3GPP TSG-RAN WG2 #116bis-e Tdoc R2-22xxxxx

Electronic meeting, 2022-01-17 - 2022-01-25

Agenda Item: 8.11.3

Source: Ericsson

Title: Summary of AI 8.11.3 RRC\_INACTIVE

Document for: Discussion, Decision

# 1 Introduction

This paper summarizes the below paper.

[1] R2-2200257 Discussion on positioning in RRC INACTIVE state ZTE discussion

[2] R2-2200280 Support of UL&UL+DL positioning in RRC\_INACTIVE Intel Corporation discussion Rel-17 NR\_pos\_enh-Core

[3] R2-2200295 Impact on SA2 with DL NR positioning in RRC\_INACTIVE CATT, Ericsson discussion Rel-17 NR\_pos\_enh-Core

[4] R2-2200296 Discussion on UL NR Positioning in RRC\_INACTIVE state CATT discussion Rel- 17 NR\_pos\_enh-Core

[5] R2-2200327 Discussion on positioning in RRC\_INACTIVE vivo discussion Rel-17 NR\_pos\_enh-Core

[6] R2-2200424 Way-forward for RRC\_INACTIVE positioning Huawei, CATT, China Unicom, CMCC, Fraunhofer, Futurewei, HiSilicon, Intel Corporation, Spreadtrum Communications, OPPO, VIVO, Xiaomi, ZTE Corporation discussion Rel-17 NR\_pos\_enh-Core

[7] R2-2200425 Remaining issues on RRC\_INACTIVE DL Postioning Huawei, HiSilicon discussion Rel-17 NR\_pos\_enh-Core

[8] R2-2200710 Discussion on positioning for UE in RRC Inactive Xiaomi discussion

[9] R2-2200731 Discussion on the measurement reporting in RRC\_INACTIVE Samsung discussion Rel-17 NR\_pos\_enh-Core

[10] R2-2200781 Discussion on Positioning in RRC\_INACTIVE state OPPO discussion Rel-17 NR\_pos\_enh-Core

[11] R2-2200957 Remaining Details for RRC\_INACTIVE Positioning in Uplink Fraunhofer IIS; Fraunhofer HHI discussion Rel-17 R2-2110249

[12] R2-2200963 Remaining issues for positioning of UEs in RRC\_INACTIVE State Qualcomm Incorporated discussion

[13] R2-2200989 Remaining aspects on RRC\_INACTIVE Positioning Lenovo, Motorola Mobility discussion Rel-17

[14] R2-2201065 Discussion on RRC Inactive mode Positioning Ericsson discussion Rel-17

[15] R2-2201186 Discussion on Positioning in RRC INACTIVE state InterDigital, Inc. discussion Rel- 17 NR\_pos\_enh-Core

[16] R2-2201528 Positioning in RRC\_INACTIVE Nokia Germany discussion Rel-17

**The sections are organized based upon some rough priority. So, it should be treated in the same order. It is expected that proposals from P1 to P24 are prioritized and are treated first.**

**Some of the Proposals (beyond P24) can be discussed in RAN3 (Assistance Information gNB to/from LMF: section 2.7 and 2.9) or SDT WI (Assistance Information UE to gNB/LMF: section 2.8). They are not considered critical for completion of the WI. Further, some of the enhancements such as on-Demand PRS in RRC Inactive (section 2.12), multiple UL SRS configuration in RRC Inactive (section 2.10), Validity of AD in Inactive Mode (section 2.13) and cell barring (section 2.12) can be revisited in Rel-18 (possibly LPHA).**

**The capability differentiation aspects (section 2.14) can be discussed later when basic support of the feature is complete or as part of general capability discussion.**

# Categorization of Proposals:

Easy Proposals:

[Proposal 1 To support UL positioning in RRC\_INACTIVE, reuse SDT TA timer for TA validation.](#_Toc93061140)

[Proposal 2 To support UL positioning in RRC\_INACTIVE, reuse RSRP change based solution for TA validation](#_Toc93061141)

[Proposal 3 The SRSp configuration is considered as invalid if TA is not valid.](#_Toc93061142)

