**3GPP TSG RAN WG1 #109-e R1-22NNNNN**

**e-Meeting, May 9th – 20th, 2022**

**Agenda item:** **8.5.1**

**Source: Moderator (Ericsson)**

**Title: Moderator Summary for [109-e-R17-ePos-03] maintenance on accuracy improvements for UL-AoA and DL-AoD positioning solutions**

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

## Introduction

This summary documents the email discussion on questions to RAN1 received in LS R1-2203040 and captured as issues 1-5 and 7-1 in the preparation phase summary R1-2205097, as per the following chairman decision:

[109-e-R17-ePos-01] Email discussion under 8.5 on LS in R1-2203040, covering issues 1-5 and 7-1 in R1-2205097 – Florent (Ericsson) by May 13.

## Discussion

## issues 1-5 and 7-1 in R1-2205097

for convenience, issues 1-5 and 7-1 from the preparation phase are copied below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Issue#** | **Issue** | **References** | **FL initial assessment** | **Company inputs (if any)** |
| 1-5 | **SRS port index for TEG**  In LS [R1-2203040](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203040.zip), RAN3 asks RAN to feedback “if information on the SRS port index needs to be signalled to LMF when SRS resource for MIMO is used.”  The response to RAN3’s question was discussed in [4] and [11].    **FL comments:**  RAN1 needs to provide the response back to RAN3 in this meeting. It is unclear at this moment on whether the issue will be discussed under AI 8.1 or in a separate email thread. | [R1-2203436](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203436.zip) [4]  [R1-2203864](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203864.zip)[11] | H | **[vivo]**:H  **[CATT]**: H. Reply LS from RAN1 is needed.  OPPO: Discussion is needed as RAN1 needs to reply RAN3 LS  QC: Agree with FL’s initial assessment  Ericsson: Ok with FL’s assessment.  **FL Comments:** According to the Prep Phase discussion in AI 5, we will have separated email thread under AI 8.5 to discuss the response to RAN3’s LS.  **FL Final assessment:**  Further discussion under the email thread for discussing the response to RAN3 LS R1-2203040. |
| 7-1 | Update of agreement on parameter level for On-demand PRS  Proposal 9:   * ***Update the following agreement regarding on demand PRS.***  |  | | --- | | **Agreement**   * From RAN1 perspective, for LMF-initiated request of on-demand DL PRS, the following group of on-demand DL PRS parameters is defined and signaled   + per resource set per positioning frequency layer per FR  1. DL PRS Periodicity 2. DL PRS Resource Bandwidth 3. DL PRS Resource Repetition Factor 4. Number of DL PRS Resource Symbols per DL PRS Resource 5. DL-PRS CombSizeN   Two options for indication of DL PRS QCL-Info, either   * + Option 1: per resource set per positioning frequency layer per FR * LMF recommends a list of QCL sources   + Option 2: per resource set per positioning frequency layer per FR     - LMF requests to provide the QCL information in the assistance data in NRPPa   + per FR     - Number of DL PRS frequency layers   + either per resource set per positioning frequency layer or per ~~UE~~TRP     - Start/end time of DL PRS transmission   + either per resource, or per resource set, or per ~~UE~~TRP     - ON/OFF indicator (for LMF initiated request only) | | [7] R1-2203516 | [H]  Might be related to reply LS to RAN3 | **[vivo]:H**  **OPPO:** There is the maintenance of R17 positioning. If RAN3 agreement has impact on RAN1 specifications, we can revise RAN1 spec accordingly. There is no need to revise previous RAN1 agreement directly. RAN2 also received the same LS, and they can revise RAN2 spec accordingly if necessary.  QC: H  **FL Final assessment: H**  FL comment: Assume we can discuss as part of discussion if any LS or update is needed but will be good for RAN1 to clarify. |
|  |  |  |  |  |

## issues 1-5: SRS port index for TEG

in the RAN3 LS to RAN1[1], the following question is asked:

|  |  |  |
| --- | --- | --- |
| **TEG** | Some companies in RAN3 believe it is beneficial to signal the SRS port index to the LMF, so that LMF can group measurements based on Port index. RAN3 would like to know if SRS Port Index needs to be signalled to the LMF when SRS resource for MIMO is used? | **RAN1 to feedback if information on the SRS port index needs to be signalled to LMF when SRS resource for MIMO is used.** |

