[106bis-e][227] NR_SL_relay_enh - Version 0.0.5
RAN4
https://nwm-trial.etsi.org/#/documents/8470

R4-2306258

3GPP TSG-RAN WG4 Meeting # 106bis-e

Electronic Meeting, 17 April –26 April, 2023

Agenda item: 5.33.3

Source: Moderator (LG Electronics)

Title: Topic summary for [106-bis-e][227] NR_SL_relay_enh.

Document for: Information

1 Introduction

This document is the email discussion summary for [106bis-e][227] NR_SL_relay_enh with two topics as below:

1. Topic #1: Response to incoming LS on comparison of SL-RSRP and SD-RSRP measurements (R2-2302234)
2. Topic #2: RRM requirements

.

2 Topic #1: Response to incoming LS on Comparison of SL-RSRP and SD-RSRP measurements (R2-2302234)

2.1 Companies' contributions summary

Table 1: Companies' contributions summary

T-doc number	Company	Proposals / Observations

R4-2304357	Qualcomm Inc.	Observation 1: If we take power control of unicast transmission into consideration, the power offset applied to the unicast signal is unknown to nodes except the transmitter, and therefore we don't see how an appropriate offset can be applied to correct SL-RSRP and enable to comparison to SD-RSRP. Observation 2: Moreover, discovery message is always transmitted by the relay UE and SD-RSRP comparison of different relay UEs is always feasible, and therefore we don't see the advantage to compare SL-RSRP to SD-RSRP. Proposal: Do not compare SL-RSRP with SD-RSRP. No, the comparison of SL-RSRP and SD-RSRP measurement cannot be used for the purposes of triggering a measurement report. It is not feasible for the network or a UE to know whether a certain measured SL-RSRP value was affected by sidelink pathloss based power control, downlink pathloss based power control, congestion control, only the pathloss between the transmitter and receiver, or a combination.
R4-2304785	Xiaomi	Proposal 1: The comparison of SL-RSRP and SD-RSRP measurement is feasible for the purposes of triggering a measurement report.
R4-2304912	LG Electronics	Proposal 1: the comparison between SL-RSRP and SD-RSRP is not always valid due to power control.

R4-2304930	MediaTek Inc.	Observation 1: Measurement accuracy requirements for SL-RSRP and SD-RSRP are the same. Proposal 1: Just send RAN2 the information that measurement accuracy requirements for SL-RSRP and SD-RSRP are the same and not conclude on whether direct comparison of SD-RSRP and SL-RSRP is possible in RAN4.
R4-2305226	Oppo	Proposal-1: Direct comparison of SL-RSRP and SD-RSRP should not be supported from RRM perspective.
R4-2305548	Nokia, Nokia Shanghai Bell	Proposal 1: Measured SD-RSRP and SL-RSRP between two UEs cannot be used relative to each other or relative to same reference threshold. Proposal 2: It is up to RAN2 to enhance the value reported in sl-MeasResult to make it more meaningful in Rel-18.

R4-2305793	Ericsson	Observation #1: The SD-RSRP and SL-RSRP are measured combining several samples/snapshots over a measurement period. Observation #2: In principle the remote UE by applying an offset (e.g. based on the difference between the maximum transmit/-configured power and the current transmit power) to the SL-RSRP, can trigger event Z2 reliably. Observation #3: However, during the SL-RSRP measurement period, the transmit power of the relay UE on the unicast PC5 link can change due to the power control. Observation #4: Another challenge is that due to the power control the relative power tolerance can vary between ±2 dB to ±8 dB depending on the power control step size according to clause 6.3E.4 (Power control for V2X) of TS 38.101-1. Observation #5: Considering the above observations (#1 to #4), setting an appropriate and correct offset value for evaluating event Z2 will be quite challenging. Proposal #1: The new measurement report trigger event (Z2) is based on the comparison between the SD-RSRPs from different relay UEs i.e. Event Z2: The measured SD-RSRP of a candidate L2 U2N Relay UE becomes an offset better than measured SD-RSRP of the serving L2 U2N Relay UE

2.2 Open issues summary

2.2.1 comparison of SL-RSRP and SD RSRP measurements

Sub-topic description: In the LS from RAN2 (R2-2302234), RAN2 asks feedback from RAN1/RAN4 on the comparisons of SL-RSRP from serving relay UE and SD-RSRP from candidate relay UE.

