**3GPP TSG-RAN WG2 Meeting #121bisR2-2304341**

**Electronic April 2023**

**Title:** **DRAFT** LS on 2TA operation for Rel-18 MIMO

**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 and configuring additional RACH configs 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 the other aspects e.g., the possible grouping, related operations for 2TAs, RAN2 has some questions need to check with RAN1.

1. **TAG groups**

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 TAG groups per serving cell.

Example 1

Group 1: A1, B1, C1, D1

Group2: A2, B2, C2, D2

Group 3: E1, F1, G1, H1

Group 4: E2, F2, G2, H2

Example 2

Group 1: A1, B1, C1, D1

Group2: A2

Group3: B2

Group4: C2

**Question 1 on grouping**

**Q1a:** For the TAG groups configured for the UE, are there configuration limitations involved? For example, whether one cell can or cannot belong to more than one group.

**Q1b:** Does RAN1 see a need to increase the number of TAGs?

**Question 2 on operation**

**Q2a:** When the timer associated with one of the TRPs of a serving cell expires, is it according to RAN1 view that UL towards that TRP (e.g. SRS resources sets associated to that TRP) are impacted but UL towards the another TRP (e.g. SRS resources sets associated to that TRP) can remain in operation?

 **Q2a:**  Is there a need from RAN1’s perspective to have two PTAGs in case of two TAGs belongs to a PCell?

1. **Additional RACH configs:**

RAN2 discussed the additional RACH configs for the inter-cell multi-DCI multi-TRP option where the serving cell is configured with additionalPCIs, one of these PCIs is at the time active for the second TRP while the first TRP is associated to the original PCI of the serving cell, and the first and the second TRP are associated with different TAGs.

RAN2 would like to understand better the configuration details. Currently, the serving cells of one TAG share one common RACH configuration, and that configuration is applied in the UL BWP in which the RACH is performed. In Rel-17, RAN1 introduced the “inter-cell” mTRP operation where additional PCI may be associated to the second TRP within one serving cell configuration.

 RAN2 understanding of the RAN1 agreement is that each of the additional PCIs within one serving cell, may be configured with its own RACH configuration.

**Question 3 on RACH**

**Q3a:** Is there a difference in the RACH configuration between the additional PCIs configured for the UE?

**Q3b:** Is there a difference in the RACH configuration between the original serving cell (TRP/PCI) and the additional PCIs configured for the UE?

**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