3GPP TSG-RAN WG2 Meeting #121-bis electronic DRAFT\_ R2-2304207

April 17-26, 2023

Source: Session chair (Huawei)

Title: Report from MBS breakout session

## Offline discussions

Kicked-off together with a meeting start:

* [AT121bis-e][600] Organizational - MBS session

Scope:

* + - Share plans and list of ongoing email discussions for MBS session
    - Share meeting notes and agreements for review and endorsement
* [AT121bis-e][601][MBS-R17] CP issues (Ericsson)

Scope: Review Tdocs/CRs submitted to 6.2.2, identify agreeable proposals and CRs for approval.

Outcome:

* Phase 1: Summary/report with proposals
* Phase 2: Summary/report (refinement of proposals, if needed), (updated) CRs
* Phase 3: (updated) CRs ready for approval

Deadline:

* Phase 1: Deadline for comments: W1 Thursday 0800 UTC
* Phase 2: Deadline for comments: W2 Tuesday 0500 UTC (report available for CB session, if needed)
* Phase 3: Agreeable CRs available EOM
* [AT121bis-e][602][MBS-R17] Stage-2 and UP issues (Nokia)

Scope: Review Tdocs/CRs submitted to 6.2.1 and 6.2.3, identify agreeable proposals and CRs for approval.

Outcome:

* Phase 1: Summary/report with proposals
* Phase 2: Summary/report (refinement of proposals, if needed), (updated) CRs
* Phase 3: (updated) CRs ready for approval

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* Phase 3: Agreeable CRs available EOM

# 2 General

## 2.4 Instructions

Focus for current meeting

- RAN2 121bis-e has a full agenda, as usual limited by the TU planning. It is expected to focus on Rel-18. It will be up to Session chairs to prioritize maintenance topics. In general, parts of Rel-17 that are still somewhat immature, corrections with potential significant impact and incoming email discussions should be treated. It is also recognized that the time between meetings may be short and TS version availability may be an issue for some maintenance topics. At next meeting RAN2 122, maintenance will be prioritized, as usual.

Tdoc limitations

Tdoc limitations doesn’t apply to Rapporteur Input, i.e.

- Assigned summary rapporteur input of the summary.

- Email / offline discussions outcomes by discussion rapporteur,

- WI rapporteurs input for WI planning etc,

- TS rapporteur input for TS maintenance

- Contact Company of a LSin that triggers RAN2 action may submit one tdoc to facilitate the LS reply. This only applies to one of the contact companies in case there are several (default the first).

Tdoc limitations doesn’t apply to Input created at the meeting, revisions, assigned documents etc.

Tdoc limitations doesn’t apply to shadow / mirror CRs (Cat A), or In-Principle Agreed CRs.

Tdoc limitations applies to all other submitted tdocs (e.g. discussion tdoc and CR tdoc are counted as two).

[R2-2302402](file:///C:\Users\Dwx974486\Documents\3GPP\TSGR2\TSGR2_121bis\docs\R2-2302402.zip) RAN2 Handbook MCC discussion Late

## 6.2 NR Multicast

(NR\_MBS-Core; leading WG: RAN2; REL-17; WID: RP-201038)

Tdoc Limitation: 2 tdocs

### 6.2.1 Organizational and Stage-2 corrections

Incoming LSs, general issues, corrections to TS 38.300.

[R2-2302406](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302406_R1-2302209.doc) Reply LS on SPS configuration for unicast and multicast (R1- 2302209; contact: ASUSTek) RAN1 LS in Rel-17 NR\_MBS-Core To:RAN2

[R2-2303126](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303126%20General%20MBS%20CR%20to%2038.300.docx) General MBS CR to 38.300 Nokia, Nokia Shanghai Bell CR Rel-17 38.300 17.4.0 0651 - F NR\_MBS-Core

[R2-2304154](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2304154%20MBS%20broadcast%20reception%20via%20unicast.docx) MBS broadcast and unicast reception Ericsson discussion Rel-17 NR\_MBS-Core Late

*Withdrawn*

R2-2303618 Clarifications for MBS broadcast service continuity Ericsson CR Rel-17 38.300 17.4.0 0657 - F NR\_MBS-Core Withdrawn

### 6.2.2 CP corrections

Including corrections to TS 38.331, TS 38.304, TS 38.306.

