3GPP TSG RAN WG1 Meeting #109e R1-2205161

**e-meeting, May 9th – 20th, 2022**

**Source: Moderator (CATT)**

**Title: FL Summary for mitigating UE/gNB Rx/Tx timing delays**

**Agenda item: 8.5.1**

**Document for: Discussion and Decision**

# Introduction

This document provides a summary of the following email discussion:

[109-e-R17-ePos-02] Email discussion under 8.5.1 for maintenance on accuracy improvements by mitigating UE Rx/Tx and/or gNB Rx/Tx timing delays, for issues 1-1, 1-2, 1-6, 1-9, 1-13, 1-14, 1-15, 1-16 in [R1-2205097](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2205097.zip), including discussion on LS in [R1-2203024](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203024.zip) – Ren Da (CATT)

* 1st check point: May 13 (any RRC impact by May 12)
* Final check point: May 20

# Aspects related to RAN4 LS [R1-2203024](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203024.zip)

**Issue #1-1 in** [**R1-2205097**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2205097.zip)

Submitted Proposals

* ***(Huawei [1][12])) Proposal 1:*** *Define the following framework for Tx TEG reporting.*
* *The framework of UE/TRP Tx TEG:* 
  + *Define multiple candidate timing error margin values {TE1, TE2, …, TEN} in the spec.* 
    - *The number of candidate values (i.e. N) and the exact values of {TE1, TE2, …, TEN} will be decided in Perf part.*
  + *UE/TRP selects one value M from {TE1, TE2, …, TEN} based on its implementation and indicate to LMF per report.*
  + *For UE that supports multiple Tx TEGs (TEG#1, TEG#2, …), the associated timing error margin value of each Tx TEG is M, which means the timing error difference between the transmission within the same Tx TEG is within the margin M.* 
    - *The applicability of reported UE Tx TEG is limited to all the SRS in a UEPositioningAssistanceInfo message in RRC or in a Multi-RTT-ProvideLocationInformation IE in LPP that are tagged with the corresponding TEG ID.*
  + *For TRP that supports multiple Tx TEGs, it is up to RAN3 to define the corresponding signaling if needed.*
* ***(Qualcomm [8]) Proposal 4:*** *The applicability of reported UE Rx TEG, RxTx TEGs, is limited to the measurements contained within the single measurement instance of a measurement report in which the Rx TEG information is provided, and only to measurements that are tagged with the corresponding TEG ID.*
  + *Send an LS to RAN4*
* ***(Qualcomm [8]) Proposal 5:*** *Add the following sentence in TS 38.214 Section 5.1.6.5*
  + *The applicability of reported UE Rx TEG, RxTx TEGs, is limited to the measurements contained within the single measurement instance of a measurement report in which the Rx TEG, RxTx TEG, information is provided, and only to measurements that are tagged with the corresponding TEG ID.*
* ***(CATT [10][11]) Proposal 1: Send a reply LS to RAN4 with the following questions of clarification:***
  + *Question 1: Does a UE/TRP always support the same timing error margin value for Rx TEGs (or RxTx TEGs), or can a UE/TRP support different timing error margin values at different times?*
  + *Question 2: If a UE/TRP supports both Rx and RxTx TEGs, will the selected timing error margin value for Rx TEG(s) be the same as the timing error margin value for RxTx TEG(s), or can a UE/TRP select different timing error margin values for Rx TEG(s) and RxTx TEG(s)?*

FL Comments

Given that RAN4 has defined the framework for Rx TEG/RxTx TEG, one may expect RAN4 will further discuss the framework for Tx TEG. Another option, as proposed in [1][12], is RAN1 defines the framework for Tx TEG, and them inform other WGs on RAN1’s decision.

About the validity of the UE Rx TEG, RxTx TEGs, it seems there are some questions [8][10][11], which need RAN4 to provide the clarifications.

Based on the inputs from RAN4’s LS, it seems there is a need to add the corresponding changes to TS 38.214 as suggested in [8].

