**3GPP TSG-RAN WG4 Meeting # 110bis R4-2404837**

**Changsha, China, April 15 – 19, 2024**

**Agenda item:** 6.22.3

**Source:** Moderator (LG Electronics)

**Title:** Topic summary for [110bis][226] NR\_SL\_relay\_enh

**Document for:** Information

# Introduction

*This document is the topic summary for [110bis][226] NR\_SL\_relay\_enh. In the last RAN4#110 meeting, the RRM performance requirement parts are discussed. But there are still a number of issues. The lists of open issues are as follow:*

* **Issue 1-1-1:** Whether include the out of coverage scenario to the applicability description for the accuracy requirements of SD/SL-RSRP for R18 SL remote UE performing relay UE selection/reselection in multipath scenario.
* **Issue 1-2-1:** Test case for delay of selection/reselection of relay UE by remote UE in U2U relay scenario
* **Issue 1-2-2:** Applicability rule for delay of (re)selection of relay UE by remote UE
* **Issue 1-2-3:** Test requirements for delay of selection/reselection of relay UE by remote UE in U2U relay scenario
* **Issue 1-2-4:** Test cases for interruptions caused by SL DRX activation and deactivation of remote UE in multi-path relay scenario
* **Issue 1-2-5:** 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

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

**Issue 1-1-1**

**Issue 1-2-1, Issue 1-2-4**

**Issue 1-2-2, Issue 1-2-3, Issue 1-2-5**

# Topic #1: RRM performance requirements

## Companies’ contributions summary

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| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2404479 | LGE | ***Proposal 1:*** Out of coverage case is also necessary for different frequencies scenario between the direct path and the SL on the indirect path.  ***Proposal 2:*** 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. |
| R4-2405817 | Nokia | 1. Existing accuracies in Clause 10.4.5 also applies to a remote UE in the multipath scenario when the remote is out of the coverage on the sidelink frequency when the direct path and the sidelink on the indirect path are using different frequencies. 2. UE capable of both U2U and U2N relay operations is required to pass one of U2U and U2N tests. 3. The existing test setup for U2N relay (re)selection can be used as a baseline for the test cases.   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.   1. RAN4 to define a test case to verify selection/reselection of relay UE by remote UE in U2U relay scenario. |

## 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: Whether include the out of coverage scenario to the applicability description for the accuracy requirements of SD/SL-RSRP for R18 SL remote UE performing relay UE selection/reselection in multipath scenario.**

* Proposals
  + Option 1: Existing accuracies in Clause 10.4.5 also applies to a remote UE in the multipath scenario when the remote is out of the coverage on the sidelink frequency when the direct path and the sidelink on the indirect path are using different frequencies. (Nokia, LGE)
* Recommended WF
  + Moderator’s view: Option 1 is agreeable.

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| *Agreement:*   * 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   + FFS: 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. |

### Sub-topic 1-2 Test cases and scenarios for R18 sidelink relay UE

**Issue 1-2-1: Test case for delay of selection/reselection of relay UE by remote UE in U2U relay scenario**

* Proposals
  + Option 1: RAN4 to define a test case to verify selection/reselection of relay UE by remote UE in U2U relay scenario. (Nokia)
* Recommended WF
  + Moderator’s view: Option 1 is agreeable. According to the agreement of last meeting, the test case of U2U relay scenario should be defined if there is no UE feature dependency.

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| *Agreement:*  Check the UE feature dependency.   * If UE supporting U2U is mandated to support U2N, new test case is not needed. * If not, new test case is needed. Define applicability that only U2U or U2N case needs to be tested. |

**Issue 1-2-2: 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: If the option 1 in issue 1-2-1 is agreed, option 1 in issue 1-2-2 is agreeable.

**Issue 1-2-3: 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: Need further discussion.

**Issue 1-2-4: 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: Option 1 has been the majority view. Companies are encouraged to check whether they can compromise on option 1.

**Issue 1-2-5: 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 if issue 1-2-4 is agreed with option 2.