[Proposal 4 When cell reselection is performed and UE initiates RRC resume procedure to the cell which is different from the cell in which the SRSp is configured, the TA timer configuration for SRS should be released.](#_Toc93061143)

[Proposal 5 The SRSp configuration is released when the UE sends](#_Toc93061144) *[RRCResumeRequest](#_Toc93061144)* [to an gNB other than the gNB where it is released to RRC\_INACTIVE state.](#_Toc93061144)

[Proposal 6 BWP info together with the](#_Toc93061145) *[SRS-PosResourceSet](#_Toc93061145)* [IE is included in](#_Toc93061145) *[RRCRelease](#_Toc93061145)* [message for SRS configuration in RRC\_INACTIVE.](#_Toc93061145)

[Proposal 7 RAN2 confirms RAN1 agreement that UE may be configured to transmit UL SRS for Positioning where the following parameters are additionally configured for the transmission of the SRS for Positioning during the RRC\_INACTIVE state: frequency location and bandwidth, SCS, CP length.](#_Toc93061146)

[Proposal 8 Add the restriction on AP SRS in the field description of resourceType “The aperiodic is not applicable for the UE in RRC\_INACTIVE.”.](#_Toc93061147)

LS related Proposals:

[Proposal 14 RAN2 to decide how to capture the stage 2 details in specification](#_Toc93061605)

[A. It is not necessary to introduce the new positioning procedures in stage 2 specification for RRC inactive UE positioning [8]](#_Toc93061606)

[B. Send LS to SA2 to let SA2 decide the spec impacts [12, 3]. Use [R2-2200961] as baseline](#_Toc93061607)

[C. Capture in TS 38.305 [12]](#_Toc93061608)

[Proposal 23 RAN2 to send an LS to RAN4 as provided in [14] asking UE measurements validity when UE has performed measurements in different RRC states. Should the previous measurements be discarded, or can it be continued after state transition.](#_Toc93061622)

# 2 Discussion

## 2.1 TA related UL SRS Configuration in RRC Inactive

TA validation procedure from SDT/PUR is reused [5], [6] also similar approach mentioned by [4],[8].

1. To support UL positioning in RRC\_INACTIVE, reuse SDT TA timer for TA validation.
2. To support UL positioning in RRC\_INACTIVE, reuse RSRP change based solution for TA validation
3. The SRSp configuration is considered as invalid if TA is not valid.
4. When cell reselection is performed and UE initiates RRC resume procedure to the cell which is different from the cell in which the SRSp is configured, the TA timer configuration for SRS should be released.
5. The SRSp configuration is released when the UE sends *RRCResumeRequest* to an gNB other than the gNB where it is released to RRC\_INACTIVE state.

## 2.2 Stage 3 Details

[2] and [4] address the issue on how to introduce SRS configuration in RRCRelease message, e.g. which IE should be contained, srs-Config, BWP-Uplink or UplinkConfig?

The solution mentioned in [2] says: The simple way is to extend Rel-16 SRS-PosResourceSet IE to contain BWP IE which already contains locationAndBandwidth, subcarrierSpacing and cyclicPrefix. Same view is also expressed by [4]; based on UE capabilities, the gNB would configure an SRS configuration for Positioning with the initial UL BWP or non-initial BWP. Considering the existing *SRS-PosResourceSet* IE doesn’t contain BWP info, RAN2 need to configure BWP info together with the *SRS-PosResourceSet* IE in *RRCRelease* message for SRS configuration in RRC\_INACTIVE.

1. BWP info together with the *SRS-PosResourceSet* IE is included in *RRCRelease* message for SRS configuration in RRC\_INACTIVE.

Further RAN1 has agreed to support UL SRS configuration without BWP info

Subject to UE capability, a UE may be configured with an SRS for Positioning where the following parameters are additionally configured for the transmission of the SRS for Positioning during the RRC\_INACTIVE state: frequency location and bandwidth, SCS, CP length.

1. RAN2 confirms RAN1 agreement that UE may be configured to transmit UL SRS for Positioning where the following parameters are additionally configured for the transmission of the SRS for Positioning during the RRC\_INACTIVE state: frequency location and bandwidth, SCS, CP length.

