec.  The same comment can be applied to the 5.3.5.2 and 5.3.7.2 | Suggest that keeping the legacy description as “L2 U2N Relay UE”. We think not to be changed as “A L2 U2N Remote UE or L2 Intermediate U2N Relay UE”.  [Rapp] Removing the term 'L2 Intermediate U2N Relay UE' from Clause 5.2.2.2.1 can help minimize changes without introducing ambiguity. However, deleting this term from Clauses 5.3.5.2 and 5.3.7.2 could lead to ambiguity. Therefore, it is recommended to retain the changes in Clauses 5.3.5.2 and 5.3.7.2 as they are. |
| LG | In 5.2.2.2.2, “A L2 U2N Remote UE or L2 First U2N Relay UE or L2 Intermediate U2N Relay UE is not required” can be replaced just simply as A L2 U2N Remote UE or L2 Intermediate U2N Relay UE is not required”. | We think not to clarify intermediate Relay UE and the first Relay UE, if there is not a special reason to be clarified. The first Relay UE also an intermediate Relay UE based on the definition.  [Rapp] Updated in the CR with the change marks R2#130. |
| LG | In 5.3.2.3, in the phrase of “1> if the UE is acting as a L2 U2N Relay UE or L2 Last U2N Relay UE”, we think the “L2 Last U2N Relay UE” can be removed. Because “L2 Last U2N Relay UE” is also “U2N Relay UE” according to the definition. It looks double description. | Suggest “1> if the UE is acting as a L2 U2N Relay UE or L2 Last U2N Relay UE” replaced to “1> if the UE is acting as a L2 U2N Relay UE”.  [Rapp] In this context, the term 'L2 Last U2N Relay UE' is necessary to clearly distinguish the Relay UE that is in coverage in the multi-hop scenario. Therefore, it is recommended to retain this change. |
| LG | In 5.3.3.6, we think the added phrase as “or by a L2 First U2N Relay UE or by a L2 Intermediate U2N Relay UE” can be removed. Because the timer operation is clearly the case when the intermediate Relay UE operates as intermediate Relay UE. | Suggest to remove the added phrase, i.e., “or by a L2 First U2N Relay UE or by a L2 Intermediate U2N Relay UE,”.  [Rapp] Term “or by a L2 First U2N Relay UE” is removed to align it with other changes. However in this context, the term L2 Intermediate U2N Relay UE ' seems necessary as the relay (re)selection or cell selection can also be performed by the Intermediate U2N Relay UE. Therefore, it is recommended to retain this change. |
| LG | In 5.3.3.7, is it needed to differentiate whether connected L2 U2N Remote UE(s) or to the connected downstream child UE(s) in the side of U2N Relay UE? The U2N Relay UE just sends notification message to its Remote UE(s) regardless the Remote UE(s) acts as intermediate Relay UE or not.  For the 3.5.5.8 and 5.3.5.5.1, we want to do the similar comment. | Suggest to be changed as “sends *NotificationMessageSidelink* message to the connected L2 U2N Remote UE(s) ~~or to the connected downstream child UE(s)~~ in accordance with 5.8.9.10.”  [Rapp] The intention behind this change was to clarify that, in the context of multi-hop, the term Downstream Child UE is a general term that encompasses both U2N Remote UEs and U2N Relay UEs in the downstream direction. Without this clarification, it could be misinterpreted that the NotificationMessageSidelink is intended only for directly connected Remote UEs. Therefore, it is recommended to retain this change.. |
| LG | In the 5.3.5.2, the phrase of “the establishment of Uu Relay RLC channels and PC5 Relay RLC channels (other than SL-RLC0 and SL-RLC1) for L2 U2N Relay UE or for L2 Last U2N Relay UE is performed” doesn’t need to be changed. Because the U2N Relay UE can be also the Last U2N Relay UE. The last U2N Relay UE is just the U2N Relay UE having Uu Relay RLC channel. The sentence already has the U2N Relay UE establishment of Uu Relay RLC channels and PC5 Relay RLC channels. So, we think it is not needed to be clarified as last U2N Relay UE.  The same comment for the subclause 5.3.5.3 and 5.3.5.5.12, 5.3..5.5.13, 5.3.7.2 | We suggest to be changed as the followings:  [5.3.5.2]   * the establishment of Uu Relay RLC channels and PC5 Relay RLC channels (other than SL-RLC0 and SL-RLC1) for L2 U2N Relay UE ~~or for L2 Last U2N Relay UE~~ is performed only when AS security has been activated, and the establishment of PC5 Relay RLC channels for L2 U2N Remote UE or for L2 First U2N Relay ~~UE or for L2 Intermediate U2N Relay UE~~ (other than SL-RLC0 and SL-RLC1) is performed only when AS security has been activated;   [5.3.5.3]  3> resume SRB2, SRB4, DRBs, multicast MRB, and BH RLC channels for IAB-MT, and Uu Relay RLC channels for L2 U2N Relay UE ~~or for L2 U2N Last Relay UE,~~ that are suspended;  [5.3.7.2] suspend all RBs, and BH RLC channels for IAB-MT, and Uu Relay RLC channels for L2 U2N Relay ~~UE or for L2 U2N Last Relay UE~~, except SRB0 and broadcast MRBs;  [Rapp] In this context, the term 'L2 Last U2N Relay UE' is necessary to clearly distinguish the Relay UE that is in coverage in the multi-hop scenario and has connection to the network via the Uu interface.  According to the definition of L2 U2N Relay UE, the Last Relay UE is just one type within this broader category. Therefore, it is necessary to be more specific in these sections to avoid ambiguity and ensure clarity in the multi-hop context.  Therefore, it is recommended to retain this change. |