**3GPP TSG-RAN WG2 Meeting #121bisR2-2304342**

**Electronic April 2023**

**Title:** **DRAFT** LS on 2TA for multi-DCI multi-TRP

**Response to: -**

**Release:** Rel-18

**Work Item:** NR\_MIMO\_evo\_DL\_UL-Core

**Source:** Ericsson (to be replaced with 3GPP TSG-RAN WG2)

**To:** 3GPP TSG-RAN WG1

**Contact Person:**

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**Attachments:** None

RAN2 has discussed the 2TA aspects including per TRP UE initiated RACH procedure(CBRA), configuring more than one TAG per serving cell based on RAN1 input and RAN2 contributions.

Whether CBRA is to be supported for Initial TA acquisition per TAG/TRP, RAN2 agreed the following:

* From RAN2 perspective, per TRP UE-initiated RACH procedure is not supported.

As for configuring more than one TAG per serving cell aspects related to grouping and related operation for 2TAs, RAN2 has some questions need to check with RAN1.

1. **TAG groups**

There is general understanding in RAN2 that the functionality RAN1 is designing involves two time-alignment timers to be applicable per one serving cell (through two TAGs configured for a serving cell). One timer is associated to UL towards one TRP and the other towards the other TRP. Out of the below options, RAN1 concluded to support two TAGs within serving cell:

**Agreement**

For multi-DCI based multi-TRP operation, down-select one of the two alternatives:

* Alt 1: configure two TAGs within a serving cell
* Alt 2: consider two TAs within one TAG within a serving cell

RAN2 discussed how the cells/TRPs configured for the UE, are to be grouped if UE is configured with two TA groups per serving cell.

**Question 1 on grouping**

Currently, NR does not impose any requirements in configuring different serving cells to different TAGs in carrier aggregation scenario but this is left to NW implementation.

**Q1a:** If serving cells are configured with two TRPs and if there is one TAG configured which contains one of theTRPs of the serving cells, is there is any restriction to configure TA group for the other TRPs? For example, is it allowed to configure the groups such that there is TA group of cells where some cells have both timer expired and some cells with second timer still running.

**Q1b:** Is it possible that one TA group contains some serving cells which are associated to only one TA group, and some cells/TRPs which are associated to two TA groups?

NR currently supports up to 4 TAGs per cell group and RAN2 has not identified a need to increase the number for the mTRP case.

**Q1c:** Can RAN1 confirm up to 4 TAGs is enough or do you see a need to increase the number of TAGs?

**Question 2 on operation**

**Q2:** When the time-alignment timer associated with one of the TRPs of a serving cell expires, is UL towards that TRP only impacted but UL towards the another TRP can remain in operation (ie., the time-alignment timer towards the another TRP remains in operation)?

**3. Actions:**

**To RAN1 group:**

**ACTION:** RAN2 respectfully asks RAN1 to take the agreements into consideration in the future work and provide responses to above questions.

**4. Date of Next TSG-RAN WG2 Meetings:**

TSG-RAN WG2 Meeting #122 May 2023 Incheon

TSG-RAN WG2 Meeting #123 August 2023 Toulouse