[R2-2302522](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302522%20Remaining%20issues%20on%20Supporting%20MBS%20in%20SNPN.docx) Remaining issues on Supporting MBS in SNPN CATT, CBN discussion NR\_MBS-Core

[R2-2302523](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302523%20Corrections%20to%20TS%2038.331.docx) Corrections to TS 38.331 CATT, CBN CR Rel-17 38.331 17.4.0 3946 - F NR\_MBS-Core

[R2-2302590](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302590_CR3948_38331%20Correction%20to%20PDSCH%20Aggregation%20of%20MBS%20SPS.docx) Correction to PDSCH Aggregation of MBS SPS vivo CR Rel-17 38.331 17.4.0 3948 - F NR\_MBS-Core

[R2-2302823](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302823_38.331_CR3967_CP%20Corrections%20for%20MBS.docx) CP Corrections for MBS Samsung Electronics Co., Ltd CR Rel-17 38.331 17.4.0 3967 - F NR\_MBS-Core

[R2-2303031](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303031_CR3978_38331%20Clarificaition%20on%20Key%20Refresh%20in%20MBS.docx) Clarificaition on Key Refresh in MBS vivo CR Rel-17 38.331 17.4.0 3978 - F NR\_MBS-Core Late

[R2-2303127](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303127%20General%20MBS%20CR%20to%2038.331%20v2.docx) General MBS CR to 38.331 Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.4.0 3987 - D NR\_MBS-Core

[R2-2303552](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303552%20Misc%20correction%20to%20TS%2038.331%20on%20NR%20MBS.docx) Misc correction to TS 38.331 on NR MBS ZTE, Sanechips CR Rel-17 38.331 17.4.0 4015 - F NR\_MBS-Core

[R2-2303619](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303619%20Corrections%20for%20MBS%20with%20eDRX%20and%20MICO%20mode.docx) Corrections for MBS with eDRX and MICO mode Ericsson CR Rel-17 38.304 17.4.0 0335 - F NR\_MBS-Core Late

[R2-2303919](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303919%20Corrections%20on%20MBS%20SPS%20configuration_v1.docx) Corrections on MBS SPS configuration ASUSTeK CR Rel-17 38.331 17.4.0 4037 - F NR\_MBS-Core

[R2-2303966](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303966%20Miscellaneous%20RRC%20corrections%20for%20MBS.docx) Miscellabeous RRC corrections for MBS Huawei, CBN, HiSilicon CR Rel-17 38.331 17.4.0 4044 - F NR\_MBS-Core

[R2-2303967](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303967%20Discussion%20on%20the%20remainning%20MBS%20issues.docx) Discussion on the remainning MBS issues Huawei, HiSilicon discussion Rel-17 NR\_MBS-Core

[R2-2304170](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2304170%20Editorial%20modification%20to%20TS%2038.331%20on%20NR%20MBS.docx) Editorial modification to TS 38.331 on NR MBS MediaTek inc. CR Rel-17 38.331 17.4.0 4062 - D NR\_MBS-Core

*Withdrawn*

R2-2302520 Remaining issues on Supporting MBS in SNPN CATT discussion NR\_MBS-Core Withdrawn

R2-2302521 Corrections to TS 38.331 CATT CR Rel-17 38.331 17.4.0 3945 - F NR\_MBS-Core Withdrawn

[R2-2304146](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2304146%20Editorial%20modification%20to%20TS%2038.331%20on%20NR%20MBS.docx) Editorial modification to TS 38.331 on NR MBS MediaTek inc. CR Rel-17 38.331 17.4.0 4058 - D NR\_MBS\_enh-Core Withdrawn

### 6.2.3 UP corrections

Including corrections to MAC, PDCP, RLC and SDAP.

[R2-2302767](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302767_CR1579_38321%20Corrections%20on%20cfr-ConfigMulticast%20and%20Multicast%20DRX.docx) Corrections on cfr-ConfigMulticast and Multicast DRX NEC Corporation, LG Electronics Inc, Nokia, Nokia Shanghai Bell, Samsung CR Rel-17 38.321 17.4.0 1579 - F NR\_MBS-Core

[R2-2302768](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302768%20Discussion%20on%20the%20correction%20for%20cfr-ConfigMulticast%20and%20Multicast%20DRX.docx) Discussion on the correction for cfr-ConfigMulticast and Multicast DRX NEC Corporation, LG Electronics Inc, Nokia, Nokia Shanghai Bell, Samsung discussion Rel-17 NR\_MBS-Core

[R2-2303067](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303067%2038.321%20CR1583%20(Rel17)%20UP%20Corrections%20for%20MBS.docx) UP Corrections for MBS Samsung R&D Institute India CR Rel-17 38.321 17.4.0 1583 - F NR\_MBS-Core

## 7.11 Enhancements of NR Multicast and Broadcast Services

(NR\_MBS\_enh-Core; leading WG: RAN2; REL-18; WID: RP-221458)

Time budget: 0.75 TU

Tdoc Limitation: 3 tdocs

### 7.11.1 Organizational

LS in, rapporteur input, running CRs etc.

