**3GPP TSG RAN meeting #100 RP-23xxxx**

**Taipei, June 12-14, 2023**

## 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: 60% | 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#121bis-e

**Multicast reception in RRC\_INACTIVE**

Control plane

Similar to Rel-17 broadcast reception procedure, UE acquires new SIB and multicast MCCH to get PTM configuration after cell reselection.

When a UE reselects to a cell for which PTM configuration is not available in multicast MCCH, the UE initiates RRC resumption procedure for an active multicast session it is interested to receive or continue receiving.

UE may trigger RRC connection resumption if the reception quality of the multicast data is below a configured threshold, FFS how to specify the threshold/reception quality.

Frequency prioritization may be provided to the UE for cell reselection for multicast reception in RRC\_INACTIVE, detailed mechanism on how to identify the frequency info (e.g., SAI, USD, or frequency info directly provided by network) is FFS.

No need to define a mechanism other than the frequency prioritization, i.e., per cell based prioritization in cell re-selection, to help UE choose the right cell to camp on.

The neighbor cell list mechanism for multicast reception in RRC\_INACTIVE may be configured e.g. it can be used by UE to resume RRC connection if service is not available in the re-selected cell by NCL, without reading MCCH in the re-selected cell, in some aspects similar to Rel-17 NCL mechanism in MBS broadcast.

A "special UE" identified by MBS assistance information from 5GC can be released to RRC\_INACTIVE (e.g., when the session is deactivated). FFS how can network enable such UE to resume to RRC\_CONNECTED upon session activation

Rel-18 UE can stay in RRC\_INACTIVE and start monitoring corresponding G-RNTI upon an enhanced group paging (e.g., upon session activation or data transmission resumed). Details FFS.

For one UE already in RRC\_INACTIVE, it can stay in RRC\_INACTIVE and stop monitoring corresponding G-RNTI upon events like session deactivation/temporary no data.

FFS which option to take: enhanced group paging or enhanced MCCH, to enable Rel-18 UE to stay in RRC\_INACTIVE and stop monitoring corresponding G-RNTI upon events like session deactivation/temporary no data.

No additional enhancement (with regard to enhancements made for ‘deactivation/temp no data’) is needed specifically for enabling UE to stay in RRC\_INACTIVE and stop monitoring corresponding G-RNTI upon session release.

Legacy group paging (i.e., Rel-17 group paging) can be used to resume UE to RRC\_CONNECTED state.

Upon events like session activation/data transmission resumed, if PTM configuration is not available to UE, UE initiates RRC connection resumption.

UE-specific paging (i.e. PagingRecordList) can be used to move specific MBS multicast UE(s) to RRC\_CONNECTED (i.e. legacy UE behavior).

When both enhanced group paging and unicast paging are received by the UE (and targeted for this UE), the UE follows unicast Paging and goes to RRC CONNECTED.

User plane

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.

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 in RRC\_INACTIVE is performed via beam sweeping based on SSB index like broadcast MBS (i.e. beam information is not needed 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.)

On support of multicast SPS in RRC\_INACTIVE, postpone RAN2 discussion to next meeting.

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.

The common LCID space is used for multicast MRB and unicast DRB regardless of UE RRC state (i.e. no change on the LCID table for MTCH).

Postpone the UP discussion on L2 operation during RRC state transition until the signaling design of PTM configuration in RRCRelease message is concluded.

Postpone the discussion on L2 operation during mobility to next RAN2 meeting.

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.

Change the working agreement to the agreement below:

Agreement: 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.

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.

#### 2.2.2 Agreements in RAN2#122

**Multicast reception in RRC\_INACTIVE**

The multicast MCCH configuration takes the broadcast MCCH configuration structure (i.e., mcch-Config-r17) as baseline.

To notify the multicast MCCH change, change notification mechanism for Rel-17 broadcast MCCH is the baseline.

Working assumption (to be confirmed by RAN1 via pending reply LS): One bit in the MCCH DCI is used to notify the change of the multicast MCCH. We reuse the bit used for MCCH change indication from Rel-17 MBS broadcast. This does not cover session deactivation which is FFS.