### Proposal 2-1

* *Consider one of the following options on the framework for Tx TEG:*
  + *Option 1: RAN1 will discuss and define the framework for Tx TEG based on RAN4’s LS R1-2203024 in RAN1#109e, e.g., as proposed in [1][12]*
  + *Option 2: RAN1 is expecting RAN4 will define the framework for Tx TEG, i.e., RAN1 will not discuss and define the framework for Tx TEG in RAN1#109e.*

Comments

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| **Company** | **Comments** |
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### Proposal 2-2

* *The applicability of reported UE Rx TEG, RxTx TEGs, is limited to the measurements contained within the single measurement instance of a measurement report in which the Rx TEG information is provided, and only to measurements that are tagged with the corresponding TEG ID.*
  + *Include above statement in reply LS to RAN4*

Comments

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| **Company** | **Comments** |
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### Proposal 2-3

* *Include the following questions of clarification in reply LS to RAN4:*
  + *Question 1: Does a UE/TRP always support the same timing error margin value for Rx TEGs (or RxTx TEGs), or can a UE/TRP support different timing error margin values at different times?*
  + *Question 2: If a UE/TRP supports both Rx and RxTx TEGs, will the selected timing error margin value for Rx TEG(s) be the same as the timing error margin value for RxTx TEG(s), or can a UE/TRP select different timing error margin values for Rx TEG(s) and RxTx TEG(s)?*

Comments

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| **Company** | **Comments** |
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### Proposal 2-4

* *Add the following TP in TS 38.214 Section 5.1.6.5:*

*The applicability of reported UE Rx TEG, RxTx TEGs, is limited to the measurements contained within the single measurement instance of a measurement report in which the Rx TEG, RxTx TEG, information is provided, and only to measurements that are tagged with the corresponding TEG ID.*

Comments

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| **Company** | **Comments** |
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# UE Tx TEG Reporting (TEG changes/updates/Reset)

**Issue #1-2 in** [**R1-2205097**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2205097.zip)

Submitted Proposals

* ***(Huawei,*** [***R1-2203099***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203099.zip)***[1]) Proposal 2:*** *Define the following reporting principle and include it in the LS to RAN2.*
  + *UE is not required to report the same association of a TEG ID for an occasion (via the timestamp) compared with the previous occasion.*
  + *The timestamp corresponds to the slot when the association is valid, which may not be a slot containing the actual SRS transmission.*
  + *Both the original TEG and target TEG need to be included for an occasion via the timestamp in the report if UE switches SRS from the original TEG to the target TEG, e.g. delist the SRS from the original TEG and include the SRS to the target TEG.*
  + *For SRS not associated with any TEG in case UE is not able to determine the association, UE may not report the SRS resource ID in any of the TEG within the report*
  + *For SRS that has been previously associated with a TEG, but is no longer associated with any TEG in case UE is not able to determine the association after a given occasion, the UE may update the TEG by delisting the concerned SRS, without including the SRS to any target TEG.*
* ***(Huawei,*** [***R1-2203099***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203099.zip)***[1]) Proposal 3: Include the following change suggestion in the LS to RAN2.***
  + *The field description of nr-TimeStamp in the TEG association reporting should be the earliest time instance instead of the latest time instance.*
  + *The field srs-PosResSetAssociationList in the TEG association reporting should be optional to allow updating a TEG that is no longer associated with any SRS.*
* ***(ZTE,*** [***R1-2203519***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203519.zip) ***[4]) Proposal 2:*** *In each measurement instance, a time span including starting time and ending time of the measurement instance is reported together with the measurement results, where no group delay change is assumed during the time span.*
* ***(ZTE,*** [***R1-2203519***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203519.zip) ***[4]) Proposal 3:*** *For each UE Rx-Tx time difference measurement instance, if a Tx TEG ID is reported, the UE should also report the association of the Tx TEG ID to the UL SRS resource(s) that have already been transmitted and are associated with the Tx TEG ID during the time span of the measurement instance.*
* ***(InterDigital,*** [***R1-2204127***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2204127.zip)***[7]) Proposal 1:*** *Support the UE to report the association information between UE Tx TEG and SRS resource for UL-TDOA only if there is a change in the Tx TEG association compared to the last reporting.*

*FL: The proposal was intensively discussed in previous meeting w/o consensus.*

* ***(InterDigital,*** [***R1-2204127***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2204127.zip)***[7]) Proposal 2:*** *Support the UE to report the association information between UE Tx TEG and SRS resource whenever the UE determines the previous association information is no longer valid.*

*FL: The proposal was intensively discussed in previous meeting w/o consensus.*

* ***(Qualcomm,*** [***R1-2204985***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2204985.zip) ***[8]) Proposal 1****: The Timestamp of the TxTEG<->SRS association is needed and should be kept in the LPP measurement report for M-RTT.*

