3GPP TSG-RAN WG2 #121 R2-23XXXXX

Athens, Greece, 27th February – 3rd March 2023

**Agenda item: 8.2.1**

**Source: Xiaomi**

**Title:** **[AT121][409][POS] Reply LS to SA2 on RAN dependency for SL positioning (Xiaomi)**

**Document for: Discussion and Agreement**

# 1 Introduction

This document is to kick off the following offline discussion:

* [AT121][409][POS] Reply LS to SA2 on RAN dependency for SL positioning (Xiaomi)

Scope: Draft a reply to R2-2300076, taking into account discussions under the SL positioning AI. RAN1 can be included if the content applies to them as well.

Intended outcome: Approvable LS

Deadline: Wednesday 2023-03-01 1900 EET

# 2 Contact Information

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| --- | --- |
| Company | Contact: Name (E-mail) |
| Huawei, HiSilicon | Yinghao Guo yinghaoguo@huawei.com |
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| CATT | Jianxiang Li (lijianxiang@catt.cn) |
| Xiaomi | Jiangxiaowei (jiangxiaowei@xiaomi.com) |
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# Discussions

As issue 1 and issue 2 in SA2 LS[R2-2300076] have already been concluded by the online discussion, this offline discussion will focus on the issue 2.

Regarding issue 2, SA2 askes RAN WGs to evaluate if their understanding regarding positioning QoS parameters are correct, as highlighted below:

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| SA2 concludes that PQI is authorized and provisioned to the UE by 5GC with the mapping to the Ranging/SL positioning service when PC5-U is used as the SLPP transport layer. The positioning QoS parameters (i.e. LCS QoS information) may also be authorized and provisioned. From SA2 perspective, positioning QoS parameters may include accuracy and latency of direction and distance. SA2 would expect RAN WGs to evaluate if that’s a correct understanding. |

From rapporteur point of view, LPP has defined the following parameters for QoS:

QoS ::= SEQUENCE {

horizontalAccuracy HorizontalAccuracy OPTIONAL, -- Need ON

verticalCoordinateRequest BOOLEAN,

verticalAccuracy VerticalAccuracy OPTIONAL, -- Need ON

responseTime ResponseTime OPTIONAL, -- Need ON

velocityRequest BOOLEAN,

...,

[[ responseTimeNB-r14 ResponseTimeNB-r14 OPTIONAL -- Need ON

]],

[[ horizontalAccuracyExt-r15 HorizontalAccuracyExt-r15 OPTIONAL, -- Need ON

verticalAccuracyExt-r15 VerticalAccuracyExt-r15 OPTIONAL -- Need ON

]]

}

Rapporteur think these parameters can be as baseline. SL positioning supports absolute positioning, relative positioning and ranging. For absolute positioning and relative positioning, QoS parameters can include absolute/relative horizontal accuracy, verticalCoordinateRequest, absolute/relative vertical accuracy, response time, and velocityRequest. For ranging, QoS parameters can include distance accuracy, direction accuracy, response time, and velocity. However, whether additional QoS parameters are needed should be addressed by RAN1.

**Q1: Regarding which RAN WG is responsible for providing the positioning QoS parameter, please provide your view on the following options:**

**-Option 1: RAN2 can provide a initial list of positioning QoS parameters based on RAN2 understanding, and RAN1 can provide feedback and may add additional parameters;**

