**3GPP TSG-RAN WG2 Meeting #119bise R2-220xxxx**

**Online, October, 2022**

**Agenda Item: 6.10.4.2**

**Source: OPPO**

**Title: Summary of [POST119bis-e][114][NR NTN] LS on Validity of assistance information (OPPO)**

**Document for: Discussion and Decision**

# Introduction

This document is to kick off the following offline discussion.

* [Post119bis-e][114][NR NTN] LS on validity of assistance information (Oppo)

Scope: Discuss a possible revision of the LS to RAN1

Intended outcome: LS to RAN1

Deadline (for companies' feedback): Thursday 2022-10-20 16:00 UTC

Deadline (for LS in R2-2211047): Friday 2022-10-21 10:00 UTC

# 2. Contact information

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| --- | --- |
| Company | Delegate contact |
| COMPANY\_NAME | NAME ([email@address.com](mailto:email@address.com)) |
| Ericsson | robert.s.karlsson AT ericsson.com |
| Lenovo | Min Xu (xumin13@lenovo.com) |
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# Discussion

The current draft CR is based on the vice-chair’s wording suggestions.

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| **1. Overall Description:**  Regarding RAN1’s agreement on serving cell’s Epoch time referring to the current SFN or the next upcoming SFN after the frame where the message indicating the Epoch time is received, RAN2 has discussed and thinks that there could be an issue with latency (e.g. for initial access) when Epoch time points to a future time and validity timer has not started.  To solve this issue, RAN2 kindly requests RAN1 to provide feedback on whether:   1. backwards propagation of satellite assistance information is needed, or 2. it can be ensured that Epoch time for serving cell will always refer to a frame nearest to the frame where the message indicating the Epoch time is received (RAN1 to evaluate which RAN1 changes would be needed for this), or 3. this can be addressed by setting the Epoch time properly by the network (i.e. no spec changes).   **2. Actions:**  **To RAN1**  **ACTION:** RAN2 kindly requests RAN1 to provide feedback to the above questions. |

**Question 1: Is the content in the draft CR acceptable to you? If not, please share your comments or wording suggestions.**