*FL: This seems to be RAN2’s issue. Not sure if RAN1 needs to discuss it.*

FL Comments

It is important to properly handle the change/updates of the UE Tx TEG association in higher-layer signaling. It is also quite complicated to properly handle the changes/updates and the Tx TEG association. However, RAN1 has made the decision to let RAN2 to handle the change/updates, and at this moment it is unclear whether RAN2 needs RAN1’s help on this issue, since so far RAN2 does not send LS to request RAN1’s inputs. Most of the above proposals are related to the details related to the signalling design and some of the methods were discussed in the previous meeting. Thus, in FL’s view, it is important for RAN1 to have a consistent view on which of the issues related to the reporting details need to be further discussed in RAN1.

### Proposal 3-1

Companies are invited to provide their opinions on which of the following proposals needs to be further discussed and decided by RAN1 in this meeting.

* *Option 1: Define the following reporting principle and include it in the LS to RAN2.*
  + *UE is not required to report the same association of a TEG ID for an occasion (via the timestamp) compared with the previous occasion.*
  + *The timestamp corresponds to the slot when the association is valid, which may not be a slot containing the actual SRS transmission.*
  + *Both the original TEG and target TEG need to be included for an occasion via the timestamp in the report if UE switches SRS from the original TEG to the target TEG, e.g. delist the SRS from the original TEG and include the SRS to the target TEG.*
  + *For SRS not associated with any TEG in case UE is not able to determine the association, UE may not report the SRS resource ID in any of the TEG within the report*
  + *For SRS that has been previously associated with a TEG, but is no longer associated with any TEG in case UE is not able to determine the association after a given occasion, the UE may update the TEG by delisting the concerned SRS, without including the SRS to any target TEG.*
* *Option 2: Include the following change suggestion in the LS to RAN2.*
  + *The field description of nr-TimeStamp in the TEG association reporting should be the earliest time instance instead of the latest time instance.*
  + *The field srs-PosResSetAssociationList in the TEG association reporting should be optional to allow updating a TEG that is no longer associated with any SRS.*
* *Option 3: In each measurement instance, a time span including starting time and ending time of the measurement instance is reported together with the measurement results, where no group delay change is assumed during the time span.*
* *Option 4: For each UE Rx-Tx time difference measurement instance, if a Tx TEG ID is reported, the UE should also report the association of the Tx TEG ID to the UL SRS resource(s) that have already been transmitted and are associated with the Tx TEG ID during the time span of the measurement instance.*
* *Option 5: Support the UE to report the association information between UE Tx TEG and SRS resource for UL-TDOA only if there is a change in the Tx TEG association compared to the last reporting.*
* *Option 6: Support the UE to report the association information between UE Tx TEG and SRS resource whenever the UE determines the previous association information is no longer valid.*
* *Option 7: The Timestamp of the TxTEG<->SRS association is needed and should be kept in the LPP measurement report for M-RTT.*

Comments

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| **Company** | **Comments** |
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# Reporting of SRS port index

**Issue #1-5 in** [**R1-2205097**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2205097.zip)**.**

In LS R1-2203040[13], RAN3 asks RAN1 the following question related to TEG:

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| **TEG** | Some companies in RAN3 believe it is beneficial to signal the SRS port index to the LMF, so that LMF can group measurements based on Port index. RAN3 would like to know if SRS Port Index needs to be signalled to the LMF when SRS resource for MIMO is used? | **RAN1 to feedback if information on the SRS port index needs to be signalled to LMF when SRS resource for MIMO is used.** |

Submitted Proposals

* ***(CATT [1][14]) Proposal 2:*** *Suggest no further discussion on reporting SRS port index with the UL positioning measurements in Rel-17.*
* ***(Samsung, [5]) Proposal 2:*** *SRS port index is not needed to be reported.*
* ***(vivo [16]) Response****: from the perspective of RAN1, there is no clear conclusion that can confirm the relationship between multi-port MIMO SRS and TEG feature, and there is not enough time to prove the performance gain brought by multi-port SRS measurement. Therefore, at least in Rel-17, RAN1 cannot give a conclusion on the SRS port index to be signalled to LMF when SRS resource for MIMO is used****.***
* ***(ZTE [17]) RAN1’s answer:*** *From RAN1 perspective, TEG is only applicable for positioning SRS in which only 1 port is supported, so it is unnecessary to report SRS port index to LMF.*
* ***(OPPO [18]) Proposed reply 2:*** *From RAN1 perspective, there is no need to signal the information on the SRS port index to LMF when SRS resource for MIMO is used since the benefit is not clear.*
* ***(Huawei [19]) RAN1 response:*** *RAN1 thinks that SRS port index associated with NG-RAN measurement can be signalled, if MIMO-SRS is used for UL-RTOA measurement. The decision is up to RAN3.*

