**3GPP TSG RAN meeting #102 RP-23xxxx**

**Edinburgh, Scotland, December 11-15, 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-231829 |
| **Target Completion Date****(indicate if changed)** | Study Item:  | Core part: 12/2023 | Performance part:  | Testing part:  |
| **Overall Completion level** | Study Item:  | Core part: 100% | 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** | Rui Zhou |
| **Company** | CATT |
| **Email** | zhourui@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 in RAN1#114b

**Multicast reception in RRC\_INACTIVE**

[**R1-2310503**](file:///E%3A%5C3GPP%20RAN1%5CDocs%5CR1-2310503.zip) **Summary on multicast reception in RRC\_INACTIVE Moderator (Apple)**

From Thursday session

Agreement:

Type0-PDCCH CSS and Type0B-PDCCH CSS can be configured for multicast MCCH and MTCH reception in RRC\_INACTIVE state.

Agreement:

Support DCI format 4\_0 for multicast MCCH and DCI format 4\_1 for multicast MTCH in Type0/0B CSS for multicast scheduling in RRC\_INACTIVE state.

Conclusion

* Type3-PDCCH CSS is not supported for multicast MTCH in RRC\_INACTIVE state.
* DCI format 4\_0 is not used for multicast MTCH scheduling.

[**R1-2310597**](file:///E%3A%5C3GPP%20RAN1%5CDocs%5CR1-2310597.zip) **Draft reply LS on multicast reception in RRC\_INACTIVE Moderator (Apple)**

**Friday session:** The draft LS to RAN2 is endorsed. Final LS is approved in [R1-2310598](file:///E%3A%5C3GPP%20RAN1%5CDocs%5CR1-2310598.zip).

#### 2.1.2 Agreements in RAN1#115

**Multicast reception in RRC\_INACTIVE**

[**R1-2312497**](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2312497.zip) Summary on replying LS on UE Capability of Multicast Reception in RRC\_INACTIVE Moderator (vivo)

**Agreement**

RAN1 confirms the RAN2 assumption that the UE in RRC\_INACTIVE state is not required to support FDMed multicast MCCH PDSCH or MTCH PDSCH with DL channels other than FDMed multicast MCCH PDSCH and PBCH in a slot in Pcell . Specifically, from RAN 1’ perspective, the UE in RRC\_INACTIVE state is not expected to support reception of

* FDMed multicast MTCH PDSCH and PBCH
* FDMed multicast MCCH PDSCH and multicast MTCH PDSCH
* FDMed multiple multicast MTCH PDSCHs
* FDMed multicast MCCH/multicast MTCH PDSCH and SIB PDSCH
* FDMed multicast MCCH/multicast MTCH PDSCH and Paging PDSCH
* FDMed multicast MCCH/multicast MTCH and RAR PDSCH
* FDMed multicast MCCH/MTCH and broadcast MCCH/MTCH

**Agreement**

FG 33-3-2 and FG 33-3-3 do not apply to the UE multicast reception in RRC INACTIVE state.

**Agreement**

From RAN1 perspective,

* a new FG for the support of FDMed any combinations of unicast/broadcast/multicast PDSCHs in RRC\_INACTIVE state is not needed.
* whether a new FG for the support of intra-slot TDMed unicast/broadcast/ multicast PDSCHs in RRC\_INACTIVE state is introduced is up to RAN2.

LS to RAN2 is agreed in R1-2312641.

[**R1-2312427**](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2312427.zip) Summary of TPs for multicast reception in RRC\_INACTIVE Moderator (Apple)

**Agreement**

The TP in section 3.1 (Proposal 1 v1: Adopt the TP1 for TS38.211 to support multicast reception in RRC\_INACTIVE state.) is agreed for Rel-18.

* Final CR to be drafted by the 38.211 editor.

**Agreement**

The TP in section 3.2 (Proposal 2 v1: Adopt the TP2 for TS38.212 to support multicast reception in RRC\_INACTIVE state.) is agreed for Rel-18.

* Final CR to be drafted by the 38.212 editor.

**Agreement**

The TP in section 3.3 (Proposal 3 v1: Adopt the TP3 for TS38.213 to support multicast reception in RRC\_INACTIVE state.) is agreed for Rel-18.

* Final CR to be drafted by the 38.213 editor.

**Agreement**

The TP in section 2.4 (**Proposal 4: Adopt the TP4 for TS38.214 to support multicast reception in RRC\_INACTIVE state.**) is agreed for Rel-18 **without the following change**

* Final CR to be drafted by the 38.214 editor.

The UE is not expected to decode a PDSCH in a serving cell scheduled by a PDCCH with C-RNTI, CS-RNTI, MCS-C-RNTI, G-RNTI, G-CS-RNTI, MCCH-RNTI or multicast-MCCH-RNTI and one or multiple PDSCH(s) required to be received according to this Clause in the same serving cell without a corresponding PDCCH transmission if the PDSCHs partially or fully overlap in time except if the PDCCH scheduling the PDSCH ends at least 14$∙2^{max⁡(0,μ-3)}$ symbols before the earliest starting symbol of the PDSCH(s) without the corresponding PDCCH transmission, where** and the symbol duration are based on the smallest numerology between the scheduling PDCCH and the PDSCH, in which case the UE shall decode the PDSCH scheduled by the PDCCH. When the PDCCH reception incudes two PDCCH candidates from two respective search space sets, as described in clause 10 of [6, TS 38.213], for the purpose of determining the PDCCH with C-RNTI, CS-RNTI or MCS-C-RNTI scheduling the PDSCH ends at least 14$∙2^{max⁡(0,μ-3)}$ symbols before the earliest starting symbol of the PDSCH(s) without the corresponding PDCCH transmission, the PDCCH candidate that ends later in time is used.

