**3GPP TSG RAN WG1 Meeting #107-e R1-2112768**

**e-meeting, November 11th–19th, 2021**

**Title: [Draft] LS on the reporting of the Tx TEG association information**

**Release:** Rel-17

**Work Item:** NR\_pos\_enh-Core

**Source:** Moderator (CATT) [To be RAN1]

**To:** RAN2, RAN4

**Cc:** RAN3

**Contact Person:**

#### Name: Ren Da

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**Send any reply LS to: 3GPP Liaisons Coordinator,** mailto:3GPPLiaison@etsi.org

**Attachments:** None

**1. Overall Description:**

The following agreement was made regarding the UE Tx TEG reporting as an outcome of the discussion of “Accuracy improvements by mitigating UE Rx/Tx and/or gNB Rx/Tx timing delays for NR positioning enhancements” at RAN1#107e.

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| Agreement:*Confirm and modify the working assumption with the following modifications:** *For mitigating UE Tx timing errors for UL TDOA, subject to UE’s capability, support the serving gNB to request a UE to provide the association information of UL SRS resources for positioning with Tx TEGs to the serving gNB if the UE supports multiple UE Tx TEGs for UL TDOA.*
	+ *The serving gNB should forward the association information provided by the UE to the LMF.*
		- *~~FFS: whether to support the serving gNB to forward the association information to the neighboring gNBs~~*
	+ *UE should report its capability of supporting multiple UE Tx TEGs for UL TDOA to serving gNB.*
* *For mitigating UE Tx timing errors for Multi-RTT, subject to UE’s capability, support the LMF to request a UE to provide the association information of UL SRS resources for positioning with Tx TEGs directly to the LMF if the UE supports multiple Tx TEGs for Multi-RTT.*
	+ *~~FFS: whether to support the LMF to forward the association information to the serving and neighboring gNBs~~*
	+ *UE should report its capability of supporting multiple UE Tx TEGs for Multi-RTT directly to the LMF.*
* *Note: For mitigating UE Tx timing errors when both UL-TDOA and Multi-RTT, or UL-TDOA and DL-TDOA are used, the UE should provide the association information of UL SRS resources for positioning with Tx TEGs, subject to UE capability (in the bullets above):*
	+ *to the serving gNB if a request to provide the association information is received from the gNB*
	+ *to the LMF if a request to provide the association information is received from the LMF.*
* *~~FFS: Mitigation of UE Tx timing errors when Multi-RTT, UL-TDOA and/or DL-TDOA are used.~~*
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With the consideration of the signalling efficiency related to the above agreement and possible changes of UE Tx TEG associations in different transmission time occasions of the SRS resources for positioning, the following agreement was also made at RAN1#107e.

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| **Agreement*** *For UL-TDOA, supporting the following for the serving gNB to request a UE to report the Tx TEG association information between UE Tx TEG IDs and SRS resources for positioning, subject to UE capability of supporting UE Tx TEG:*
	+ *Based on a configured periodicity, a UE may report the UE Tx TEG association for the SRS resources for positioning that have already been transmitted during the configured period*
		- *It is up to RAN2 to decide how to indicate the change of the Tx TEG association during the configured period (e.g., using the timestamps)*
		- *It is up to RAN4 to decide when the Tx TEG association is changed*
	+ *The values of the configurable periodicities are up to RAN2*
	+ *Note: Tx TEG association information reporting by single request/response mode is assumed already supported with the previous agreement.*
* *Send an LS to RAN2/RAN4 (cc: RAN3)*
	+ *to RAN2, including the following RAN1’s agreement related to the reporting of the UE Tx TEG, for RAN2 to work on the signaling*
	+ *to RAN4 for checking the agreement and work on how to decide when the Tx TEG association is changed*
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RAN1 would like to ask RAN2 to consider the above agreements in ongoing work and implement relevant signalling support.

RAN1 would like to ask RAN4 to check the above agreements to see there is any concern and work on how to decide when the UE Tx TEG association is changed.

**2. Actions:**

**To RAN2:**

**ACTION:** RAN1 respectfully asks RAN2 to enable signaling to support the above agreements for NR positioning enhancements.

**ACTION:** RAN1 respectfully asks RAN4 to check the above agreements to see there is any concern and work on how to decide when the UE Tx TEG association is changed.

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

TSG-RAN WG1 Meeting #107-bis-e January 17 – 25, 2022 Electronic Meeting

TSG-RAN WG1 Meeting #108-e February 21 – March 03, 2022 Electronic Meeting