[2] suggest to add “The aperiodic is not applicable for the UE in RRC\_INACTIVE.” in TS 38.331 below for resourceType file descrition

***resourceType***

Time domain behavior of SRS resource configuration, see TS 38.214 [19], clause 6.2.1. The network configures SRS resources in the same resource set with the same time domain behavior on periodic, aperiodic and semi-persistent SRS.

1. Add the restriction on AP SRS in the field description of resourceType “The aperiodic is not applicable for the UE in RRC\_INACTIVE.”.

## 2.3 Stage 2 Details

### 2.3.1 For UL Positioning procedure when to provide Event Report Ack

As provided comparison in [12] for UL-only positioning the difference between the Procedure shown in Figure 1 [12] and the Procedure 2 (R2-2108383, Huawei et al.) is essentially only when the LCS Event Report Acknowledgement is provided to the UE. For Procedure 2, the LCS Event Report Acknowledgement is sent immediately after the LCS Event Report has been received by an LMF.

For the Procedure proposed in Figure 1 [12], the LCS Event Report Acknowledgement is provided once the UL-positioning has been successfully configured at the UE and TRPs. This allows the procedure more reliably be completed in RRC\_INACTIVE state.

[7] mentions that “it should be emphasized that the step 5 (event report ack) and 7 (POSITIONING INFORMATION REQUEST) are not strictly serialized. Step 7 does not necessarily need to be sent after Step 5. When the gNB receives POSITIONING INFORMATION REQUEST, it would know that the UE is performing RRC\_INACTIVE uplink positioning and would not send *RRCRelease* to the UE at that immediate moment.

There can be two alternatives to solve this deadlock:

* A note can be added in procedure proposed by [7] saying Step 5 may appear after step 7.
* It is agreed that event report ACK is provided once the UL-positioning has been successfully configured at the UE and TRPs

1. RAN2 to agree to one of the options when to provide Event Report Ack.

* A note can be added in procedure proposed by [7] saying Step 5 may appear after step 7
* It is agreed that event report ACK is provided once the UL-positioning has been successfully configured at the UE and TRPs

### 2.3.2 Indication for transition to RRC Inactive: Primarily for DL-Only

As per the analysis provided in [12, 7, 4], it is considered that gNB needs to know that there is no any further msg transfer that needs to be done either by LMF or UE; further the UE should be switched to RRC Inactive state and not to idle.

Multiple options have been discussed.

* [12] RAN3 agreement ”Agree to add a new assistance information from LMF to gNB, which can include e.g. the UE expected periodical reporting.”
  + The "NRPPa Assistance Information" message from the LMF to the gNB should provide the deferred MT-LR information configured in the UE, such as requested positioning methods, event type, reporting interval, and the UE positioning capabilities in RRC\_INACTIVE state.
* [4] For a deferred 5GC-MT-LR procedure for Periodic or Triggered Location Events using low power event reporting, an "end indication" is introduced in N2 message to assist the ng-eNB to release RRC connection in clause 6.7.1 in TS 23.273. The similar mechanism can be reused for NR positioning in RRC\_INACTIVE. For DL positioning in RRC\_INACTIVE, the "end indication" in N2 message can be reused
  + In order to assist the gNB to release UE into RRC\_INACTIVE, an "end indication" is introduced from LMF to gNB if LMF determines there is no signaling to send for the UE.
* [7] Support UE to be able to indicate the gNB about the ongoing downlink positioning session of the UE.

1. RAN2 to discuss the need for gNB to be aware of precisely when to transit the UE to Inactive and further ensuring the transition is not to idle; if needed; which option to opt for;

* RAN3 based NRPPa Assistance Information
* Similar to existing “"end indication"”
* UE to indicate gNB about ongoing downlink positioning session

### 2.3.3 On Need of Indication of LPP *moreMessagesOnTheWay/noMoreMessages* flag

As motivated in [12]; “the existing MAC CE Buffer Status Report (BSR) carries the information on how much data a UE has in the buffer to be sent out, which however, does not enable a gNB to determine how many LPP messages a UE has to sent out since any type of NAS PDU could be sent via the SDT framework and the gNB does not know the content of the NAS PDU. A more reliable way of assisting the gNB when to release a UE to RRC\_INACTIVE would be to provide an indication of more versus no more messages to follow.”