**Agreement**

The TP in section 3.5 (Proposal 6 v1: Adopt the TP6 for TS38.202 to support multicast reception in RRC\_INACTIVE state.) is agreed for Rel-18.

* Final CR to be drafted by the 38. 202 editor.

#### 2.1.3 Remaining Open issues

## 2.2 RAN2

#### 2.2.1 Agreements in RAN2#123bis

**Multicast reception in RRC\_INACTIVE**

Introduce an explicit indication in the multicast MCCH/RRCRelease(i.e., in the IE MBSMulticastConfiguration) for the UE to stop G-RNTI monitoring. It is used for notification triggered by the multicast session deactivation or the temporary no data.

UE in RRC\_INACTIVE does not need to monitor multicast MCCH DCI in the current cell until next group paging is received if UE is notified “the stop of G-RNTI monitoring” for all the joined multicast sessions, including the following cases,

Case 1: UE is receiving multicast in RRC\_INACTIVE and then is notified about the session deactivation via MCCH.

Case 2: UE transits from RRC\_CONNECTED to RRC\_INACTIVE, and “the stop of G-RNTI monitoring” is indicated in RRCRelease message.

If UE receives PTM configuration of multicast session(s) in RRCRelease and “the stop of G-RNTI monitoring” is indicated for the corresponding session(s) and then UE selects the same cell as on which it received RRCRelease, UE starts to monitor MCCH DCI upon receiving group paging that indicates to allow the multicast reception in RRC\_INACTIVE.

If “the stop of G-RNTI monitoring” for a session is indicated in RRCRelease message and the PTM configuration of the corresponding multicast session is not included in same message , UE reads multicast MCCH(if present) upon receiving group paging that indicates to allow the multicast reception in RRC\_INACTIVE.

If the whole Rel-18 multicast related configuration is absent in RRC Release, UE behaves the same as Rel-17 MBS UE.

If the session is active and UE receives PTM configuration in RRCRelease message and then UE selects the same cell as it received RRCRelease, UE does not perform Multicast MCCH information acquisition immediately but starts to monitor MCCH DCI for possible change notification after transiting to INACTIVE.

FFS UE in RRC\_INACTIVE reads MCCH(if present) on the reselected cell after cell reselection to acquire the PTM configuration session if UE received“the stop of G-RNTI monitoring” indication for the session.

FFS If UE receives PTM configuration of multicast session(s) in RRCRelease and “the stop of G-RNTI monitoring” is indicated for the corresponding session(s) and then UE selects the same cell as on which it received RRCRelease, UE acquires the PTM configuration from MCCH (if present) upon receiving group paging that indicates to allow the multicast reception in RRC\_INACTIVE. FFS if the UE uses the configuration from RRCRelease until having read the one from MCCH

FFS whether there can be case where MCCH is not present

If UE in RRC\_INACTIVE received “the stop of G-RNTI monitoring” indication for the session in the source cell, the UE reads MCCH(if present) in the reselected cell after cell reselection.

If UE receives PTM configuration of multicast session(s) in RRCRelease and “the stop of G-RNTI monitoring” is indicated for all of the the corresponding session(s) and if UE selects the same cell as on which it received RRCRelease, UE acquires the PTM configuration from MCCH (if present) upon receiving group paging that indicates to allow the multicast reception in RRC\_INACTIVE.

UE can use the PTM configuration from RRCRelease until having read the one from MCCH.

Multicast MCCH can be optionally present for a cell providing multicast reception in RRC\_INACTIVE. We do not optimize for this in RAN2, e.g. we are targeting a single cell scenario without mobility and without PTM configuration update for optional MCCH.The RSRP/RSRQ measurement as specified in TS 38.304 are reused (i.e. no new measurements and measurement requirements).

No TTT is introduced

All MRBs corresponding to the same multicast session to be received in RRC\_INACTIVE should be continued.

MRB ID is not configured in PTM configuration for multicast in INACTIVE. FFS if anything is needed.

mt-Access is selected for multicast reception when it is applicable to the legacy mt-Access use case (i.e. it is not applicable to access identities 1, 2 and 11-15).

UE selects '0' as the Access Category when the resumption of the RRC connection is triggered for multicast reception.

A UE starts the drx-HARQ-RTT-TimerDL-PTM for the corresponding HARQ process in the first symbol after the end of the corresponding multicast transmission.

Potential agreement: A 1-bit indication on cell PDCP COUNT synchronization for an MBS service is present with the INACTIVE MRB PTM configuration provided in RRCRelease/MCCH. FFS whether the indication is for RNA or another area.

