3GPP TSG-RAN WG2 Meeting #131 R2-2506214

Bengaluru, India, 25 – 29 August 2025

**Agenda item: 8.6.3**

**Source: Nokia**

**Title: Text Proposal for multi-TRP in Rel-19 LTM**

**WID/SID: NR\_Mob\_Ph4 - Release 19**

**Document for: Discussion and Decision**

# 1 Introduction

This is a report for the following at-the-meeting offline discussion:

* [AT131][104][MOB] (Nokia)

**Scope:** Prepare an agreeable TP on mTRP.

**Intended outcome:** TP in R2-2506214.

**Deadline: Comeback in 8/27 Wednesday session**

In RAN2#131 meeting (August 2025) the following agreements have been made on mTRP and L1 event-triggered reporting in LTM:

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| **Agreements on mTRP and L1 event-triggered reporting in LTM**   * When mTRP is configured in the serving cell the UE uses the best beam of the two “current beams” for LTM event evaluation, and it’s up to UE implementation to how to derive the best beam. * No additional indication is needed. * The coexistence between event-triggered L1 measurement reporting and mTRP for the source cell is supported in Release 19 LTM. |

Below we propose how to reflect these agreements in RAN2 specifications.

# 2 Text Proposals

In the next subsections we outline the proposed changes to Stage-2 and MAC specifications. In Stage-2 we explain how the current beam is selected. Then in MAC for the RSRPserving description we clarify this is the RSRP of the beam that was selected (according to 38.300).

## 2.1 TP for TS 38.300

Based on the latest endorsed CR for TS 38.300 , we suggest the following text proposal for Stage-2 specification.

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| 9.2.4 Measurements […]  Measurement reports for event triggered L1 based measurements are characterized by the following:  - Measurement reports include the reporting configuration identity that triggered the reporting;  - The max number of beam and the beam measurement quantities to be included in measurement reports are configured by network;  - The current beam of the serving cell to be included in measurement reports are configured by the network;  - When multi-TRP is configured for the serving cell, the UE uses the best beam of the two current beams for LTM event evaluation and reporting. It is up to the UE implementation how to choose the best beam.  […] |

## 2.2 TP for TS 38.321

Based on the latest endorsed CR for TS 38.321, we suggest the following text proposal for MAC specification.

