**3GPP TSG-RAN WG2 Meeting #115 Electronic DRAFT R2-210xxxx**

**Elbonia, 16 – 27 August 2021**

**Title: [DRAFT]** LS on inter-cell beam management in Rel-17

**Response to:** -

**Release:** Release 17

**Work Item:** NR\_feMIMO-Core

**Source:** Nokia [RAN2]

**To:** RAN1

**Cc:** RAN4

**Contact Person:**

#### Name: Tero Henttonen

E-mail Address: tero.henttonen@nokia.com

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

**Attachments:** -

**1. Overall Description:**

RAN2 has continued the discussion on inter-cell beam management in the context of the Rel-17 FeMIMO WI, would like to request some clarifications on various areas to better understand the required RAN2 work.

First, RAN2 would like to note that as the term "non-serving cell" has been problematic, the following questions use "**serving cell TRP**" to denote the "legacy" TRP and "**TRP with different PCI**" to denote the "non-serving cell" configured for the UE.

Consequently, RAN2 would request answers to the following questions:

* **1) Basic Tx/Rx operation with multi-TRP:** The WI states that UE always only receive TxRx from a single cell. Does this mean that when UE is configured to use both *serving cell TRP* and *TRP with different PCI*, does UE always receive and transmit to the same TRP? in particular:
  + a) **UL and DL:** Are UL and DL always processed at the same TRP or can UE use e.g. *serving cell TRP* for UL transmissions and *TRP with different PCI* for DL reception?
  + b) **System information:** If UE is using *TRP with different PCI* for DL, is UE still required to receive system information from *serving cell TRP*?
  + c) Can UE always receive CD-SSB from *serving cell TRP* (e.g. for RRM measurement purposes)?
* **2) MAC aspects:** RAN2 would like to understand the impacts to MAC operation, in particular:
  + a) **Timing advance:** Is it assumed that TA is the same for both *serving cell TRP* and *TRP with different PCI*, or does UE maintain different TAs for each?
  + b) **RACH:** Are there any impacts to RACH operation when inter-cell multi-TRP is configured? That is, is it necessary to perform RACH toward TRP with different PCI e.g. for TA, BFR, etc?
  + c) **PHR:** When UE is configured for *TRP with different PCI* for a cell with UL, is there an impact to PHR calculation?
* **3) HARQ operation:** How does the HARQ operation work with the multi-beam operation? In particular:
  + a) **HARQ entity:** Is there a single HARQ entity serving both the *serving cell TRP* and *TRP with different PCI*?
  + b) **HARQ retransmissions:** Can retransmission occur from different TRP than initial transmission? E.g. can initial transmission be done from *serving cell TRP* and retransmission from *TRP with different PCI*?
* **4) Unified TCI aspects:** How are the unified TCI states used in the inter-cell beam management?
* **5) Inter-cell beam management (Objective 1 in the WID) and inter-cell multi-TRP (Objective 2 in the WID):** Are there any differences to any of previous questions if multi-TRP is configured or if a single TRP is configured with inter-cell beam management (where applicable)?

RAN2 would request RAN1 to provide feedback on at least the above questions and indicate information on any other aspects that may impact RAN2 work.

**2. Actions:**

**To RAN4 group.**

**ACTION:** RAN2 respectfully asks RAN1 to provide answers to the above questions and indicate information on any other aspects that may impact RAN2 work**.**

**3. Date of Next TSG-RAN WG2 Meeting:**

3GPP RAN2#116-e from 2021-11-01 to 2021-11-12 Electronic Meeting