[R2-2302426](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302426_R3-231030.docx) 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

* Noted

[R2-2303795](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303795%2038.300%20Running%20CR%20for%20MBS%20enhancements.docx) 38.300 Running CR for MBS enhancements CMCC draftCR Rel-18 38.300 17.4.0 B NR\_MBS\_enh-Core

* Noted
* Should be updated with new agreements and submitted to the next meeting

[R2-2303971](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303971%20RRC%20running%20CR%20for%20eMBS.docx) RRC running CR for eMBS Huawei, HiSilicon draftCR Rel-18 38.331 17.4.0 B NR\_MBS\_enh-Core

*Moved from 7.11.2*

* Noted
* Should be updated with new agreements and submitted to the next meeting

### 7.11.2 Multicast reception in RRC\_INACTIVE

Objective: Specify support of multicast reception by UEs in RRC\_INACTIVE state [RAN2, RAN3], PTM configuration for UEs receiving multicast in RRC\_INACTIVE state [RAN2]. Study the impact of mobility and state transition for UEs receiving multicast in RRC\_INACTIVE. (Seamless/lossless mobility is not required) [RAN2, RAN3].

Papers should not be submitted to 7.11.2, please use 7.11.2.1 or 7.11.2.2 instead.

#### 7.11.2.1 Control plane

Further details of PTM configuration, service continuity, notifications and RRC state transitions handling including:

- FFS whether the network can provide PTM configuration for intra-gNB cells

- PTM configuration structure (message, parameters etc.)

- service continuity during mobility

- notifications/group paging enhancements due to session activation/deactivation or due to Inactive mutlicast reception on/off

- MCCH change notification vs. (group) Paging for different cases

Including report of [Post121][606][eMBS] Service continuity and notifications (ZTE)

**NOTE: Aspects covered by [Post121][606][eMBS] should not be discussed in company papers**

[R2-2303553](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303553%20Summary%20of%20%5bPost121%5d%5b606%5d%5beMBS%5d%20Service%20continuity%20and%20notifications%20(ZTE).docx) Summary of [Post121][606][eMBS] Service continuity and notifications (ZTE) ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh

**# service continuity scenarios in RRC\_INACTIVE**

Proposal 1. (21/22) Similar to Rel-17 broadcast reception procedure, UE acquires new SIB and multicast MCCH to get PTM configuration after cell reselection.

Proposal 2. (19/22) 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.

Proposal 3. (14/22) UE is able to trigger RRC connection resumption if the reception quality of the multicast data is below a configured threshold, FFS on the definition of reception quality.

DISCUSSION P3

* QCM does not think we need to specify this and the UE can trigger resume based on implementation.
* Nokia thinks QCM’s approach could work, but also finds it useful for NW to have some control for this. Huawei agrees with Nokia view. Ericsson thinks NW should always be in control and we cannot just allow UE to resume whenever it wants.
* CATT is fine with P3, even though this is optimization.
* QCM would like to avoid forcing the UE to go back to Connected too often and would like to avoid too complex discussions.
* ZTE thinks some NW control is needed. LG agrees, otherwise UEs may abuse a possibility to go to CONNECTED.
* TD Tech, NEC supports P3.
* 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 & NCL**

Proposal 4. (19/22) A frequency prioritization mechanism is needed 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. Whether to have down-prioritization mechanism is FFS.

Proposal 5: (19/22) 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.

Proposal 6: (17/22) The neighbor cell list mechanism for multicast reception in RRC\_INACTIVE can be configured, e.g., UE resumes RRC connection immediately if service is not available in the re-selected cell by NCL, without reading MCCH in the re-selected cell.

DISCUSSION P4

* Ericsson does not think this is needed for MULTICAST. BS was assumed to use a single frequency which is not the case for MC. Also, this could lead to UEs reselecting congested cells. Congestion does not happen in all frequencies.
* Nokia thinks that in case MC is provided in INACTIVE, then they would like to see UEs reselecting to these frequencies, so are OK with the proposal.
* QCM supports P4.
* Ericsson this this should be optional for the network to configure it. CATT thinks this should be mandatory.
* 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.

