**3GPP TSG RAN meeting #98e RP-22xxxx**

**Electronic Meeting, December 12-16, 2022**

## Status Report to TSG

**Agenda item:** 9.3.2.8

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **WI / SI Name** | Enhancements of NR Multicast and Broadcast Services | | | | |
| included in this status report | Study Item:  No | Core part:  Yes | Performance part:  No | | Testing part:  No |
| **Acronym** | NR\_MBS\_enh | | | | |
| **Unique ID** | 940099 | | | | |
| **TSG Tdoc of latest approved WI/SI description (if any)** | RP-221458 | | | | |
| **Target Completion Date**  **(indicate if changed)** | Study Item: | Core part: 12/2023 | Performance part: | Testing part: | |
| **Overall Completion level** | Study Item: | Core part:  30% | Performance Part: | Testing part: | |

Note: Overall completion level percentage numbers should use one of the colors below:

* xx%: Normal progress, no RAN plenary action needed
* xx%: Progress behind schedule, may need RAN plenary intervention. If so, SR should clearly define requested action
* xx%: Progress critically behind, RAN plenary shall intervene. SR should define requested action

**Source:**

|  |  |  |
| --- | --- | --- |
| **Leading WG** | | RAN2 |
| **Rapporteur** | **Name** | Erlin Zeng |
| **Company** | CATT |
| **Email** | erlin.zeng@catt.cn |

## 1 Work plan related evaluation

|  |  |
| --- | --- |
| **Do you want to modify the time budget for this WI/SI compared to what was endorsed at the last RAN meeting?** | No |

*If you answered No: Then please remove the Excel file from the zip file of this status report.*

*If you answered Yes: Then please fill out the attached Excel template to request a modification of the time budgets for your WI /SI. The Excel table has to be filled out for all affected RAN WGs and up to the target date of the WI/SI. The basis are the endorsed time budgets of the last RAN meeting. Please highlight all changes of the values.  
 One time unit (TU) corresponds to ~ 2 hours in the meeting.  
 If this status report covers a WI with Core and Performance part, then please have one line for each in the attached Excel table.  
 Note: If no Excel table is attached, then this means no time budget change.*

**Additional explanations/motivations for the time budget changes in the attached Excel table:**

## 2. Detailed progress in RAN WGs since last TSG meeting (for all involved WGs)

NOTE: Agreements and Open issues impacted cross-TSG aspects shall be explicitly highlighted

## 2.1 RAN1

#### 2.1.1 Agreements

#### 2.1.2 Remaining Open issues

## 2.2 RAN2

#### 2.2.1 Agreements in RAN2#119-bis-e

The following reply LS to SA2 and RAN3 is approved.

R2-2210882 Reply LS on FS\_5MBS\_Ph2 progress RAN2 LS out Rel-18 NR\_MBS\_enh-Core, FS\_5MBS\_Ph2 To:SA2, RAN3 Cc:RAN1

**Multicast reception in RRC\_INACTIVE**

General descriptions:

The following general description is taken as baseline for PTM configuration delivery Option 1:

(1-a) PTM configuration(s) (i.e., configurations used for multicast reception in RRC\_INACTIVE) of one or more multicast sessions for at least one cell are provided via dedicated RRC signaling to a UE.

(1-b) The RRC message for this includes RRCReconfiguration and/or RRCRelease and/or RRCResume (details FFS)

(1-c) UE stores the received configurations while it is in RRC\_INACTIVE, and if there is a need to update some or all the configurations, the UE is notified of such changes and may trigger RRC connection resume to obtain the updated configurations. In case of mobility in RRC\_INACTIVE, the UE triggers RRC connection resume if the configuration of the session is not available for the new cell.

The following general description is taken as baseline for PTM configuration delivery Option 2:

(2-a) PTM configurations (i.e., configurations used for multicast reception in RRC\_INACTIVE) are provided via an MCCH-like channel (same or different as used for MBS broadcast), and information regarding MCCH scheduling is provided via SIB, FFS dedicated signalling

(2-b) UE can receive such configurations when it is in RRC\_INACTIVE, FFS whether it is allowed/needed to also receive when UE is in RRC\_CONNECTED

(2-c) If there is a need to update some or all the received configurations, UE does not need to resume RRC connection but is notified of such changes (e.g. via MCCH DCI) and obtains the updated configurations via MCCH.

Other agreements:

Dedicated RRC signalling (i.e. RRC release message with suspendConfig) is used for switching a multicast receiving UE from RRC\_CONNECTED to RRC\_INACTIVE and continue multicast reception (details FFS).

For both option 1 and option 2, as a baseline, group paging can be used to switch UEs receiving multicast from RRC\_INACTIVE to RRC\_CONNECTED, and UEs continue the multicast reception in CONNECTED. FFS if there is any potential issue if Rel-17 group paging is reused. FFS if there are other cases when UE triggers resume. FFS if MCCH can also be used in case of option 2.

