3GPP TSG RAN WG2 Meeting #116-e R2-210xxxx

**Electronic meeting, 1st -12th November 2021**

**Agenda item:** 8.11.1

**Source:** Intel Corporation

**Title:** Report of [Post116-e][611][POS] RAT-dependent positioning running CR to 38.305 (Intel)

**Document for:**  Discussion and decision

# Introduction

This is the email discussion report for following email discussion:

* [Post116-e][611][POS] RAT-dependent positioning running CR to 38.305 (Intel)

Scope: Endorse an update of R2-2111374 with decisions of this meeting.

Intended outcome: Endorsed CR

Deadline: Short (not for RP)

Short (One week) = Deadline Nov 19 1200 UTC

Rapporteur would like to split the discussion in two phases:

**Phase 1**: To check the proposals from Rapporteur and the draft TP; The **deadline for this 1st phase** of email discussion is **Thursday Nov 18 , 0900 UTC.**

**Phase 2**: To finalize the draft running CR; The **deadline for this 2nd phase** of email discussion is **Friday Nov 19 , 0900 UTC.**

# Annex: companies’ point of contact

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| **Company** | **Point of contact** | **Email address** |
| Intel Corporation | Yi Guo | Yi.guo@intel.com |
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# Phase 1the draft on how to capture meeting agreements

## 3.1 Latency reduction

Based on email discussion R2-2109665 Summary of [Post115-e][605][POS] Pre-configured assistance data (Intel) Intel Corporation, RAN2 agreed:

Agreements:

Proposal 1: Assistance data can be (pre-)configured independently of any given LPP positioning session and thus can be reused across multiple positioning sessions.

Proposal 2: It is suggested to agree that in order to reduce positioning latency associated with signaling of assistance data (via both broadcast or dedicated signaling), pre-configured assistance data can be considered valid for usage across multiple LPP positioning sessions.

FFS spec impact from these proposals.

Agreement:

Pre-configured assistance data (distinct from “pre-defined configuration” as discussed for on-demand PRS) refers to the DL-PRS assistance data (with associated validity criteria) that can be provided to the UE (before or during an ongoing LPP positioning session), to be then utilized for potential positioning measurements at a future time (e.g. for deferred MT-LR). FFS whether to capture this in a spec.

Rapporteur captured Pre-configured assistance in section 7.3.2, 7.3.3 by adding “pre-configured” before assistance data,e.g

If a scheduled location time is provided in step 1, the LMF may provide pre-configured assistance data to the UE ahead of time and schedule location measurements by the UE to occur at or near to the scheduled location time. The LPP procedures to transfer UE LPP positioning capabilities may be skipped if the LMF already obtained the UE positioning capabilities from the AMF in step 1.

**Discussion point 3.1-1: Companies are invited to provide your view on the changes shown as above, i.e. add “pre-configured”.**

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| **Company’s name** | **Agree or not** | **Comments, if any** |
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Rapporteur also captured the definition of Pre-configured assistance data in section 3.1 as

**Pre-configured assistance data:** The DL-PRS assistance data (with associated validity criteria) that can be provided to the UE (before or during an ongoing LPP positioning session), to be then utilized for potential positioning measurements at a future time (e.g. for deferred MT-LR).

**Discussion point 3.1-2: Companies are invited to provide your view on the changes shown as above.**

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| **Company’s name** | **Agree or not** | **Comments, if any** |
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**Discussion point 3.1-3: Companies are invited to provide your view on whether other sections/parts should be updated based on agreements for pre-configured assistance data.**

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| **Company’s name** | **Comments, if any** |
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During [Offline-623][POS] 38.305 CR for RAT-dependent positioning (Intel)?, companies commented that

“The scheduled location time is to obtain a location estimate valid at the requested time, and not to provide "assistance data ahead of time". Assistance Data are normally always provided "ahead of time"; i.e., LPP assistance data transfer happens normally before a LPP location request is send anyhow. Therefore, this should be "an LMF may schedule location measurements to occur at or near to the scheduled location time."” i.e.

