**3GPP TSG-RAN WG3 Meeting #120 R3-23xxxx**

**Incheon, Korea, May 22 – 26, 2023**

**Agenda item:** 13.5

**Source:** Xiaomi (Moderator)

**Title:** Offline discussion on SA2 related issues on mobile IAB

**Document for:** Discussion

# 1 Introduction

This document contains the controversial issues about SA2’s issues for the following CRs

|  |  |  |
| --- | --- | --- |
| [R3-232834](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_120%5CDocs%5CR3-232834.zip) | (draftCR TS 38.305) Introduction of Mobile TRP (Ericsson, Xiaomi, Qualcomm Inc., CATT, Nokia, Nokia Shanghai Bell, ZTE) | draftCR |
| [R3-232835](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_120%5CDocs%5CR3-232835.zip) | Support for mobile TRP Location Information (Ericsson, Xiaomi, Qualcomm Inc., CATT, Nokia, Nokia Shanghai Bell, ZTE) | CR0101r1, TS 38.455 v17.4.0, Rel-18, Cat. B |
| [R3-232979](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_120%5CDocs%5CR3-232979.zip) | (CR to TS 38.473) Support of mobile TRP Location Information (Xiaomi, Ericsson, Qualcomm, CATT, Nokia, Nokia Shanghai Bell, ZTE) | CR1176r, TS 38.473 v17.4.1, Rel-18, Cat. B |
| [R3-232903](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_120%5CDocs%5CR3-232903.zip) | (TP for NR\_mobile\_IAB BL CRs for TS 38.455/ 38.413/38.473) Discussion on the UE positioning and additional ULI (Huawei) | other |

Note: considering the above spec impacts are from SA2 and there’s no BL CR for TS 38.455, the papers to capture the solutions to solve SA2’s issues can be CRs or draftCR. (this is also confirmed by the Rapporteur)

For R3-232903, if the additional ULI for NGAP can be agreeable, R3-232903 can be revised to CR format to capture the corresponding solutions for NGAP.

# 2 Discussion

### Mobile TRP involved positioning

After some offline discussions with companies that have concerns, there’re two issues to be discussed

* The format and presence of time stamp in mobile TRP location information
* NRRPa message(s) is to include the updated mobile TRP location information in case of network assisted positioning.

**Issue 1a, the presence of time stamp in mobile TRP location information**

Some companies think the time stamp is not needed for the case of network assisted positioning, but some companies think it’s useful, as UE positioning measurement may have an offset to the time of the mobile-TRP’s location/velocity measurement. It is suggested to use an optional presence for time stamp, and it’s up to gNB implementation to decide whether include it or not.

**Q1: do you agree that the time stamp in mobile TRP location information can be optional?**

|  |  |
| --- | --- |
| **Company** | **Comment** |
| Xiaomi  | Yes  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Issue 1b, the format of time stamp in mobile TRP location information**

Clarification: the intention to use UTC time format for the time stamp is to align LPP spec, which specifies the result of MO-LR. But one company has concerns on whether IAB-MT have the capability to provide UTC time, so they prefer to use SFN format time stamp.

After further checking, the moderator found that there’s no specifications saying that UE needs to have capability to provide UTC time, and UE can also get UTC time from the gNB via SIB9, there are many ways for UE (IAB-MT) or IAB-DU to get the UTC time, it may not be a problem to providing the UTC time.

However, to make it easier and more reliable, it is suggested to use SFN time format as it’s already specified in F1AP and NRPPa.

**Q1a: do you agree that the time stamp in the mobile TRP location information can use the SFN format (i.e. reuse the IE in F1AP and NRPPa)?**

|  |  |
| --- | --- |
| **Company** | **Comment** |
| Xiaomi  | Yes  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Issue 2, which NRPPa message should be used to include the updated location information**

This issue is related to step 11 in SA2’s spec, according to the contributions, all the companies except one have the same understanding on which message to be used. One company thinks SA2 doesn’t make it clear which NRPPa message should be used.

It’s the moderator’s understanding, NRPPa is in RAN3 scope, SA2 are not familiar with the NRPPa messages, so they need RAN3’s guidance, RAN3 needs to decide which message to be used. After two meetings’ discussions, all the companies in RAN3 agrees that including the updated mobile TRP location information in Measurement Report and Response messages, there’s no technical concerns to object this.