Issue 1-1: Comparison of SL-RSRP and SD-RSRP measurements

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- Proposals
  - Option 1 (Xiaomi): The comparison of SL-RSRP and SD-RSRP measurement is feasible for the purposes of triggering a measurement report
  - Option 2-1 (LGE): The comparison between SL-RSRP and SD-RSRP is not always valid due to power control.
  - Option 2-2 (Oppo): Direct comparison of SL-RSRP and SD-RSRP should not be supported from RRM perspective.
  - Option 2-3 (Nokia):
    - Measured SD-RSRP and SL-RSRP between two UEs cannot be used relative to each other or relative to same reference threshold.
    - It is up to RAN2 to enhance the value reported in sl-MeasResult to make it more meaningful in Rel-18.
  - Option 2-4 (Qualcomm):
    - Do not compare SL-RSRP with SD-RSRP
    - No, the comparison of SL-RSRP and SD-RSRP measurement cannot be used for the purposes of triggering a measurement report. It is not feasible for the network or a UE to know whether a certain measured SL-RSRP value was affected by sidelink pathloss based power control, downlink pathloss based power control, congestion control, only the pathloss between the transmitter and receiver, or a combination.
  - Option 2-5 (Ericsson):
    - Considering the above observations (#1 to #4), setting an appropriate and correct offset value for evaluating event Z2 will be quite challenging.
    - The new measurement report trigger event (Z2) is based on the comparison between the SD-RSRPs from different relay UEs
  - Option 3 (MediaTek): Just send RAN2 the information that measurement accuracy requirements for SL-RSRP and SD-RSRP are the same and not conclude on whether direct comparison of SD-RSRP and SL-RSRP is possible in RAN4.

- Recommended WF
  - Companies are encouraged to provide their views. Following draft LSs were provided and one of the Draft LS can be baseline after Issue 1-1 is agreed
    - R4-2304931 (MediaTek),
    - Appendix in R4-2305226 (Oppo),
    - Appendix in R4-2305548 (Nokia)
    - Appendix in R4-2305793 (Ericsson)

Feedback Form 1: Comparison of SL-RSRP and SD-RSRP measurements

1 – Qualcomm Incorporated

We support option 2, and pointing out the fact that SL-RSRP under unicast and SD-RSRP under broadcast are not comparable as option 2-4 is beneficial.

Option 1 is based on the identical *accuracy* requirement of SL-RSRP and SD-RSRP, however, the same accuracy requirement doesn't imply comparable, in fact, unknown offset explained by the proponents of option 2 makes the comparison invalid.

And therefore, providing accuracy requirement information here is not relevant, and therefore option 3 doesn't address the LS question.

2 – LG Electronics UK

We think RAN4 does not need to provide possible solutions for Z2 such as value of offset since it is up to RAN2. And RAN4 can just provide fact that the comparison is not always valid due to power control. But, for more detailed feedback, we are fine to provide feasible comparison cases as follows:

The comparison is not always valid due to power control, but, the comparison may be valid in following cases:

-. [If same transmit powers are used for SD-RS and SL-RS]

-. [When max transmit power is configured both SD-RS and SL-RS]

Other cases can be further discussed, if needed

Regarding option 3, we think RAN2 does not asks for accuracy requirements, so, option 3 does not address the question from RAN2.

3 – HiSilicon Technologies Co. Ltd

Whether the comparison of SL-RSRP and SD-RSRP measurement based on current power control is feasible shall be discussed in RAN1 rather than in RAN4. We have similar view as option 3. RAN4 just informs RAN2 that UE has already supported to perform both SL-RSRP and SD-RSRP measurements for SL relay in R17 and defined the corresponding measurment requirements for relay selection/reselection.