Change “If a scheduled location time is provided in step 1, ~~the~~ an LMF may ~~provide assistance data to the UE ahead of time and~~ schedule location measurements ~~by the UE~~ to occur at or near to the scheduled location time. The LPP procedures to transfer UE LPP positioning capabilities may be skipped if the LMF already obtained the UE positioning capabilities from the AMF in step 1.”

From Rapporteur perspective, based on RAN2 response LS in R2-2108958

“RAN2 understand that this is for a use case where a LCS Client that is requesting the location of a target UE knows a time T at which the location should be obtained. In such cases, the scheduled location time T would allow the latency for obtaining and reporting the location of a target device to be reduced by the duration of the location preparation phase which allows a reduction of latency. But the scheduled location time does not allow further latency reduction during the location execution phase. ”, the main benefit of scheduled location time is to allow the network to provide the assistance data in advance, and therefore it should be reflected in the stage 2.

**Discussion point 3.1-4: Companies are invited to provide your view on whether the “provided assistance data” should be kept in section 7.3.2 and 7.3.3 of stage 2 running CR.**

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| **Company’s name** | **Yes or no** | **Comments, if any** |
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**Editorial changes from Rapporteur:**

1 The LMF may interact with the AMF to support the provisioning of UE positioning capability to the AMF as described in TS 23.273 [35].

2 If a scheduled location time is provided in step 1, the LMF may provide assistance data to the UE ahead of time and schedule location measurements by the UE to occur at or near to the scheduled location time. The LPP procedures to transfer UE LPP positioning capabilities may be skipped if the LMF has already obtained the UE positioning capabilities from the AMF in step 1.

**Discussion point 3.1-5: Companies are invited to provide your comments on the editorial changes shown** **as above, i.e. “provision” to “provisioning”, and “already obtained ” to “has already obtained ”.**

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| **Company’s name** | **Comments, if any** |
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**Discussion point 3.1-6: Companies are invited to provide your comments on the changes shown in the running CR on latency reduction, and if any additional agreements need to be captured.**

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| **Company’s name** | **Section** | **Comments, if any** |
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## 3.2 positioning in RRC\_INACTIVE

**Note: In the draft stage 2 running CR, Rapporteur did not capture anything for RRC\_INACTIVE;**

In last meeting, based on email discussion R2-2109979 Summary of [Post115-e][608][POS] PRS configuration and measurement in RRC\_INACTIVE vivo, RAN2 agreed

Agreement:

Proposal 1 (modified): The PRS configuration from LMF to UE is independent of the RRC state. That is, no impact on PRS configuration for RRC\_INACTIVE (13/15) from RAN2 perspective.

And based on R2-2111379 [AT116-e][625][POS] Proposals from RRC\_INACTIVE positioning OPPO, RAN2 further agreed:

Agreement:

Proposal 6: SRS for positioning in RRC\_INACTIVE state can be configured through the following ways:

- RRCRelease with SuspendConfig (13/13)

- SDT DL RRC message, i.e. Msg B / Msg 4 of RA-SDT (9/13)

- WA: pre-configure positioning SRS in RRC\_CONNECTED (9/13)

FFS detailed signalling for these approaches.

Proposal 8: Support SP SRSp for positioning in RRC\_INACTIVE state. (12/13)

Proposal 9: SP Positioning SRS Activation/Deactivation MAC CE is reused for triggering SRSp transmission in RRC\_INACTIVE. (12/12)

Proposal 10: AP SRSp is not supported for positioning in RRC\_INACTIVE state. (11/13)

However RAN2 has no consensus on what baseline procedure should be and whether to capture the details in stage 2

**Proposal 2: RAN2 further discuss whether to capture the agreed baseline procedures in TS 38.305 (5/13):**

**- LPP PDU and LCS message transfer with SDT in RRC\_INACTIVE state;**

**- DL and RAT-independent positioning in RRC\_INACTIVE state;**

**- UL/ UL+DL positioning in RRC\_INACTIVE state.**

**Proposal 5: Adopt the stage2 procedure in Annex C as baseline for UL and UL+DL positioning in RRC\_INACTIVE for further study. (10/12)**

In addition, during running stage 2 CR discussion, companies commented on the note in 5.2:

NOTE: The positioning procedures between a UE and network for UEs in RRC\_CONNECTED state also appl for UEs in RRC\_INACTIVE state using SDT.