A 1-bit indication on cell PDCP COUNT synchronization for an MBS service is present with the INACTIVE MRB PTM configuration provided in RRCRelease, and cells in the RNA area are synchronized for PDCP COUNT.

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

UE initiates the MII reporting for the non-serving cell upon stopping the reception of all the broadcast services that UE were receiving on a non-serving cell (TP in R2-2309559 can be taken as baseline).

For Rel-18 MII reporting, frequency of interest determination is amended to add a condition that at least one of the MBS sessions is from non-serving cell for the concerned frequency included in SIB21 from the non-serving cell and/or USD (TP in R2-2310088 can be taken as baseline).

For MII for shared processing, FreqInfoMBS in the running CR refers to the frequency information obtained from the USD or the SIB21 (i.e. same understanding as Rel-17).

For MII for shared processing, signalling will support reporting CFR location & BW (i.e. actual value of locationAndBandwidthBroadcast-r17 encoded as INTEGER (0..37949)) as well as point A of non-serving cell, i.e. information enough to point to the exact location of CFR, if available at the UE. It is an optional IE in MII.

#### 2.2.2 Agreements in RAN2#124

**Multicast reception in RRC\_INACTIVE**

If not captured already properly, we can clarify in stage-2 specs that the UE can only receive MCCH with multicast configurations after joining multicast session.

Other open issues discussed based on company contributions

If not captured already properly, in the next revision we will capture in RRC that UE can use PTM configuration from RRC Release until it receives the one from MCCH.

DRX Command MAC CE is applicable for inactive multicast DRX operation.

Remove EN1 in section 5.7b of running MAC CR for eMBS.

Introduce a new fix RNTI value for Multicast MCCH-RNTI.

We will call the new RNTI: “multicast MCCH-RNTI” (we align also in other specs)

The same LCID value is used for multicast MCCH and broadcast MCCH.

Agree the TP as in P3a in R2-2312295.

Remove the Editor Note 1 in section 5.3.1 of MAC running CR.

Clarify in MAC specs section 5.8.1a only applies to UEs in RRC CONNECTED.

As a baseline, a UE supporting multicast reception in RRC\_INACTIVE state also supports the following components:

- 12-bit length of PDCP sequence number;

- ROHC profiles 0x0000, 0x0001, and 0x0002;

- 4 ROHC header compression context sessions as the minimum number;

- UM MRB with 12-bit length of RLC sequence number;

- UM MRB with 6-bit length of RLC sequence number.

Capabilities maxMRB-Add-r17 and maxNumberG-RNTI-r17 are also applicable to multicast reception in RRC INACTIVE state.

FFS whether the functionality of RRC connection resumption triggering due to the reception quality below the configured threshold is mandatory/optional capability.

Support the simultaneous configuration of SDT and MBS multicast reception in RRC\_INACTIVE to one UE, unless serious issues are identified during implementation in the CR.

MRB cannot be configured as SDT bearer.

The UE is not required to monitor group Paging during SDT procedure.

The understanding is NW can send the UE directly to INACTIVE with PTM config for MC in INACTIVE.

In a “synced” RNA area, the order of MRBs within the same session configuration in the source and target cells’ MCCH messages should be consistent.

For transition from RRC CONNECTED to RRC INACTIVE, the same LCIDs are used for the same MRBs if UE continues in the same cell from which it received RRCRelease.

MRB continuity is guaranteed only when the UE transits from RRC CONNECTED to RRC INACTIVE in the same cell.

Understanding is the UE uses the latest available measurement for condition evaluation, no need to capture special cases. Check whether this requires some spec changes, e.g. a NOTE.

NW should be able to configure eLCID for multicast MRB in RRC\_INACTIVE, similar as in Rel-17.

The max number of thresholds for resume is set to 8.

For RRC\_INACTIVE, when Multicast CFR for RRC\_INACTIVE and broadcast CFR are configured differently, if one CFR is not completely contained within the other CFR, then UE is not required to receive both broadcast and multicast simultaneously.

If multicast CFR for RRC\_INACTIVE is not configured, the default is same as CORESET#0 (check whether/not already captured in the running CR).

Upon transition to RRC\_INACTIVE from RRC\_CONNECTED, MAC is reset (including flushing of soft buffer for HARQ process used for multicast reception in RRC\_INACTIVE). No spec impact is expected.

Upon cell reselection, MAC is reset (including flushing of soft buffer for HARQ process used for multicast reception in RRC\_INACTIVE). There may be impact to RRC spec (to indicate the MAC reset).

Upon transition to RRC\_INACTIVE from RRC\_CONNECTED, MAC is reset (including stopping of drx-HARQ-RTT-TimerDL-PTM and drx-RetransmissionTimerDL-PTM, if running). No spec impact is expected.