FL Comments

The proposal to support gNB to report the associated SRS port ID when SRS resource for MIMO is used for the purpose of positioning was discussed in the previous meetings w/o conclusion. In last meeting, the proposal of letting RAN3 to decide whether to reporting of the SRS port ID was also discussed w/o conclusion. From the feedback of multiple companies on this issue, it seems most of the feedback do not support gNB to report the associated SRS port ID to LMF. Thus, FL would suggest responding to RAN3 that RAN1 cannot make the decide to support the feature in Rel-17, and it is up to RAN3 to make the decision.

### Proposal 4-1

* *Response to RAN3’s question in R1-2203040 related to the signalling support of reporting of SRS port index:*
  + *RAN1 cannot reach the consensus to support reporting of the SRS port index to LMF when SRS resource for MIMO is used for the purpose of positioning.*
  + *the support of reporting of SRS port index RAN1 has decided no further discussion on the support of reporting of SRS port index in Rel-17.*
  + *The support of reporting of SRS port index has no impact on RAN1. Thus, whether to support the signalling support of reporting of SRS port index can be up to RAN3.*

Comments

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| **Company** | **yes** | **NO** | **Additional comments** |
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# Error margins for Rx/RxTx TEGs

**Issue #1-6 in** [**R1-2205097**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2205097.zip)**.**

Submitted Proposals

* ***(CATT,*** [***R1-2203436***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203436.zip) ***[1]) Proposal 3:*** *Suggest adding the following RRC parameters for Rx/RxTx TEGs according to the LS from RAN4 (*[*R1-2203024*](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203024.zip)*).*
  + *ueRxTEG-margin with the values as "FFS: RAN4"*
  + *ueRxTxTEG-margin with the values as "FFS: RAN4"*
* ***(vivo,*** [***R1-2203515***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203515.zip) ***[3]) Proposal 2:*** *Support the UE capability of timing error margin for Rx TEG and RxTx TEG.*
  + *The capability type is per UE.*
* ***(ZTE,*** [***R1-2203519***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203519.zip) ***[4])*** *Proposal 4: Send a reply LS to RAN4 to ask whether timing error margin value is reported to LMF by UE capability signaling or other signaling, e.g. by ProvideLocationInformation.*
* ***(Huawei, R1-2204924[12]) Proposal 2:*** *Add the margin in the TEG reporting signaling.*

FL Comments

There is a need for RAN1 to decide whether to introduce additional RRC parameters, or UE capability to support UE/TRP to provide the Rx/RxTx TEG margins to the LMF. Companies are invited to provide their opinions on which of the following options should be used for UE/TRP to provide the Rx/RxTx TEG margins to the LMF.

### Proposal 5-1

Support of one of the following options for UE to provide the Rx/RxTx TEG margins to the LMF:

* *Option 1: Support UE to provide Rx/RxTx TEG margins to LMF as UE capability*
  + *Note: the details, e.g., per UE or per Band etc., will be further discussed in UE feature session, once more information are available from RAN4.*
* *Option 2: Support UE to provide UE Rx/RxTx TEG margins to LMF via LPP signaling*
  + *Note: Details of UE Rx/RxTx TEG margins in LPP signalling will be included in RRC parameter list once more information are available from RAN4.*
* *Option 3: Request RAN4 on whether UE Rx/RxTx TEG margins are provided to LMF as UE capability, or as LPP signaling parameters*

Comments

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| **Company** | **yes** | **NO** | **Additional comments** |
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### Proposal 5-2

* *Support gNB to provide TRP Rx/RxTx TEG margins to LMF via NRPPa signaling.*
  + *Note: Details of TRP Rx/RxTx TEG margins in NRPPa signaling will be included in RRC parameter list once more information are available from RAN4.*

Comments

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| **Company** | **yes** | **NO** | **Additional comments** |
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# Maximum number of Tx TEG SRS Associations in a M-RTT measurement report