One company commented that “*RRC\_INACTIVE should be captured under 6.4 and 6.5. We only agreed that LPP and LCS messages can be transported in RRC\_INACTIVE with SDT. This affects section 6.4.2 and 6.5.2. For LCS messages, a new subsection should be added. But since there is no agreement on how to capture RRC\_INACTIVE in Stage 2 yet, an Editor's Note would be more appropriate at this stage*. ”.

Two company commented that “*The note in the section 5.2 should also be added in section 6.4, 6.5 for RRC\_INACTIVE, respectively. “*One company commented that we may add another similar note “Note: LCS Message Transfer is applicable for UE with SDT in RRC\_INACTIVE” under section 7.3.3 & 7.3.4.

Rapporteur would like to check companies’ view on how to capture RRC\_INACTIVE in stage 2:

**Option 1**: Wait for the decision on P2/P5 above;

**Option 2**: Capture general Note in stage 2 as

NOTE: The positioning procedures between a UE and the network for UEs in RRC\_CONNECTED state also apply for UEs in RRC\_INACTIVE state using SDT.

**Affected sections**: section 5.2?, section 6.4 and 6.5?

Note: LCS Message Transfer is applicable for UE with SDT in RRC\_INACTIVE

**Affected sections**: Section 7.3.3 and 7.3.4?

**Discussion point 3.2-1: Companies are invited to provide your view on which option do you prefer. If option 2 is preferred, please also indicate the affected sections and any comments you have.**

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| **Company’s name** | **Option 1 or Option 2;**  **Affected sections;** | **Comments, if any** |
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## 3.3 On-Demand DL-PRS transmission

Based on email discussion R2-2109483 Report of [Post115-e][606][POS] MO-LR for on-demand PRS (CATT) CATT, RAN2 agreed:

Agreements:

Proposal 1: RAN2 to agree to support the UE originated request of on-demand PRS via MO-LR for autonomous self location. (11/14)

Proposal 3: RAN2 to agree that UE can send an MO-LR Request message included in an UL NAS TRANSPORT message to the serving AMF including an LPP Request Assistance Data message which is used for on-demand DL-PRS transmission, and the MOLR-Type of this MO-LR Request message is “assistanceData”. (12/14)

Proposal 4: RAN2 to agree the following general stage 2 procedure as baseline for UE initiated on-demand PRS via MO-LR. (13/14) [Figure 2 of R2-2109483, with the associated list of steps as given in section 5 of R2-2109483.] To be discussed in development of the running stage 2 CR (post-meeting) how much of this detail we need to capture in 38.305.

In addition, based on summary R2-2111256 Summary of Agenda Item 8.11.4: On-demand PRS Lenovo, Motorola Mobility, RAN2 further agreed:

Agreements:

Proposal 1.1: The UE may initiate an on-demand PRS request per positioning method including DL-TDoA, DL-AoD and Multi-RTT, via the existing LPP RequestAssistanceData message.

Proposal 1.2: There is no need for introducing a new LPP message to carry the on-demand PRS request.

Rapporteur captured MO-LR in the section 7.x as:



Figure 7.x.2-1: Procedures to support On-Demand PRS transmission.

0. The LMF may receive information on the possible On-Demand PRS configurations that the gNB can support during the TRP Configuration Information Exchange procedure.

1. In case of UE-initiated On-demand PRS, the LMF may configure the UE with pre-defined PRS configurations via LPP Provide Assistance Data message or via posSI.

