**3GPP TSG-RAN WG4 Meeting # 110 R4-2400766**

**Athens, Greece, February 26 – March 1, 2024**

**Agenda item:** 8.24.3

**Source:** Moderator (LG Electronics)

**Title:** Topic summary for [110][230] NR\_SL\_relay\_enh

**Document for:** Information

# Introduction

*This document is the topic summary for [110][230] NR\_SL\_relay\_enh. In the last RAN4#109 meeting, the RRM core requirement parts are finalized. So, in this meeting mainly the RRM performance requirement part would be discussed. The lists of open issues are as follow:*

* **Issue 1-1-1:** SD-RSRP and SL-RSRP accuracy requirements for R18 SL remote UE performing relay UE selection/reselection in multipath scenario
* **Issue 1-1-2:** Whether the applicability description update is necessary for the accuracy requirements of SD-RSRP and SL-RSRP for R18 SL remote UE performing relay UE selection/reselection in multipath scenario.
* **Issue 1-1-3:** Test case for delay of selection/reselection of relay UE by remote UE in U2U relay scenario
* **Issue 1-1-4:** Applicability rule for delay of (re)selection of relay UE by remote UE
* **Issue 1-1-5:** Test requirements for delay of selection/reselection of relay UE by remote UE in U2U relay scenario
* **Issue 1-1-6:** Test cases for interruptions caused by SL DRX activation and deactivation of remote UE in multi-path relay scenario
* **Issue 1-1-7:** Applicability rule for interruptions caused by the remote UE and the relay UE on their serving cells due to the transitions between the active and non-active times of the SL DRX
* **Issue 1-2-1:** CR to TS 38.133 on RRM performance requirements for enhanced NR sidelink relay
* **Issue 2-1-1:** CR to TS 38.133 on RRM core requirements for enhanced NR sidelink relay

Recommendation of prioritized topics for online discussion is highlighted to yellow color

**Issue 2-1-1**

**Issue 1-1-2, Issue 1-1-3, Issue 1-1-6**

**Issue 1-1-1, Issue 1-1-4, Issue 1-1-5, Issue 1-1-7, Issue 1-2-1**

# Topic #1: RRM performance requirements

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2400559 | Qualcomm | **Proposal 1: The existing R17 SL relay test is applicable to the concerned SL UEs in R18, and no new test cases are needed.**  **Proposal 2: Do not consider out of SL frequency coverage scenario for SD-RSRP and SL-RSRP measurement accuracy requirement.** |
| R4-2400573 | LGE | ***Proposal 1:*** Current specification could not cover multipath scenario. So, the applicability updating for multipath scenario is necessary.  ***Proposal 2:*** Define test cases of delay of selection/reselection of relay UE in U2U relay scenario. But the test cases of interruptions caused by the remote UE due to the SL DRX operation in multi-path relay scenario is not necessary.  ***Proposal 3:*** To limit the testing burden, define an applicability rule in annex A of TS38.133, that the UE capable of both U2U relay and U2N relay operations is required to pass only one of the two test cases.  ***Proposal 4:*** RAN4 does not need to define the test cases of interruptions caused by the SL DRX operation of the remote UE in multi-path relay scenario.  CR work split for sidelink relay RRM performance.  Table 1: Work split on RRM performance requirements and test cases for R18 Sidelink relay scenario   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **No.** | **Requirements for or test cases for** | **Detail** | **New or impacted section in TS38.133** | **Volunteer Company** | | 1 | Intra-frequency Discovery Signal Measurement Accuracy | Applicability update to include the multi-path scenario | 10.4.5 | Ericsson | | 2 | Selection/Reselection of relay UE |  | A.9.1.X | TBD | |
| R4-2400574 | LGE | CR to TS 38.133 on RRM core requirements for enhanced NR sidelink relay |
| R4-2401379 | Huawei | ***Proposal 1: There is no need to define new RRM accuracy requirements for R18 enhanced SL relay.***  ***Proposal 2: For R18 SL relay enhancements, there is no need to introduce new RRM test cases.*** |
| R4-2401917 | MTK | **Proposal 1: Legacy discovery signal measurement accuracy requirements are applicable to multipath scenario.**  **Proposal 2: Define a test case on selection/reselection of relay UE for U2U scenario. UE capable of both U2U and U2N is required to pass only one of the two test cases (U2U and U2N).**  **Proposal 3: Not to define a new test case to test the interruptions caused by the remote UE and relay UE due to the SL DRX operation between the remote UE and the relay UE in multi-path relay scenario.** |
| R4-2401941 | Ericsson | (NR\_SL\_relay\_enh-Perf) Draft CR on applicability of SD-RSRP and SL-RSRP accuracy requirements in multipath scenario |
| R4-2402726 | Nokia | 1. The existing accuracy requirements should be applicable to remote UE in the multipath scenario. 2. To verify selection/reselection of relay UE by remote UE in U2U relay scenario, the existing test setup for U2N relay (re)selection can be used as a baseline for the test cases. 3. Test requirements from Clause A.9.1.7.2 shall be used for U2U relay scenario with the assumption that the remote UE, U2U relay UE, and the target UE are out of coverage. |

## Open issues summary

### Sub-topic 1-1 RRM performance requirements for R18 sidelink relay UE

*This sub-topic is for RRM performance requirements of R18 sidelink relay UE*

*Open issues and candidate options before meeting:*

**Issue 1-1-1: SD-RSRP and SL-RSRP accuracy requirements for R18 SL remote UE performing relay UE selection/reselection in multipath scenario**

* Proposals
  + Option 1: There is no need to define new RRM accuracy requirements for R18 enhanced SL relay. (HW, MTK, Nokia, Ericsson, LGE, Qualcomm)
* Recommended WF
  + Moderator’s view: Regarding RRM performance requirement for the accuracy requirement of SD-RSRP and SL-RSRP at SL relay multipath scenario, most companies agreed that the legacy requirements are applicable to multipath scenario, so the new RRM accuracy requirements for R18 enhanced SL relay is not necessary.