**Proposal 1:** The LPP *moreMessagesOnTheWay/noMoreMessages* flag should be visible at the serving gNB when sending the RRC Resume Request + Event Report with LPP Provide Location Information (Step 3 of the baseline procedure in Annex C of R2-2108383 [2]). The flag can be generic to allow usage for other types of NAS message transfer.

1. RAN2 to decide whether the LPP *moreMessagesOnTheWay/noMoreMessages* flag should be visible at the serving gNB when sending the RRC Resume Request + Event Report

## 3.4



## 3.5

on how to specify DL, UL and UL+DL positioning in RRC Inactivate mode

[12] shows that UL and UL+DL positioning procedures can be depicted using one common flow whereas [7] captures using two separateflows**.**

[12] further allows the UE to include in the LCS Event Report an embedded LPP Request Assistance Data message with IE *NR-Multi-RTT-RequestAssistanceData* and *nr-AdType* set to '*ul-srs*' to request an UL-SRS for Multi-RTT positioning.

3. . Use [R2-2200961] as baseline
5. If If there is consensus to capture the stage 2 details in TS 38.305 then RAN2 to discuss whether a common flow is used to depict UL and UL+DL positioning.
6. If If there is consensus to capture the stage 2 details in TS 38.305 then RAN2 to discuss whether UE can include the LCS Event Report an embedded LPP Request Assistance Data message with IE *NR-Multi-RTT-RequestAssistanceData* and *nr-AdType* set to '*ul-srs*' to request an UL-SRS for Multi-RTT positioning.

[12] further proposed; that the the LPP PDU and LCS message transfer procedures with SDT in RRC\_INACTIVE state are used as baseline. Since Stage 2 does currently not support LPP PDU and LCS message transfer in RRC\_INACTIVE state, the procedures should be captured in Stage 2 TS 38.305.

1. the LPP PDU and LCS message transfer procedures with SDT in RRC\_INACTIVE state are used as baseline. Since Stage 2 does currently not support LPP PDU and LCS message transfer in RRC\_INACTIVE state, the procedures should be captured in Stage 2 TS 38.305 [8].
2. RAN2 to discuss whether to capture LPP PDU and LCS message transfer in RRC\_INACTIVE state in TS 38.305.

## 2.4 Segmentation

[14] mentions that the LPP data should not be segmented by LPP layer to fit the content for using SDT. Segmentation in LPP is defined to overcome NAS limitations. It is function of RLC to perform segmentation based upon TBS.

[9] mentions the issue on the LPP segmentation considering SDT operation was also discussed in the last RAN2 #116-e meeting and prefers to select Option 1.

* **Option 1: The message size threshold for LPP segmentation is up to UE implementation and has no specification impact in RAN side.**
* **Option 2: The LMF provides segmentation configuration information to the UE for ensuring suitable LPP segmentation in RRC\_INACTIVE.**

1. RAN2 to discuss whether LPP Segmentation violates any architectural constrains (application layer segmenting data to enable a certain transport selection by lower layer) and if this should be allowed.

## 2.5 Scope of RRC Inactive

[1] proposes to support all location service types in SDT active period including MT-LR, MO-LR, NI-LR and deferred MT-LR.

1. RAN2 to decide which service types can be supported using SDT active period

[13], [15] provides Observation that UE-assisted DL NR E-CID measurements should be supported in RRC\_INACTIVE state at least in the case of SS-RSRP and SS-RSRQ measurements.

1. RAN2 to discuss support of RRC\_INACTIVE reporting of RRM measurements along with other DL-based positioning methods.

## 2.6 State Transition

[14] poses a question that “When UE has been configured to perform DL-TDOA measurements in inactive mode and UE switches to connected mode for any other reasons such as voice call; can UE continue performing the measurements in connected mode”.

Further [14] proposes that RAN2 should check with RAN4 on the measurement accuracy and requirements and whether combining measurements performed at different RRC states does not pose any accuracy limitations.