**Q2: do you agree that the updated mobile TRP location information can be included in the following messages? If no, please provide technical issues.**

**NRPPa MEASUREMENT RESPONSE message**

**NRPPa MEASUREMENT REPORT message**

**F1AP POSITIONING MEASUREMENT RESPONSE message**

**F1AP POSITIONING MEASUREMENT REPORT message**

|  |  |
| --- | --- |
| **Company** | **Comment** |
| Xiaomi  | Yes  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

### Additional ULI

For additional ULI, the following open issues are discussed in many contributions.

*RAN3 to discuss whether to include the TAI and the time stamp of the location information of IAB-MT’s serving cell into the new IAB-MT User Location Information IE.*

**Issue 1, whether to include TAI of IAB-MT’s serving cell as additional ULI of UE**

Only one company has concerns on TAI, as they think according to the SA2’s TR, TAI is not needed and SA2 didn’t make it clear whether they want TAI.

It is the moderator’s understanding, SA2 already specified in TS 23. 501 that the additional ULI can be used for e.g. mobility restriction, which including per TAI restrictions, this means that the TAI is needed. In addition, the SA2 clearly asked RAN3 in their LS that they want ULI of IAB-MT, instead of only NCGI.

**Issue 2, whether to have a separate Age of location for IAB-MT’s ULI.**

Considering there is already age of location in UE’s ULI, which indicates the UTC time when the information was generated, so there may be no need a separate Age of location for IAB-MT’s ULI.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| >>Age of Location | O |  | Time Stamp9.3.1.75 | Indicates the UTC time when the location information was generated. | - |  |

**Q3: do you agree that the NCGI and TAI of IAB-MT’s serving cell should be included in the new IAB-MT User Location Information IE into the existing User Location Information NGAP IE**

|  |  |
| --- | --- |
| **Company** | **Comment** |
| Xiaomi  | Yes  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

### Wording issue

If there’s wording issues, please directly revise it in the draft folder with technical notes.

### LS

**Q4: Do you think we need LS to SA2?**

|  |  |
| --- | --- |
| **Company** | **Comment** |
| Xiaomi  | Yes, we could let SA2 know RAN3’s solutions if the CRs are agreed. |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

# References

|  |  |  |
| --- | --- | --- |
| [R3-232978](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_120%5CDocs%5CR3-232978.zip) | Discussion on SA2 related issues on mobile IAB (Xiaomi) | discussion |
| [R3-232833](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_120%5CDocs%5CR3-232833.zip) | Discussion of SA2 FS\_VMR Solutions (Ericsson) | discussion |
| [R3-232765](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_120%5CDocs%5CR3-232765.zip) | Discusssion on issues related to SA2 VMR (Qualcomm Inc.) | discussion |
| [R3-232927](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_120%5CDocs%5CR3-232927.zip) | Discussion on positioning with mobile IAB (Nokia, Nokia Shanghai Bell) | discussion |
| [R3-233043](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_120%5CDocs%5CR3-233043.zip) | Discussion on location information for mobile IAB (Lenovo) | discussion |
| [R3-233174](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_120%5CDocs%5CR3-233174.zip) | Enhancements on positioning and additional ULI for mobile IAB (ZTE) | discussion |
| [R3-232834](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_120%5CDocs%5CR3-232834.zip) | (draftCR TS 38.305) Introduction of Mobile TRP (Ericsson, Xiaomi, Qualcomm Inc., CATT, Nokia, Nokia Shanghai Bell, ZTE) | draftCR |
| [R3-232835](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_120%5CDocs%5CR3-232835.zip) | Support for mobile TRP Location Information (Ericsson, Xiaomi, Qualcomm Inc., CATT, Nokia, Nokia Shanghai Bell, ZTE) | CR0101r1, TS 38.455 v17.4.0, Rel-18, Cat. B |
| [R3-232979](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_120%5CDocs%5CR3-232979.zip) | (CR to TS 38.473) Support of mobile TRP Location Information (Xiaomi, Ericsson, Qualcomm, CATT, Nokia, Nokia Shanghai Bell, ZTE) | CR1176r, TS 38.473 v17.4.1, Rel-18, Cat. B |
| [R3-232903](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_120%5CDocs%5CR3-232903.zip) | (TP for NR\_mobile\_IAB BL CRs for TS 38.455/ 38.413/38.473) Discussion on the UE positioning and additional ULI (Huawei) | other |