FFS whether to introduce PTM configuration applicable area, i.e., the mechanism that the PTM configurations, once acquired by a UE, may apply to a certain area (i.e., a set of cells instead of a single cell).

Rel-18 UE in INACTIVE can be informed when the session is activated (Details FFS).

As a baseline, group paging can be used to inform Rel-18 UE(s) about the session activation (Details FFS, e.g., UE behavior when receiving such group notification).

If a UE is in RRC\_INACTIVE and is configured to receive a multicast session in RRC\_INACTIVE, the UE may be notified when the multicast session is deactivated. FFS how (e.g., informed via group paging, MCCH, or other ways).

Rel-17 mechanism (NAS-based indication) is applicable for multicast session release. FFS if any enhancement is needed.

FFS how UE determines whether it can receive the multicast session in RRC\_INACTIVE or not when the session is activated, taking into account the following solutions (can further update the descriptions if needed, and several solutions may be needed, some solutions may apply only for certain configuration options)

1. When the multicast session is activated, UE can receive the multicast session in RRC\_INACTIVE if the PTM configuration used in RRC\_INACTIVE for the session is available to the UE and the UE has joined the session already (e.g., configuration provided to UE via dedicated RRC signaling or via MCCH), otherwise it goes back to RRC\_CONNECTED to receive the multicast session.

2. When the multicast session is activated, UE is indicated by group paging whether it can receive the multicast session in RRC\_INACTIVE or not (detailed signaling FFS).

3. UE is configured "whether it can receive the multicast session in RRC\_INACTIVE" by dedicated signaling before UE is released. When the multicast session is activated, UE stays in RRC\_INACTIVE or resumes RRC connection accordingly (detailed signaling FFS).

If option 1 is supported for PTM configuration

As a baseline, group paging may be used to inform the UE when network changes the PTM configurations, and UE upon reception triggers RRC connection resume procedure to obtain the updated configurations (details of group paging can be FFS).

FFS whether and how to solve the issue in signalling/system load when a large number of UEs in the cell need PTM configuration update.

FFS if there is an issue that a UE can obtain all the PTM configurations for a multicast service via Option 2 without/before joining the multicast session on the condition that security is enabled by service layer. And if yes FFS how to solve the issue (e.g., dedicated configuration + MCCH).

**Shared processing for MBS broadcast and Unicast reception**

For shared processing we adopt the following as a baseline:

1) new IE is added in system information to control whether MBSInterestIndication for shared processing can be sent or not;

2) MBSInterestIndication message content and related procedure is updated for shared processing.

New IE to control whether MBSInterestIndication for shared processing can be sent or not is added to SIB1.

In MBSInterestIndication, for a broadcast service that the UE is receiving or is interested to receive, at least the following information can be signalled: broadcast frequency, subcarrier spacing, and bandwidth. FFS details/exact parameters and other information. FFS in which scenarios the UE reports this information (e.g. intra-PLMN case, inter-PLMN case)

FFS whether UE capability is needed to enable shared processing.

#### 2.2.2 Agreements in RAN2#120

**Multicast reception in RRC\_INACTIVE**

We will have a mixed approach and we start with the following:

* + 1. When NW configures UE to continue the multicast reception in INACTIVE state, NW provides the PTM configuration for the activated multicast session via the RRC dedicated signalling, at least for the serving cell (FFS other cases).
    2. MCCH is used in case there is a need to indicate a PTM configuration in case there is a need for change in PTM config or during mobility beyond serving cell / gNB. FFS session status change and other indications.
    3. We assume that the UE can only receive multicast service after it joined the session.
    4. FFS whether MCCH configuration is initially provided to the UE via dedicated signalling.

**RAN sharing scenarios**

The following reply LS is approved.

R2-2213109 Reply LS on resource efficiency for MBS reception in RAN sharing scenario RAN2 LS out Rel-18 NR\_MBS\_enh-Core To:RAN3 Cc:SA2

#### 2.2.3 Remaining Open issues

* Specify support of multicast reception by UEs in RRC\_INACTIVE state
  + PTM configuration for UEs receiving multicast in RRC\_INACTIVE state
  + Study the impact of mobility and state transition for UEs receiving multicast in RRC\_INACTIVE. (Seamless/lossless mobility is not required)
* Specify Uu signalling enhancements to allow a UE to use shared processing for MBS broadcast and unicast reception, i.e., ‎including UE capability and related assistance information reporting regarding simultaneous unicast reception in RRC\_CONNECTED and MBS broadcast reception from the same or different operators