#### 2.2.3 Remaining Open issues

## 2.3 RAN3

#### 2.3.1 Agreements in RAN3#121bis

**About RAN Sharing**

* Introduce a F1-U tunnel not established IE in F1AP BROADCAST CONTEXT SETUP/MODIFICATION RESPONSE to enable DU to indicate to CU-CP that F1-U shall not be established.
* Explicit indicator from CU-CP to CU-UP on F1-U not establishment in E1AP i.e. introduce a F1-U tunnel not established IE in E1AP BC BEARER CONTEXT MODICIFCATION REQUEST.
* For multiple cell-ID broadcast scenario, DUs decides how many F1-U tunnels to be set up. The decision of CU-CP on establishment of NG-U tunnel takes the feedback of DU on establishment of a set of F1-U tunnels into account.
* Update the previous agreement from "Introduce a F1-U tunnel not established in F1AP BROADCAST CONTEXT SETUP/MODIFICATION RESPONSE to enable DU indicate to CU-CP that F1-U shall not be established" to "Introduce a F1-U tunnel not established in F1AP BROADCAST CONTEXT SETUP RESPONSE to enable DU indicate to CU-CP that F1-U shall not be established"

.

**Multicast reception in RRC\_INACTIVE**

* Introduce the *thresholdIndex* IE in *Multicast CU to DU RRC Information* IE per cell.
* Both of the following two options are adopted to support PTM configuration provision during RRC Release procedure in split gNB scenario:

Option 1: CU retrieves the PTM configuration from DU via CU initiated Multicast context setup/modification procedure.

Option 2: During active MBS multicast sessions, the DU always ensures that the CU is provided with the latest PTM configuration via a new DU initiated Multicast context modification procedure.

* F1AP should support to enable/disable “Inactive reception” mode for specific multicast session on per cell level.

#### 2.3.2 Agreements in RAN3#122

**About RAN Sharing**

* For MOCN, CU-CP does not initiate Bearer Context Setup procedure towards CU-UP in case CU-CP decides to not establish NG-U tunnel for one MBS session. No stage3 impact is identified so far.
* For multiple Cell-ID, introduce a class 2 DU initiated Transport Resource establishment procedure in F1AP which triggers the class 1 Broadcast Context Modification procedure from CU to establish F1-U.
* MBS service area IE only applied to location dependent service in 37.483.
* Remove FFS in 38.401 on whether there is one to one mapping between one set of F1-U tunnels and one NG-U tunnel with the understanding that the standard shall consider the general case where F1-U tunnels can only be setup with a corresponding NG-U tunnel being established for the same PLMN/5GC.
* Define *Associated Session* *ID* IE as Octet String and refer to *Associated SessionId* IE in TS 29.571.
* Remove *Shared NG-U Not Established* IE in NGAP.

.

**Multicast reception in RRC\_INACTIVE**

* To introduce SIBx in the *gNB-DU System Information* IE.
* Introduce a new F1AP procedure to deliver IEs including *MBS-NeighbourCellList* IE , *thresholdMBS-List* IE, RRC *Multicast MTCH Neighbour Cell Information* IE and *ThresholdIndex* IE.
* Explicit indication is introduced as per cell per session level to indicate the multicast RRC Inactive reception mode activation/deactivation.
* Explicit indication is introduced to indicate stop of broadcasting *RRC Multicast MTCH Neighbour Cell Information* IE and *ThresholdIndex* IE.
* Removal Editor’s note on *MBS Multicast Configuration Response Information* IE.
* Replace the current Editor’s Note on Indication for *Multicast RRC\_INACTIVE Reception* IE with the semantic description “Corresponds to information contained the *inactiveReceptionAllowed* as specified in TS 38.331 [8].”
* 2 code point as (G-RNTI monitoring start, G-RNTI monitoring stop…) in replacement of existing *MBS* *Session Status* IE.