4 – Beijing Xiaomi Mobile Software

We understood that the comparation between SL-RSRP and SD RSRP measurements is not always valid considering the power control after checking companies' contribution. We are fine to go with option 2.

5 – MediaTek Inc.

Due to power control issue, the comparation between SL-RSRP and SD RSRP measurements is not feasible. Although we think it is better to discuss power control issue in RAN1, we are fine to go with option 2.

6 – Ericsson LM

We support Option 2. Due to power control reason the comparison between SL-RSRP and SD-RSRP is not feasible. Another impact of the power control is depending on the power control step size, the TX power

of the target SL UE will incorporate inaccuracy. Therefore, using an offset to compensate for the lower TX power will not be feasible or will not compensate for the tolerance.

In our view RAN4 should provide complete response from RAN4 point of view. PC step accuracy is RAN4 issue not RAN1.

7 – Nokia Corporation

We support Option 2.

Using SD-RSRP in event Z2 comparing SD-RSRP of a candidate L2 U2N Relay UE with SD-RSRP of the serving L2 U2N Relay UE, as suggested by some companies, will not work since SD-RSRP of the serving L2 U2N Relay UE may not be always available.

We are fine using Appendix in R4-2305548 should be used as baseline, which is also in line with R4-2304912.

2.3 Summary for 1st round

Table 2:

	Status summary
Sub-topic #1-1	1st round summary: • Option 1: no supporting company • Option 2: Qualcomm, LGE, Xiaomi, MediaTek, Ericsson, Nokia • Option 3: Huawei, MediaTek Since no company support option 1 in 1st round, two options can be further discussed in 2nd round. Tentative agreements: Option 2 can be a tentative agreement. Candidate options: • Option 1: Inform the measurement requirements for SL-RSRP and SD-RSRP and not conclude on whether direct comparison of SD-RSRP and SL-RSRP is possible in RAN4. • Option 2: Inform that the comparison between SL-RSRP and SD-RSRP is not always valid due to power control. Recommendations for 2nd round: the above two candidate options can be further discussed in 2nd round.

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2.4 Discussion on 2nd round

2.4.1 Contents for reply LS

- Proposals:
  - Option 1: Inform the measurement requirements for SL-RSRP and SD-RSRP and not conclude on whether direct comparison of SD-RSRP and SL-RSRP is possible in RAN4.
  - Option 2: Inform that the comparison between SL-RSRP and SD-RSRP is not always valid due to power control.
- Recommended WF: Companies are encouraged to provide their views

2.4.1.1 Offline GTW

HW: support option 3. Inform that UE can measure both SL-RSRP and SD-RSRP. Power control is up to RAN1.

Ericsson: Confusing option 3. Support option 2. Can discuss power control tolerance in RAN4 and it depends on the step size.

QC: Option 3 implies that do not send reply LS RAN2 since it's not answer. Prefer option 2.

Nokia: Fine to inform that the comparison is not always feasible. Further discuss information in LS.

Recommended WF: It can be further discussed with draft LS (Nokia). **Please provide your comments into draft LS or emai-thread for draft LS.**

Feedback Form 2: Contents for reply LS

2.5 Summary for 2nd round

This issue was discussed with draft LS in ftp: Directory Listing /ftp/tsg_ran/WG4_Radio/TSGR4_106bis-e/Inbox/Drafts/[106bis-e][227] NR_SL_relay_enh/LS (3gpp.org)

3 Topic #2: RRM requirements

Main technical topic overview. The structure can be done based on sub-agenda basis.