## 2.3 RAN3

#### 2.3.1 Agreements in RAN3#117-bis-e

**General**

* Reply LS to SA2 on FS\_5MBS\_Ph2 progress was approved which captured RAN3 agreements

**About RAN Sharing**

* + - RAN3 believes that Solution(s) which assume MOCN RAN nodes can identify the same MBS service based on the information provided by 5GC should be supported.
    - The following principles should be considered when discussing solutions on which information should be provided from 5GC:
      * The solution provided by RAN3 for RAN sharing should not have impact on Rel-17 UE and Rel-17 gNB.
      * The identity providing a reference to the same MBS service should not depend on the momentarily participating operators considering of the possibility for sharing operators leaving or entering the common ongoing session from time to time, that’s to say the solution should be robust to cover the cases that the shared PLMNs start and stop the MBS session at the same time and start and stop the MBS session at the different time.
* It could not be assumed that MB-SMF/AF/MBSF is aware which NG-RAN node or which cell within a NG-RAN node is shared since currently NG-RAN node only inform AMF of the supported PLMN and no coordination with MB-SMF/AF/MBSF.
* RAN3 think that a solution based on information received from 5GC is desired.
* Solutions 2,7,24 and 29 can work, while solutions 2, 7 with majority support in RAN3.
* Solution 24 brings configuration efforts which may have flexibility and scalability issue in case MBS services are dynamically added or removed.

**About Support for RRC Inactive state**

* The gNB decides whether a UE is configured to receive multicast data in RRC\_INACTIVE. The gNB may take at least the following information into account based: 5QI, PER, ARP, and expected UE Activity Behaviour, information locally available at the gNB and other.
* The QoS requirements apply to the provision of the multicast session, independently from the strategy a gNB applies to achieve their fulfillment.
* NG-RAN signaling supports service continuity for UEs receiving multicast session data in RRC\_INACTIVE, i.e., a UE is able to continue multicast reception without RRC state transitioning after cell reselection in RRC\_INACTIVE state if the configuration of the new cell is available for the UE. FFS impacts to network interface.
* During an active multicast session, the gNB-DU shall keep the PTM transmission when delivering respective multicast data to RRC\_INACTIVE UEs.
* Detailed F1AP design is pending on RAN2 decision for PTM configuration delivery method and further RAN3 discussions.

#### 2.3.2 Agreements in RAN3#118

**General**

* LS to SA2 to clarify that provision of join/leave MBS session information depends on the discussion in groups out of RAN3.

**About RAN Sharing**

* It is up to the NG-RAN node implementation on how to handle different QoS parameters for the same service from different PLMNs in case different QoS parameters for the same service are received.
* Wait for feedback from SA2 on solution down-selection.
* For local MBS service, cell granularity shared area decision according to overlapped area.
* For location dependent MBS service, the NG-RAN node should associate the relevant shared area corresponding to area session ID
* The gNB-CU provides the MBS RAN Sharing efficiency Information received from CN (if received) to the gNB-DU in F1AP: BROADCAST CONTEXT SETUP REQUEST message.
* "MBS RAN sharing efficiency information" == "information enabling the gNB to identify the MBS sessions among which resource efficiency for MBS reception in RAN sharing scenarios can be applied"
* In case of RAN Sharing with multiple cell-ID broadcast, each logical gNB-DU will receive within the F1AP: BROADCAST CONTEXT SETUP REQUEST message the MBS RAN Sharing efficiency Information received from CN (if received).

**About Support for RRC Inactive state**

* No agreement is reached

#### 2.3.3 Remaining Open issues

* Specify support of multicast reception by UEs in RRC\_INACTIVE state [RAN2, RAN3]
  + Study the impact of mobility and state transition for UEs receiving multicast in RRC\_INACTIVE. (Seamless/lossless mobility is not required) [RAN2, RAN3]
* Study and if necessary, specify enhancements to improve the resource efficiency for MBS reception in RAN sharing scenarios[RAN3]

## 2.4 RAN4

#### 2.4.1 Agreements

#### 2.4.2 Remaining Open issues

## 2.5 RAN5

#### 2.5.1 Agreements

#### 2.5.2 Remaining Open issues

#### 2.5.3 Remaining Open issues with cross-WG dependencies

## 2.6 RAN6

#### 2.6.1 Agreements

#### 2.6.2 Remaining Open issues

## 3. Detailed progress in SA/CT WGs since last TSG meeting (for all involved WGs)

NOTE: This section only needs to be filled in for WI/SIs where there is a corresponding relevant WI/SI in SA/CT.

## 3.1 SAx/CTs

#### 3.1.1 Agreements with cross-TSG impacts

#### 3.1.2 Remaining Open issues with cross-TSG impacts

NOTE: This section should also flag any critical dependencies that need TSG attention.