#### 2.3.2 Remaining Open issues

## 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. R2-2309425 Reply LS on multicast reception in RRC\_INACTIVE (R1-2308612; contact: Apple)
2. R2-2309555 Open issue list for NR MBS enhancements CATT, Huawei, HiSilicon, Apple, vivo, Xiaomi, CMCC
3. R2-2309561 Introduction of eMBS UE Capabilities into TS 38.306 vivo
4. R2-2309562 Introduction of eMBS UE Capabilities into TS 38.331 vivo
5. R2-2309567 Further Consideration on UE Capability of eMBS vivo
6. R2-2310310 MAC Running CR for eMBS Apple
7. R2-2310711 RRC running CR for eMBS Huawei, HiSilicon
8. R2-2311152 Clarification for Mission Critical UEs Ericsson
9. R2-2311153 [Draft] Reply to LS addressing packet loss Ericsson
10. R2-2309538 Leftover CP issues on Multicast reception in RRC\_INACTIVE ZTE, Sanechips
11. R2-2309556 Report of [Post123][606][eMBS] Session activation deactivation and state transitions CATT
12. R2-2311257 Report of [Post123][606][eMBS] Session activation deactivation and state transitions CATT
13. R2-2309557 Remaining CP Issues for Multicast reception in RRC\_INACTIVE CATT, CBN
14. R2-2309564 Discussion on Remaining Issues for eMBS CP vivo
15. R2-2309801 Remaining control plane issues for multicast reception in RRC INACTIVE MediaTek inc.
16. R2-2309837 Further discussion on control plane for multicast reception in RRC\_INACTIVE state TD Tech, Chengdu TD Tech
17. R2-2309846 MCCH change notification for multicast sessions in RRC\_INACTIVE state TD Tech, Chengdu TD Tech
18. R2-2309859 Remaining issues on PTM configuration and notification LG Electronics Inc.
19. R2-2309860 Remaining issues on multicast servic continuity LG Electronics Inc.
20. R2-2309946 Control plane aspects of multicast reception in RRC\_INAVTICE Lenovo
21. R2-2310015 Discussion on Service Continuity and RRC state transitions Spreadtrum Communications
22. R2-2310048 Consideration on the control plane issue for multicast reception in RRC\_INACTIVE Xiaomi
23. R2-2310059 Discussion on control plane for multicast reception in RRC\_INACTIVE NEC Corporation.
24. R2-2310087 CP aspects for Multicast reception in RRC\_INACTIVE Samsung R&D Institute India
25. R2-2310265 Discussion on CP open issues CMCC
26. R2-2310311 CP issues for multicast reception in RRC INACTIVE Apple
27. R2-2310549 Coexistence of SDT and Multicast reception in RRC\_INACTIVE Sharp
28. R2-2310550 RRC Resume Due to Bad Reception Quality of Multicast Sharp
29. R2-2310574 Discussion on co-existence between multicast reception in INACTIVE and SDT ITRI
30. R2-2310712 CP issues for multicast reception for RRC INACTIVE UE Huawei, HiSilicon
31. R2-2310797 Control plane details for multicast reception in RRC\_INACTIVE state Nokia, Nokia Shanghai Bell
32. R2-2311034 Remaining aspects of RRC state transition and notifications not concluded by [Post123][606] Qualcomm Incorporated
33. R2-2311065 Consideration of RRC Resume due to bad quality and resume cause Kyocera
34. R2-2311066 Other CP open issues for multicast reception in INACTIVE Kyocera
35. R2-2311092 Discussion on PTM configuration for eMBS Shanghai Jiao Tong University
36. R2-2311236 Multicast reception in RRC\_INACTIVE Ericsson
37. R2-2311237 MBS multicast and UE power saving Ericsson
38. R2-2309539 Leftover UP issues on Multicast reception in RRC\_INACTIVE ZTE, Sanechips
39. R2-2309540 CFR design for Multicast reception in RRC\_INACTIVE ZTE, Sanechips
40. R2-2309558 Remaining UP Issues for Multicast reception in RRC\_INACTIVE CATT, CBN
41. R2-2309565 Discussion on Remaining Issues for eMBS UP vivo
42. R2-2309587 Remaining UP issues for multicast in RRC Inactive NEC
43. R2-2309802 Remaining User plane issues for multicast reception in RRC INACTIVE MediaTek inc.
44. R2-2309845 Further discussion on user plane for multicast reception in RRC\_INACTIVE state TD Tech, Chengdu TD Tech
45. R2-2309947 User plane aspects of multicast reception in RRC\_INAVTICE Lenovo
46. R2-2310016 Discussion on UP remaining issues for Multicast Spreadtrum Communications
47. R2-2310058 Discussion on the data loss during the PDCP count synchronization Xiaomi
48. R2-2310266 Discussion on UP open issues CMCC
49. R2-2310312 UP issues for multicast reception in RRC INACTIVE Apple
50. R2-2310476 Views on the FFS on the multicast CFR configuration aspects Qualcomm Incorporated
51. R2-2310478 UP Aspects for Multicast Reception Samsung
52. R2-2310551 MRB Handling During the RRC State Transition Sharp
53. R2-2310700 Discussion on user plane open issues for eMBS LG Electronics Inc.
54. R2-2310713 UP issues for multicast reception for RRC INACTIVE UE Huawei, HiSilicon
55. R2-2310930 Remaining UP issues for MBS Ericsson
56. R2-2310991 User plane aspects of multicast reception in RRC\_INACTIVE state Nokia, Nokia Shanghai Bell
57. R2-2309559 Remaining Issues on Shared Processing CATT, CBN