3.1 Companies' contributions summary

Table 3: 1st summary for Topic #1

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T-doc number	Company	Proposals / Observations
R4-2304786	Xiaomi	Proposal 1: The discussion on requirements for multi-path case should be pending until the WI scope is clarified. Proposal 2: The legacy requirements for selection/reselection of relay UE in clause 12.10 of TS 38.133 can be reused.
R4-2304913	LG Electronics	Proposal 1: multi-path scenario is out of scope for RAN4. Even if it is assumed, the existing selection/reselection requirement of relay UE can be reused since no impact is expected for indirect path. Proposal 2: No need to define interruption time for direct path when remote UE performs the selection/reselection of the indirect path
R4-2304932	MediaTek	Proposal 1: Use the legacy requirements of selection/reselection of relay UE in U2N relay as a baseline for U2U relay. Proposal 2: Wait for RAN2 outcome and further discuss the impact on RRM requirements. Proposal 3: Not define requirements for multi-path relay scenario.
R4-2305325	Huawei, HiSilicon	Proposal 1: For relay UE selection/reselection procedure, the current R17 requirements on measurement period and evaluation period of SD-RSRP/SL-RSRP can be reused in R18. Proposal 2: For multi-path relay solution in R18, there is no need to define interruption requirements due to selection/reselection of the indirect path.

R4-2305792	Ericsson	Single hop UE-to-UE relay scenario: •Observation #1: The UE-to-UE relay scenario comprises of source UE connected to the destination UE via relay UE forming 1-hop UE-to-UE relay. •Observation #2: From layer-1 perspective the time to select/reselect a relay UE in UE-to-UE relay should be the same as defined for selection/reselection of a relay UE in UE-to network (U2N) relay scenario in section 12.10, TS 38.133. •Proposal #1: The requirements for the selection/reselection of the relay UE defined in section 12.10 (including measurement period in Table 12.10.2-1), TS 38.133 are reused for the selection/reselection delay of the relay UE in 1-hop UE-to-UE relay scenario. Multi-path relay scenario: •Observation #3: According to the WID necessary RRM core requirements should be defined by RAN4 without pointing to any specific objective. Multi-path relay scenario comprises of the source/remote UE having one direct path (WAN/Uu) to gNB and one indirect path to the same gNB via UE-to-Network relay UE (UE2). •Observation #4: In multi-path relay scenario, the source/remote UE (UE1) has two simultaneous paths with the same gNB: one direct path (WAN/Uu) to gNB and one indirect path to the same gNB via UE-to-Network (U2N) relay UE (UE2). •Observation #5: From layer-1 perspective the time to select/reselect a relay UE for the indirect path (U2N) should be the same as defined for selection/reselection of a relay UE in U2N relay scenario in section 12.10, TS 38.133. •Observation #6: During the selection/reselection of the relay UE (UE2) for the indirect path, the remote UE (UE1) will cause interruption on the direct path. •Observation #7: The maximum length of each interruption on the

R4-2305549	Nokia	Observation 3: RRM requirements in TS 38.133 sec. 12.10.2 Selection / Reselection of relay UE in RAN4 for relay discovery and (re)selection for U2N relay in Rel-17 may be used as baseline for relay discovery and (re)selection for U2U relay in Rel-18. Observation 4: There could be different Discovery periods configured for both the hops of U2U relay UE. It could happen that Discovery period of hop 1 allowed to have more than 1 discovery messages in hop 1 during the discovery periods of hop 2 And we propose: Proposal 1: RAN4 can wait for RAN2 to agree on the U2U relay discovery and (re)selection procedures before evaluating whether the existing requirements for U2N relay are applicable or new requirements are needed. Proposal 2: Latest measurement during a discovery period must be considered for evaluation of (re)selection criterion. Proposal 3: RAN4 can wait for RAN2 to progress further to decide on U2U selection and reselection considering m-path scenarios.

3.2 Open issues summary

3.2.1 The requirements for the selection/reselection of the relay UE

Issue 2-1: The requirements for the selection/reselection of the relay UE

- Proposals
  - Option 1 (Xiaomi, LGE, HW, Ericsson): The legacy requirements for selection/reselection of relay UE in clause 12.10 of TS 38.133 can be reused.
  - Option 1-1(MediaTek, Nokia): The legacy requirements for selection/reselection of relay UE in clause 12.10 of TS 38.133 can be used as baseline and wait for RAN2 progress.

