3GPP TSG-RAN WG2 Meeting #130***R2-250xxxx***

St Julian’s, Malta, May 19 - 23, 2025

**Agenda item:** 8.1.1

**Source:** Qualcomm Incorporated (Rapporteur)

**Title:** Open Issues List for Running CR to TS 37.355 (LPP)

**Document for:**  Discussion

# 1. Introduction

This document summarizes the open issues for the running CR to TS 37.355 (LPP) to support the AI/ML Positioning Accuracy Enhancements.

# 2. Open Issues List

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| --- | --- | --- | --- | --- |
| # | Clause/IE | Brief Description | Description/Comment | Status |
| 1 | 6.4.3  *NR-DL-PRS-Info* | Applicability of *dl-PRS-ResourcePrioritySubset* | The IE *NR-DL-PRS-Info* also includes method specific information (for DL-AoD). If DL-PRS assistance data are needed for AI/ML positioning, it needs to be clarified that the *dl-PRS-ResourcePrioritySubset* is not applicable to AI/ML positioning. | Open |
| 2 | 6.4.3  *NR-DL-PRS-ProcessingCapability* | Applicability of IE *NR-DL-PRS-ProcessingCapability* | In the case of capabilities for multiple NR positioning methods are provided, the IE *NR-DL-PRS-ProcessingCapability* applies across the NR positioning methods and the target device shall indicate the same values for the capabilities in IEs *NR-DL-TDOA-ProvideCapabilities*, *NR-DL-AoD-ProvideCapabilities*, and *NR-Multi-RTT-ProvideCapabilities*.  Most capabilities are primarily for UE-assisted mode.  If the IE *NR-DL-PRS-ProcessingCapability* is applicable to AI/ML positioning, it needs to be clarified whether the above also applies to *NR-AI-ML-PositioningProvideCapabilities*. | Open |
| 3 | 6.4.3  *NR-DL-PRS-QCL-ProcessingCapability* | Applicability of *NR-DL-PRS-QCL-ProcessingCapability* | In the case of capabilities for multiple NR positioning methods are provided, the IE *NR-DL-PRS-QCL-ProcessingCapability* applies across the NR positioning methods and the target device shall indicate the same values for the capabilities in IEs *NR-DL-TDOA-ProvideCapabilities*, *NR-DL-AoD-ProvideCapabilities*, and *NR-Multi-RTT-ProvideCapabilities*.  Most capabilities are primarily for UE-assisted mode.  If the IE *NR-DL-PRS-QCL-ProcessingCapability* is applicable to AI/ML positioning, it needs to be clarified whether the above also applies to *NR-AI-ML-PositioningProvideCapabilities*. | Open |
| 4 | 6.4.3  *NR-DL-PRS-ResourcesCapability* | Applicability of *NR-DL-PRS-ResourcesCapability* | The IE *NR-DL-PRS-ResourcesCapability* defines the DL-PRS Resources capability for each positioning method.  However, most capabilities are primarily for UE-assisted mode. Whether and which DL-PRS Resources capabilities are needed for UE-based direct AI/ML positioning depends on RAN1. | Open |
| 5 | 6.4.3  *NR-On-Demand-DL-PRS-Configurations-Selected-IndexList*  6.5.10.1  *NR-DL-TDOA-ProvideAssistanceData*  6.5.11.1  *NR-DL-AoD-ProvideAssistanceData* | Applicability of *NR-On-Demand-DL-PRS-Configurations-Selected-IndexList* | In the case of available on-demand DL-PRS configurations for multiple NR positioning methods are provided, the *NR-On-Demand-DL-PRS-Configurations* shall be present in only one of *NR-Multi-RTT-ProvideAssistanceData*, *NR-DL-AoD-ProvideAssistanceData*, or *NR-DL-TDOA-ProvideAssistanceData.*  If on-demand PRS is applicable to AI/ML positioning, it needs to be clarified whether the above also applies to *NR-AI-ML-PositioningProvideAssistanceData*. | Open |
| 6 | 6.4.3  *NR-PRU-DL-Info* | Applicability of *NR-PRU-DL-Info* | Currently, the IE *NR-PRU-DL-Info* is primarily used for NR carrier phase positioning.  If the IE *NR-PRU-DL-Info* is also applicable to AI/ML positioning, the IE description needs to be generalized. | Open |
| 7 | 6.4.3  *NR-SelectedDL-PRS-IndexList*  6.5.10.1  *NR-DL-TDOA-ProvideAssistanceData*  6.5.11.1  *NR-DL-AoD-ProvideAssistanceData* | Applicability of *NR-SelectedDL-PRS-IndexList* | In the case of assistance data for multiple NR positioning methods are provided, the IE *NR-DL-PRS-AssistanceData* shall be present in only one of *NR-Multi-RTT-ProvideAssistanceData*, *NR-DL-AoD-ProvideAssistanceData*, or *NR-DL-TDOA-ProvideAssistanceData*.  If the IE *NR-DL-PRS-AssistanceData* is applicable to AI/ML positioning, it needs to be clarified whether the above also applies to *NR-AI-ML-PositioningProvideAssistanceData*. | Open |
| 8 | 6.5.13.1 (new)  *NR-AI-ML-PositioningProvideAssistanceData* | Details of IE *NR-AI-ML-PositioningProvideAssistanceData* | May be similar to DL-TDOA assistance data per RAN1 agreement from RAN1#119:  "For AI/ML based positioning Case 1, all assistance information from legacy UE-based DL-TDOA, other than info #7, can be provided from LMF to UE."  Note: Info#7 is  "Geographical coordinates of the TRPs served by the gNB (include a transmission reference location for each DL-PRS Resource ID, reference location for the transmitting antenna of the reference TRP, relative locations for transmitting antennas of other TRPs)" | Open |
| 9 | 6.5.13.2 (new)  *NR-AI-ML-PositioningRequestAssistanceData* | Details of IE *NR-AI-ML-PositioningRequestAssistanceData* | Will be based on IE *NR-AI-ML-PositioningProvideAssistanceData* | Open |
| 10 | 6.5.13.3 (new)  *NR-AI-ML-PositioningProvideLocationInformation* | Details of *NR-AI-ML-PositioningProvideLocationInformation* | The main issue here is whether batch reporting is applicable to AI/ML positioning. | Open |
| 11 | 6.5.13.5 (new)  *NR-AI-ML-PositioningRequestLocationInformation* | Details of *NR-AI-ML-PositioningRequestLocationInformation* |  | Open |
| 12 | 6.5.13.6 (new)  *NR-AI-ML-PositioningProvideCapabilities* | Details of *NR-AI-ML-PositioningProvideCapabilities* | May be similar to DL-TDOA per RAN1 agreement from RAN1#119:  "For AI/ML based positioning Case 1, all assistance information from legacy UE-based DL-TDOA, other than info #7, can be provided from LMF to UE."  DL-PRS capabilities (if any) depends on RAN1 (see also issue #2, #3, #4). | Open |
| 13 | 6.5.13.8 (new)  *NR-DL-AI-ML-LocationServerErrorCauses* | Location server error causes | Current list is based on DL-TDOA. | Open |
| 14 | 6.5.13.8 (new)  *NR-DL-AI-ML-TargetDeviceErrorCauses* | Target device error causes | Current list is based on DL-TDOA. | Open |