2a. In case of UE-initiated On-Demand PRS, the UE sends an On-Demand PRS request to the LMF via LPP Request Assistance Data message or MO-LR Request/Nlmf\_Location\_DetermineLocationRequest. The On-Demand PRS request may be a request for PRS transmission or change to the PRS transmission characteristics for positioning measurements.

Also changed step 2a in the figure

**Discussion point 3.3-1: Companies are invited to provide your view on the TP shown as above. Also please indicate if anything is missing.**

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| **Company’s name** | **Agree or not** | **Comments, if any** |
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**Discussion point 3.3-2: Companies are invited to provide your comments on the changes shown in the running CR on On-Demand PRS transmission, and if any additional agreements need to be captured.**

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| **Company’s name** | **Section** | **Comments, if any** |
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## 3.4 PRU

Based on R2-2111364 Summary of [AT116-e][615][POS] PRUs Qualcomm Incorporated, RAN2 agreed:

Agreement:

Proposal 5: Regarding the handling of the PRU topic, agree the following way forward:

(1) Send an LS to SA2 asking SA2 whether the MT-LR or MO-LR location procedures as currently specified in TS 23.273 can be used to enable an LMF obtaining location measurements from PRUs (via LPP) and to trigger SRS transmission of PRUs (via NRPPa), or whether an LMF needs to be enabled to instigate location procedures for a PRU (e.g., LPP, NRPPa procedures) without receiving a location request for the PRU from an AMF (i.e., in the absence of an MT-LR or MO-LR for the PRU), and if so, whether support can be provided as part of Release 17.

(2) Send an LS to RAN1 asking RAN1 whether the LMF determined "correction information" obtained from PRU measurements need to be provided to target UEs for UE-based mode of operation, and if so, ask RAN1 to provide further details on the specific "correction information" which need to be provided to target UEs. In addition, ask RAN1 to provide further details on the "PRU antenna orientation information" which should be provided to an LMF.

LS to be progressed by email (extension of [AT116-e][615], to approve by email by EOM).

Agreements:

Proposal 3: RAN2 confirm that the PRU considered as a UE supports the normal LPP procedures for PRU capability transfer.

Proposal 1 (modified): RAN2 confirms that a PRU can support at least the following functionality (as described in the RAN1 LS), dependent on PRU capability:

- Provide the positioning measurements (e.g., RSTD, RSRP, Rx-Tx time differences) to an LMF.

- Transmit the UL SRS signals for positioning.

- FFS known location information and antenna orientation information

Rapporteur did not capture any new changes on PRU in the stage 2 running CR.

**Discussion point 3.4-1: Companies are invited to provide your comments on the changes shown in the running CR on PRU, and if any additional agreements need to be captured.**

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| **Company’s name** | **Section** | **Comments, if any** |
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# Summary report and proposals

Aiming to help with the meeting discussion/progress, the proposals are categorized starting with:

* [To agree] when there is large support and hence proposed for easy agreement.
* [To discuss] when there is substantial level of support and agreement may be possible.
* [FFS] when there is low support or companies propose new solutions or options to possibly consider further e.g. if there is sufficient support (understanding that these topic have not been discussed by all companies when providing their views in the different discussion points).

The proposals also start with a number: for the format [x], ‘x’ represents the number of supportive companies (i.e. these solutions are marked as FFS as the proposed solutions were not discussed by all companies) and, for the format [x/y], ‘x’ represents the number of supportive companies, and (y-x) the number of companies with different view.