It is not supported to provide the PTM configuration of intra-gNB neighbour cells in the dedicated signalling.

For PTM configuration structure on the multicast MCCH, Rel-17 broadcast PTM configuration structure is taken as baseline.

As a baseline, The PTM configuration in the RRCRelease message with suspendconfig has the same structure as the PTM configuration in multicast MCCH.

FFS how existing MRBs are handled.

Introduce a new indication per tmgi in the group paging which informs Rel-18 UEs having a valid PTM configuration to receive the multicast in RRC\_INACTIVE.

MCCH is used for notifying MC session deactivation for multicast reception in RRC\_INACTIVE to enable Rel-18 UE to stay in RRC\_INACTIVE and stop monitoring corresponding G-RNTI.

This is assumed to have no/minor impact on RAN1/PHY.

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

The granularity for capability of receiving MBS broadcast from a non-serving cell is at FeatureSetDownlinkPerCC level. This capability does not imply simultaneous reception on multiple CCs.

No additional signalling is introduced to control information to be reported by the UE (on top of what we have already agreed).

When sending MII, UE reports the whole information (i.e. at least frequency, bandwidth, SCS) when indicated by SIB1 of its unicast serving cell. FFS whether there are cases where this information is not available at the UE and what happens then.

FFS if any special handling is needed when the non-serving cell updates the configuration (which is relevant for MII)

No additional information is added to MII on top of what has been already agreed.

#### 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#119bis-e

**About RAN Sharing**

Support of location dependent services

* WA: In case of location dependent broadcast services, the gNB deduces identical broadcast content from the MBS Associated Session ID and the MBS Service Area information provided by the participating 5GCs. (to be checked against the actual SA2 agreements / agreed CR text.)

NG functions

* WA: Introduce an explicit indication to 5GC in case that NG-U resources are not setup. Details are FFS.

F1 functions

* Support, for MOCN,sharing of F1-U resources among multiple broadcast MBS sessions with the same associated session ID.

PDCP aspects for RAN sharing with multiple Cell ID broadcast

* WA: In case of RAN sharing with multiple Cell ID broadcast, the entity controlling the logical DUs decides which MRB-PDCP-ConfigBroadcast to provide on MCCH. Details are FFS.

**RRC-Inactive reception for multicast**

* Additional protocol function for multicast MCCH configuration is expected to be included in F1 Multicast Context management procedures, based on RAN2 progress on MCCH matters.
* RAN3 acknowledged the new SIB defined in RAN2 and how to introduce the new SIB over F1 needs to be further discussed.
* XnAP signalling for exchange of neighbour cells’ PTM configuration is not supported.
* No enhancement to enable network to be aware of the distribution of UEs receiving multicast in RRC\_INACTIVE is agreed.

#### 2.3.2 Agreements in RAN3#120

**About RAN Sharing**

* Add Associated Session ID IE in the same level of MBS Session ID IE in related NG/F1 messages.
* Include in the MBS Session Setup or Modification Response Transfer IE an indication that the NG-RAN node has decided to not establish shared NG-U transport resources for the broadcast MBS session in case of unicast transport.
* Define a new class 1 procedure to allow the gNB/CU-CP requesting the setup of shared NG-U resources during an ongoing broadcast MBS session for unicast transport.
* In case of location dependent broadcast services, the gNB deduces identical broadcast content from the MBS Associated Session ID and the MBS Service Area information provided by the participating 5GCs.
* The CU-CP sends the MBS Service Area to DU and DU determines whether to apply RAN sharing optimization over the radio.

**RRC-Inactive reception for multicast**

* Agree the following statement in the stage 2 and stage 3 spec:

Stage 2 (38.300):

As specified in TS 23.247 [45], the gNB may receive from the 5GC MBS for a UE Assistance Information associated with a multicast MBS session, which assists the gNB in configuring the UE properly. The MBS Assistance Information indicates that the UE is expected to require dedicated resources very frequently. Based on this information, the gNB may decide the RRC state of the UE.

in Stage 3 (NGAP/XnAP), the definition is as follows:

This IE provide MBS Assistance Information as specified in TS 38.300 [8] and TS 23.247 [x].