- Recommended WF
  - Moderator' suggestion: Reuse the legacy requirements for selection/reselection of relay UE in clause 12.10 of TS 38.13 if there is no input from RAN2.

Feedback Form 3: The requirements for the selection/reselection of the relay UE

1 – Qualcomm Incorporated Assume moderator's WF doesn't have spec impact, and we can support. If there is a spec impact, please elaborate and we can evaluate.
2 – LG Electronics UK We think the legacy requirement can be reused.
3 – HiSilicon Technologies Co. Ltd We can agree with the moderator's suggestion.
4 – Beijing Xiaomi Mobile Software Agree with moderator's suggestion.
5 – MediaTek Inc. Agree with moderator's suggestion.
6 – Ericsson LM We also agree with the moderator recommendation with the understanding that the requirements (delay) for selection/reselection of the relay UE by the remote UE capable of UE2UE relay are defined in TS 38.133 based on section 12.10 of TS 38.133. We do not understand what QC means there is no spec impact. Even if the requirements are reused there is an impact on the spec because this is new UE capability (UE2UE relay) and scenario is also different i.e. UE to UE relay not UE2N relay. The reason requirements are the same because L1 between the remote UE ->relay UE is the same in legacy section 12.10 and in the new scenario.
7 – Nokia Corporation We can agree to recommended WF by moderator. The legacy requirements for selection/reselection of relay UE in clause 12.10 of TS 38.133 can be used as baseline and wait for RAN2 progress to evaluate whether changes are needed.

3.2.2 Interruption time

Issue 2-2: Interruption time in multipath scenario

- Proposals

- Option 1 (Xiaomi): The discussion on requirements for multi-path case should be pending until the WI scope is clarified.
- Option 1-1(Nokia): RAN4 can wait for RAN2 to progress further to decide on U2U selection and reselection considering m-path scenarios
- Option 2 (MediaTek, LGE): Not define requirements for multi-path relay scenario
- Option 2-1 (Huawei, LGE): For multi-path relay solution in R18, there is no need to define interruption requirements due to selection/reselection of the indirect path.
- Option 3 (Ericsson):
  - Define the maxmum interruption length of each interruption on the direct path caused by the remote UE during selection/reselection of the relay UE for the indirect path is according to table 3:

Table 4: Ericsson's proposal

	NR Slot length (ms)	**Interruption length X (slots)**	
		Synchronous	**Asynchronous**
0	1	1	2
1	0.5	1	2
2	0.25	3	

  - The remote UE shall not cause any interruption on the direct path when using the sidelink resource allocation mode 2 for the selection/reselection of the relay UE for the indirect path during the following critical procedures:
    - While receiving paging,
    - While receiving system information,
    - T310 timer is running for RLF on PCell,
    - performing candidate beam detection on PCell/serving cell as specfied in sections 8.5.5. and 8.5.6 of TS 38.133

- Recommended WF
  - Companies are encouraged to provide their views.

Feedback Form 4: Interruption time in multipath scenario

1 – Qualcomm Incorporated Selection and reselection of relay UE has many procedures, and it is not obvious which procedure it refers to. Our understanding is that the RRC reconfiguration in the selection/reselection procedure may incur interruption to Uu, but it is specified already in the specification with agreed interruption length and without restrictions proposed by Ericsson. We don't see why this RRC reconfiguration has a lower priority than other RRC reconfiguration and additional restrictions are needed. Based on the above observation, we support option 2-1 given that the requirement is already there.
2 – LG Electronics UK Support option 2 and 2-1. Specific requirements for multi-path scenario does not need to be defined.
3 – HiSilicon Technologies Co. Ltd We support option 2 and 2-1. No additional interruption requirements need to be defined in R18.
4 – Beijing Xiaomi Mobile Software We support option 1, and also agree with option 2 and 2-1.
5 – Ericsson LM We do not agree with option 2 and 2-1. But we can support option 1-1 since RAN2 work is still ongoing.
6 – Nokia Corporation We support Option 1-1. In our view the WI scope does not include requirements related to M-path and this needs further clarification.
7 – MediaTek Inc. Support option 2 and 2-1.