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| 5.x.2 Performing measurement An RRC\_CONNECTED UE obtains L1 beam level measurement results by measuring one or multiple RSs as configured by the network as specified in [RAN1 REF] for the LTM candidate cell(s) with the candidate ID configured in *ltm-CandidateReportConfigList* for evaluation of reporting criteria. For each L1 beam level measurement result in RRC\_CONNECTED, the UE applies the layer 1 filtering by implementation, before using the measured results for evaluation of reporting criteria and measurement reporting. When multi-TRP is configured in the serving cell, the UE uses the best beam of the two current beams for LTM event evaluation. It is up to the UE implementation how to choose the best beam. The MAC entity performs the evaluation of reporting criteria as specified in 5.x.3 based on the L1 measurement results from lower layer. For the LTM candidate cell(s) with the candidate ID not configured in *ltm-CandidateReportConfigList*, the UE is not required to perform and event evaluation in 5.x.3 on the RSs belonging to the candidate ID for the corresponding event.  For L1 beam level event triggered measurements report, the network can configure SS/PBCH block(s) or CSI-RS as event evaluation RS type, and L1-RSRP as trigger quantity. Reporting quantity is the same as the trigger quantity. ---------------------------------------Next Modified Section-------------------------------------------------6.1.3.x Event Triggered L1 Measurement Report MAC CE Event triggered L1 measurement report MAC CE consists of either:  - event triggered L1 measurement report format (variable size); or  - truncated event triggered L1 measurement report format (variable size).  The event triggered L1 measurement report formats are identified by MAC subheaders with an eLCIDs as specified in Table 6.2.1-2b.  For a truncated event triggered L1 measurement report MAC CE, at least the following fields should be included: report ID field, at least one triggered RS with corresponding measured quantity, and the current RS of serving cell as described in TS 38.215 [24] with corresponding measured quantity, if UE is configured to report the measurement result of current RS of the serving cell by *reportCurrentBeam*.  Editor’s NOTE: It is working assumption: *If network configures to include the current serving beam in MR, the UE always includes the current serving beam in the truncated MR MAC CE. In this case, minimum size of truncated MR MAC CE is {at least one triggered beam + the current serving beam}. If grant is not enough for that, the UE does not assemble a truncated MR MAC CE*.  The fields in the (truncated) event triggered L1 measurement report MAC CE are defined as follows:  - Report ID: This field indicates corresponding measurement report ID for this *ltm-CSI-ReportConfigId* associated with this event triggered measurement report. The length of the Report ID field is 6 bits;  - Typei: This field indicates the type of the RS i of LTM candidate cell included in the event triggered L1 measurement report. The field is set to 00 to indicate the RS(s) that has satisfied the entry condition of the event associated with the report ID for TTT, triggers this measurement report MAC CE, and included in the *BEAM\_ENTERING\_LIST*; it is set to 01 to indicate the RS(s) that has satisfied the leaving condition of the event associated with the report ID for TTT, triggers this measurement report MAC CE, and included in the *BEAM\_LEAVING\_LIST*; it is set to 10 to indicate the RS(s) for which has been reported in the (Truncated) L1 measurement report MAC CE, and included in the *BEAM\_REPORTED\_LIST* associated with the report ID as specified in clause 5.x.3; it is set to 11 to indicate the RS(s) not satisfying the event for TTT, if configured by network by *allowReportAnyBeam* specified in TS 38.331 [5], i.e. the RS(s) with Type set to neither 00, 01, nor 11. The RS(s) not satisfying the event for TTT is selected based on the decending order of measured quantity. The RS(s) included in the truncated event triggered L1 measurement report MAC CE are selected based on a decreasing order of the priority for the type of beam: 00, 01, 10, 11. If the (truncated) event triggered L1 measurement report MAC CE cannot accommodate all RS(s) with the same priority, the RS(s) are selected based on a decreasing order of measured quality. The length of the field is 2 bits;  NOTE 3: For the measurement report triggered by LTM2, the RS with Type of 00 is the current beam, which is always included in the last octet.  - RSRIi: This field indicates the reference signaling resource index of the beam i of LTM candidate cell for the event triggered L1 measurement report (i.e. SS/PBCH Block Resource indicator (SSBRI) or CSI-RS resource indicator (CRI)). The maximum number of non-serving RS reported is configured by *maxNumberOfReportedBeams* if the measurement of current RS of serving cell is not included, or is *maxNumberOfReportedBeams*-1 if the measurement of current RS of serving cell is included. The first RS is the RS with the highest measured quality for non-serving RS in this measurement report MAC CE. The length of the RSRI index field is 9 bits;  - RSRP1: This field indicates the measured quantity of the first beam based on SS/PBCH block or CSI-RS (i.e. the L1-RSRP) as described in TS 38.215 [24]. The length of the RSRP1 field is 7 bits;  - DiffRSRPi: This field indicates the derived differential measured quantity for the beam i of LTM candidate cell based on SS/PBCH block or CSI-RS (i.e. the L1-RSRP) as described in TS 38.215 [24], with the reference of measured quality of the first beam. The length of the DiffRSRPi field is 4 bits;  - RSRPserving: This field indicates the measured quantity based on SS/PBCH block or CSI-RS (i.e. the L1-RSRP) for current RS of serving cell used for LTM event evaluation, as described in TS 38.215 [24] and in section 5.x.2, if UE is configured to report the measurement result of current RS of the serving cell by *reportCurrentBeam*. The length of the RSRPserving field is 7 bits;  - R: Reserved bit, set to 0.    Figure 6.1.3.x-1: event triggered L1 measurement report and truncated event triggered L1 measurement report MAC CE |

# References

1. R2-2506195 *Introduction of NR mobility enhancements Phase 4 in TS 38.300* 3GPP TSG-RAN WG2 Meeting #131 Bangalore, India, August 25th – 29th, 2025
2. R2-2505397 *Introduction of NR mobility enhancements Phase 4 in MAC* 3GPP TSG-RAN WG2 Meeting #131 Bangalore, India, August 25th – 29th, 2025