**- Option 2: completely leave to RAN1 to decide the positioning QoS parameters;**

**- Option 3: completely leave to RAN2 to decide the positioning QoS parameters;**

**- Option 4: Other**

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| Company | Options | Comments |
| Huawei, HiSilicon | Option4 | The QoS requirements come from the service layer for LCS and the QoS for sidelink positioning should be similarly coming from the service layer. We should leave the discussion to SA1/2 |
| OPPO | Option1 | We agree that the QoS should come from the service layer. But RAN could give our preference to them as SA2 sent a LS to evaluate their understanding on the QoS |
| Ericsson |  | These QoS parameters are also known to SA2. So we can reply saying; Similar to LCS QoS for positioning; ranging LCS QoS is also needed. |
| Qualcomm | Option 3 | RAN2 has defined these parameters in the past |
| CATT | Option 1 with comments | Comments on this question:  SA2 asked RAN2 to confirm the understanding below, From SA2 perspective, positioning QoS parameters may include accuracy and latency of direction and distance. SA2 would expect RAN WGs to evaluate if that’s a correct understanding.  Hence, RAN2 should discuss and conclude whether the understanding from SA2 can be confirmed. |
| Xiaomi | Option 1 | We think at least RAN2 can provide initial list of parameters based on the QoS IE defined in LPP. But RAN1 may have other QoS parameters that may need to be introduced, we suggest also to ask RAN1. |
| Nokia | Option 1 | Same as Xiaomi |
| ZTE | Option 1 |  |
| Lenovo | Option 1 | SA2 has provided their list of recommended QoS parameters. From RAN2 side, we can confirm this understanding. In addition, the parameters provided by SA2 were missing some details on the QoS parameters, e.g., direction accuracy |
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**Rapporteur’s summary: 4/6 companies agree that RAN2 can provide the list of parameters, 3/6 companies think we can also ask RAN1’s opinion on additional parameters.**

**Proposal 1(4/6): RAN2 can provide a initial list of positioning QoS parameters based on RAN2 understanding, and RAN1 can provide feedback and may add additional parameters.**

**Q2: If option 1 or 3 is selected, do company agree that, from RAN2 point of view, SL positioning QoS can include the following parameters:**

**- For absolute & relative positioning: absolute/relative horizontal accuracy, verticalCoordinateRequest, absolute/relative vertical accuracy, response time, and velocityRequest;**

**- For ranging: distance accuracy, direction accuracy, response time, and velocityRequest.**

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| Company | Yes/No | Comments |
| OPPO | Yes | For now it is OK. We can revise later if needed. |
| Qualcomm | Yes | In addition to the listed parameters, velocity accuracy (heading accuracy, speed accuracy) are recommended as QoS parameters. |
| CATT | Yes | So far so good and we can update the list if RAN1 share comments. |
| Xiaomi | Yes |  |
| Nokia | Yes |  |
| ZTE | Yes |  |
| Lenovo | Yes |  |
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**Rapporteur’s summary: 4/4 companies agree the proposed parameters, one company suggests to add more parameters for velocity accuracy(heading accuracy, speed accuracy). This additional parameters may require more discussion.**

**Proposal 2(4/4): RAN2 to agree that, from RAN2 point of view, SL positioning QoS can include the following parameters:**

**- For absolute & relative positioning: absolute/relative horizontal accuracy, verticalCoordinateRequest, absolute/relative vertical accuracy, response time, and velocityRequest;**

**- For ranging: distance accuracy, direction accuracy, response time, and velocityRequest.**

**Q3: If option 1 is selected, do company agree that the reply LS is also sent to RAN1 to ask if there is additional positioning QoS parameters?**

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| --- | --- | --- |
| Company | Yes/No | Comments |
| OPPO | Yes |  |
| CATT | Yes |  |
| Xiaomi | Yes |  |
| Nokia | Yes |  |
| ZTE | Yes |  |
| Lenovo | Yes | Good to check with RAN1 |
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**Rapporteur’s summary: 3/3 companies agree to sent to RAN1 to ask if there is additional positioning QoS parameters.**

**Proposal 3 (3/3): RAN2 to agree that the reply LS is also sent to RAN1 to ask if there is additional positioning QoS parameters.**

# Summary

**Proposal 1(4/6): RAN2 can provide a initial list of positioning QoS parameters based on RAN2 understanding, and RAN1 can provide feedback and may add additional parameters.**

**Proposal 2(4/4): RAN2 to agree that, from RAN2 point of view, SL positioning QoS can include the following parameters:**

**- For absolute & relative positioning: absolute/relative horizontal accuracy, verticalCoordinateRequest, absolute/relative vertical accuracy, response time, and velocityRequest;**

**- For ranging: distance accuracy, direction accuracy, response time, and velocityRequest.**

**Proposal 3 (3/3): RAN2 to agree that the reply LS is also sent to RAN1 to ask if there is additional positioning QoS parameters.**