3.2.3 Different Discovery periods

Issue 2-3: Different Discovery periods

- Proposals
  - Option 1 (Nokia):
    - There could be different Discovery periods configured for both the hops of U2U relay UE. It could happen that Discovery period of hop 1 allowed to have more than 1 discovery messages in hop 1 during the discovery periods of hop

- Latest measurement during a discovery period must be considered for evaluation of (re)selection criterion

- Recommended WF
  - Companies are encouraged to provide their views.

Feedback Form 5: Different Discovery periods

1 – Qualcomm Incorporated What's the impact of option 1? Whichever measurements in the discover period has the same accuracy requirement, and given that filtering is running across discover periods, we don't think specifying the behavior is needed. Could Nokia explain the motivation of specifying the behavior, and how it can benefit the system?
2 – LG Electronics UK More clarification is needed.
3 – HiSilicon Technologies Co. Ltd Spec impact due to option 1 needs to be clarified.
4 – Ericsson LM The scenario in option 1 is unclear. Our understanding is that UE2UE relay scenario comprises of 1-hop i.e. only one relay UE is involved between the remote UE and the destination UE. Can Nokia clarify what is meant by, **".....both the hops of U2U relay UE...".** Or
5 – Nokia Corporation Main point raised for discussion is how to handle different discovery periods in first hop and second hop.
6 – MediaTek Inc. Each hop can be evaluated independent. Even with the same discovery period, the channel conditions of the two hops will be different.
7 – Nokia Corporation To clarify a bit further. We agree that each hop can be evaluated independently. We wanted to raise the issue of fact that the relay UE may receive two discovery messages from the source remote UE during its own discovery period to forward this message to the other UEs (target remote UE).

In such case first the received discovery message may not be valid anymore and only the most recent of the two discovery messages (hence, the 'latest measurement').

However, this is maybe mostly an observation from RAN4 perspective and is more for RAN2 discussion.

3.3 Summary for 1st round

Table 5: 1st summary for topic #2

	Status summary
Sub-topic#2-1	1st round summary: One company have concern on spec impact and most companies agree with following tentative agreements: Tentative agreements: The legacy requirements for selection/reselection of relay UE in clause 12.10 of TS 38.133 can be used as baseline and wait for RAN2 progress to evaluate whether changes are needed. Candidate option: • Option 1: The legacy requirements for selection/reselection of relay UE in clause 12.10 of TS 38.133 can be used as baseline and wait for RAN2 progress to evaluate whether changes are needed. Recommendations for 2nd round: Agree with tentative agreements
Sub-topic#2-2	1st round summary: • Option 1: Xiaomi, Ericsson • Option 1-1: Nokia • Option 2: LGE, Huawei, Xiaomi, MediaTek • Option 2-1: Qualcomm, LGE, Huawei, Xiaomi, MediaTek • Option 3: Ericsson No decision in 1st round. Tentative agreements: N/A Candidate options: same as options in 1st round. Recommendations for 2nd round: Further discuss in 2nd round

Sub-topic#2-2	1st round summary: Most companies think that more clarification is needed for the proposal. So, the proponent provides information for this issue as follows: "*Main point raised for discussion is how to handle different discovery periods in first hop and second hop.* *To clarify a bit further.* *We agree that each hop can be evaluated independently. We wanted to raise the issue of fact that the relay UE may receive two discovery messages from the source remote UE during its own discovery period to forward this message to the other UEs (target remote UE).* *In such case first the received discovery message may not be valid anymore and only the most recent of the two discovery messages (hence, the 'latest measurement').* *However, this is maybe mostly an observation from RAN4 perspective and is more for RAN2 discussion.*" Tentative agreements: N/A Candidate options: same as option in 1st round. Recommendations for 2nd round: Further discuss in 2nd round with the above information provided by proponent

3.4 Discussion on 2nd round

3.4.1 The requirements for the selection/reselection of the relay UE

- Candidate option:
  - Option 1: The legacy requirements for selection/reselection of relay UE in clause 12.10 of TS 38.133 can be used as baseline and wait for RAN2 progress to evaluate whether changes are needed.