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| **Company** | **Yes/No** | **Additional comments** |
| Ericsson | Absolutely not | There has been no agreement in RAN1 nor RAN2 if ephemeris is valid or not valid before the epoch time.  “RAN2 has discussed and thinks that there could be an issue with latency (e.g. for initial access) when Epoch time points to a future time and the assistance information is not considered to be valid before the Epoch time.”  Point 2 is about enabling indicating an epoch time in the past, but it proposes one way to do this (and it’s a bad way, using nearest frame effectively removes half of the signalled epoch times, the ones in the future). RAN1 can decide themselves how epoch in the past can be enable. Important is that this works for implicit and explicit epoch time. We propose:   1. Epoch time for serving cell can be indicated in the past   Point 3 is not a solution to the latency introduced when epoch time is in the future, it shall be removed. We prefer not sending an LS if anything like point 3 is included.  [ZTE]: We think the original problem statement is correct and better, since current UE behavior is in controlled by T430, and the problem is because UE cannot start T430 early to use the parameter, there is no description in specs saying the assistance information is valid. As for updates for 2, it won’t help with the progress to keep the option too general, as there might be other interpretations that is not discussed by RAN2. Prefer to use original description. Anyway, we already states that RAN1 will evaluate the required changes. |
| Qualcomm | Yes | We think the point 3 is the key regardless of solution. The network knows how many repetitions of SI message it plans and can set the epoch time appropriately just after the last repetition within SI window.  So, we do not agree to change the current text in the draft. In our understanding anyway RAN1 would be discussing this and reach a conclusion regardless of RAN2 LS.  Backward propagation means not only for ephemeris, but it also means for common TA parameters which could be problematic. |
| OPPO | Yes | We understand the current text is a good compromise as it includes companies’ proposals raised in RAN2 (including BP’s support). We should try to progress with this LS to RAN1 otherwise there is risk that the issue will stay unresolved. |
| ZTE | Yes | We support to send the LS as it is, and let RAN1 to decide since the whole common TA concept is introduced by them, and RAN2 only follows their decision on this topic. |
| Lenovo | Yes | OK to send LS with options and let RAN1 decide. |
| Xiaomi | Yes | We support to ask RAN1 the three questions, we think RAN1 has more expertise to evaluate them. |
| Nokia | Yes, after some changes | In second bullet we suggest the following changes:   1. Latency issue can be solved by ensuring that Epoch time for serving cell will always refer to a frame nearest to the frame where the message indicating the Epoch time is received (if confirmed, RAN1 is asked to evaluate which RAN1 changes would be needed for this), or   Third bullet could be removed or this has to be indicated that it does not relate to RAN1 actions. So bullets 1 and 2 are sufficient. |
| CATT | See comments | We think we at least send LS to RAN1 for this issue to show RAN2 strong concern on this issue, regardless the draft CR will be modified or not.  RAN1 has just finished their discussion on this issue ([110bis-e-R17-NR-NTN-02]). No agreement has been achieved to support the backwards propagation solution. Maybe we cannot assume RAN1 can achieve conclusion to support backwards propagation, even we include this in our LS.  We also think the proposal from Ericsson is better solution, we wonder the concern of companies to include the modification from Ericsson in LS. We are not trying to give a decision instead of RAN1, but just a suggestion from RAN2 point of view.  For point 3, we agree with Ericsson that point 3 cannot solve the latency problem, it can only mitigate it. And this gives some restriction on network implementation.  If majority companies insist to add point 3 in the LS, we suggest not making point 3 have juxtaposition with point 1 and point 2. The suggest approach is as follow:  To solve this issue, RAN2 kindly requests RAN1 to provide feedback on whether:   1. backwards propagation of satellite assistance information is needed, or 2. it can be ensured that Epoch time for serving cell will always refer to a frame nearest to the frame where the message indicating the Epoch time is received (RAN1 to evaluate which RAN1 changes would be needed for this)   or, no spec changes, but the issue couldn’t be solved completely, just mitigate the latency problem by NW implementation:  a. this can be addressed by setting the Epoch time properly by the network (i.e. no spec changes).  [ZTE] : We don’t agree with above text updates proposed. First we are wondering if it is RAN2 consensus that this issue as proposed is valid in all cases and RAN2 has strong concerns? At least, from what I read in some companies comments, they think this is just issue caused by bad NW implementation, and the really concern is that if RAN1 cannot conclude on BP discussion there will be risk that we introduce late changes that impact both implementation and specs’ stability.  Please note with improper NW implementation there could be extra delays with all above mentioned solutions, and this could happen for all configuration that is configured by NW, koffset, TAC and etc. Moreover we don’t know if supporting BP or other enhancements could have other drawbacks or cause problems, this shall also be evaluated by RAN1,we cannot conclude that it can solve all issues. We would like to keep the LS as it is and let RAN1 to do comprehensive investigation.  [CATT]：  Firstly, we have had a common understanding that, there could be an issue with latency (e.g. for initial access) when Epoch time points to a future time and validity timer has not started. We are not talking about for all cases. We think RAN2 has strong concern on this issue, otherwise, we don’t need this LS, anyway, RAN1 may continue to discuss this issue again in next meeting, we can just waiting for the output of RAN1.  And we think we should not leave this issue to RAN1 completely. RAN1 has discussed this issue several meetings, and achieve nothing as last. Of course, it is up to RAN1 at last, but RAN2 is not prevented to give RAN2 suggestion. Actually, RAN1 has not a clear technical reason on the agreements.  We can accept to include all the three points in the LS (please note that, we are not preventing the LS), but just suggest considering the proposal from Ericsson, at the same time. Because, we should guarantee the UE always has valid information to use, at any time it wants to access the network (we assume we have a common understanding on this). We indeed wonder what is the concern on this. Anyway, RAN1 has the last word. |
| Huawei, HiSilicon | Yes but | We tend to agree with Ericsson/Nokia/CATT that the third bullet should be removed, as proper NW implementation can just mitigate the delay, not solve the issue completely. |
| Apple | Yes | It's clear that RAN2 company’s views are divergent and we can make consensus in this meeting.  In current LS version, it doesnot mention any RAN2 preference but just list all the options for RAN1 to make the decision.  We think the current version correctly reflects the RAN2 situation, and we are fine with it. |

# 4. Summary and Proposals

To be updated…