1. RAN2 to send an LS to RAN4 as provided in [14] asking UE measurements validity when UE has performed measurements in different RRC states. Should the previous measurements be discarded, or can it be continued after state transition.

[1] expresses the need for network to give UE an indication on whether to continue transmitting the periodic SRS in RRC\_INACTIVE state for power savings. The indication can be a 1 bit parameter with value 0 or 1. with this indication, UE may follow NW’s guidance on transmitting SRS efficiently.

[14] mentions UE UL SRS configuration applicability in various RRC modes should be discussed; when UE states Transition while configured to transmit UL SRS. Can UE continue UL SRS Tx that was configured for inactive mode when UE switches from Inactive mode to Connected mode.

1. RAN2 to discuss whether UE UL SRS configuration provided in one mode is applicable in other; if yes, RAN2 to discuss whether an indication can be used from NW to UE to support such continuity.

## 2.7 Assistance data from LMF to gNB

[8] motivates the need of assistance data from LMF to gNB. The SDT configuration is decided by gNB, but for positioning measurements or location estimate transmission, the gNB doesn’t know the data size that the UE will report, so it is difficult for gNB to decide appropriate SDT configuration. Therefore, LMF can provide assistance information to gNB, gNB can decide the appropriate SDT configuration for UE to perform positioning. Regarding the assistance information, the data size and data transmission period can be considered.

[9] provides the view that Assistance information from LMF to gNB for SDT configuration will not be supported

1. RAN2 to discuss the need of LMF providing information including positioning data size and transmission period to gNB, and gNB consider the assistance data when the gNB configures SDT for UE positioning.

## 2.8 Assistance Information from UE

[7] provides the view that there should be support of CG-configuration recommendation from the UE to the network for CG-SDT based on the reporting periodicities of RRC\_INACTIVE DL positioning and Spec impact should be decided by SDT.

[14] provides the view that since the lower layers are transparent to any information specific to improving the positioning procedures in RRC\_INACTIVE state, e.g., using BSR to indicate more data to be transmitted, there could be benefits to introducing UE assistance information at the LPP layer to optimize the transmission of the positioning measurement report by the LMF using, e.g., SDT-CG mechanisms.

[9] provides the view that RAN2 have discussion on the need of the assistance information from UE to gNB for SDT configuration in POS session first and share the result with SDT session if any agreement is made

[15] provides the view thatUE can send assistance information to gNB for ensuring suitable SDT resources (e.g. RA-SDT/CG-SDT) and data volume threshold is configured in UE. The assistance information sent byUE to gNB for positioning in INACTIVE includes type of reporting (e.g. periodic, semi-persistent), payload size of LPP messages measurement duration, start timing of reporting and periodicity of reporting.

1. RAN2 to discuss the need to support CG-configuration recommendation from the UE and decide whether UE assistance information for optimized transmission of positioning measurement reports is gNB transparent (e.g., signaled via LPP) or gNB non-transparent (e.g., signaled via lower layer signalling).

[15] further mentions that

* UE can send assistance information to gNB on periodic events (e.g. duration, periodicity) to ensure the validity conditions/criteria and SRSp configuration provided to UE for usage during INACTIVE are aligned with the periodic events
* UE can send an indication (e.g. in MAC CE) to gNB for indicating the detection of a triggering event (e.g. for deferred MT-LR) and initiating activation of semi-persistent SRSp transmission in INACTIVE

1. RAN2 to discuss the need for the UE to send Assistance Information on periodic events to ensure the validity conditions/criteria and SRSp configuration provided to UE for usage during INACTIVE are aligned with the periodic events

## 2.9 Assistance data from gNB to LMF

[8] provides motivation that gNB provides the TA timer to LMF. When the TA timer for UL positioning in RRC inactive is expired, UE will release UL positioning reference signal, but the LMF don’t have the information on TA timer, LMF may still send positioning measurement request to the gNB to request the UL positioning measurements. In this case, the gNB can’t provide the UL positioning measurements to the LMF and the positioning latency will be increased. If the gNB provide the information on TA timer to the LMF, LMF can decide to request the positioning measurements or request new SRS configuration based on the TA timer information.