* No LS is sent to SA2 on the MBS Assistance Information definition related aspect.

#### 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. R2-2302426 Reply LS on FS\_5MBS\_Ph2 progress (R3-231030; contact: Huawei) RAN3 LS in Rel-18 FS\_5MBS\_Ph2, NR\_MBS\_enh-Core To:SA2 Cc:RAN1, RAN2, CT4
2. R2-2303795 38.300 Running CR for MBS enhancements CMCC draftCR Rel-18 38.300 17.4.0 B NR\_MBS\_enh-Core
3. R2-2303971 RRC running CR for eMBS Huawei, HiSilicon draftCR Rel-18 38.331 17.4.0 B NR\_MBS\_enh-Core
4. R2-2302524 Discussions on PTM Configuration and Mobility CATT, CBN discussion NR\_MBS\_enh-Core
5. R2-2302525 Notifications for multicast reception in RRC\_INACTIVE CATT, CBN discussion NR\_MBS\_enh-Core
6. R2-2302579 Multicast MCCH design for multicast in RRC INACTIVE MediaTek inc. discussion Rel-18 NR\_MBS\_enh-Core
7. R2-2302608 Control plane for multicast reception in RRC\_INACTIVE state TD Tech, Chengdu TD Tech discussion Rel-18
8. R2-2302669 Further Discussion on eMBS from CP vivo discussion Rel-18 NR\_MBS\_enh-Core
9. R2-2302769 Discussion on control plane for Multicast reception in RRC\_INACTIVE NEC Corporation discussion Rel-18 NR\_MBS\_enh-Core
10. R2-2302962 CP aspects for Multicast reception in RRC\_INACTIVE Samsung R&D Institute India discussion Rel-18
11. R2-2303049 Service continuity, RRC state transitions and notifications Qualcomm Incorporated discussion Rel-18 NR\_MBS\_enh-Core
12. R2-2303129 Control plane aspects of multicast reception in RRC\_INACTIVE Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MBS\_enh-Core
13. R2-2303159 Discussion for UEs receiving Multicast in RRC\_INACTIVE state TCL Communication Ltd. discussion
14. R2-2303228 Discussion on CP aspects for multicast reception in RRC\_INACTIVE Lenovo discussion Rel-18
15. R2-2303271 Further consideration of PTM configuration and mobility aspects on multicast reception in RRC INACTIVE Kyocera discussion Rel-18
16. R2-2303272 Notification and RRC state transition aspects on multicast reception in RRC INACTIVE Kyocera discussion Rel-18 R2-2301587
17. R2-2303307 PTM configuration for multicast reception in RRC\_INACTIVE LG Electronics Inc. discussion Rel-18
18. R2-2303308 Multicast activationdeactivation notification and RRC state transitions LG Electronics Inc. discussion Rel-18
19. R2-2303419 PTM configuration for multicast reception in RRC\_INACTIVE Apple discussion Rel-18 NR\_MBS\_enh-Core
20. R2-2303553 Summary of [Post121][606][eMBS] Service continuity and notifications (ZTE) ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh
21. R2-2303554 Misc CP issues on multicast reception in RRC\_INACTIVE ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh
22. R2-2303585 Discussion on service continuity and RRC state transitions Spreadtrum Communications discussion Rel-18
23. R2-2303620 Multicast reception in RRC\_INACTIVE Ericsson discussion Rel-18 NR\_MBS\_enh-Core Late
24. R2-2303621 MBS multicast with eDRX and MICO mode Ericsson discussion Rel-18 NR\_MBS\_enh-Core Late
25. R2-2303630 Ensuring desired level of reliability for an MBS session in RRC\_INACTIVE Interdigital Inc. discussion Rel-18 NR\_MBS\_enh-Core
26. R2-2303776 RRC Resume for Multicast in RRC\_INACTIVE Sharp discussion
27. R2-2303796 Discussion on PTM configuration related open issues CMCC discussion Rel-18 NR\_MBS\_enh-Core Late
28. R2-2303797 Discussion on RRC\_INACTIVE UE join procedure CMCC discussion Rel-18 NR\_MBS\_enh-Core Late
