**3GPP TSG RAN WG1 108-e R1-2202884**

eMeeting, February 21st – March 3rd, 2022

**Title:** LS on Rel-17 NR eIAB for TS 38.300

**Response to: -**

**Release:** Rel-17

**Work Item:** NR\_IAB\_enh

**Source:** RAN WG1

**To:** RAN WG2

**CC:**

**Contact Person:**

#### Name: Luca Blessent

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**1. Overall Description:**

As part of NR eIAB WI, the following TPs to 38.300 have been endorsed from a RAN1 perspective.

----------------------------------------- start TP1 for 38.300 v.16.8.0 -------------------------------------------

**<**Unchanged text is omitted>

#### 5.3.5.3          Uplink timing control

The gNB determines the desired Timing Advance setting and provides that to the UE/IAB-MT. The UE/IAB-MT uses the provided TA to determine its uplink transmit timing relative to the UE/IAB-MT's observed downlink receive timing.

An IAB-node may support additional modes for uplink timing:

* The IAB-MT uses the provided TA plus a provided an additional offset to determine its uplink transmission timing, to facilitate parent node’s IAB-MT Rx / IAB-DU Rx multiplexing.
* The IAB-MT aligns its uplink transmission timing to the IAB-DU downlink transmission timing, to facilitate IAB-MT Tx / IAB-DU Tx multiplexing.

The IAB-node uplink timing mode is indicated by the parent node via MAC-CE.

**<**Unchanged text is omitted>

--------------------------------------------------- end TP1 -----------------------------------------------

----------------------------------------- start TP2 for 38.300 v.16.8.0 -------------------------------------------

**<**Unchanged text is omitted>

## 10.9   IAB Resource Configuration

~~In general,~~ If the IAB-DU and the IAB-MT of an IAB-node are subject to a half-duplex constraint, ~~as~~ correct transmission/reception by one cannot be guaranteed during transmission/reception by the other and vice versa, e.g., when collocated and operating in the same frequency. If an IAB-node suppors enhanced frequency or spatial multiplexing capabilities, additional multiplexing modes can be supported, i.e. IAB-MT Rx / IAB-DU Rx, IAB-MT Tx / IAB-DU Tx, IAB-MT Rx / IAB-DU Tx, IAB-MT Tx / IAB-DU Rx. An IAB-node can report its duplexing constraints between the IAB-MT and the IAB-DU via F1AP. An IAB-node can indicate via F1AP whether or not FDM is required for an enhanced multiplexing operation.

The scheduler on an IAB-DU or IAB-donor-DU complies with the gNB-DU resource configuration received via F1AP, which defines the usage of scheduling resources to account for the aforementioned duplexing constraint.

The resource configuration assigns an attribute of hard, soft or unavailable to each symbol of each DU cell. Transmission/reception can occur in symbols configured as hard, whereas scheduling cannot occur, except for some special cases, for symbols configured as unavailable. For symbols configured as soft, scheduling can occur conditionally on an explicit indication of availability by the parent node via DCI format 2\_5, or on an implicit determination of availability by the IAB-node. The implicit determination of availability is determined by the IAB-node depending on whether or not the operation of the IAB-DU would have an impact on the collocated IAB-MT.

The resource configuration can be shared among neighbouring IAB-nodes and IAB-donors to facilitate interference management, dual connectivity, and enhanced multiplexing.

To facilitate transitioning from IAB-MT to IAB-DU operation and vice versa, guard symbols can be used to overcome potentially misaligned symbol boundaries between the IAB-MT domain and the IAB-DU domain (e.g. IAB-MT Rx boundaries are not aligned with the IAB-DU Tx boundaries). Specifically, an IAB-node can indicate to a parent node a number of desired guard symbols, while the parent node can indicate to the IAB-node the number of actually provided guard symbols for specific transitions.

An IAB-node supporting enhanced multiplexing capabilities, i.e. IAB-MT Rx / IAB-DU Rx, IAB-MT Tx / IAB-DU Tx, IAB-MT Rx / IAB-DU Tx, IAB-MT Tx / IAB-DU Rx, can provide via MAC-CE to a parent node information to facilitate scheduling for enhanced multiplexing operation by the IAB-node, specifically:

* recommended IAB-MT’s Tx/Rx beams,
* desired IAB-MT Tx PSD range,
* desired parent node’s IAB-DU Tx power adjustment,
* required IAB-MT’s uplink transmission timing mode.

Correspondingly, the parent node can provide via MAC-CE information to the IAB-node to facilitate enhanced multiplexing at the IAB-node and/or at the parent node:

* restricted IAB-DU Tx beams,
* actual parent node’s IAB-DU Tx power adjustment,
* IAB-MT’s uplink transmission timing mode.

**<**Unchanged text is omitted>

--------------------------------------------------- end TP2 -----------------------------------------------

RAN1 requests RAN2 to take the above into account in their future work.

**2. Actions:**

**To RAN2**

**ACTION:** RAN1 requests RAN2 to kindly take the above into account in their future work.

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

RAN1#109-e May 16-27, 2022 eMeeting

RAN1#110-e August 22-26, 2022 Toulouse, FR