3GPP TSG-RAN WG1 Meeting #105-e R1-210xxxx

e-Meeting, May 10th – 27th, 2021

**Title: DRAFT** Reply LS on TA pre-compensation

**Reply to:** LS on TA pre-compensation (R2-2104376)

**Release:** Release 17

**Work Item:** NR\_NTN\_solutions-Core

**Source:** Moderator (OPPO), [RAN1]

**To:** RAN2

**Cc:**

**Contact Person:**

**Name:** Hao Lin

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**Attachments:** None

**1. Overall Description:**

RAN1 would like to thank RAN2 for sending their LS on TA pre-compensation. RAN1 has discussed the questions asked by RAN2 and RAN1 answers are provided below.

**RAN2 Q2**: RAN2 respectfully requests RAN1 to provide input on: (i) how UE determines UE-gNB RTT, and (ii) what additional information needs to be broadcasted other than that for TA pre-compensation, if any.

**RAN1 answer**: In RAN1#105-e meeting, RAN1 reached the following agreement on UE-gNB RTT determination, which is used to delay the starts of ra-ResponseWindow and msgB-ResponseWindow. The UE-gNB RTT is estimated according to the UE's TA and K\_mac. RAN2 may take this information into account for future discussion.

Agreement:

The starts of ra-ResponseWindow and msgB-ResponseWindow are delayed by an estimate of UE-gNB RTT.

* The estimate of UE-gNB RTT is equal to the sum of UE’s TA and K\_mac.

Note 1: The UE’s TA is based on the RAN1#104bis-e agreement on Timing Advance applied by an NR NTN UE given by  $N\_{TA}=\left(N\_{TA}+N\_{TA, UE-specific}+N\_{TA,common}+N\_{TA,offset}\right)×T\_{c}$$T\_{TA}=\left(N\_{TA}+N\_{TA, UE-specific}+N\_{TA,common}+N\_{TA,offset}\right)×T\_{c}$. The estimate of gNB-satellite RTT is equal to the sum of $N\_{TA,common}×T\_{c}$ and K\_mac.  How to treat $N\_{TA}$ and $N\_{TA,offset}$ can be further discussed.

Note 2: According to the RAN1#104bis-e agreement: When UE is not provided by network with a K\_mac value, UE assumes K\_mac = 0.

Note 3: The accuracy of the estimated UE-gNB RTT with respect to the true UE-gNB RTT can be further discussed.

Note 4: Other options of determining the estimate of UE-gNB RTT can be further discussed.

**2. Actions:**

**To RAN2 group:**

**ACTION:** RAN1 respectfully asks RAN2 to take the above into account for future work.

**3. Date of Next TSG-RAN WG1 Meetings:**

TSG-RAN WG1 Meeting #106-e 16 – 27 August 2021 Electronic Meeting

TSG-RAN WG1 Meeting #106-bis-e 11 – 19 October 2021 Electronic Meeting