## 4. References

NOTE: This can be e.g. a list of all related Tdocs in the affected WGs since last TSG, references to LSs, produced TRs/TSs, the work/study item description or status reports of previous TSGs.

1. R2-2209356 LS on FS\_5MBS\_Ph2 progress (S2-2207470; contact: Huawei) SA2 LS in Rel-18 FS\_5MBS\_Ph2, NR\_MBS\_enh To:RAN2, RAN3 Cc:RAN1
2. R2-2209664 Consideration on replying to the SA2 LS on MBS progress Huawei, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core
3. R2-2210878 Report of [AT119bis-e][604][eMBS] Reply LS to SA2 (Huawei) Huawei, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core
4. R2-2210879 Reply LS on FS\_5MBS\_Ph2 progress RAN2 LS out Rel-18 NR\_MBS\_enh-Core, FS\_5MBS\_Ph2 To:SA2, RAN3 Cc:RAN1
5. R2-2210882 Reply LS on FS\_5MBS\_Ph2 progress RAN2 LS out Rel-18 NR\_MBS\_enh-Core, FS\_5MBS\_Ph2 To:SA2, RAN3 Cc:RAN1
6. R2-2210068 Report of [Post119-e][610][eMBS] PTM configuration for INACTIVE (CATT) CATT discussion Rel-18 NR\_MBS\_enh-Core
7. R2-2210880 Report of [AT119bis-e][605][eMBS] PTM configuration for INACTIVE (CATT) CATT discussion Rel-18 NR\_MBS\_enh-Core
8. R2-2209412 Supporting Multicast Reception in RRC\_INACTIVE vivo discussion Rel-18 NR\_MBS\_enh-Core R2-2207227
9. R2-2209449 Multicast reception by UEs in RRC\_INACTIVE state Qualcomm Incorporated discussion Rel-18 NR\_MBS\_enh-Core
10. R2-2209458 Discussion on multicast reception in RRC\_INACTIVE state TD Tech Ltd, Chengdu TD Tech discussion Rel-18
11. R2-2209513 Discussion on multicast reception in RRC\_INACTIVE state OPPO discussion Rel-18 NR\_MBS\_enh
12. R2-2209514 LS on multicast reception in RRC\_INACTIVE OPPO LS out Rel-18 NR\_MBS\_enh To:RAN1
13. R2-2209533 MBS pre-configuration and PTM configuration in RRC\_INACTIVE state CANON Research Centre France discussion Rel-18
14. R2-2209587 Multicast Reception in RRC\_INACTIVE Samsung discussion Rel-18
15. R2-2209613 Session state change for UEs receiving Multicast in RRC\_INACTIVE state TCL Communication Ltd. discussion
16. R2-2209614 PTM configuration for UEs receiving Multicast in RRC\_INACTIVE state TCL Communication Ltd. discussion
17. R2-2209623 Discussion on multicast reception in RRC\_INACTIVE NEC Europe Ltd discussion Rel-18 NR\_MBS\_enh-Core
18. R2-2209662 Multicast reception for RRC\_INACTIVE Huawei, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core
19. R2-2209744 Multicast reception in RRC\_INACTIVE ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh-Core
20. R2-2209806 Multicast Reception in INACTIVE State Apple discussion Rel-18 NR\_MBS\_enh-Core
21. R2-2209876 Discussion on multicast reception in RRC INACTIVE MediaTek inc. discussion Rel-18 NR\_MBS\_enh-Core
22. R2-2209919 Multicast reception in RRC\_INACTIVE LG Electronics Inc. discussion Rel-18
23. R2-2209946 PTM configuration for multicast reception in RRC\_INACTIVE Lenovo discussion Rel-18
24. R2-2209947 Mobility and state transition for multicast reception in RRC\_INACTIVE Lenovo discussion Rel-18
25. R2-2209988 Discussion on Multicast Reception in RRC\_INACTIVE Spreadtrum Communications discussion Rel-18
26. R2-2210026 Considerations on security issues for multicast MCCH Beijing Xiaomi Software Tech discussion Rel-18
27. R2-2210066 Discussion on multicast reception in RRC\_INACTIVE CATT, CBN discussion Rel-18 NR\_MBS\_enh-Core
28. R2-2210114 Discussion on supporting group scheduling for RRC\_INACTIVE UEs FGI discussion
29. R2-2210132 Multicast reception in RRC\_INACTIVE Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MBS\_enh-Core
30. R2-2210146 Discussion on multicast reception in RRC\_INACTIVE CMCC discussion Rel-18 NR\_MBS\_enh-Core
31. R2-2210384 Multicast reception in RRC\_INACTIVE Intel Corporation discussion Rel-18 NR\_MBS\_enh-Core
32. R2-2210423 PTM Configuration for RRC\_INACTIVE Sharp discussion
33. R2-2210424 Paging message for Multicast session received in RRC\_INACTIVE Sharp discussion
34. R2-2210428 Details of multicast reception in RRC INACTIVE Kyocera discussion Rel-18
35. R2-2210453 Discussion on Mobility during Multicast Reception in RRC Inactive State TCL Communication Ltd. discussion Rel-18
36. R2-2210458 Discussion on RAN based Notification Area for Multicast Mobility in Inactive State TCL Communication Ltd. discussion Rel-18 R2-2207191
37. R2-2210557 Provision of reliable MBS in RRC\_INACTIVE InterDigital, Inc. discussion Rel-18 NR\_MBS\_enh-Core
38. R2-2210715 Service availability for mission critical UEs during RAN congestion Ericsson discussion Rel-18 NR\_MBS\_enh-Core