1. RAN2 to discuss whether there is need for gNB to provide the TA timer information for UL positioning in RRC inactive to LMF.

[9] provides the view that SDT configuration information (i.e., data threshold) from gNB to LMF will not be supported

1. RAN2 to agree that SDT configuration information (i.e., data threshold) from gNB to LMF will not be supported

## 2.10 Multiple UL SRS Configuration in RRC Inactive

[1] mentions that introducing multiple SRS configurations with associated PCI brings benefit to UE mobility in RRC\_INACTIVE. Therefore, it is proposed that serving gNB can configure UE with multiple SRS configurations with associated PCIs in RRC\_INACTIVE.

[11] mentions that a list of cells where the SRS configuration is valid in RRC\_INACTIVE state shall be signaled to the UE.

1. RAN2 to discuss the need of multiple SRS configuration per cell
2. RAN2 to discuss the need of validity of SRS configuration with respect a list of cells

Further [11] mentions the need of

* The SRS configuration shall be divided into common and UE-specific for RRC\_INACTIVE. The common configuration shall be coordinated among multiple cells. : For periodic SRS, common SRS configuration may be provided once and receiving the UE-specific part via SDT in RRC\_INACTIVE shall trigger the periodic SRS.
* UE shall receive several configurations; each configuration has a validity scope and the UE shall be configured to select an applicable configuration corresponding to its coarse location or based on measurement.

1. RAN2 to discuss the need of separating common and UE-specific configuration for UL SRS Inactive mode.

## 2.11 Cell Barring applicability for positioning measurements

[14] motivates that there is need to indicate whether a barred cell may allow UE to camp to perform positioning measurements.

|  |
| --- |
| ***SIB1 field descriptions*** |
| ***positioningMeasurementsNotBarred***  This field indicates that the when cell is barred the UE is allowed to camp on the cell to perform positioning measurements. |

1. RAN2 to discuss the need of a cell barring applicability for Positioning measurement purpose is indicated.

## 2.12 On-Demand PRS in RRC Inactive mode and SDT Frequency and SDT based PRS configuration

[13] proposes that RAN2 to at least consider the support of LMF-initiated on-demand DL-PRS in RRC\_INACTIVE state to enable update of the DL-PRS configuration.

[16] provides the Observation and proposal as below

**Proposal 1:** RAN2 to specify conditions for RRC\_INACTIVE UEs to trigger an SDT session to permit the LMF to deliver updated assistance data, especially assistance data on DL PRS, and how to control the amount and efficiency of such LMF-oriented SDT sessions.

Observation: The conditions for RRC\_INACTIVE UEs requesting updated assistance data from the LMF via SDT should relate to the ability of the UEs to measure PRS with sufficient quality.

Proposal 2: UEs should request updates of assistance data in case the measurement quality of the (previously) configured PRS resources drops below a given threshold.

[16] further proposes that to limit the SDT trigger a timer is used.

**Proposal 3**: RRC\_INACTIVE UEs should be configured with minimum time intervals between consecutive assistance data update requests, so as to avoid too frequent UL SDT transmissions.

1. RAN2 to discuss the need of on-demand PRS in RRC Inactive mode and avoiding too frequent UL SDT transmissions.

[13] mentions the need for UE toselect a PRS configuration for usage in RRC INACTIVE state by taking into account of the parameters of SDT configuration (e.g. RA-SDT/CG-SDT resources, data volume threshold) configured in UE.

1. RAN2 to discuss the need to support UE selecting a PRS configuration for usage in RRC INACTIVE state by taking into account of the parameters of SDT configuration (e.g. RA-SDT/CG-SDT resources, data volume threshold) configured in UE.

## 2.13 Validity of AD in Inactive mode

[13] proposes to extend the same validity conditions for RRC\_CONNECTED state (once agreed upon) to RRC\_INACTIVE state for pre-configured assistance data.

1. RAN2 to extend the same validity conditions for RRC\_CONNECTED state (once agreed upon) to RRC\_INACTIVE state for pre-configured assistance data.

