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

**Prague, Czech Republic, 13th – 17th Oct. 2025**

**Agenda item:** **8.6.1**

**Source: Apple Inc**

**Title:** **38.300 open issue list for R19 mobility**

**WID/SID: NR\_Mob\_Ph4**

**Document for:** **Discussion and Decision**

# Introduction

This document collects and summarizes the list of open issue list for 38.300 using the below post meeting discussion CR.

* [POST131][113][MOB] (Apple)

**Scope:** Update MOB 38.300 CR (including this meeting agreements also) and merge endorsed RAN3 CR

**Intended outcome:** 38.300 CR in R2-2506225 to be agreed.

**Deadline:** Short email discussion

1. Initial list of open issues by rapporteur, proposed resolutions for easy open issues or resolution options for other issues: sept. 19th
2. Input from other companies and final set of proposals and resolutions for identified issues that don’t require contribution input: Oct. 1st

NOTE: no contributions from other companies expected

Per instruction from the chairlady, this document will collect such open issues. More specifically, please provide here open issues that were identified but not addressed during the running CR review phase or we expect to come from other WGs.

Please provide your input no later than **Wednesday October 1 01:00 UTC**. After the deadline, I will provide a draft CR for companies to review before submission.

Since this is stage-2, if you have wording suggestions for the open list, please provide in the below table directly. This helps me with making the draft CR more efficiently, and also other companies to comments on the TP here.

# Contact information

Please provide your contact information in the table below.

|  |  |  |
| --- | --- | --- |
| **Company** | **Name** | **Email** |
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# Open issues

Companies are invited to describe any identified open issues not addressed during the running CR review phase or we expect to come from other WGs.