29. R2-2303943 Consideration on the notifications for multicast reception in RRC\_INACTIVE Beijing Xiaomi Software Tech discussion Rel-18
30. R2-2303968 Multicast reception for RRC INACTIVE UE Huawei, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core
31. R2-2304021 Control plane aspects for multicast reception in RRC\_INACTIVE Intel Corporation discussion Rel-18 NR\_MBS\_enh-Core
32. R2-2304121 Discussion on PTM configuration Shanghai Jiao Tong University discussion
33. R2-2302494 HARQ operation during RRC state transitions for multicast reception NEC discussion NR\_MBS\_enh-Core
34. R2-2302609 User plane for multicast reception in RRC\_INCTIVE state TD Tech, Chengdu TD Tech discussion Rel-18
35. R2-2302670 Further Discussion on eMBS from UP vivo discussion Rel-18 NR\_MBS\_enh-Core
36. R2-2303050 Further views on multicast CFR configuration aspects Qualcomm Incorporated discussion Rel-18 NR\_MBS\_enh-Core
37. R2-2303130 User plane aspects of multicast reception in RRC\_INACTIVE Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MBS\_enh-Core
38. R2-2303153 Discussion on UP issues for Multicast in RRC Inactive LG Electronics Inc. discussion Rel-18 NR\_MBS\_enh-Core
39. R2-2303201 Discussion on UP issues for multicast in RRC INACTIVE MediaTek inc. discussion Rel-18 NR\_MBS\_enh-Core
40. R2-2303229 Discussion on UP aspects for multicast reception in RRC\_INACTIVE Lenovo discussion Rel-18
41. R2-2303420 Summary of [Post121][607][eMBS] UP issues for Multicast in RRC Inactive (Apple) Apple discussion Rel-18 NR\_MBS\_enh-Core
42. R2-2303555 BWP and CFR for multicast reception in RRC\_INACTIVE ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh
43. R2-2303959 Consideration on the support of PDCP count continuity Beijing Xiaomi Software Tech discussion Rel-18
44. R2-2303969 Remaining UP issues for multicast reception in RRC\_INACTIVE Huawei, CBN, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core
45. R2-2304022 User plane aspects for multicast reception in RRC\_INACTIVE Intel Corporation discussion Rel-18 NR\_MBS\_enh-Core
46. R2-2304151 User Plane Aspects for Multicast in INACTIVE Samsung discussion Rel-18 NR\_MBS\_enh-Core
47. R2-2302526 Remaining issues on Shared Processing CATT, CBN discussion NR\_MBS\_enh-Core
48. R2-2302610 Simultaneous unicast reception and broadcast reception TD Tech, Chengdu TD Tech discussion Rel-18
49. R2-2302671 Further Discussion on Shared Processing in eMBS vivo discussion Rel-18 NR\_MBS\_enh-Core
50. R2-2302770 Discussion on shared process for MBS broadcast and unicast NEC Corporation discussion Rel-18 NR\_MBS\_enh-Core
51. R2-2302961 Shared processing for MBS broadcast and unicast reception Samsung R&D Institute India discussion Rel-18
52. R2-2303051 Shared processing for MBS broadcast and Unicast reception Qualcomm Incorporated discussion Rel-18 NR\_MBS\_enh-Core
53. R2-2303202 Discuss on Shared processing for broadcast and unicast reception MediaTek inc. discussion Rel-18 NR\_MBS\_enh-Core
54. R2-2303273 Shared processing for inter-PLMN MBS broadcast reception Kyocera discussion Rel-18 R2-2301588
55. R2-2303354 Remaining issues for shared processing of MBS Xiaomi discussion Rel-18 NR\_MBS\_enh-Core R2-2301702
56. R2-2303421 Shared processing of MBS broadcast and unicast reception Apple discussion Rel-18 NR\_MBS\_enh-Core
57. R2-2303556 Shared processing for MBS broadcast and Unicast reception ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh
58. R2-2303622 Shared processing for MBS broadcast and Unicast reception Ericsson discussion Rel-18 NR\_MBS\_enh-Core R2-2301207 Late
59. R2-2303970 Discussion on shared processing for MBS broadcast and Unicast reception Huawei, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core
60. R2-2304023 Shared processing for simultaneous MBS broadcast and Unicast reception Intel Corporation discussion Rel-18 NR\_MBS\_enh-Core
61. R2-2304060 Bandwidth signalling and scenarios for shared processing Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MBS\_enh-Core R2-2301753
62. R2-2304149 Discussion on Shared processing for MBS broadcast and unicast reception CMCC discussion Rel-18 NR\_MBS\_enh-Core
63. R2-2304819 RRC running CR for eMBS Huawei, HiSilicon draftCR Rel-18 38.331 17.4.0 B NR\_MBS\_enh-Core R2-2303971
64. R2-2305631 38.300 Running CR for MBS enhancements CMCC draftCR Rel-18 38.300 17.4.0 B NR\_MBS\_enh-Core
65. R2-2306157 MAC running CR for eMBS Apple draftCR Rel-18 38.321 17.4.0 NR\_MBS\_enh-Core
66. R2-2304700 Discussion on eMBS from the CP Perspective vivo Mobile Com. (Chongqing) discussion Rel-18 NR\_MBS\_enh-Core
67. R2-2304728 Control plane discussion for multicast reception in RRC INACTIVE MediaTek inc. discussion Rel-18 NR\_MBS\_enh-Core
68. R2-2304774 CP Issues of Multicast Reception in RRC\_INACTIVE CATT, CBN discussion Rel-18 NR\_MBS\_enh-Core
69. R2-2304820 Multicast reception for RRC\_INACTIVE UE Huawei, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core
70. R2-2304933 Consideration on the control plane issue for multicast reception in RRC\_INACTIVE Beijing Xiaomi Software Tech discussion Rel-18
71. R2-2304985 Discussion on control plane for Multicast reception in RRC\_INACTIVE NEC Corporation discussion Rel-18 NR\_MBS\_enh-Core
72. R2-2305184 Service continuity, RRC state transitions and notifications Qualcomm Incorporated discussion Rel-18 NR\_MBS\_enh-Core
73. R2-2305379 Discussion for UEs receiving Multicast in RRC\_INACTIVE state TCL Communication Ltd. discussion
74. R2-2305387 Discussion on security issue with multicast MCCH CANON Research Centre France discussion Rel-18 NR\_MBS\_enh-Core Withdrawn
75. R2-2305475 Control plane for multicast reception in RRC\_INACTIVE state TD Tech, Chengdu TD Tech discussion Rel-18
76. R2-2305477 PTM configuration for multicast reception in RRC\_INACTIVE LG Electronics Inc. discussion Rel-18
77. R2-2305478 Multicast activationdeactivation notification and RRC state transitions LG Electronics Inc. discussion Rel-18
78. R2-2305572 Discussion on Service Continuity and RRC state transitions Spreadtrum Communications discussion Rel-18
79. R2-2305632 Discussion on multicast reception in RRC\_INACTIVE CP issues CMCC discussion Rel-18 NR\_MBS\_enh-Core
80. R2-2305699 Discussion on PTM Configuration and Session Status Change Lenovo discussion Rel-18
81. R2-2305700 Discussion on Mobility and RRC State Transition Lenovo discussion Rel-18
82. R2-2305786 CP aspects for Multicast reception in RRC\_INACTIVE Samsung R&D Institute India discussion Rel-18
83. R2-2305817 Transition to CONNECTED to ensure the reliability for an MBS session Interdigital Inc. discussion Rel-18 NR\_MBS\_enh-Core
84. R2-2305916 Multicast reception in RRC\_INACTIVE Ericsson discussion Rel-18 NR\_MBS\_enh-Core
85. R2-2305917 MBS multicast and UE power saving Ericsson discussion Rel-18 NR\_MBS\_enh-Core
86. R2-2306047 Notification of Multicast session deactivation/temporary no data in enhanced group paging message SHARP Corporation discussion