**Issue #1-13 in** [**R1-2205097**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2205097.zip)**.**

Submitted Proposals

* ***(Qualcomm,*** [***R1-2204985***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2204985.zip) ***[8]) Proposal 2:*** *With regards to the Tx TEG SRS Association inside an M-RTT report, support a maximum of 1024 Tx TEG SRS associations (up to 8 Tx TEG per band \* Up to 4 bands \* Up to 32 timestamps).*

FL Comments

The maximum number of UE-TxTEG is currently defined as 8 per UE. Further discussion may be needed to change it “per band”. In addition, the maximum of Tx TEG is also related to the issue on whether the SRS associations is unchanged in different time instances within one measurement report.

### Proposal 6-1

* *In one UE M-RTT measurement report, support reporting the UE Rx-Tx time difference measurements related to*
  + *A maximum 8 Tx TEG per band*
  + *A maximum of 4 bands*
  + *A maximum of 32 measurement time instances*
  + *A maximum of 1024 Tx TEG SRS associations*

Comments

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| **Company** | **yes** | **NO** | **Additional comments** |
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# Maximum number of measurement instances in a report

**Issue #1-16 in** [**R1-2205097**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2205097.zip)**.**

Submitted Proposals

* ***(Qualcomm,*** [***R1-2204985***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2204985.zip) ***[8]) Proposal 7:*** *Support up to 128 measurement instances in a single measurement report.*

FL Comments

RAN1 needs to define the maximum number of measurement instances in a report, and include the maximum number in the RRC parameter list for RAN2/RAN3.

### Proposal 7-1

* *Support up to 128 measurement instances in a single measurement report.*

Comments

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| **Company** | **yes** | **NO** | **Additional comments** |
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# TPs

## TP for terminologies of “ueRxTEG” and “ueRxTEG

**Issue #1-9 in** [**R1-2205097**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2205097.zip)**.**

Submitted Proposals

* ***(OPPO,*** [***R1-2203960***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203960.zip) ***([6]) Proposal 1:*** *Adopt the following TP1 for TS 38.214 to keep the consistency within the same specification.*

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| TP1 for TS 38.214  --------------------------------------------------------------------------------------------------------------------------------  ***Reason for change:*** The terminologies of “*ueRxTEG*” and “*ueRxTEG*” are defined in TS 38.214. However, they are not used in the specification. In contrast, the terminologies of “UE Rx TEG” and “UE RxTx TEG” are used in TS 38.214.  ***Summary of change:*** Change *ueRxTEG*” and “*ueRxTEG*” to “UE Rx TEG” and “UE RxTx TEG”, respectively  ***Consequences if not approved:***  Inconsistent terminologies within the same specification.  --------------------------------------------------------------------------------------------------------------------------------  5.1.6.5 PRS reception procedure  <Unchanged parts are omitted>  The UE may be configured to report one or more measurement instances, each with its own timestamp, on DL RSTD, DL PRS-RSRP, and/or UE Rx-Tx time difference measurements, in a single measurement report.  Timing Error Group(s) (TEG(s)) at UE side are defined:  *-* UE Rx TEG is associated with one or more DL measurements, which have the Rx timing error difference within a certain margin.  *-* UE RxTx TEG is associated with one or more UE Rx-Tx time difference measurements, which have the 'Rx timing errors+Tx timing errors' difference within a certain margin.   * <Unchanged parts are omitted> |

* ***(OPPO,*** [***R1-2203960***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203960.zip) ***([6]) Proposal 2: Adopt the following TP1 for TS 38.214 to keep the consistency within the same specification.***

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| TP2 for TS 38.214  --------------------------------------------------------------------------------------------------------------------------------  ***Reason for change:*** The terminology “*ueTxTEG*” is defined in TS 38.214. However, it is not used in the specification. In contrast, the terminology “UE Tx TEG” is used in TS 38.214.  ***Summary of change:*** Change “*ueTxTEG*” to “UE Tx TEG”  ***Consequences if not approved:***  Inconsistent terminologies within the same specifiction.  --------------------------------------------------------------------------------------------------------------------------------  6.2.1.4 UE sounding procedure for positioning purposes  <Unchanged parts are omitted>  The UE may be configured, subject to UE capability, to report UE Tx TEGs (Timing Error Group), where:  *-* UE Tx TEG is associated with the transmissions of one or more UL SRS resources for the positioning purpose, which have the Tx timing error difference within a certain margin.  The UE may be configured to report, subject to UE capability, association information of SRS resource(s) configured by the higher layer parameter *SRS-PosResource* with UE Tx TEG(s) via higher layer parameter [*ueTxTEG*].  <Unchanged parts are omitted> |

FL Comments

The TP seems editorial, which can be discussed directly when updating the specs.