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| --- | --- | --- |
| **Company** | **Issue description** | **Rapporteur suggestion** |
| XYZ | Why and what is the issue | **How to address it:** Pls provide a TP, or intended wording. |
| Apple | 9.2.3.1 Overview […]  Timer based handover failure procedure is supported in NR. RRC connection re-establishment procedure is used for recovering from handover failure except in certain CHO, DAPS handover or LTM cell switch scenarios:  - When DAPS handover fails, the UE falls back to the source cell configuration, resumes the connection with the source cell, and reports DAPS handover failure via the source without triggering RRC connection re-establishment if the source link has not been released.  - When initial CHO execution attempt fails or HO fails, the UE performs cell selection, and if the selected cell is a CHO candidate and if network configured the UE to try CHO after handover/CHO failure, then the UE attempts CHO execution once, otherwise re-establishment is performed.  - When LTM execution attempt triggered by LTM cell switch command MAC CE fails, the UE performs cell selection and if the selected cell is an LTM candidate cell and if network configured the UE to try LTM after LTM execution failure, then the UE attempts RACH-based LTM execution once, otherwise re-establishment is performed.  For the highlighted part, CLTM is missed and needs to be added. | **TP:**  - When LTM execution attempt triggered by LTM cell switch command MAC CE fails or when the CLTM execution attempt by the UE fails, the UE performs cell selection and if the selected cell is an LTM candidate cell and if network configured the UE to try LTM after LTM execution failure, then the UE attempts RACH-based LTM execution once, otherwise re-establishment is performed. |
| Apple | Some general parts of LTM from 9.2.3.5.1 also apply to CLTM and this is not clearly provided. | **TP:** 9.2.3.X.1 General CLTM cell switch is executed by the UE when L1-based or L3-based LTM cell switch execution conditions are met. The same LTM procedures as described in clause 9.2.3.5.1 on network activation of TCI states for DL synchronization and on configuration and initiation of UL TA acquisition (via PDCCH order) are also applicable for CLTM. |
| Apple | Clarification on inter-gNB procedure in 9.2.3.5.2 | 2. The source gNB decides to configure LTM.  3. The source gNB requests LTM for one or more candidate cells belonging to the source gNB and/or one or more candidate gNB(s). For inter-gNB LTM, the source gNB initiates a HANDOVER REQUEST message per candidate cell containing one candidate cell ID and may contain the CSI resource configuration for subsequent LTM. For both intra and inter-gNB LTM, the source gNB may request the candidate cell(s)/gNB(s) to provide the CSI-RS resource configuration for L1 RSRP measurement and/or for early CSI acquisition. For inter-gNB LTM, the source gNB may include the LTM security information. For inter-gNB LTM, the source gNB includes the same source NG-RAN node UE XnAP ID for all HANDOVER REQUEST messages to a candidate gNB.  4. Admission Control may be performed by the candidate cells(s)/gNB(s).  5. The candidate cell prepares and provides the LTM configuration(s) to the source gNB. For inter-gNB LTM, the candidate gNB(s) respond(s) with HANDOVER REQUEST ACKNOWLEDGE message to the source gNB including the generated RRC configurations for the accepted candidate cell. For both intra and inter-gNB LTM, the candidate may also include additional information related to the CSI-RS resource configuration and early sync information upon request. For inter-gNB LTM, the candidate gNB also responds the selected LTM security information. For inter-gNB LTM, each candidate gNB includes the same target NG-RAN node UE XnAP ID for all HANDOVER REQUEST ACKNOWLEDGE messages it responds.  6. The source gNB sends an LTM CONFIGURATION UPDATE message to the candidate gNB(s) to update the LTM configurations of candidate cell(s). The source gNB may include the common CSI resource configuration, the LTM configuration ID mapping list and the LTM security information.  7. The candidate gNB(s) sends the LTM CONFIGURATION UPDATE ACKNOWLEDGE message to the source gNB. The candidate gNB(s) may also provide the CSI report configuration. The candidate gNB may include the CSI report configuration for CSI acquisition of the candidate cell(s).  NOTE: Step 6 may also be triggered after step 14, or after step 17 by implementation for subsequent LTM.  NOTE: Step 6 and Step 7 are triggered if early CSI acquisition is applied. |
| Apple | Clarification on CLTM procedure | The procedure for CLTM is as follows:  1. The UE sends a *MeasurementReport* message to the gNB. The gNB decides to configure CLTM and initiates CLTM preparation.  2. The source gNB can request the candidate cells to provide conditional execution configurations and the candidate cells provide the conditional configuration including their own execution conditions, to be used in subsequent CLTM.  3. The source gNB sends an *RRCReconfiguration* message to the UE and this includes the CLTM configurations of candidate cells as well as the execution condition(s) for the CLTM.  4. The UE stores the CLTM candidate configurations and transmits an *RRCReconfigurationComplete* message to the gNB. The UE starts evaluating the execution conditions based on the provided configuration.  5/6. The source gNB can trigger early synchronization (for example, based on the L1 or L3 measurement reports from the UE, if configured) to the UE and steps 4a/4b from figure 9.2.3.5.2-1 are applicable here as well. In addition, the source gNB can provide the TA value for each of the candidate cells the UE has performed UL synchronization with. Depending on network configuration, the UE may perform early UL synchronization with CLTM candidate cell(s), by using UE-based TA measurement, if configured  7. At the UE, the CLTM execution condition for the candidate LTM cell is satisfied. The UE performs the CLTM switch by applying the configuration of the satisfied LTM candidate cell. If the UE has valid TA as part of the UL early synchronization from step 6, the UE skips RACH. Otherwise, RACH is performed as part of the CLTM switch.  8. The UE completes the CLTM cell switch procedure by sending *RRCReconfigurationComplete* message to the switched LTM cell as in step 8 from intra-gNB LTM from figure 9.2.3.5.2-1. The UE does not release any valid TA value(s) of LTM candidate cells with CLTM configuration.  The steps 5-8 can be performed multiple times for subsequent CLTM cell switch executions using the CLTM candidate configuration(s) provided in step 2.  The following principles apply to CLTM:  - CLTM is supported for intra-gNB LTM when DC is not configured. Inter-gNB CLTM is not supported.  - CLTM can be RACH-based or RACH-less. RACH-based CLTM includes CFRA and CBRA, and only CG based RACH-less CLTM is supported.  - U-Plane handling from clause 9.2.3.5.3 applies to CLTM as well and since there is no LTM cell switch command MAC CE reception for CLTM, the UE performs MAC reset upon CLTM execution. |