87. R2-2306049 RRC Resume for Multicast in RRC\_INACTIVE SHARP Corporation discussion
88. R2-2306147 Control plane aspects on multicast reception in RRC INACTIVE Kyocera discussion Rel-18 R2-2303271
89. R2-2306158 CP issues on multicast reception in RRC\_INACTIVE Apple discussion Rel-18 NR\_MBS\_enh-Core
90. R2-2306321 Control plane aspects for multicast reception in RRC\_INACTIVE Intel Corporation discussion Rel-18 NR\_MBS\_enh-Core
91. R2-2306363 PTM configuration and mobility handling Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MBS\_enh-Core
92. R2-2306401 PTM configuration for multicast reception in RRC\_INACTIVE Shanghai Jiao Tong University discussion
93. R2-2305663 CFR design for Multicast reception in RRC\_INACTIVE ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh-Core
94. R2-2304701 Further Discussion on Shared Processing in eMBS vivo Mobile Com. (Chongqing) discussion Rel-18 NR\_MBS\_enh-Core R2-2302671
95. R2-2304729 Discuss on Shared processing for broadcast and unicast reception MediaTek inc. discussion Rel-18 NR\_MBS\_enh-Core
96. R2-2304775 Remaining issues on Shared Processing CATT, CBN discussion Rel-18 NR\_MBS\_enh-Core
97. R2-2304821 Discussion on shared processing for MBS broadcast and unicast reception Huawei, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core
98. R2-2304888 Bandwidth signalling and scenarios for shared processing Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MBS\_enh-Core R2-2304060
99. R2-2304986 Discussion on shared process for MBS broadcast and unicast NEC Corporation discussion Rel-18 NR\_MBS\_enh-Core
100. R2-2305185 Shared processing for MBS broadcast and Unicast reception Qualcomm Incorporated discussion Rel-18 NR\_MBS\_enh-Core
101. R2-2305480 Simultaneous unicast reception and broadcast reception TD Tech, Chengdu TD Tech discussion Rel-18
102. R2-2305502 Shared processing for simultaneous MBS broadcast and unicast reception Intel Corporation discussion Rel-18 NR\_MBS\_enh-Core R2-2304023
103. R2-2305577 Remaining issues for shared processing of MBS Xiaomi discussion Rel-18 NR\_MBS\_enh-Core
104. R2-2305633 Discussion on Shared processing CMCC discussion Rel-18 NR\_MBS\_enh-Core
105. R2-2305664 Shared processing for MBS broadcast and unicast reception ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh-Core
106. R2-2305783 Shared processing for MBS broadcast and unicast reception Samsung R&D Institute India discussion Rel-18
107. R2-2306148 Shared processing for inter-PLMN MBS broadcast reception Kyocera discussion Rel-18 R2-2303273
108. R2-2306159 Shared processing of MBS broadcast and unicast reception Apple discussion Rel-18 NR\_MBS\_enh-Core
109. R3-231187 Support of MBS in RAN sharing scenarios (Qualcomm Incorporated) discussion
110. R3-231197 Sharing processing for both unicast reception and broadcast reception (TD Tech, Chengdu TD Tech) discussion
111. R3-231252 Discussions and proposals concerning Rel-18 work on MBS reception in RAN sharing scenarios (Ericsson) discussion
112. R3-231283 (TP for TS 38.300) RAN Impacts of Rel-18 RAN Sharing Solutions (Nokia, Nokia Shanghai Bell) other
113. R3-231336 (TP for 38.473)Discussion on MBS RAN sharing (Samsung) other
114. R3-231350 (TP for 38.413/38.473/38.401)Discussion on efficient MBS reception in RAN sharing scenario (CATT,CBN,China Telecom) other
115. R3-231397 (TPs to TS 38.401, 38.410, 38.413, 38.473 BL CRs) MBS reception in RAN sharing scenario (Huawei, CBN) other