## 2.14 Capability Aspects

[13] proposes the need of the positioning capabilities to be distinguished among UEs supporting RRC\_CONNECTED positioning and/or RRC\_INACTIVE positioning and thus a differentiation should be also be made in the capability indication between UEs supporting the two types of positioning capabilities.

1. RAN2 to confirm if the capability information among UEs performing RRC\_CONNECTED or RRC\_INACTIVE positioning will be different and whether special RRC\_INACTIVE capability is necessary.

# Conclusion

Based on the discussion in the previous sections we propose the following:

[Proposal 1 To support UL positioning in RRC\_INACTIVE, reuse SDT TA timer for TA validation.](#_Toc93061587)

[Proposal 2 To support UL positioning in RRC\_INACTIVE, reuse RSRP change based solution for TA validation](#_Toc93061588)

[Proposal 3 The SRSp configuration is considered as invalid if TA is not valid.](#_Toc93061589)

[Proposal 4 When cell reselection is performed and UE initiates RRC resume procedure to the cell which is different from the cell in which the SRSp is configured, the TA timer configuration for SRS should be released.](#_Toc93061590)

[Proposal 5 The SRSp configuration is released when the UE sends *RRCResumeRequest* to an gNB other than the gNB where it is released to RRC\_INACTIVE state.](#_Toc93061591)

[Proposal 6 BWP info together with the *SRS-PosResourceSet* IE is included in *RRCRelease* message for SRS configuration in RRC\_INACTIVE.](#_Toc93061592)

[Proposal 7 RAN2 confirms RAN1 agreement that UE may be configured to transmit UL SRS for Positioning where the following parameters are additionally configured for the transmission of the SRS for Positioning during the RRC\_INACTIVE state: frequency location and bandwidth, SCS, CP length.](#_Toc93061593)

[Proposal 8 Add the restriction on AP SRS in the field description of resourceType “The aperiodic is not applicable for the UE in RRC\_INACTIVE.”.](#_Toc93061594)

[Proposal 9 RAN2 to agree to one of the options when to provide Event Report Ack.](#_Toc93061595)

[ A note can be added in procedure proposed by [7] saying Step 5 may appear after step 7](#_Toc93061596)

[ It is agreed that event report ACK is provided once the UL-positioning has been successfully configured at the UE and TRPs](#_Toc93061597)

[Proposal 10 RAN2 to discuss the need for gNB to be aware of precisely when to transit the UE to Inactive and further ensuring the transition is not to idle; if needed; which option to opt for;](#_Toc93061598)

[ RAN3 based NRPPa Assistance Information](#_Toc93061599)

[ Similar to existing “"end indication"”](#_Toc93061600)

[ UE to indicate gNB about ongoing downlink positioning session](#_Toc93061601)

[Proposal 11 RAN2 to decide whether the LPP *moreMessagesOnTheWay/noMoreMessages* flag should be visible at the serving gNB when sending the RRC Resume Request + Event Report](#_Toc93061602)

[Proposal 12 RAN2 to discuss whether to revert the agreement to provide AD during ongoing SDT procedure or add the procedure in stage2.](#_Toc93061603)

[Proposal 13 RAN2 to discuss not to support pre-configuration of positioning SRS in RRC\_CONNECTED.](#_Toc93061604)

[Proposal 14 RAN2 to decide how to capture the stage 2 details in specification](#_Toc93061605)

[A. It is not necessary to introduce the new positioning procedures in stage 2 specification for RRC inactive UE positioning [8]](#_Toc93061606)

[B. Send LS to SA2 to let SA2 decide the spec impacts [12, 3]. Use [R2-2200961] as baseline](#_Toc93061607)

[C. Capture in TS 38.305 [12]](#_Toc93061608)

[Proposal 15 If there is consensus to capture the stage 2 details in TS 38.305 then the baseline is taken from [6] (Huawei et al.) paper.](#_Toc93061609)

[Proposal 16 If If there is consensus to capture the stage 2 details in TS 38.305 then RAN2 to discuss whether a common flow is used to depict UL and UL+DL positioning.](#_Toc93061610)