58. R2-2309566 Bandwidth Location Issue for Shared Processing Report vivo
59. R2-2310060 Discussion on shared process between broadcast and unicast NEC Corporation.
60. R2-2310088 Shared processing for broadcast and unicast reception Samsung R&D Institute India
61. R2-2310267 Discussion on shared processing CMCC
62. R2-2310586 Discussion on the CFR location for shared MBS capability Xiaomi
63. R2-2310714 Discussion on shared processing for MBS broadcast and unicast reception Huawei, HiSilicon
64. R2-2311006 Additional scenarios for shared processing Nokia, Nokia Shanghai Bell
65. R2-2311049 Remaining aspects of shared processing for MBS broadcast and unicast reception Qualcomm Incorporated
66. R2-2311259 [Pre123bis][601][eMBS] Summary of 7.11.3 Shared processing Qualcomm Incorporated (rapporteur)
67. R2-2311715 Reply LS on multicast reception in RRC\_INACTIVE (R1-2310598; contact: Apple)
68. R2-2311852 Introduction of eMBS CATT
69. R2-2312272 Introduction of eMBS UE Capabilities vivo
70. R2-2312273 Introduction of UE Capability Reporting for eMBS vivo
71. R2-2312275 Summary of [Post123bis][614] Open Issues for eMBS UE Capabilities vivo
72. R2-2312294 Introduction of NR MBS enhancement Apple
73. R2-2312295 Summary of MAC open issue discussion for eMBS Apple
74. R2-2312296 Introduction of NR MBS enhancement (to address open issues) Apple
75. R2-2312524 PDCP Running CR for eMBS Xiaomi
76. R2-2312683 Introduction of eMBS in TS 38.300 CMCC
77. R2-2312684 38.300 running CR open issues for eMBS CMCC
78. R2-2313218 Introduction of eMBS in TS 38.323 Xiaomi
79. R2-2313243 Shared processing description in 38.300 Nokia, Nokia Shanghai Bell discussion
80. R2-2313244 Introduction of eMBS to RRC Huawei, HiSilicon
81. R2-2313372 Introduction of eMBS to RRC Huawei, HiSilicon
82. R2-2313373 MBS open issue list for RRC Huawei, HiSilicon
83. R2-2313548 Introduction of eMBS to RRC Huawei, HiSilicon
84. R2-2311806 Leftover CP issues on Multicast reception in RRC\_INACTIVE ZTE, Sanechips, CBN
85. R2-2311808 MRB continuation for Multicast reception in RRC\_INACTIVE ZTE, Sanechips
86. R2-2311812 Discussion on Remaining Issues for eMBS CP vivo
87. R2-2311853 Remaining CP Issues for Multicast reception in RRC\_INACTIVE CATT, CBN
88. R2-2311886 Remaining CP issues for multicast reception in RRC INACTIVE MediaTek inc.
89. R2-2311999 Discussion on 38.306 running CR for R18 MBS MediaTek Inc.
90. R2-2312070 Discussion on control plane for eMBS NEC
91. R2-2312297 CP issues for multicast reception in RRC INACTIVE Apple
92. R2-2312476 Control plane aspects of multicast reception in RRC\_INACTIVE Lenovo
93. R2-2312506 Consideration on the control plane issue for multicast reception in RRC\_INACTIVE Xiaomi
94. R2-2312545 Discussion on co-existence between multicast reception in INACTIVE and SDT ITRI
95. R2-2312551 Open issues on control plane for multicast reception in RRC\_INACTIVE state TD Tech, Chengdu TD Tech
96. R2-2312569 Discussion on CP remaining issues for Multicast Spreadtrum Communications
97. R2-2312685 Discussion on CP open issues CMCC
98. R2-2312718 CP Aspects for Multicast Reception in RRC\_INACTIVE Samsung R&D Institute India
99. R2-2312853 CP open issues for multicast reception in INACTIVE Kyocera
100. R2-2312962 Open issues for multicast reception in RRC\_INACTIVE Ericsson
101. R2-2312964 MBS multicast and UE power saving Ericsson
102. R2-2313035 No special handling for “Special UE” and other open issues Qualcomm Incorporated
103. R2-2313102 Remaining issues on multicast reception in RRC\_INACTIVE LG Electronics Inc.
104. R2-2313277 CP issues for eMBS Shanghai Jiao Tong University
105. R2-2313362 MBS multicast reception when eDRX or MICO mode are configured Ericsson
106. R2-2313374 Remaining CP issues for multicast reception in RRC\_INACTIVE Huawei, HiSilicon
107. R2-2313415 Coexistence of SDT and Multicast reception in RRC\_INACTIVE Sharp
108. R2-2313416 MRB handling during RRC resume procedure Sharp
109. R2-2313496 Control plane details for multicast reception in RRC\_INACTIVE state Nokia, Nokia Shanghai Bell
110. R2-2311807 MAC Reset for Multicast reception in RRC\_INACTIVE upon RRCRelease ZTE, Sanechips
111. R2-2311813 Discussion on Multicast DRX Timer vivo
112. R2-2311814 Further Discussion on PDCP COUNT vivo
113. R2-2311854 Remaining UP Issues for Multicast reception in RRC\_INACTIVE CATT, CBN
114. R2-2311887 CFR discussion for multicast and broadcast services MediaTek inc.
115. R2-2312071 Discussion on user plane for eMBS NEC
116. R2-2312477 User plane aspects of multicast reception in RRC\_INACTIVE Lenovo
117. R2-2312488 Discussion on the remaining UP issues for the multicast reception in RRC\_INACTIVE Xiaomi
118. R2-2312553 Open issues on user plane for multicast reception in RRC\_INACTIVE state TD Tech, Chengdu TD Tech