116. R3-231445 Remaining issue of supporting MBS reception in RAN Sharing (Lenovo) discussion
117. R3-231503 TP to TS 38.413 and 38.473 with discussion on network sharing of MBS (ZTE) discussion
118. R3-231188 Enhancements to support Multicast reception by UEs in RRC\_INACTIVE state (Qualcomm Incorporated) discussion
119. R3-231198 Multicast reception in RRC\_INACTIVE state (TD Tech, Chengdu TD Tech) discussion
120. R3-231253 Discussions and proposals concerning Rel-18 work on multicast reception in RRC\_INACTIVE (Ericsson) discussion
121. R3-231284 (TP for TS 38.413, TS 38.423 and TS 38.300) MBS Reception in RRC inactive state (Nokia, Nokia Shanghai Bell) other
122. R3-231335 Discussion on MBS reception by inactive state UE (Samsung) discussion
123. R3-231379 MBS Inactive Reception (NEC) discussion
124. R3-231398 (TPs to TS 38.300, 401, 413, 423,470, 473 BL CRs) Multicast Reception for RRC\_INACTIVE state Ues (Huawei, CBN) Other
125. R3-231444 Support of multicast reception in RRC\_INACTIVE (Lenovo) discussion
126. R3-231463 (TP for 38.401/38.413/38.423/38.473) Discussion on multicast over RRC INACTIVE (CATT,CBN,China Telecom) Discussion
127. R3-231464 Proposal on how to proceed on assistant information from CN to NG-RAN node (CATT) discussion
128. R3-231504 Multicast reception in RRC\_INACTIVE (ZTE) discussion
129. R3-231809 Multicast Reception in RRC\_INACTIVE state (CMCC) discussion
130. R3-232885 Further discussions and proposals concerning Rel-18 work on resource efficiency for MBS reception in RAN sharing scenarios (Ericsson) other
131. R3-232681 Support of MBS in RAN sharing scenarios (Qualcomm Incorporated) discussion
132. R3-232709 (TP for TS 38.300) RAN Impacts of Rel-18 RAN Sharing Solutions (Nokia, Nokia Shanghai Bell) Other
133. R3-232867 (TPs to BL CRs) MBS reception in RAN sharing scenario (Huawei, CBN, CMCC) other
134. R3-232915 (TP for TS38.473, TS38.413 BL CR) Discussion on MBS RAN sharing (BEIJING SAMSUNG TELECOM R&D) Other
135. R3-232973 (TP to TS 38.413, 38.473) Discussion on network sharing of MBS (ZTE) discussion
136. R3-233051 Remaining issues of supporting MBS reception in RAN Sharing (Lenovo) discussion
137. R3-233163 (TP for 38.401/38.413/38.473/37.483)Discussion on efficient MBS reception in RAN sharing scenario (CATT,CBN) other
138. R3-232868 (TPs to BL CRs) Multicast Reception for RRC\_INACTIVE state UEs (Huawei, CBN) other
139. R3-232683 Enhancements to support Multicast reception by UEs in RRC\_INACTIVE state (Qualcomm Incorporated) discussion
140. R3-232710 (TP for TS 38.300, TS 38.413, TS 38.423) MBS Reception in RRC Inactive State (Nokia, Nokia Shanghai Bell) other
141. R3-232886 Further discussions and proposals concerning Rel-18 work on multicast reception in RRC\_INACTIVE (Ericsson) other
142. R3-232974 Multicast reception in RRC\_INACTIVE (ZTE) discussion
143. R3-232916 (TP for TS38.473 and TS38.423 BL CR) Discussion on MBS reception by inactive state UE (BEIJING SAMSUNG TELECOM R&D) other
144. R3-233050 Discussion on multicast reception in RRC\_INACTIVE (Lenovo) discussion
145. R3-233162 (TP for 38.413/38.423/38.473)Discussion on multicast over RRC INACTIVE (CATT,CBN) other
146. R3-233204 Multicast reception in RRC\_INACTIVE state (TD Tech, Chengdu TD Tech) discussion
147. R3-233227 Multicast Reception in RRC\_INACTIVE state (CMCC) discussion
148. R3-233373 Summary of unofficial offline Discussion on Rel-18 MBS (CATT) discussion

 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