39. R2-2210385 Shared processing for simultaneous MBS broadcast and Unicast reception Intel Corporation discussion Rel-18 NR\_MBS\_enh-Core
40. R2-2209413 Supporting Shared Processing for MBS Broadcast and Unicast vivo discussion Rel-18 NR\_MBS\_enh-Core R2-2207228
41. R2-2209448 Shared processing for MBS broadcast and unicast reception Qualcomm Incorporated discussion Rel-18 NR\_MBS\_enh-Core R2-2208097
42. R2-2209459 CFR configuration for multicast reception in RRC\_INACTIVE state TD Tech Ltd, Chengdu TD Tech discussion Rel-18
43. R2-2209624 Discussion on shared process for unicast and broadcast reception NEC Europe Ltd discussion Rel-18 NR\_MBS\_enh-Core
44. R2-2209663 Discussion on shared processing for MBS broadcast and Unicast reception Huawei, CBN, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core
45. R2-2209745 On signaling framework for shared processing ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh-Core
46. R2-2209807 Sharing processing of MBS broadcast and unicast reception Apple discussion Rel-18 NR\_MBS\_enh-Core
47. R2-2209867 Shared Processing for MBS broadcast and unicast reception Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MBS\_enh-Core
48. R2-2209877 Discussion on broadcast coexistence and signaling enhancement MediaTek inc. discussion Rel-18 NR\_MBS\_enh-Core R2-2207567
49. R2-2209920 Shared processing for broadcast and unicast LG Electronics Inc. discussion Rel-18
50. R2-2209989 Discussion on shared processing for MBS broadcast and Unicast Reception Spreadtrum Communications discussion Rel-18
51. R2-2210054 Discussion on shared processing for MBS broadcast and unicast reception Xiaomi discussion Rel-18 NR\_MBS\_enh-Core
52. R2-2210067 Discussions on shared processing for MBS broadcast and unicast reception CATT, CBN discussion Rel-18 NR\_MBS\_enh-Core
53. R2-2210147 Discussion on shared processing for broadcast and unicast reception CMCC discussion Rel-18 NR\_MBS\_enh-Core
54. R2-2210427 Shared processing for inter-PLMN MBS broadcast reception Kyocera discussion Rel-18 R2-2208290
55. R2-2210610 Uu Signalling Enhancements for MBS Samsung discussion Rel-18 NR\_MBS\_enh-Core
56. R2-2210716 MBS broadcast and unicast reception with shared resources Ericsson discussion Rel-18 NR\_MBS\_enh-Core R2-2208092
57. R2-2211157 Reply LS on FS\_5MBS\_Ph2 progress (R3-225987; contact: Huawei) RAN3 LS in Rel-18 FS\_5MBS\_Ph2, NR\_MBS\_enh-Core To:SA2, RAN2 Cc:RAN1
58. R2-2211168 LS on resource efficiency for MBS reception in RAN sharing scenario (R3-226084; contact: CATT) RAN3 LS in Rel-18 NR\_MBS\_enh To:RAN2 Cc:SA2
59. R2-2212628 38.300 Running CR for MBS enhancements CMCC CR Rel-18 38.300 17.2.0 0589 - B NR\_MBS\_enh-Core
60. R2-2213112 38.300 Running CR for MBS enhancements CMCC CR Rel-18 38.300 17.2.0 0589 - B NR\_MBS\_enh-Core
61. R2-2211243 Further discussions on multicast reception in RRC\_INACTIVE CATT, CBN discussion NR\_MBS\_enh-Core
62. R2-2211247 Supporting Multicast Reception in RRC\_INACTIVE from Upper Layer Aspects vivo Mobile Com. (Chongqing) discussion Rel-18 NR\_MBS\_enh-Core
63. R2-2211248 Supporting Multicast Reception in RRC\_INACTIVE from Lower Layer Aspects vivo Mobile Com. (Chongqing) discussion Rel-18 NR\_MBS\_enh-Core
64. R2-2211271 Analysis of options for sending PTM configuration TD Tech, Chengdu TD Tech discussion Rel-18
65. R2-2211273 Multicast reception in RRC\_INACTIVE state Chengdu TD Tech, TD Tech discussion Rel-18
66. R2-2211294 Discussion on Paging and PTM configuration for Multicast reception in Inactive State TCL Communication Ltd. discussion Rel-18 Late
67. R2-2211299 Discussion on multicast reception in RRC\_INACTIVE state OPPO discussion Rel-18 NR\_MBS\_enh
68. R2-2211300 LS on multicast reception in RRC\_INACTIVE OPPO LS out Rel-18 NR\_MBS\_enh To:RAN1
69. R2-2211434 Session state change for UEs receiving Multicast in RRC\_INACTIVE state TCL Communication Ltd. discussion
70. R2-2211435 PTM configuration for UEs receiving Multicast in RRC\_INACTIVE state TCL Communication Ltd. discussion
71. R2-2211512 Multicast reception for RRC INACTIVE UE Huawei, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core
72. R2-2211550 Multicast reception by UEs in RRC\_INACTIVE state Qualcomm Incorporated discussion Rel-18 NR\_MBS\_enh-Core
73. R2-2211611 Discussion on multicast reception in RRC\_INACTIVE NEC Europe Ltd discussion Rel-18 NR\_MBS\_enh-Core
74. R2-2211730 Multicast reception in INACTIVE state Apple discussion Rel-18 NR\_MBS\_enh-Core