The observations captured are the following:

**Observation 1.** xxxx.

The proposals captured are the following:

**Proposal 1.** **[To agree]**

The following list shows the proposals above organized based on the suggested priority aiming to help during its meeting discussion:

**Proposals for easy agreement**

**Proposal 1.** **[To agree]**

**Proposals for discussion (1st priority) or to be captured as FFS**

**Proposal 6.** **[To discuss]**

**Proposals for discussion (2nd priority) or to be captured as FFS**

xxx

# Annex-Agreements on RAT dependent positioning methods

## Running CRs

[R2-2111374](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202111%20-%20RAN2_116-e,%20Online\Extracts\R2-2111374-Running%2038.305%20CR_v02_CL.docx) Running 38.305 CR for Positioning WI on RAT dependent positioning methods Intel Corporation draftCR Rel-17 38.305 16.6.0 B NR\_pos\_enh-Core

* Endorsed

## Latency reduction

### 3GPP TSG-RAN WG2 Meeting #114-e R2-21xxxxx Online, 19-27 May 2021

Agreements:

Support pre-configuration of assistance data to the UE at least in an LPP session. Details of how to enable this are FFS (e.g. what additional functionality beyond deferred location procedure might be needed).

The LPP Request Location Information message can serve as an indication to the UE to utilize the pre-configured AD. FFS additional conditions/validity criteria for using the pre-configured AD.

### 3GPP TSG-RAN WG2 Meeting #115 electronic R2-2108835

Agreement:

Proposal 3: Regarding the validity conditions/criteria associated with pre-configured assistance data, consider at least the following options:

 Option A: Based on a validity area (e.g. a list of cells)

 Option B: Based on a (configured) validity timer or a numerical limit on number of times it is utilized

 Option C: Based on explicit modification or release from the LMF/NG-RAN

 Option D: Based on the UE’s current location and/or the time

Agreement:

Proposal 6 (modified): In response to the question asked by SA2 regarding UE positioning capability, ~~it is proposed to~~ capture that the positioning related UE capabilities can be variable.

NOTE: P6 was edited after agreement for clarity (deletion marked with strikeout). Checked in email discussion [AT115-e][600].

### 3GPP TSG-RAN WG2 Meeting #116 electronic

Agreements:

Proposal 1: Assistance data can be (pre-)configured independently of any given LPP positioning session and thus can be reused across multiple positioning sessions.

Proposal 2: It is suggested to agree that in order to reduce positioning latency associated with signaling of assistance data (via both broadcast or dedicated signaling), pre-configured assistance data can be considered valid for usage across multiple LPP positioning sessions.

FFS spec impact from these proposals.

Agreement:

Pre-configured assistance data (distinct from “pre-defined configuration” as discussed for on-demand PRS) refers to the DL-PRS assistance data (with associated validity criteria) that can be provided to the UE (before or during an ongoing LPP positioning session), to be then utilized for potential positioning measurements at a future time (e.g. for deferred MT-LR). FFS whether to capture this in a spec.

Agreement:

Proposal 8 (modified): Down-prioritize dynamic triggering of a preconfigured SRS at UE in connected mode by gNB for transmitting SRS based on measurement report provided by UE in Rel-17.

## RRC\_INACTIVE

### 3GPP TSG-RAN WG2 Meeting #113b-e R2-21xxxxx Online, 12-20 April 2021

Agreements:

WA: Any uplink LCS or LPP message can be transported in RRC\_INACTIVE from RAN2 perspective, subject to the data volume supported by AS layers. I.e. RAN2 do not specify a restriction on message type.

FFS if LPP needs to select transport, i.e. if the message is just submitted to lower layers which decide how to deliver it (SDT, change state, etc.).

FFS if RRC state is exposed to LPP.

### 3GPP TSG-RAN WG2 Meeting #114-e R2-21xxxxx Online, 19-27 May 2021

Agreements:

Any uplink LCS or LPP message can be transported in RRC\_INACTIVE from RAN2 perspective.

Follow Rel-17 SDT framework for INACTIVE UL and DL positioning:

 If the UE initiated data transmission using UL SDT, the network can send DL LCS, LPP message and RRC message (e.g. to configure SRS (TBD on what message is used), if UL positioning supported) to the UE.

 Otherwise, if UE did not initiate UL SDT, rely on legacy operation, i.e. the network shall transition the UE to RRC\_CONNECTED, e.g. based on RAN paging.

