**3GPP TSG RAN WG2#121-bis-e R2-230xxxx**

**Online, 17th – 26th April, 2023**

Title: DRAFT LS to RAN1 on multicast reception in RRC\_INACTIVE

Response to: -

Release: Release 18

**Work Item: NR** **NR\_MBS\_enh-Core**

Source: Apple (to be RAN2)

To: RAN1

Cc: -

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Attachments: None

**1. Overall Description:**

In Rel-18 MBS enhancement, RAN2 has discussed multicast reception in RRC\_INACTIVE and made the following agreements in RAN2#121bis-e:

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| RAN2#121bis-e agreements:   1. CFR for multicast reception in RRC\_INACTIVE    * From the location&bandwidth and SCS configuration perspective,  follow R17 MBS broadcast CFR principle (i.e. case A,C,E) to provide multicast CFR configuration in RRC\_INACTIVE.    * Multicast CFR in RRC\_INACTIVE and broadcast CFR can be configured differently. FFS whether we need to restrict that one CFR is completely contained within the other in this case (we should understand what the issue is otherwise).    * Case B and case D are not supported for multicast CFR in RRC\_INACTIVE;    * Whether multicast CFR in RRC\_CONNECTED and in RRC\_INACTIVE are different is up to NW implementation. FFS whether this causes some issues which need to be addressed.    * The same CFR is used for multicast MCCH and MTCH. It can be revisited if there is any issue found, e.g. for RedCap UEs. 2. HARQ Operation    * HARQ feedback related information in the DCI is not needed or can be ignored for multicast transmission to RRC\_INACTIVE UE.    * The HARQ operation for multicast reception in RRC\_INACTIVE is same as the operation without HARQ feedback in RRC\_CONNECTED state.    * The multicast transmission RRC\_INACTIVE is performed via beam sweeping based on SSB index like broadcast MBS (i.e. beam information is not need in DCI.    * For MTCH, RAN2 assumes to reuse the same DCI format of R17 multicast (i.e. DCI format 4-1/4-2) for dynamic scheduling of multicast in RRC INACTIVE. RAN2 assumes for MCCH scheduling, DCI format 4-0 is used. We will ask RAN1 to confirm whether it is feasible and whether both 4-1 and 4-2 are needed.    * We will also indicate other relevant agreements to RAN1 (e.g. on beam sweeping etc.) 3. SPS    * On support of multicast SPS in RRC\_INACTIVE, postpone RAN2 discussion to next meeting. 4. DRX    * On DRX operation for multicast in RRC\_INACTIVE, take the multicast DRX as baseline. FFS handling on PTM related HARQ RTT Timer and DRX Retransmission Timer. 5. Others    * Including the following two issues in LS to RAN1:      + Issue 1: RAN1 to confirm RAN2 understanding that PDSCH aggregation is supported for multicast MTCH in RRC\_INACTIVE (as that is supported in Rel-17 multicast MTCH in RRC\_CONNECTED as well as broadcast MTCH).      + Issue 2: RAN1 to check the feasibility of following Rel-17 CSS design for multicast MTCH and MCCH: 1) reusing the same CSS for multicast MTCH in RRC\_INACTIVE (same as multicast MTCH in RRC\_CONNECTED); 2) separate CSS for MCCH and MTCH.    * UE in RRC CONNECTED state is not required to read multicast MCCH to be able to receive multicast MBS service i.e. the UE receives the PTM configuration via dedicated signalling. This can be revisited if issues with service continuity are identified. |

RAN2 has identified some issues which are relevant to RAN1 and would like to check RAN1 views on the following aspects for multicast reception in RRC\_INACTIVE:

* **Issue 1:** RAN1 to confirm whether the following RAN2 assumption is feasible. If feasible, whether both DCI format 4-1 and 4-2 are needed? RAN1
  + *For MTCH, RAN2 assumes to reuse the same DCI format of R17 multicast (i.e. DCI format 4-1/4-2) for dynamic scheduling of multicast in RRC INACTIVE. RAN2 assumes for MCCH scheduling, DCI format 4-0 is used.*
* **Issue 2:** RAN1 to confirm whether the following RAN2 understanding is correct or not.
  + *RAN2 understanding that PDSCH aggregation is supported for multicast MTCH in RRC\_INACTIVE (as that is supported in Rel-17 multicast MTCH in RRC\_CONNECTED as well as broadcast MTCH).*
* **Issue 3:** RAN1 to check the feasibility of following Rel-17 CSS design for multicast MTCH and MCCH in RRC\_INACTIVE:
  + *1) reusing the same CSS for multicast MTCH in RRC\_INACTIVE (same as multicast MTCH in RRC\_CONNECTED);*
  + *2) separate CSS for MCCH and MTCH.*

**2. Actions:**

**To** **RAN1**

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

**3. Date of Next RAN2 Meetings:**

TSG-RAN WG2#122 2023-05-22 to 2023-05-26 Incheon, KR

TSG-RAN WG2#123 2023-08-21 to 2023-08-25 Toulouse, FR