3.4.1.1 Offline GTW

Following tentative agreement was made in offline GTW.

<Tentative agreement>

- Option 1: The legacy requirements for selection/reselection of relay UE in clause 12.10 of TS 38.133 can be used as baseline and wait for RAN2 progress to evaluate whether changes are needed.

If the above tentative agreement is not agreeable, please provide your views. If you agree, you don't need to comment.

Feedback Form 6: Tentative agreement on the requirements for the selection/reselection of the relay UE

1 – Nokia Corporation

Tentative agreement is agreeable.

3.4.2 Interruption time in multipath scenario

- Proposals
  - Option 1 (Xiaomi, Ericsson): The discussion on requirements for multi-path case should be pending until the WI scope is clarified.
  - Option 1-1(Nokia): RAN4 can wait for RAN2 to progress further to decide on U2U selection and reselection considering m-path scenarios
  - Option 2 (MediaTek, LGE, Huawel, Xiaomi): Not define requirements for multi-path relay scenario
  - Option 2-1 (Qualcomm, LGE, Huawei, Xiaomi, MediaTek): For multi-path relay solution in R18, there is no need to define interruption requirements due to selection/reselection of the indirect path.
  - Option 3 (Ericsson):
    - Define the maxmum interruption length of each interruption on the direct path caused by the remote UE during selection/reselection of the relay UE for the indirect path is according to table 6:

Table 6:

	NR Slot length (ms)	**Interruption length X (slots)**	
		Synchronous	**Asynchronous**
0	1	1	2
1	0.5	1	2
2	0.25	3	

    - The remote UE shall not cause any interruption on the direct path when using the sidelink resource allocation mode 2 for the selection/reselection of the relay UE for the indirect path during the following critical procedures:
      - While receiving paging,

- While receiving system information,
- T310 timer is running for RLF on PCell,
- performing candidate beam detection on PCell/serving cell as specfied in sections 8.5.5. and 8.5.6 of TS 38.133

- Recommended WF
  - Companies are encouraged to provide their views.

3.4.2.1 Offline GTW

<Offline GTW>

Ericsson: interruption requirement is required. It can be discussed after RAN2 work is cleared.

Nokia: Similar view with Ericsson.

QC: Q to Nokia: we already have interruption requirements and it similar with legacy.

Nokia: Depending on RAN2,

Ericsson: Scenario is different. Legacy may not applicable. It can be further discussed.

Xiaomi: Wait RAN2

Following tentative agreement is made in offline GTW.

<Tentative agreement>

- RAN4 can wait for RAN2 to progress further to decide on U2U selection and reselection considering m-path scenarios.

If the above tentative agreement is not agreeable, please provide your views. If you agree, you don't need to comment.

Feedback Form 7: Tentative agreement on Interruption time

1 – Nokia Corporation
Tentative agreement is agreeable to us

3.4.3 Different discovery periods

- Proposals
  - Option 1 (Nokia):

  - There could be different Discovery periods configured for both the hops of U2U relay UE. It could happen that Discovery period of hop 1 allowed to have more than 1 discovery messages in hop 1 during the discovery periods of hop
  - Latest measurement during a discovery period must be considered for evaluation of (re)selection criterion

- Recommended WF: Discuss with below information provided by proponent

"*Main point raised for discussion is how to handle different discovery periods in first hop and second hop.*

To clarify a bit further.

We agree that each hop can be evaluated independently. We wanted to raise the issue of fact that the relay UE may receive two discovery messages from the source remote UE during its own discovery period to forward this message to the other UEs (target remote UE).

