3GPP TSG-RAN WG4 Meeting #116bis R4-25xxxxx

**Prague, Czech Republic, Oct. 13-17, 2025**

**Agenda item:** 6.11.1

**Source:** Qualcomm Incorporated

**Title:** AI/ML ad-hoc meeting minutes

**Document for:** Approval

# Introduction

The discussion on the AI/ML study is organized in thread [112]. The ad-hoc meeting will discuss some of the topics from the moderator summary in [1].

# Discussion

## Topic #1: CSI reporting requirement and testing framework for CSI prediction

## Topic #2: RRM core requirement and testing framework for beam management

## Topic #3: RRM core requirement and testing framework for Positioning accuracy enhancement

### Sub-topic 3-1

*CR for Requirements for case 1*

In the previous meeting it was agreed to introduce reporting delay for case 1 based on the legacy requirement. The actual CR should be discussed and agreed.

**Issue 3-1: Requirements for case 1**

Proposals

* + Option 1: Endorse CR for case 1 in R4-2514353 (Nokia)
  + Option 2: others
* Recommended WF
  + Option 1

Please provide any comments on the draft CR

Discussion:

QC: general approach is fine, however, we haven’t agreed some of the parameters yet like number of samples or beam sweeping factors. We also had some questions on the delay uncertainty, where is this coming from.

Nokia: we didn’t explicitly mention everything, we took the structure of the legacy spec. we are willing to work to make any changes

E///: it’s not easy to understand some of those details. It is possible to have simultaneous measurements, we should look at all those. It should be clarified that the location request should be for case 1.

Vivo: requirements are not clear, this should be verifiable by a test. For example, there is no definition of the inference time. We should also clarify other parameters.

Nokia: inference delay is hard to define.

QC: we can provide a value on inference time for the next meeting, other companies can do the same. We propose to use the measurement time from Rel-17.

E///: we can agree the parameters, then it should be easy to come up with the final CR in the next meeting.

QC: we need Rx TEG to increase the robustness, better estimate can be obtained.

E///: Rx TEG is not considered for case 1. For legacy, the number was clear but this is not the case for case 1

Vivo: can we reuse the legacy requirements for RSTD as delay?

QC: we take the legacy RSTD requirements and plug into this delay, we can also do all the cases, with and w/o gap

E///: we should clarify that measurements in connected are only within the gap. This would be the simplest requirement

Agreement:

To be clarified in the requirements:

* Request location information message should refer to “case 1” positiniong
* Reuse the legacy RSTD measurement delay for all the cases (with gap, w/o gap, PRS aggregation)
* Beam sweeping factor for FR2 including sweeping reduction factor
  + Take the legacy values
* Rx TEG: check on signaling, take the legacy(used in RSTD measurements) approach if it is signaled
* Cover all RRC states

CR structure:

* Introduce new clause for AI/ML based positioning case 1
* Reference existing requirements wherever they are reused to avoid duplicating the same requirement

Introduce requirements for each RRC state in the corresponding clauses:

Draft for RRC idle: Nokia

Draft for RRC connected: E///

Draft for RRC inactive: Nokia

### Sub-topic 3-2

*CR for case 3a/3b*

A draft CR was already technically endorsed in the last meeting. A formal CR could agreed in this meeting for case 3a/3b.

**Issue 3-2: CR for case 3a/3b**

Proposals

* + Option 1: merge Clauses 13.3 13.6 from R4-2513670 (CMCC) into R4-2514119 (Ericsson) and endorse final CR
  + Option 2: Others
* Recommended WF
  + Option 1

Discussion:

CMCC: we are fine to merge

E///: the changes for Rx-Tx part are fine. For the RSRP and RSRPP are not in the RAN3 spec, these are not needed. RSRP/RSRPB is not supported as output of the AI/ML model so they are not reported

CMCC: we will further check

Agreement:

Clause 13.2(Rx-Tx reporting) from R4-2513670 (CMCC) to be merged into R4-2514119 (Ericsson).

CMCC to further check until end of this meeting on other clauses

E/// to provide final CR in RAN4#117

### Sub-topic 3-3

*Testing for case 1*

**Issue 3-3: Testing for case 1**

* Proposals
  + Option 1: Introduce 2 tests, one for FR1 and one for FR2
    - Tests to be based on the legacy tests as proposed in R4-2514118
  + Option 2: Do not define any tests
  + Option 3: others
* Recommended WF
  + To be discussed

Discussion:

Nokia: we don’t have any accuracy requirements, what are we testing?

E///: this would only be a delay test

CMCC: we also support Option 1

E///: we should do tests only in RRC connected, single CC

Vivo: this is more of a functionality test. We should only do a test with RSTD and do only 1 test, for example without gaps. Shorter testing time would be preferred

CMCC: we define requirements for all states, why only do a test in connected?

E/// it’s just our proposal

QC: using just connected is easier from a test procedure point of view. We will reuse the final requirements including the inference delay to be agreed, correct?

E///: yes

Agreement:

Introduce “case 1” tests only for reporting delay, one for FR1 and one for FR2

* Only connected mode
* Only reporting delay to be tested
* Only for the case with gaps

### Sub-topic 3-4

*Combinations of positioning features or positioning and other features*

In R4-2514117 it is proposed to introduce requirements for combinations of other features and positioning case 1 or for capabilities introduced for other feature which could have impact on positioning.

**Issue 3-4: Combinations of features and positioning case 1**

* Proposals
  + Option 1: Introduce multiple requirements for combinations of features and positioning case 1, such examples are
    - UE configured to perform positioning measurements for case-1 and “legacy” PRS based measurements
    - Requirements for the cases in which the UE supports reduce number of samples
    - Requirements for UEs supporting reduced rx beam sweeping factor
    - Impact of the number of Rx TEGs on the measurement period requirement
  + Option 2: Do not introduced requirements for such combinations, this will become untractable as there can be too many combinations of features
    - Only keep the baseline requirements
  + Option 3: others
* Recommended WF
  + Option 2

Discussion:

# References

[1] R4-2514519, “Topic summary for [116bis][112] R19 AI for air interface”, Moderator(Qualcomm Incorporated), RAN4#116bis