75. R2-2211880 PTM configuration option 1 CANON Research Centre France discussion Rel-18 R2-2209533 Withdrawn
76. R2-2211890 Discuss on PTM configuration delivery for multicast in RRC INACTIVE MediaTek inc. discussion Rel-18 NR\_MBS\_enh-Core
77. R2-2211891 Discuss on the notification for multicast in RRC INACTIVE MediaTek inc. discussion Rel-18 NR\_MBS\_enh-Core
78. R2-2211971 Multicast reception in RRC\_INACTIVE Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MBS\_enh-Core
79. R2-2212014 PTM configuration option 1 CANON Research Centre France discussion Rel-18 R2-2209533
80. R2-2212037 PTM configuration for multicast reception in RRC\_INACTIVE Lenovo discussion Rel-18
81. R2-2212038 Mobility and state transition for multicast reception in RRC\_INACTIVE Lenovo discussion Rel-18
82. R2-2212104 Discussion on Multicast Reception in RRC\_INACTIVE Samsung R&D Institute India discussion Rel-18
83. R2-2212176 Discussion on Multicast Reception in RRC\_INACTIVE Spreadtrum Communications discussion Rel-18
84. R2-2212185 Multicast reception in RRC\_INACTIVE Intel Corporation discussion Rel-18 NR\_MBS\_enh-Core
85. R2-2212209 Service expectations for Multicast Sessions in RRC\_INACTIVE AT&T, FirstNet discussion Rel-18
86. R2-2212305 Multicast reception in RRC\_INACTIVE Ericsson discussion Rel-18 NR\_MBS\_enh-Core
87. R2-2212310 State transition for multicast reception in RRC\_INACTIVE LG Electronics Inc. discussion Rel-18
88. R2-2212311 PTM configuration for multicast reception in RRC\_INACTIVE LG Electronics Inc. discussion Rel-18
89. R2-2212411 Ensuring desired level of reliability for an MBS session InterDigital, Inc. discussion Rel-18 NR\_MBS\_enh-Core
90. R2-2212521 Details of multicast reception in RRC INACTIVE Kyocera discussion Rel-18 R2-2210428
91. R2-2212545 PTM Configuration for RRC\_INACTIVE UE SHARP Corporation discussion
92. R2-2212629 Discussion on multicast reception in RRC\_INACTIVE CMCC discussion Rel-18 NR\_MBS\_enh-Core
93. R2-2212741 Considerations on the multicast reception in RRC\_INACTVE state Xiaomi discussion Rel-18
94. R2-2212896 Multicast reception in RRC\_INACTIVE ASELSAN, Turkcell discussion Rel-18 NR\_MBS\_enh-Core
95. R2-2212926 Multicast reception in RRC\_INACTIVE ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh-Core
96. R2-2211272 Simultaneous unicast reception and MBS broadcast reception TD Tech, Chengdu TD Tech discussion Rel-18
97. R2-2212967 MBS reception interruption problem in LTE and NR Chengdu TD Tech, TD Tech discussion Rel-18
98. R2-2211307 Shared processing for MBS broadcast and unicast reception Qualcomm Incorporated discussion Rel-18 NR\_MBS\_enh-Core R2-2209448
99. R2-2212968 MBS reception interruption problem in LTE and NR TD Tech, Chengdu TD Tech discussion Rel-18
100. R2-2211731 Shared processing of MBS broadcast and unicast reception Apple discussion Rel-18 NR\_MBS\_enh-Core
101. R2-2212522 Shared processing for inter-PLMN MBS broadcast reception Kyocera discussion Rel-18 R2-2210427
102. R2-2211244 [Draft] Reply LS on resource efficiency for MBS reception in RAN sharing scenario CATT LS out NR\_MBS\_enh-Core To:RAN3 Cc:SA2
103. R2-2211245 Discussions on RAN3 LS on resource efficiency for MBS reception in RAN sharing scenario CATT, CBN discussion NR\_MBS\_enh-Core
104. R2-2211513 Discussion on the RAN3 LS on resource efficiency for MBS reception in RAN sharing scenario Huawei, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core
105. R2-2211612 Discussion on RAN sharing scenarios for MBS NEC Europe Ltd discussion Rel-18 NR\_MBS\_enh-Core
106. R2-2211972 RAN sharing and response to RAN3 Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MBS\_enh-Core
107. R2-2212057 Discussion on RAN sharing scenario Samsung discussion Rel-18
108. R2-2212306 RAN sharing scenarios Ericsson discussion Rel-18 NR\_MBS\_enh-Core
109. R2-2212577 Discussion on RAN3 LS on MBS RAN sharing Intel Corporation discussion Rel-18 NR\_MBS\_enh-Core
110. R2-2212630 Discussion on RAN3 LS CMCC discussion Rel-18 NR\_MBS\_enh-Core
111. R2-2212740 Discussion on the “LS on resource efficiency for MBS reception in RAN sharing scenario” from RAN3 (R3-226084) Xiaomi discussion Rel-18
112. R2-2212927 RAN2 on network sharing for Broadcast session ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh-Core
113. R3-225321 LS on FS\_5MBS\_Ph2 progress SA2
114. R3-225533 Feedback to SA2 on FS\_5MBS\_Ph2 Progress Nokia, Nokia Shanghai Bell
