**3GPP TSG-RAN WG2 Meeting #123 \_R2-2309265**

**Toulouse, France, August 21-25, 2023**

**Title:** [draft] LS on RAN2 progress on LTM

**Response to:**

**Release:** Rel-18

**Work Item:** NR\_Mob\_enh2-Core

**Source:** Huawei, HiSilicon (To be changed to RAN2)

**To:** **RAN1**

Cc: RAN3, RAN4

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Attachments:

**1. Overall Description:**

RAN2 would like inform the agreements achieved in RAN2#123 meeting:

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| --- |
| *General** 1b) The case of PCell change (MCG) by LTM, without SCG, is supported (If there is an SCG configuration it is released at LTM execution).
* 2b) The case of SCG LTM, without MN involvement is supported
* as a working assumption (can be revisited e.g. at the last meeting), it is assumed that other MCG/SCG cases are not supported.

*Early timing advance and RACH-less** Define the association between CG occasion and beam in RRC and specify that the UE uses a CG occasion associated with the indicated beam in MAC
* Observation: In cases for which it is desired that CG used for LTM is not used further once the UE has made the cell its new serving cell, it is assumed that the network could release Type1 CG resource on LTM completion (existing functionality)
* Before RACH-less LTM procedure completion, the UE shall not trigger RACH (when the UE has no valid PUCCH resource for triggered SRs), as in LTE RACH-less.
* RAN2 assumes For RACH-less LTM, the UE determines successful reception of its first UL data based on receiving a PDCCH addressing the UE’s C-RNTI in the target cell scheduling a new transmission after the first UL data, (FFS if specified contents should be transmitted with this transmission, e.g. as LTE MAC CE).
* All the RRC configurations related to early RACH are specific per LTM candidate cell and signalled separately from the candidate cell configuration (i.e. LTM Candidate configuration).
* The early RACH procedure share a same MAC entity with the legacy RACH procedure. (e.g. no extra MAC entity is needed for early RACH)
* It is up to UE implementation to handle the RACH initiation collisions where the early RACH is getting involved. No specification change can be foreseen.
* R2 assumes For counting the power ramping step for early RACH, Reuse PREAMBLE\_POWER\_RAMPING\_COUNTER
* FFS if UE transmits the preamble without the power ramping upon reception of PDCCH order with retransmission indication if preamble transmission encounter the LBT failure.
* P8: Confirm that the RACH procedure toward a candidate cell is considered as complete once the preamble transmission is instructed to the lower layer.
* automatic retransmission by timer with CG (similar to NR-U, SDT) is supported for the first UL data transmission with CG.

*RRC** Proposal 1 Any cross-feature interaction with LTM will be considered at the end of Rel-18.
* Proposal 2 SCell(s) can be added/modified/released within an LTM candidate cell configuration.
* Proposal 3 In case of a reconfiguration failure on one or more LTM related configurations, legacy UE behaviour applies.
* Proposal 4 The legacy full configuration procedure (including the fullConfig flag) is not re-used for LTM.
* Proposal 6 ServingCellConfigCommon shall be part of the complete LTM candidate cell configuration that the UE applies when performing an LTM cell switch procedure.
* Proposal 8 RAN2 confirm that an LTM cell switch procedure should not be triggered while an MCG failure recovery procedure is ongoing.
* Proposal 9 The reconfiguration with sync procedure is tentatively not re-used for LTM but the final decision on this is left to RRC running CR implementation.
* Proposal 10 The sending of RRCReconfigurationComplete message for LTM is tentatively done in section 5.3.5.3 but the final decision on this is left to RRC running CR implementation.
* P11: From TS point of view, R2 assumes that first and subsequent LTM can be covered by same TS contents (if exceptions are neede, can be discussed case by case)
* Upon an LTM cell switch, the UE releases the radio bearer related configuration. Is up to network to provide the radio bearer configuration either within the reference configuration or within the LTM candidate cell configuration.
* Upon an LTM cell switch, the UE shall release the radio bearer that are part of the current UE configuration but not part of the target LTM candidate cell configuration.
* Legacy T304 timer is used to supervision the LTM cell switch procedure. FFS whether new values for timer T304 are needed.
* Upon an LTM cell switch failure (i.e., supervision timer expiry) or RLF, fast recovery similar to CHO:

a) UE performs cell selection.b) If selected cell is an LTM candidate cell, UE performs RACH-based LTM cell switch on the selected cell (network-controlled).c) If selected cell is not an LTM candidate cell, UE transmits RRC re-establishment request.* UE shall release all LTM-related configurations upon going to RRC\_IDLE.
* Upon RRC re-establishment, the UE handles the LTM related configuration similar to the CHO configurations.
* For the handling of LTM-related configurations in RRC\_INACTIVE the UE applies the same principles as CHO ( = conditions/triggers to release configurations).
* A UE capability to indicate the support of the reference configuration is introduced. If reference configuration is not supported then complete candidate configurations has to be used.

*L2 centric parts** BWP ID is not in the LTM cell switch MAC CE, but only based on the RRC configuration.
* Scell activation state is not in the LTM cell switch MAC CE, but only based on the RRC configuration
* Will have CFRA resource related information field in LTM cell switch MAC CE (unless serious issues are found).
* Not introduce UL grant related information field in LTM cell switch MAC CE.
* Not introduce C-RNTI information field in LTM cell switch MAC CE.
* Not introduce LTM supervisor timer value field in LTM cell switch MAC CE.
* The size of “Target Configuration ID” field in the LTM Command MAC CE is 3-bits, and the maximum number of LTM candidate cells in RRC configuration is 8.
* No need to specify processing order
* A BSR should be triggered in the target cell right after cell switch (as for legacy handover). It is assumed that no spec impact is needed.
* The UE will do RACH-less when:

- TA value is provided in the cell switch MAC CE (already agreed, TA=0 is assumed to be covered by this)- When the UE shall apply the same TA value as the source (already agreed) FFS how the UE knows this.  |

**2. Actions:**

**To RAN1/RAN3/RAN4**

**ACTION:** RAN2 respectively asks RAN1/RAN3/RAN4 to take the above agreements into account, in the following functionality design.

**3. Date of Next RAN2 Meetings:**

TSG RAN WG2 Meeting #123bis October 9 – October 13, 2023 Xiamen, China

TSG RAN WG2 Meeting #124 November 13 –November 17, 2023 Chicago, USA