**Issue 1-1-2: Whether the applicability description update is necessary for the accuracy requirements of SD-RSRP and SL-RSRP for R18 SL remote UE performing relay UE selection/reselection in multipath scenario.**

* Proposals
  + Option 1: Do not consider out of SL frequency coverage scenario for SD-RSRP and SL-RSRP measurement accuracy requirement. (Qualcomm)
  + Option 2: The applicability description update is necessary. (Ericsson, LGE, MTK)
  + Additional applicability description example:
    - Existing accuracies of SD-RSRP and SL-RSRP in clause 10.4.5 shall also apply for the remote UE in the multipath scenario provided that the remote UE:
      * is synchronised to the sidelink relay UE that is measured and
      * is in-coverage on the frequency used for sidelink if both the direct path and the SL on the indirect path are on the same frequency or
      * is out of coverage on the frequency used for sidelink if the direct path and the SL on the indirect path are on different frequencies.
* Recommended WF
  + Moderator’s view: Most companies agreed that the legacy requirements are applicable to multipath scenario, but the applicability description is not fully cover the R18 multipath scenario. So, we need to further discuss whether the applicability description update is necessary and the detail description contents also.

**Issue 1-1-3: Test case for delay of selection/reselection of relay UE by remote UE in U2U relay scenario**

* Proposals
  + Option 1: There is no need to define new RRM accuracy requirements for R18 enhanced SL relay. (Qualcomm, Huawei)
  + Option 2: Define a test case on selection/reselection of relay UE for U2U scenario. (Nokia, MTK, Ericsson, LGE)
* Recommended WF
  + Moderator’s view: Need to further discussion

**Issue 1-1-4: Applicability rule for delay of (re)selection of relay UE by remote UE**

* Proposals
  + Option 1: To limit testing, define an applicability rule in annex A of TS 38.133, that the UE capable of both U2U relay and U2N relay operations is required to pass only one of the two test cases: under U2U scenario or U2N relay scenario. (Ericsson, LGE, MTK)
* Recommended WF
  + Moderator’s view: This issue can be discussed after issue 1-1-3 is concluded with option 2.

**Issue 1-1-5: Test requirements for delay of selection/reselection of relay UE by remote UE in U2U relay scenario**

* Proposals
  + Option 1: Test requirements from Clause A.9.1.7.2 shall be used for U2U relay scenario with the assumption that the remote UE, U2U relay UE, and the target UE are out of coverage. (Nokia)
* Recommended WF
  + Moderator’s view: This issue can be discussed after issue 1-1-3 is concluded with option 2.

**Issue 1-1-6: Test cases for interruptions caused by SL DRX activation and deactivation of remote UE in multi-path relay scenario**

* Proposals
  + Option 1: There is no need to define new RRM accuracy requirements for R18 enhanced SL relay. (Qualcomm, Huawei, LGE, MTK)
  + Option 2: To verify the interruption requirements caused by the remote UE on its serving cell and the relay UE on its serving cell due to the transitions between the active and non-active times of the SL DRX in multipath scenario, reuse the methodology in test case in clause A.9.1.6.2 (Test for interruption to WAN at transitions between active and non-active during SL-DRX in asynchronous case) by configuring the remote UE (UE1) and the relay UE (UE2) served by different cells (Cell1 and Cell2 respectively) on different carrier frequencies. (Ericsson)
  + The purpose of the test shall be to verify the interruption caused on the serving cell (Cell1) (direct path) by the remote UE and interruption caused on the serving cell (Cell2) (indirect path) by the relay UE do not exceed the required limit while there are transitions between active and non-active times during the SL-DRX (between the remote UE and relay UE on the indirect path).
* Recommended WF
  + Moderator’s view: The majority of companies support option 1. Companies are encouraged to check whether they can compromise on option 1.

**Issue 1-1-7: Applicability rule for interruptions caused by the remote UE and the relay UE on their serving cells due to the transitions between the active and non-active times of the SL DRX**

* Proposals
  + Option 1: To limit testing, define an applicability rule in annex A of TS 38.133, that the UE capable of both multipath relay and U2N relay operations is required to pass only the test case in multipath operation. (Ericsson)
* Recommended WF
  + Moderator’s view: This issue can be discussed after issue 1-1-6 is concluded with option 2.

### Sub-topic 1-2 CRs

*This sub-topic is for maintenance CR work of core requirements*

*Open issues and candidate options before meeting:*

**Issue 1-2-1: CR to TS 38.133 on RRM performance requirements for enhanced NR sidelink relay**

* Proposals
  + R4-2401941 Draft CR on applicability of SD-RSRP and SL-RSRP accuracy requirements in multipath scenario
* Recommended WF
  + Moderator’s view: This issue can be discussed after issue 1-1-2 is concluded with option 2.

# Topic #2: RRM core requirements maintenance

## Companies’ contributions summary

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| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2400574 | LGE | CR to TS 38.133 on RRM core requirements for enhanced NR sidelink relay |

## Open issues summary

### Sub-topic 2-1 CRs

**Issue 2-1-1: CR to TS 38.133 on RRM core requirements for enhanced NR sidelink relay**

* Proposals
  + R4-2400574 CR to TS 38.133 on RRM core requirements for enhanced NR sidelink relay
* Recommended WF
  + Moderator’s view: Need to further discussion