119. R2-2312570 User plane aspects of multicast reception in RRC\_INACTIVE state Nokia Corporation
120. R2-2312686 Discussion on UP open issues CMCC
121. R2-2313024 Views on the FFS on the multicast CFR configuration aspects Qualcomm Incorporated
122. R2-2313156 Remaining user plane issues for eMBS LG Electronics Inc.
123. R2-2313326 UP Aspects for Multicast Reception in RRC\_INACTIVE Samsung
124. R2-2313375 Remaining UP issues for multicast reception in RRC\_INACTIVE Huawei, HiSilicon
125. R2-2311855 Remaining Issues on UE Capabilities CATT, CBN
126. R2-2312073 Discussion on shared process NEC
127. R2-2312719 Remaining Issues for Shared Processing Samsung R&D Institute India
128. R2-2313243 Shared processing description in 38.300 Nokia, Nokia Shanghai Bell
129. R2-2313287 Impact of multicast reception in RRC\_INACTIVE state on sharing processing TD Tech, Chengdu TD Tech
130. R2-2313288 Impact of multicast reception in RRC\_INACTIVE state on sharing processing TD Tech, Chengdu TD Tech
131. R2-2313376 Discussion on shared processing for MBS broadcast and unicast reception Huawei, HiSilicon
132. R2-2313383 Clarification on the non-serving cell reception capability of MBS broadcast Xiaomi
133. R3-235144 (TP to TS 37.483) Network sharing for MBS Broadcast (ZTE)
134. R3-235183 (TPs to MBS BL CRs) MBS reception in RAN sharing scenario (Huawei, CBN)
135. R3-235207 (TP for TS 37.483, TS 38.473) Discussion on MBS RAN sharing (Samsung)
136. R3-235272 (TP for TS 38.470, 38.473) Resolution of RAN Sharing open points (Nokia, Nokia Shanghai Bell)
137. R3-235278 Support of MBS in RAN sharing scenarios (Qualcomm Incorporated)
138. R3-235406 Stage-2 CR for Introducing RAN OAM based solution for MBS RAN Sharing ( Qualcomm Inc, Huawei, Nokia, Nokia Shanghai Bell, ZTE, Samsung, CMCC, FirstNet, ATT, Lenovo, MITRE, LGE,China Unicom, China Telecom,NTT DOCOMO, CBN, Google,NEC)
139. R3-235415 Discussion on efficient MBS reception in RAN sharing scenario (CATT)
140. R3-235461 Considerations, comments and content to progress Rel-18 work on MBS reception in RAN sharing scenarios (Ericsson)
141. R3-235145 (TP to 38.413, 38.473) Further thoughts on Multicast reception in RRC\_INACTIVE (ZTE, Sanechips, CBN)
142. R3-235184 (TPs to MBS BL CRs) Multicast Reception for RRC\_INACTIVE state Ues (Huawei, CBN)
143. R3-235208 (TP for BLCR TS 38.473) Discussion on MBS reception by inactive state UE (Samsung)
144. R3-235252 Discussion on multicast reception in RRC\_INACTIVE (Lenovo)
145. R3-235273 (TP for TS 38.300, TS 38.423, TS 38.470, TS 38.473) Resolution of open points for MBS Reception in RRC Inactive State (Nokia, Nokia Shanghai Bell)
146. R3-235279 Enhancements to support Multicast reception by Ues in RRC\_INACTIVE state (Qualcomm Incorporated)
147. R3-235414 Discussion on Multicast over Inactive (CATT)
148. R3-235462 Continuation, clarification and contributions to progress Rel-18 work on support of multicast reception in RRC\_INACTIVE (Ericsson)
149. R3-235644 Multicast Reception in RRC\_INACTIVE state (CMCC)
150. R3-235797 Summary of unofficial offline discussion on Rel-18 MBS (CATT)
151. R3-237161 Leftover issues on network sharing for MBS Broadcast (ZTE)
152. R3-237215 (TPs to MBS BL CRs of TS 38.401, 38.413, 38.470, 38.473, 37.483) MBS reception in RAN sharing scenario (Huawei, CBN)
153. R3-237264 Support of MBS in RAN sharing scenarios (Qualcomm Incorporated)
154. R3-237272 (TP for TS 38.413, TS 38.473, TS 38.470) Resolution of RAN sharing open points (Nokia, Nokia Shanghai Bell)
155. R3-237396 Finalising Support for MBS Reception in RAN Sharing Scenarios (Ericsson)
156. R3-237557 (TP for BLCRs)Discussion on efficient MBS reception in RAN sharing scenario (CATT,CBN)
157. R3-237334 (TP to BL CR for 37.483, 38.473) Introducing MBS RAN sharing (Samsung)
158. R3-237152 LS on Providing MBS assistance information from SMF towards NG-RAN node during Xn handover (SA2(Nokia))
159. R3-237216 (TPs to MBS BL CRs of TS 38.300, 38.413, 38.473, 38.470) Multicast Reception for RRC\_INACTIVE state UEs (Huawei, CBN)
160. R3-237558 (TP for BLCRs)Discussion on Multicast over Inactive (CATT,CBN)
161. R3-237162 (TPs to BLCRs) Flowchart for multicast RRC\_INACTIVE reception (ZTE)
162. R3-237263 Enhancements to support Multicast reception by UEs in RRC\_INACTIVE state (Qualcomm Incorporated)
163. R3-237273 (TP for TS 38.423, TS 38.300, TS 38.473) Resolution of open points for RRC Inactive mode reception (Nokia, Nokia Shanghai Bell)
164. R3-237274 Reply LS on providing MBS assistance information from SMF towards NG-RAN node during Xn handover (Nokia, Nokia Shanghai Bell)
165. R3-237335 (TP for BL CR for TS 38.473) Introducing MBS reception by inactive state UE (Samsung)
166. R3-237397 Finalising Support for RRC\_INACTIVE state (Ericsson)
