**3GPP TSG-WG SA2 Meeting #161 S2-2403737**

**Athens, Greece, 26 February-1 March 2024**

Title: Reply LS on UE Location Information for NB-IoT NTN

Response to: LS on UE Location Information for NB-IoT NTN (R2-2311326)

Release: Release 18

Work Item: IoT\_NTN\_enh

Source: SA2

To: RAN2, CT1, RAN3

Cc: SA1, SA3-LI

**Contact Person:**

Name: Haris Zisimopoulos

Tel. Number:

E-mail Address: harisz AT qti DOT qualcomm DOT com

**Send any reply LS to: 3GPP Liaisons Coordinator,** **mailto:3GPPLiaison@etsi.org**

Attachments: TS 23.401 CR 3762, TS 23.271 CR 0438

**1. Overall Description:**

SA2 received an LS from RAN2 on UE Location Information for NB-IoT NTN. The incoming LS stated:

*“RAN2 rediscussed whether and how location reporting for an NB-IoT UE in NTN can be supported in case LPP mechanism is not supported.*

*No consensus could be reached in RAN2 as to whether an AS-based solution of reporting UE location, even coarse-grained, for NB-IoT UEs using control plane optimization could be supported, due to privacy and security concerns raised by some companies.*

*RAN2 would thus like to ask SA2 and CT1 if UE location reporting via NAS layer can be considered in Rel-18, to satisfy this operator requirement.”*

In order to address this requirement, SA2 approved the attached CRs for TS 23.401 and TS 23.271 and allow reporting of coarse location information in NAS (SMC) to MME and from MME to E-SMLC. This introduces support for location verification using the EPC-NI-LR LCS procedure based on coarse location information (which corresponds to a granularity of approximately 2 km). This procedure can only be used for NB-IoT UEs.

Nevertheless, with regards to the statement “how location reporting for an NB-IoT UE in NTN can be supported in case LPP mechanism is not supported” during the discussion in the meeting it was questioned by certain companies whether the current regulatory requirements for location verification can be met when the UE and/or the network do not support LPP and therefore when the related LCS procedures that allow the network to perform a network initiated location request to the UE (aka MT-LR) are not supported. A UE in this case could only report its coarse location information (which corresponds to a granularity of approximately 2km) in association with MO events, MT events or periodic TAU signalling. However, a UE could still move from an allowed region or country to a non-allowed region or country without detecting this which would lead to the network not becoming aware of this if there is no MO event, MT event or periodic TAU signalling.

Thus, SA2 still believes that the solution described in the attached SA2 approved CRs may not meet all requirements when “LPP mechanism is not supported”.

In addition SA2 also observes that the ULI information ("mapped” cell-id and TAC) that will be provided from eNB to MME and stored in CN may potentially not be very accurate given the cells may be quite large and the UE in case of NB-IoT will not be providing coarse location information to eNB. SA2 would therefore like to ask whether RAN2 and RAN3 think it may be useful for MME to further signal the coarse location information received from the UE in NAS back to eNB e.g. using one of the existing Location Reporting Procedure in order for the eNB to send updated ULI to CN. SA2 did not reflect this change in the attached SA2 approved TS 23.401 CR and would like to receive feedback from RAN2 and RAN3.

**2. Actions:**

**To RAN2, CT1:**

**ACTION:** SA2 asks RAN2 and CT1 to take the above information into account.

**To RAN2, RAN3:**

**ACTION:** SA2 asks RAN2 and RAN3 whether they think it may be useful for MME to further signal the coarse location information received from the UE in NAS back to eNB e.g. using one of the existing Location Reporting Procedure in order for the eNB to send updated ULI to MME

**3. Date of Next TSG SA WG2 Meetings:**

TSG-SA2 Meeting #162 15-19 April 2024 Changsha, P.R.China

TSG-SA2 Meeting #163 27-31 May 2024 Jeju, Rep. of Korea