Agreements:

Exposure of the RRC state of the UE to the LPP layer of the UE for RRC\_INACTIVE UL and DL positioning will not be specified. This does not exclude cross-layer behaviour in implementations.

The RRC state of the UE is not exposed to the LMF for INACTIVE UL and DL positioning.

### 3GPP TSG-RAN WG2 Meeting #115 electronic R2-2108835

Agreements:

LPP PDU and LCS message transfer:

Proposal 1: The LPP PDU Transfer Procedure in Annex A is used as baseline for further work.

NOTE 1: Some details may depend on further progress of the SDT work item.

NOTE 2: Whether such a procedure needs to be captured in Stage 2 specification or not can be decided later when the procedure has been fully developed/agreed. That is, the procedure can be considered as "running baseline".

Proposal 2: The LCS Message Transfer Procedure in Annex B is used as baseline for further work.

NOTE 1: Some details may depend on further progress of the SDT work item.

NOTE 2: Whether such a procedure needs to be captured in Stage 2 specification or not can be decided later when the procedure has been fully developed/agreed. That is, the procedure can be considered as "running baseline".

Proposal 3: UL LPP message segmentation can also be used by the UE in RRC\_INACTIVE state; i.e., a LPP message body can be sent in several shorter LPP messages instead of one long LPP message by using the SDT "Subsequent Data Transmission" phase. FFS spec impact.

DL and RAT-independent positioning:

Proposal 4: The Deferred 5GC-MT-LR Procedure with SDT for DL-only and RAT-independent positioning in Annex C is used as baseline for further work.

NOTE 1: Some details may depend on further progress of SDT work item.

NOTE 2: Whether such a procedure needs to be captured in Stage 2 specification or not can be decided later when the procedure has been fully developed/agreed. That is, the procedure can be considered as "running baseline".

NOTE 3: Once the procedure is stable from RAN2 perspective, send an LS to SA2 including the baseline procedure.

Agreement:

(High priority)Proposal 1: Support all the RAT independent positioning methods in RRC\_INACTIVE state.

Agreement:

gNB can configure the UE with periodic SRS (assuming periodic SRS is supported in RRC\_INACTIVE) by RRCRelease with suspendConfig at least when periodic event is configured for deferred MT-LR. Other cases can be further discussed.

### 3GPP TSG-RAN WG2 Meeting #116 electronic

Agreement:

Proposal 4 (modified): For positioning in RRC\_INACTIVE state, the positioning assistance data can be delivered to UE through the following ways:

- positioning system information, i.e. posSIB;(12/13)

- pre-configure assistance data when UE in RRC\_CONNECTED state;(11/13)

- send to UE in RRC\_INACTIVE during ongoing SDT procedure. (9/13)

Agreement:

Proposal 6: SRS for positioning in RRC\_INACTIVE state can be configured through the following ways:

- RRCRelease with SuspendConfig (13/13)

- SDT DL RRC message, i.e. Msg B / Msg 4 of RA-SDT (9/13)

- WA: pre-configure positioning SRS in RRC\_CONNECTED (9/13)

FFS detailed signalling for these approaches.

Proposal 8: Support SP SRSp for positioning in RRC\_INACTIVE state. (12/13)

Proposal 9: SP Positioning SRS Activation/Deactivation MAC CE is reused for triggering SRSp transmission in RRC\_INACTIVE. (12/12)

Proposal 10: AP SRSp is not supported for positioning in RRC\_INACTIVE state. (11/13)

## On demand PRS

### 3GPP TSG-RAN WG2 Meeting #113b-e R2-21xxxxx Online, 12-20 April 2021

Agreements:

UE-initiated on-demand PRS request is enabled by enhancing LPP RequestAssistanceData. FFS how much control the network has over the UE request.

The UE-initiated mechanism is enabled by the UE request triggering a request from the LMF, and the C.

