**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\_MBS\_enh-Core**

Source: Apple (to be RAN2)

To: RAN1

Cc: -

**Contact Person:**

Name: Fangli XU

E-mail Address: fangli\_xu@apple.com

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

Attachments: None

**1. Overall Description:**

For Rel-18 MBS enhancement, RAN2 has discussed multicast reception in RRC\_INACTIVE and made several agreements (chair notes can be found in R2-2304207).

RAN2 would like to inform RAN1 of the following which may be relevant to RAN1:

|  |
| --- |
| 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, case C and case E are supported) to provide multicast CFR configuration in RRC\_INACTIVE.
	* Case B and case D are not supported for multicast CFR 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).
	* 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 multicast MTCHs in RRC\_INACTIVE state. 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.
3. Beam sweeping
	* The multicast transmission in RRC\_INACTIVE is performed via beam sweeping based on SSB index like broadcast MBS (i.e. beam information is not need in DCI).
4. DCI format
	* 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 multicast 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.
 |

Additionally, RAN2 has made some assumptions on aspects relevant to RAN1 and would like to check RAN1 views on the following for multicast reception in RRC\_INACTIVE:

* **Question 1:** RAN1 to confirm whether the following RAN2 assumption is feasible. If feasible, whether both DCI format 4-1 and DCI format 4-2 are needed? If needed, how to deal with the HARQ feedback related fields in DCI format 4-1/4-2?
	+ *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 multicast MCCH scheduling, DCI format 4-0 is used.*
* **Question 2:** RAN1 to confirm whether the following RAN2 understanding is correct.
	+ *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).*
* **Question 3:** RAN1 to check the feasibility of reusing Rel-17 CSS for multicast MTCH in RRC\_INACTIVE state and multicast MCCH:
	+ *3.1) reusing the same CSS for multicast MTCH in RRC\_INACTIVE (same as multicast MTCH in RRC\_CONNECTED) and multicast MCCH;*
	+ *3.2) separate CSS for multicast MCCH and multicast MTCH in RRC\_INACTIVE.*
* **Question 4:** RAN1 to check the feasibility of SPS scheduling for multicast sessions in RRC\_INACTIVE state. If feasible how to use SPS activation/deactivation via DCI format on PDCCH and multicast MCCH from RAN1 point of view?

**2. Actions:**

**To** **RAN1 group**

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

**3. Dates 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