### Proposal 8-1

*Adopt the TPs in Proposal 1 and Proposal 2 in R1-2203960 ([6]) for TS 38.214.*

Comments

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| **Company** | **yes** | **NO** | **Additional comments** |
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## TP for capturing RAN1’s agreement on UE Tx TEG reporting (TS 38.214)

**Issue #1-14 in** [**R1-2205097**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2205097.zip)**.**

Submitted Proposals

* ***(Qualcomm,*** [***R1-2204985***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2204985.zip) ***[8]) Proposal 3:*** *Add in the TS 38.214, the following changes:*
  + *The UE may be configured to report, for the SRS resources for positioning that have already been transmitted, subject to UE capability, association information of SRS resource(s) configured by the higher layer parameter SRS-PosResource with UE Tx TEG(s) via higher layer parameter [ueTxTEG].*
  + *If the UE reports a UE Tx TEG ID with a UE Rx-Tx time difference measurement, as defined in clause 5.1.6.5, the UE shall report the association information of already transmitted SRS resources configured by the higher layer parameter SRS-PosResource with the UE Tx TEG ID.*

FL Comments

It seems the RAN1’s agreement is not fully captured into 38.214. Thus, suggest discuss how to capture the agreement in TS 38.214.

### Proposal 8-2

*Add the following TP in TS 38.214:*

* + *The UE may be configured to report, for the SRS resources for positioning that have already been transmitted, subject to UE capability, association information of SRS resource(s) configured by the higher layer parameter SRS-PosResource with UE Tx TEG(s) via higher layer parameter [ueTxTEG].*
  + *If the UE reports a UE Tx TEG ID with a UE Rx-Tx time difference measurement, as defined in clause 5.1.6.5, the UE shall report the association information of already transmitted SRS resources configured by the higher layer parameter SRS-PosResource with the UE Tx TEG ID.*

Comments

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| --- | --- | --- | --- |
| **Company** | **yes** | **NO** | **Additional comments** |
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## TP for capturing RAN1’s agreement on multiple measurement instances

**Issue #1-15 in** [**R1-2205097**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2205097.zip)**.**

Submitted Proposals

* ***(Qualcomm,*** [***R1-2204985***](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2204985.zip) ***[8]) Proposal 6:*** *Add the following sentence in TS 38.214 Section 5.1.6.5*
  + *The UE may be configured, subject to UE capability, to report, for each indicated positioning method in a measurement report, multiple measurement instances associated with the indicated positioning method.*

FL Comments

It seems the RAN1’s agreement is not fully captured into 38.214. Thus, suggest discuss how to capture the agreement in TS 38.214.

### Proposal 8-3

*Add the following TP in Section 5.1.6.5 of TS 38.214:*

* + *The UE may be configured, subject to UE capability, to report, for each indicated positioning method in a measurement report, multiple measurement instances associated with the indicated positioning method.*

Comments

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| --- | --- | --- |
| **Company** | **yes/no** | **Additional comments** |
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# References

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2. [R1-2203436](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203436.zip) Maintenance on enhancements of accuracy improvements for NR positioning CATT
3. [R1-2203515](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203515.zip) Maintenance on accuracy improvements for NR positioning enhancements vivo
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5. [R1-2203864](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203864.zip) Maintenance on accuracy improvement related enhancement Samsung
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11. [R1-2203409](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203409.zip) Draft reply LS on the UE/TRP TEG framework CATT
12. [R1-2204924](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2204924.zip) Discussion on UE/TRP TEG framework Huawei, HiSilicon
13. [R1-2203040](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203040.zip) (R3-222721), "Questions concerning the implementation of RAN1 agreements in NRPPa," RAN3 (Ericsson)
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16. [R1-2203491](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2203491.zip) Draft Reply LS on questions concerning the implementation of RAN1 agreements in NRPPa vivo
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19. [R1-2204929](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2204929.zip) Draft reply LS on Questions concerning the implementation of RAN1 agreements in NRPPa Huawei, HiSilicon