**3GPP TSG-RAN WG2 Meeting #112e DRAFT R2-2010840**

**eMeeting, 02 – 13 November 2020**

**Title: [DRAFT]** LS on physical layer aspects of small data transmission

**Response to:** -

**Release:** Release 17

**Work Item:** NR\_SmallData\_INACTIVE-Core

**Source:** ZTE [TSG RAN WG2]

**To:** TSG RAN WG1

**Contact Person:**

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**1. Overall Description:**

RAN2 has started work on the NR Small Data Enhancements WI (RP-201305). The objectives of this WI include solutions for RACH based small data transmission (RA-SDT) and Configured Grant based small data transmissions (CG-SDT). RAN2 would like to highlight the following agreements reached so far and kindly request RAN1’s input on the specific aspects mentioned below.

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| Some relevant agreements:  For RA-SDT   1. As a baseline, the RACH resource i.e. (RO+preamble combination) is different between SDT and non-SDT  * Note: the above proposal means that   + If ROs for SDT and non SDT are different, preamble partitioning between SDT and non SDT is not needed.   + If ROs for SDT and non SDT are same, preamble partitioning is needed * FFS if common configuration should be allowed  1. If the RACH resource i.e. (RO+preamble combination) is different between SDT and non-SDT then there is no further need for any differentiation between MSG2/MSGB for SDT vs non-SDT 2. For RACH based solutions, upon successful completion of contention resolution, the UE shall monitor the C-RNTI.   For CG-SDT   1. The configuration of configured grant resource for UE uplink small data transfer is contained in the RRCRelease message. FFS if other dedicated messages can configure CG in INACTIVE CG. Configuration is only type 1 CG with no contention resolution procedure for CG. 2. The configuration of configured grant resource can include one type 1 CG configuration. FFS if multiple configured CGs are allowed 3. A new TA timer for TA maintenance specified for configured grant based small data transfer in RRC\_INACTIVE should be introduced. FFS on the procedure, the validity of TA, and how to handle expiration of TA timer. The TA timer is configured together with the CG configuration in the RRCRelease message. 4. The configuration of configured grant resource for UE small data transmission is valid only in the same serving cell. FFS for other CG validity criteria (e.g. timer, UL/SUL aspect, etc) 5. The UE can use configured grant based small data transfer if at least the following criteria is fulfilled (1) user data is smaller than the data volume threshold; (2) configured grant resource is configured and valid; (3) UE has valid TA. FFS for the candidate beam criteria. 6. From RAN2 point of view: An association between CG resources and SSBs is required for CG-based SDT. FFS up to RAN1 how the association is configured or provided to the UE. Send an LS to RAN1 to start the discussion on how the association can be made. Mention that one option RAN2 considered was explicit configuration with RRC Release message 7. A SS-RSRP threshold is configured for SSB selection. UE selects one of the SSB with SS-RSRP above the threshold and selects the associated CG resource for UL data transmission.   For RA-SDT and CG-SDT   1. When UE is in RRC\_INACTIVE, it should be possible to send multiple UL and DL packets as part of the same SDT mechanism and without transitioning to RRC\_CONNECTED on dedicated grant. |

**For RA-SDT:**

As noted above, RAN2 has agreed to monitor the C-RNTI after successful completion of the contention resolution during RACH procedure. RAN2 kindly requests RAN1 to provide input on whether UE needs to monitor the C-RNTI in both common and dedicated search space/CORESET n the above case.

**For CG-SDT:**

As noted above, RAN2 has agreed that an association between type 1 CG resources and SSBs is required for CG-based SDT considering the multiple-beam operation. RAN2 also considered the option to configure such association explicitly in the RRC Release message. RAN2 kindly requests RAN1 to discuss how the association can be made and provide input on configuration of such association between the type 1 CG resources and the SSBs.

**2. Actions:**

**To RAN1 group.**

**ACTION:** RAN2 kindly requests RAN1 to take the above into account and provide input for:

* Configuration of the coreset and search space for monitoring the C-RNTI after successful completion of contention resolution during RACH procedure of RA-SDT.
* Configuration of association between the type 1 CG resources for CG-SDT and SSBs

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

3GPP RAN2#113-e 25 Jan – 05 Feb 2021 Electronic Meeting