167. R3-237419 Discussion on multicast reception in RRC\_INACTIVE (Lenovo)Remaining issues of supporting MBS reception in RAN Sharing (Lenovo)
168. R3-237895 Summary of Rel-18 MBS offline discussion (CATT)
169. [R1-2309046](file:///E%3A%5C3GPP%20RAN1%5CDocs%5CR1-2309046.zip) Discussion on CSS for multicast reception in RRC\_INACTIVE vivo
170. [R1-2309473](file:///E%3A%5C3GPP%20RAN1%5CDocs%5CR1-2309473.zip) Discussion on multicast reception in RRC\_INACTIVE CATT, CBN
171. [R1-2309654](file:///E%3A%5C3GPP%20RAN1%5CDocs%5CR1-2309654.zip) Discussion on LS on multicast reception in RRC\_INACTIVE CMCC
172. [R1-2309807](file:///E%3A%5C3GPP%20RAN1%5CDocs%5CR1-2309807.zip) Discussion on multicast reception in RRC\_INACTIVE Apple
173. [R1-2309927](file:///E%3A%5C3GPP%20RAN1%5CDocs%5CR1-2309927.zip) Discussion on multicast reception in RRC\_INACTIVE Nokia, Nokia Shanghai Bell
174. [R1-2310112](file:///E%3A%5C3GPP%20RAN1%5CDocs%5CR1-2310112.zip) Discussion on the RAN1 impact to support for multicast reception in RRC\_INACTIVE Qualcomm Incorporated
175. [R1-2310503](file:///E%3A%5C3GPP%20RAN1%5CDocs%5CR1-2310503.zip) Summary on multicast reception in RRC\_INACTIVE Moderator (Apple)
176. [R1-2310597](file:///E%3A%5C3GPP%20RAN1%5CDocs%5CR1-2310597.zip) Draft reply LS on multicast reception in RRC\_INACTIVE Moderator (Apple)
177. [R1-2310788](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2310788.zip) LS on UE Capability of Multicast Reception in RRC\_INACTIVE RAN2, vivo
178. [R1-2310833](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2310833.zip) Discussion on simultaneous reception for Rel-18 MBS Huawei, HiSilicon, CBN
179. [R1-2311007](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2311007.zip) [Draft] Reply LS on UE Capability of Multicast Reception in RRC\_INACTIVE ZTE, CBN
180. [R1-2311066](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2311066.zip) Draft reply LS on UE Capability of Multicast Reception in RRC\_INACTIVE vivo
181. [R1-2311067](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2311067.zip) Draft TPs for UE supporting FDMed multicast MCCH and PBCH in a slot for multicast reception in RRC\_INACTIVE vivo
182. [R1-2311283](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2311283.zip) Discussion on RAN2 LS on UE capability for multicast reception in RRC\_INACTIVE CATT, CBN
183. [R1-2311468](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2311468.zip) Discussion on LS on UE Capability of Multicast Reception in RRC\_INACTIVE CMCC
184. [R1-2311658](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2311658.zip) Draft reply LS on UE Capability of Multicast Reception in RRC\_INACTIVE Apple
185. [R1-2311788](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2311788.zip) [Draft] Reply LS on UE Capability of Multicast Reception in RRC\_INACTIVE Nokia, Nokia Shanghai Bell
186. [R1-2311811](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2311811.zip) Draft reply LS on UE Capability of FDMed between Multicast MCCH and PBCH Samsung
187. [R1-2311957](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2311957.zip) Draft LS reply on UE Capability of Multicast Reception in RRC\_INACTIVE MediaTek Inc.
188. [R1-2312012](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2312012.zip) Discussion of RAN2 LS on the UE Capability of Multicast Reception in RRC\_INACTIVE Qualcomm Incorporated
189. [R1-2312193](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2312193.zip) Discussion on LS on UE capability of multicast reception in RRC\_INACTIVE Ericsson
190. [R1-2312497](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2312497.zip) Summary on replying LS on UE Capability of Multicast Reception in RRC\_INACTIVE Moderator (vivo)
191. [R1-2311008](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2311008.zip) Discussion on multicast reception in RRC\_INACTIVE ZTE, CBN
192. [R1-2311467](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2311467.zip) Discussion on multicast reception in RRC\_INACTIVE CMCC
193. [R1-2311659](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2311659.zip) Maintenance of multicast reception in RRC\_INACTIVE Apple
194. [R1-2311787](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2311787.zip) Discussion on multicast reception in RRC\_INACTIVE Nokia, Nokia Shanghai Bell
195. [R1-2312011](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2312011.zip) Discussion on the RAN1 spec impact to support multicast reception in RRC\_INACTIVE Qualcomm Incorporated
196. [R1-2312207](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2312207.zip) Text proposal for Rel-18 MBS Huawei, HiSilicon, CBN
197. [R1-2312427](file:///C%3A%5CUsers%5Czhumin%5CDocs%5CR1-2312427.zip) Summary of TPs for multicast reception in RRC\_INACTIVE Moderator (Apple)

 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