The issue is commented in [3] and [4]. In [3], it is argued that TEGs are associated at the resource level and therefore all TEG changes on any of the ports under an SRS resource will also mean a change in the reported TEG. In [4], the authors recall that the issue was deadlocked in RAN1#108, with 5 companies either supporting or not supporting the proposal to attach SRS port ID to the report. From the RAN3 LS, it seem the situation is similar in RAN3.

Given the request from RAN3 LS, RAN1 should provide an answer to close the issue.

## First round of discussion

The question from RAN3 should be discussed. For the sake of progress, companies are invited to provide argumented answers beyond yes or no.

**Question 2.2.1:** should the SRS Port Index needs to be signalled to the LMF when SRS resource for MIMO is used?

**Question 2.2.1:**

|  |  |
| --- | --- |
| company | comment |
| vivo | We found it seems to conflict with section 4 in 【109-e-R17-ePos-02】, and suggest to only discuss the issue in one thread  But, we are okay with proposal 4.1 in 【109-e-R17-ePos-02】as a starting point for the issue |

## Issues 7-1

In the RAN3 LS to RAN1[1], the following observation from RAN3 is given:

|  |  |  |  |
| --- | --- | --- | --- |
| **On demand PRS** | RAN3 has observed the following RAN1 agreement on On-demand PRS ON/OFF indicator (for LMF initiated request only):   |  | | --- | | “In "On-demand PRS information for LMF-initiated on-demand DL PRS requests"; either per resource, or per resource set, or per UE” |   RAN3 would like to inform RAN1 that the procedures defined by RAN3 for on-demand PRS transmission are non-UE-associated (i.e., cell specific) and thus an ON/OFF indication per UE does not make sense. Instead, it is considered to have an OFF indication per TRP to minimize the transmission power. | **RAN1 to take into account and update their agreed parameter lists for On-demand PRS.** |

In [4], it is proposed to correct the agreement by replacing “per UE” with “per TRP”.

## First round of discussion

It is proposed to discuss the update to the agreement suggested by RAN3:

**Proposal 2.3.1: the agreement from RAN1#108e on LMF initiated request of on-demand PRS is amended as follow:**

|  |
| --- |
| **Agreement**   * From RAN1 perspective, for LMF-initiated request of on-demand DL PRS, the following group of on-demand DL PRS parameters is defined and signaled   + per resource set per positioning frequency layer per FR  1. DL PRS Periodicity 2. DL PRS Resource Bandwidth 3. DL PRS Resource Repetition Factor 4. Number of DL PRS Resource Symbols per DL PRS Resource 5. DL-PRS CombSizeN   Two options for indication of DL PRS QCL-Info, either   * + Option 1: per resource set per positioning frequency layer per FR * LMF recommends a list of QCL sources   + Option 2: per resource set per positioning frequency layer per FR     - LMF requests to provide the QCL information in the assistance data in NRPPa   + per FR     - Number of DL PRS frequency layers   + either per resource set per positioning frequency layer or per ~~UE~~TRP     - Start/end time of DL PRS transmission   + either per resource, or per resource set, or per ~~UE~~TRP     - ON/OFF indicator (for LMF initiated request only) |

Companies are encouraged to provide their comments in the table below:

**Proposal 2.3.1:**

|  |  |
| --- | --- |
| company | comment |
| vivo | Okay |

## Conclusion

TBD

## References

1. R1-2205097, Moderator Summary for preparation phase on maintenance of Rel-17 WI on NR positioning enhancements, Moderator (CATT), RAN1#109e
2. R1-2203040, Questions concerning the implementation of RAN1 agreements in NRPPa (RAN3 LS), RAN3, RAN1#109e
3. [R1-2203864](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203864.zip) Maintenance on accuracy improvement related enhancement Samsung
4. [R1-2203516](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203516.zip) Discussion on other maintenance issues on NR positioning enhancements vivo