In such case first the received discovery message may not be valid anymore and only the most recent of the two discovery messages (hence, the 'latest measurement').

However, this is maybe mostly an observation from RAN4 perspective and is more for RAN2 discussion."

3.4.3.1 Offline GTW

<Offline GTW>

Nokia: just raise the question

<Tentative agreement>

- The issue is closed. No more discussion for this issue.

If the above tentative agreement is not agreeable, please provide your views. If you agree, you don't need to comment.

Feedback Form 8: Tentative agreement on Different discovery periods

1 – Nokia Corporation
Proposal is fine

3.5 Summary for 2nd round

3.5.1 The requirements for the selection/reselection of the relay UE

<Agreement>

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- The legacy requirements for selection/reselection of relay UE in clause 12.10 of TS 38.133 can be used as baseline and wait for RAN2 progress to evaluate whether changes are needed.

3.5.2 Interruption time in multipath scenario

<Agreement>

- RAN4 can wait for RAN2 to progress further to decide on U2U selection and reselection considering m-path scenarios

3.5.3 Different discovery periods

<Agreement>

- This issue is closed. No more discussion for this issue.

4 Recommendations for Tdocs

4.1 1st round

New tdocs

Table 7: 1st round New Tdocs

New Tdoc number	Title	Source	Comments
	Reply LS on Comparison of SL-RSRP and SD-RSRP measurements	Nokia, Nokia Shanghai Bell	To: RAN_2; Cc: RAN_1
	WF on RRM requirements for SL relay enhancement	LG Electronics	

Existing tdocs

Table 8: 1st round existing Tdocs

https://nwm-trial.etsi.org/#/documents/8470

Tdoc number	Revised to	Title	Source	Recommenda-tion	Comments
R4-2304357		SL relay LS reply discussion	Qualcomm Inc.	Noted	
R4-2304785		Discussion on RRM core requirement for enhanced NR sidelink relay	Xiaomi	Noted	
R4-2304786		Discussion on RRM core requirement for enhanced NR sidelink relay	Xiaomi	Noted	
R4-2304912		Discussion on incoming LS on comparison of SL-RSRP and SD RSRP measurements	LG Electronics	Noted	
R4-2304913		Discussion on Rel-18 NR sidelink relay enhancements	LG Electronics	Noted	
R4-2304930		Discussion on SL-RSRP and SD-RSRP	MediaTek Inc.	Noted	
R4-2304931		Draft reply LS on Comparison of SL-RSRP and SD-RSRP measurements	MediaTek Inc.	Noted	
R4-2304932		Discussion on RRM impacts for R18 NR sidelink relay enhancements	MediaTek Inc.	Noted	

R4-2305226		Discussion on comparison of SL-RSRP and SD-RSRP measurements	Oppo	Noted	
R4-2305325		Discussion on RRM impacts for R18 sidelink relay enhancement	Huawei, HiSilicon	Noted	
R4-2305548		Reply LS on Comparison of SL-RSRP and SD-RSRP measurements (R2-2302234)	Nokia, Nokia Shanghai Bell	Noted	
R4-2305549		Discussion on Rel-18 NR sidelink relay enhancements	Nokia, Nokia Shanghai Bell	Noted	from AI 5.32.2
R4-2305792		Analysis of RRM requirements for SL relay enhancement	Ericsson	Noted	
R4-2305793		LS response on comparison of SL-RSRP and SD-RSRP measurements	Ericsson	Noted	

4.2 2nd round

Table 9: 2nd round Tdocs

Tdoc number	Revised to	Title	Source	Recommendation	Comments

https://nwm-trial.etsi.org/#/documents/8470

R4-2306366		Reply LS on Comparison of SL-RSRP and SD-RSRP measurements	Nokia, Nokia Shanghai Bell	Agreeable	
R4-2306367		WF on RRM requirements for NR SL relay enhancements	LG Electronics	Agreeable	