115. R3-225660 Consideration on SA2 LS on FS\_5MBS\_Ph2 progress Huawei, CBN, China Unicom
116. R3-225661 [DRAFT] Reply LS on FS\_5MBS\_Ph2 progress Huawei
117. R3-225761 Plan on Baseline CR assignment for Rel-18 MBS enhancement CATT
118. R3-225445 On SA2 LS on FS\_5MBS\_Ph2 progress Ericsson
119. R3-225330 Reply LS on the scope of resource efficiency for MBS reception in RAN sharing scenario RAN
120. R3-225338 Broadcast reception in a certain area TD Tech, Chengdu TD Tech
121. R3-225340 Support of MBS in RAN sharing scenarios Qualcomm Incorporated
122. R3-225378 MBS RAN sharing scenario NEC
123. R3-225450 On Support for MBS reception in RAN sharing scenarios Ericsson
124. R3-225464 Discussion on MBS RAN sharing Samsung R&D Institute UK
125. R3-225662 (TPs to TS 38.300, TS 38.413 BL CRs) MBS reception in RAN sharing scenario Huawei, CBN
126. R3-225724 Discussion on efficient MBS reception in RAN sharing scenario CATT
127. R3-225797 Discussion on MBS reception in RAN sharing scenarios CMCC
128. R3-225853 MBS reception in RAN sharing scenarios ZTE
129. R3-225337 Multicast reception in RRC\_INACTIVE state TD Tech, Chengdu TD Tech
130. R3-225339 Enhancements to support Multicast reception by UEs in RRC\_INACTIVE state Qualcomm Incorporated
131. R3-225379 MBS Inactive Reception NEC
132. R3-225380 CR for RRC\_INACTIVE MBS interested indication in 38.473 NEC
133. R3-225451 On support of multicast reception in RRC\_INACTIVE state Ericsson
134. R3-225465 Discussion on MC support for RRC Inactive Samsung R&D Institute UK
135. R3-225534 Information needed at gNB to enable multicast RRC inactive delivery mode Nokia, Nokia Shanghai Bell
136. R3-225663 (TP to TS 38.300 BL CR) Multicast Reception for RRC\_INACTIVE state Ues Huawei, CBN
137. R3-225725 Discussion on multicast over RRC INACTIVE CATT
138. R3-225798 Multicast Reception in RRC\_INACTIVE state CMCC
139. R3-225854 Multicast reception in RRC\_INACTIVE ZTE
140. R3-225497 PTM configuration for multicast reception in RRC\_INACTIVE Lenovo
141. R3-225498 Mobility and state transition for multicast reception in RRC\_INACTIVE Lenovo
142. R3-226172 LS on re-establishment of the MBS context during mobility registration update or service request procedure SA2
143. R3-226179 Reply LS on FS\_5MBS\_Ph2 progress RAN2
144. R3-226362 Discussion on re-establishment of the MBS context during mobility registration update or service request procedure CATT
145. R3-226363 [Draft]Reply LS on the re-establishment of the MBS context during mobility registration update or service request procedure CATT
146. R3-226321 (TPs to TS 38.300, TS 38.413 BL CRs) MBS reception in RAN sharing scenario Huawei, CBN
147. R3-226360 Discussion on efficient MBS reception in RAN sharing scenario CATT,CBN,China Telecom
148. R3-226454 Support of resource efficiency for MBS reception in RAN sharing scenarios - further discussion Ericsson
149. R3-226738 Native or foreign TMGI - a backward compatibility perspective ZTE
150. R3-226203 Support of MBS in RAN sharing scenarios Qualcomm Incorporated
151. R3-226206 Broadcast reception in a certain area TD Tech, Chengdu TD Tech
152. R3-226207 Sharing processing for both unicast reception and broadcast reception Chengdu TD Tech, TD Tech
153. R3-226381MBS RAN sharing scenario NEC
154. R3-226491(TP for TS 38.300) RAN Impacts of Rel-18 RAN Sharing Solutions Nokia, Nokia Shanghai Bell
155. R3-226596 Discussion on MBS RAN sharing Samsung
156. R3-226704 Discussion on MBS reception in RAN sharing scenarios CMCC
157. R3-226492 (TP for TS 38.300) Assistance Information needed at gNB to enable multicast reception in RRC inactive Nokia, Nokia Shanghai Bell
158. R3-226322 (TP to TS 38.300, TS 38.401 BL CRs) Multicast Reception for RRC\_INACTIVE state Ues Huawei, CBN
159. R3-226739 Multicast reception in RRC\_INACTIVE ZTE
160. R3-226455 Support of multicast reception by UEs in RRC\_INACTIVE state - further discussion Ericsson
161. R3-226361 Discussion on multicast over RRC INACTIVE CATT
162. R3-226597 Discussion on MC support for RRC Inactive Samsung
163. R3-226204 Enhancements to support Multicast reception by UEs in RRC\_INACTIVE state Qualcomm Incorporated
164. R3-226205 Multicast reception in RRC\_INACTIVE state TD Tech, Chengdu TD Tech
165. R3-226379 MBS Inactive Reception NEC
166. R3-226380 (TP for NR-MBS-Enh to TS38.473 BLCR) Indication to DU that the RRC\_INACTIVE UE is interested in MBS session NEC
167. R3-226443 Multicast reception in RRC\_INACTIVE Lenovo
168. R3-226705 Multicast Reception in RRC\_INACTIVE state CMCC