[Proposal 17 If If there is consensus to capture the stage 2 details in TS 38.305 then RAN2 to discuss whether UE can include the LCS Event Report an embedded LPP Request Assistance Data message with IE *NR-Multi-RTT-RequestAssistanceData* and *nr-AdType* set to '*ul-srs*' to request an UL-SRS for Multi-RTT positioning.](#_Toc93061611)

[Proposal 18 the LPP PDU and LCS message transfer procedures with SDT in RRC\_INACTIVE state are used as baseline. Since Stage 2 does currently not support LPP PDU and LCS message transfer in RRC\_INACTIVE state, the procedures should be captured in Stage 2 TS 38.305 [8].](#_Toc93061612)

[Proposal 19 RAN2 to discuss whether to capture LPP PDU and LCS message transfer in RRC\_INACTIVE state in TS 38.305.](#_Toc93061613)

[Proposal 20 RAN2 to discuss whether LPP Segmentation violates any architectural constrains (application layer segmenting data to enable a certain transport selection by lower layer) and if this should be allowed.](#_Toc93061614)

[Proposal 21 RAN2 to decide which service types can be supported using SDT active period](#_Toc93061620)

[Proposal 22 RAN2 to discuss support of RRC\_INACTIVE reporting of RRM measurements along with other DL-based positioning methods.](#_Toc93061621)

[Proposal 23 RAN2 to send an LS to RAN4 as provided in [14] asking UE measurements validity when UE has performed measurements in different RRC states. Should the previous measurements be discarded, or can it be continued after state transition.](#_Toc93061622)

[Proposal 24 RAN2 to discuss whether UE UL SRS configuration provided in one mode is applicable in other; if yes, RAN2 to discuss whether an indication can be used from NW to UE to support such continuity.](#_Toc93061623)

[Proposal 25 RAN2 to discuss the need of LMF providing information including positioning data size and transmission period to gNB, and gNB consider the assistance data when the gNB configures SDT for UE positioning.](#_Toc93061626)

[Proposal 26 RAN2 to discuss the need to support CG-configuration recommendation from the UE and decide whether UE assistance information for optimized transmission of positioning measurement reports is gNB transparent (e.g., signaled via LPP) or gNB non-transparent (e.g., signaled via lower layer signalling).](#_Toc93061627)

[Proposal 27 RAN2 to discuss the need for the UE to send Assistance Information on periodic events to ensure the validity conditions/criteria and SRSp configuration provided to UE for usage during INACTIVE are aligned with the periodic events](#_Toc93061628)

[Proposal 28 RAN2 to discuss whether there is need for gNB to provide the TA timer information for UL positioning in RRC inactive to LMF.](#_Toc93061629)

[Proposal 29 RAN2 to agree that SDT configuration information (i.e., data threshold) from gNB to LMF will not be supported](#_Toc93061630)

[Proposal 30 RAN2 to discuss the need of multiple SRS configuration per cell](#_Toc93061631)

[Proposal 31 RAN2 to discuss the need of validity of SRS configuration with respect a list of cells](#_Toc93061632)

[Proposal 32 RAN2 to discuss the need of separating common and UE-specific configuration for UL SRS Inactive mode.](#_Toc93061633)

[Proposal 33 RAN2 to discuss the need of a cell barring applicability for Positioning measurement purpose is indicated.](#_Toc93061634)

[Proposal 34 RAN2 to discuss the need of on-demand PRS in RRC Inactive mode and avoiding too frequent UL SDT transmissions.](#_Toc93061635)

[Proposal 35 RAN2 to discuss the need to support UE selecting a PRS configuration for usage in RRC INACTIVE state by taking into account of the parameters of SDT configuration (e.g. RA-SDT/CG-SDT resources, data volume threshold) configured in UE.](#_Toc93061636)

[Proposal 36 RAN2 to extend the same validity conditions for RRC\_CONNECTED state (once agreed upon) to RRC\_INACTIVE state for pre-configured assistance data.](#_Toc93061637)

[Proposal 37 RAN2 to confirm if the capability information among UEs performing RRC\_CONNECTED or RRC\_INACTIVE positioning will be different and whether special RRC\_INACTIVE capability is necessary.](#_Toc93061638)

# References

1. Tdoc Number, Title, Source, Meeting, Date
2. Spec number, Title, Source, Version, Date