| Apple | Some corrections in the location of text for L1 measurements.  Move the description to the correct place. | Layer 1 filtering introduces a certain level of measurement averaging. How and when the UE exactly performs the required measurements is implementation specific to the point that the output at B fulfils the performance requirements set in TS 38.133 [13]. Layer 3 filtering for cell quality and related parameters used are specified in TS 38.331 [12] and do not introduce any delay in the sample availability between B and C. Measurement at point C, C1 is the input used in the event evaluation. L3 Beam filtering and related parameters used are specified in TS 38.331 [12] and do not introduce any delay in the sample availability between A1 and E.  The high-level model for LTM event-triggered measurement is described below:    **Figure 9.2.4-2: LTM Event-triggered Measurement Model**  NOTE 1: K beams correspond to the measurements on SSB or CSI-RS resources configured for LTM by gNB and detected by UE at L1.  - **A**: measurements (beam specific samples) internal to the physical layer.  - **Layer 1 filtering**: internal layer 1 filtering of the inputs measured at point A. Exact filtering is implementation dependent. How the measurements are actually executed in the physical layer by an implementation (inputs A and Layer 1 filtering) is not constrained by the standard.  - **B**: a measurement after layer 1 filtering. This beam measurement is used as input for one or more evaluation of LTM event triggering and reporting criteria.  - **Evaluation of reporting criteria**: checks whether actual measurement reporting is necessary at point C. The evaluation can be based on more than one flow of measurements at reference point B e.g. to compare between different beam-level measurements. This is illustrated by input B and B1. The UE shall evaluate the reporting criteria at least every time a new measurement result is reported at point B, B1. The reporting criteria are standardised and the configuration is provided by RRC signalling (UE measurements).  - **C**: LTM MAC CE measurement report information (message) sent on the radio interface. |
| ITRI | In the last meeting, it was agreed that “CLTM can coexist with network triggered L3 HO, CHO and network triggered PScell change, while the coexistence of CLTM and DAPS HO is not supported.” This needs to be reflected in clause 9.2.3.X.1.  Our understanding is that the agreement at least means CLTM and CHO can be configured simultaneously for different candidate cells.  However, it is not clear that whether CLTM and CHO can be configured for the same candidate cell. Since both CLTM and CHO were introduced to improve mobility robustness, it should be clarified whether a CLTM candidate cell is also required to be configured as a CHO candidate cell for the same UE.  If there is insufficient time to discuss this in detail, it is preferable to leave this coexistence (i.e. CLTM and CHO configured for the same candidate cell) as not supported in this release. | Option 1 (TP): 9.2.3.X.1 General […]  While the UE has stored CLTM candidate configurations the UE can also execute any L3 handover except for DAPS handover.  Option 2 (TP): 9.2.3.X.1 General […]  While the UE has stored CLTM candidate configurations the UE can also execute any L3 handover except for DAPS handover. The coexistence of CLTM and CHO configured for the same candidate cell is not supported.  Option 3:  RAN2 to discuss whether the coexistence of CLTM and CHO configured for the same candidate cell should be supported. |
| MediaTek | For Figure 9.2.3.X.x-1. Signalling procedure for CLTM:  The DL sync seems not well reflected in the figure or description.  Also, the description can be further optimized as it is not always “network triggered”.  Also, “(for example, based on the L1 or L3 measurement reports from the UE, if configured)” may not needed as it is fully network implementation. | The text of R18+R19 LTM can be considered as reference:  5/6. Early DL and UL synchronization to some LTM candidate cell(s) may be performed. The source gNB may activate or deactivate the TCI states of the candidate LTM cells. The UE may perform UL synchronization with LTM candidate cell(s) before receiving the cell switch command, by using UE-based TA measurement, if configured, and/or by transmitting a preamble towards the candidate cell, as triggered by the gNB.. In addition, the source gNB can provide the TA value for each of the candidate cells the UE has performed UL synchronization with. |
| MediaTek | Wording optimization | 7. The CLTM execution condition is satisfied at the UE and on (at least) one candidate LTM cell, the UE performs the CLTM execution by applying the configuration of the satisfied LTM candidate cell. |
| MediaTek | Suggest to directly say what we want to express here instead of citing LTM procedure as reference. | 8. The UE completes the CLTM cell switch procedure by sending RRCReconfigurationComplete message to the switched LTM cell. For RACH-based CLTM, the UE considers that CLTM cell switch execution is successfully completed when the random access procedure is successfully completed. For RACH-less CLTM, the UE considers that CLTM cell switch execution is successfully completed when the UE determines that the network has successfully received its first UL data. The UE does not release any valid TA value(s) of LTM candidate cells with CLTM configuration |

# Conclusion

In this contribution, we summarize the open issues for R19 mobility enhancement in 38.300.

# Reference

1. R2-2506225 Introduction of NR mobility enhancements Phase 4 in TS 38.300