17.05.2021 minor adaptations for RAN #92e

28.01.2021 minor adaptations for RAN #91e

09.11.2020 minor adaptations for RAN #90e

31.08.2020 minor adaptations for RAN #89e

20.04.2020 minor adaptations for RAN #88e

18.02.2020 minor adaptations for RAN #87e

14.11.2019 minor adaptations for RAN #86

18.08.2019 minor adaptations for RAN #85

12.05.2019 minor adaptations for RAN #84

27.02.2019 minor adaptations for RAN #83

21.11.2018 completion levels with colours added (for RAN #82)

v04.81 31.07.2018 simplification of template and addition of cross-TSG aspects (for RAN #81)

v04.80 21.05.2018 minor adaptations for RAN #80

v04.79 26.02.2018 minor adaptations for RAN #79

v04.78 18.11.2017 minor adaptations for RAN #78

v04.77 06.08.2017 minor adaptations for RAN #77

v04.76 15.05.2017 minor adaptations for RAN #76

v04.75 31.01.2017 minor adaptations for RAN #75

v04.74 28.10.2016 minor adaptations for RAN #74

v04.73 01.09.2016 adaptations for RAN #73 (time units in extra Excel table, RAN6 reporting included)

v04.72 26.05.2016 adaptations for RAN #72 (introduction of NR & GERAN TUs)

v04.71 10.02.2016 minor adaptations for RAN #71

v04.70 30.10.2015 minor adaptations for RAN #70

v04.69 12.08.2015 minor adaptations for RAN #69

v04.68 21.05.2015 minor adaptations for RAN #68

v04.67 01.02.2015 minor adaptations for RAN #67

v04.66 16.11.2014 minor adaptations for RAN #66

v04.65 16.08.2014 minor adaptations for RAN #65

v04.64 22.05.2014 minor adaptations for RAN #64

v04.63 24.01.2014 restructuring for RAN #63 to cover Core & Perf. in one doc file

v03.62 11.11.2013 section 1.2.3 adapted for RAN #62

v03 11.08.2013 section 1.2.3 added on time budget

v02 07.05.2010 history added, some spelling corrections

v01 13.11.2009 First version of the template