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

**e-Meeting, May 9th – 20th, 2022**

**Title: FL Summary of updates to RRC parameters for Rel-17 positioning enhancements**

**Source: Moderator (CATT)**

**Agenda item: 8.5**

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

1. Introduction

This document provides a summary of the following email discussion for AI 8.5:

[109-e-R17-ePos-06] Email discussion on updates to RRC parameters from new agreements, until May 17 – Ren Da (CATT)

The RRC parameters for Rel-17 positioning enhancements from the last meeting in R1-2202541 [1] is used as the base for the udaptes.

2. Issue #1

**Agreement**

The agreement from RAN1#108e on LMF initiated request of on-demand PRS is amended as follow:

* Note: no RAN1 specification impact is expected
* send the agreement as part of the reply LS to RAN3

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| **Agreement (RAN#109e)*** 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)
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## (Round 1) Proposed Changes # 1

* *Row 157, Column P, updated with above agreement, i.e., change UE to TRP*
* *Rows 162, 163,168, Colum M, changes are made based on above agreement, i.e., change “per UE” to per “per TRP”*

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| **Company** | **comments** |
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3. Issue #2

**Agreement**

* Support up to 32 measurement instances in a single measurement report.
* Inform RAN2/RAN3 on RAN1’s decision

## (Round 1) Proposed Changes # 2

* *Row 179, add a new row for the new RRC parameter of maximum measurement instances in a single measurement report*

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| **Company** | **comments** |
| Nokia/NSB | Typo in column G ‘easurement’FL: Corrected.  |
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4. Issue #3

**Agreement**

Support the LMF to request the Rx beam sweeping factor.

**Agreement**

The request from LMF on the Rx beam sweeping factor is a single bit per positioning method, which can take two values.

* Value 1: Equal to the UE’s reported Rx beam sweeping factor in the corresponding capability for the band UE supports the feature, and equal to 8 for the FR2 bands that UE does not support the feature.
* Value 2: Equal to 8 (default assumption) for FR2 bands.
* The bit value should be set to the same across DL-TDOA, DL-AoD, and Multi-RTT for hybrid positioning.

## (Round 1) Proposed Changes # 3

* *Row 180, add a new row for the new parameter for the LMF to request UE to use the Rx beam sweeping factor*

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| **Company** | **comments** |
| vivo | Row 180, column G, the Parameter name is wrong which is copying the parameter name in row 179 and may need to be changed to “Rx beam sweeping factor request”. |
| Huawei, HiSilicon | We agree with vivo’s comments. |
| **FL** | Corretion is made with vivo/HW’s comments. |

5. Issue #4

## Background

In RAN1#105, the following agreement was made:

Agreement:

For both UE-based and UE-assisted DL-AOD, the UE can be requested subject to UE capability to measure and report (for UE-assisted) the PRS RSRP of the first path

For supporting above agreement, a paramete *requestFirstPathRSRPP is included in the RRCparameter list,*which has a Boolean value. During email discussion of this email thread [109-e-R17-ePos-06] , Huawei made the following suggestions:

“In addition, we think that the following parameter should be revised so that UE may be requested by the LMF to report a given number of RSRPP measurements, instead of blindly reporting the RSRPP measurements.

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| NR\_pos\_enh | DL-AoD Enhancement | requestFirstPathRSRPP |  New | The parameter is used for LMF to request a UE to report the RSRPP of first arrival path. | ~~BOOLEAN~~(1,2,3,…,24) |

For supporting the change suggested by Huawei, the moderator proposes first discussing the following proposal:

## *Proposal 4-1*

*Adopt the following changes to the previous agreement made in RAN1#105e*

* For both UE-based and UE-assisted DL-AOD, the UE can be requested subject to UE capability to measure and report (for UE-assisted) ~~the~~*N* PRS RSRPP of the first path, where *N* can be {1, 2, 3, …, 24}.

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| **Company** | **comments** |
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6. Summary

TBD

10. References

1. R1-2202541 Consolidated higher layers parameter list for Rel-17 NR Moderator (Ericsson)
2. Chairman’s notes, RAN1#109e