Put the stage 2 description for UE-initiated and LMF-initiated PRS request under the same framework.

### 3GPP TSG-RAN WG2 Meeting #115 electronic R2-2108835

Agreements:

Before providing available DL-PRS configuration to the UE, the LMF may obtain configuration information on what DL-PRS can be supported from one or more TRPs via NRPPa.

Capture the steps provided above as a baseline, along with a note indicating it remains FFS if the UE can send the MO-LR to request on-demand PRS.

FFS if we indicate to SA2 that MO-LR can be used to trigger on-demand PRS procedure.

It is up to Network (LMF) implementation on the steps to follow (accept/reject/ignore) on receiving request from UE for changing the DL-PRS configurations.

### 3GPP TSG-RAN WG2 Meeting #116 electronic

Agreements:

Proposal 1: RAN2 to agree to support the UE originated request of on-demand PRS via MO-LR for autonomous self location. (11/14)

Proposal 3: RAN2 to agree that UE can send an MO-LR Request message included in an UL NAS TRANSPORT message to the serving AMF including an LPP Request Assistance Data message which is used for on-demand DL-PRS transmission, and the MOLR-Type of this MO-LR Request message is “assistanceData”. (12/14)

Proposal 4: RAN2 to agree the following general stage 2 procedure as baseline for UE initiated on-demand PRS via MO-LR. (13/14) [Figure 2 of R2-2109483, with the associated list of steps as given in section 5 of R2-2109483.] To be discussed in development of the running stage 2 CR (post-meeting) how much of this detail we need to capture in 38.305.

Agreements:

Proposal 1.1: The UE may initiate an on-demand PRS request per positioning method including DL-TDoA, DL-AoD and Multi-RTT, via the existing LPP RequestAssistanceData message.

Proposal 1.2: There is no need for introducing a new LPP message to carry the on-demand PRS request.

## PRU

### 3GPP TSG-RAN WG2 Meeting #115 electronic R2-2108835

Agreements:

Proposal 1 (modified): For purposes of RAN2 discussion, the PRU functionality as described in the RAN1 LS can be considered as UE with known location (to some degree of accuracy) at least (16/17).

PRU modelled as a gNB can be discussed in RAN3 (no RAN2 action).

Agreement:

RAN2 confirm that the PRU considered as a UE supports the normal LPP procedures for assistance data transfer and location information transfer.

### 3GPP TSG-RAN WG2 Meeting #116 electronic

Agreement:

Proposal 5: Regarding the handling of the PRU topic, agree the following way forward:

(1) Send an LS to SA2 asking SA2 whether the MT-LR or MO-LR location procedures as currently specified in TS 23.273 can be used to enable an LMF obtaining location measurements from PRUs (via LPP) and to trigger SRS transmission of PRUs (via NRPPa), or whether an LMF needs to be enabled to instigate location procedures for a PRU (e.g., LPP, NRPPa procedures) without receiving a location request for the PRU from an AMF (i.e., in the absence of an MT-LR or MO-LR for the PRU), and if so, whether support can be provided as part of Release 17.

(2) Send an LS to RAN1 asking RAN1 whether the LMF determined "correction information" obtained from PRU measurements need to be provided to target UEs for UE-based mode of operation, and if so, ask RAN1 to provide further details on the specific "correction information" which need to be provided to target UEs. In addition, ask RAN1 to provide further details on the "PRU antenna orientation information" which should be provided to an LMF.

LS to be progressed by email (extension of [AT116-e][615], to approve by email by EOM).

Agreements:

Proposal 3: RAN2 confirm that the PRU considered as a UE supports the normal LPP procedures for PRU capability transfer.

Proposal 1 (modified): RAN2 confirms that a PRU can support at least the following functionality (as described in the RAN1 LS), dependent on PRU capability:

- Provide the positioning measurements (e.g., RSTD, RSRP, Rx-Tx time differences) to an LMF.

- Transmit the UL SRS signals for positioning.

- FFS known location information and antenna orientation information