3GPP TSG-RAN WG2 Meeting #131 R2-25xxxxx

Bangalore, India Aug 25th – 29th , 2025

Agenda Item: 8.3.1

Source: OPPO

Title: Draft summary of [AT131][033][AI Mob] Conclusions for TR (OPPO)

Document for: Discussion, Decision

# Annex: Proposed text proposal

*START OF CHANGES*

# 7 Conclusion

The study focuses on evaluation of benefit of AI mobility use cases, namely RRM measurement prediction and measurement event prediction. Another use case i.e. RLF prediction is studied without evaluation. The potential specification impact is also studied to enable RRM measurement prediction, measurement event prediction and relevant mobility procedure in RRC\_CONNECTED state within NR system.

During the study, FR1 intra-frequency temporal domain case B and Inter-frequency prediction are chosen as representative scenario to verify study goal 1 i.e. measurement reduction. For FR1 intra-frequency temporal domain case B, the simulation results captured in section 5.5.2.2 shows that handover performance slightly or even doesn’t degrade compared to existing L3 handover procedure when measurement is reduced e.g. around 50% in temporal domain. For inter-frequency prediction, in addition to reducing UE’s measurement efforts, the UE throughput can also be increased if measurement gap can be avoided.

FR2 intra-frequency temporal domain case A is another typical scenario to reach study goal 2 i.e. to improve handover performance i.e. the handover failure (HOF) rate etc. The simulation results captured in section 5.5.2.1 indicate the HOF rate for some companies drops when handover is executed based on predicted measurement event in advance. For other companies, the HOF rate is not changed significantly compared with legacy.

The simulation results for RRM measurement prediction captured in section 5.2.2.1 shows that the prediction accuracy i.e. average L3 cell level RSRP difference of AI algorithm for cases A & B and for inter-frequency prediction is slightly better than non-AI algorithm (sample and hold), especially for long prediction windows.

Furthermore, simulation results for generalization captured in 5.2.2.2 prove that generalization issue is either minor across UE speeds or cell configurations or can be resolved by training models across data sets, or across inter-frequency prediction direction.

Limited simulation results are submitted for intra-cell spatial domain prediction and L3 beam level prediction without any evaluation conclusion.

Specification impact for both UE sided model and network sided model are studied. The study focuses on potential enhancements of LCM procedures including data collection for training. The outcome of the study is captured in section 6.1 and 6.2. For UE sided model the specification impact is mainly due to introduction of RRM measurement prediction, while additional specification impact for measurement event prediction is limited. The main specification impact on network sided model is for data collection.

For RRM measurement prediction, L3 beam-level prediction is feasible, however there are concerns on RAN4 workload for UE sided model. For network sided model, all scenarios and all RRM sub-cases are feasible but there is no consensus whether any enhancement is needed for normative work except for temporal domain case A sub-case 2.

Based on what is summarized above, here are the recommended scenario and/or sub-cases for normative work:

* For UE sided model, intra-frequency temporal domain case A, intra-frequency temporal domain case B and inter-frequency domain prediction for co-located case, and their combinations.
* For network sided model, at least RRM sub-case 2 of intra-frequency temporal domain case A, intra-frequency temporal domain case B and inter-frequency domain prediction.

*END OF CHANGE*