**# notification on session state change or data availability**

Proposal 7: FFS whether a "special UE" identified by 5GC can be released to RRC\_INACTIVE (e.g., when the session is deactivated); and if yes, FFS how can network enable such UE to resume to RRC\_CONNECTED (e.g., upon session activation).

Proposal 8: (17/22) 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). FFS how to enhance group paging (e.g., flag to indicate UE behaviour on monitoring of G-RNTI, UE's RRC state or session state).

Proposal 9: (20/22) Upon events like session activation/data transmission resumed, if PTM configuration is not available to UE, UE initiates RRC connection resumption.

Proposal 10: (22/22) 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.

Proposal 11: Consider the following two options: enhanced group paging (9/22) or enhanced MCCH (9/22), to enable Rel-18 UE to stay in RRC\_INACTIVE and stop monitoring corresponding G-RNTI upon events like session deactivation/temporary no data.

Proposal 12. (18/22) No additional enhancement is needed specifically for enabling UE to stay in RRC\_INACTIVE and stop monitoring corresponding G-RNTI upon session release.

Proposal 13: (16/22) Legacy group paging (Rel-17) or legacy per UE paging are used to resume UE to RRC\_CONNECTED state.

* Chair: Continue via offline (ZTE)

[R2-2302524](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302524%20%20Discussions%20on%20PTM%20Configuration%20and%20Mobility.docx) Discussions on PTM Configuration and Mobility CATT, CBN discussion NR\_MBS\_enh-Core

[R2-2302525](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302525%20Notifications%20for%20Multicast%20Reception%20in%20RRC_INACTIVE.docx) Notifications for multicast reception in RRC\_INACTIVE CATT, CBN discussion NR\_MBS\_enh-Core

[R2-2302579](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302579%20Multicast%20MCCH%20design%20for%20multicast%20in%20RRC%20INACTIVE.docx) Multicast MCCH design for multicast in RRC INACTIVE MediaTek inc. discussion Rel-18 NR\_MBS\_enh-Core

[R2-2302608](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302608%20Control%20plane%20for%20multicast%20reception%20in%20RRC_INACTIVE%20state.docx) Control plane for multicast reception in RRC\_INACTIVE state TD Tech, Chengdu TD Tech discussion Rel-18

[R2-2302669](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302669%20Further%20Discussion%20on%20eMBS%20from%20CP.doc) Further Discussion on eMBS from CP vivo discussion Rel-18 NR\_MBS\_enh-Core

[R2-2302769](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302769%20Discussion%20on%20control%20plane%20for%20Multicast%20reception%20in%20RRC_INACTIVE.docx) Discussion on control plane for Multicast reception in RRC\_INACTIVE NEC Corporation discussion Rel-18 NR\_MBS\_enh-Core

[R2-2302962](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302962%20CP%20aspects%20for%20Multicast%20reception%20in%20RRC_INACTIVE.docx) CP aspects for Multicast reception in RRC\_INACTIVE Samsung R&D Institute India discussion Rel-18

[R2-2303049](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303049-notif&state-transitions-rrc-inactive.docx) Service continuity, RRC state transitions and notifications Qualcomm Incorporated discussion Rel-18 NR\_MBS\_enh-Core

[R2-2303129](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303129%20Control%20plane%20details%20for%20multicast%20reception%20in%20RRC_INACTIVE%20state.docx) Control plane aspects of multicast reception in RRC\_INACTIVE Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MBS\_enh-Core

R2-2303159 Discussion for UEs receiving Multicast in RRC\_INACTIVE state TCL Communication Ltd. discussion

[R2-2303228](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303228%20MBS_CP.docx) Discussion on CP aspects for multicast reception in RRC\_INACTIVE Lenovo discussion Rel-18

[R2-2303271](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303271_eMBS_PTM-config_mobility.doc) Further consideration of PTM configuration and mobility aspects on multicast reception in RRC INACTIVE Kyocera discussion Rel-18

[R2-2303272](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303272_eMBS_Notificaiton_RRC-state-transition.doc) Notification and RRC state transition aspects on multicast reception in RRC INACTIVE Kyocera discussion Rel-18 [R2-2301587](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2301587_eMBS_Notificaiton_RRC-state-transition.doc)

[R2-2303307](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303307%20PTM%20configuration%20for%20multicast%20reception%20in%20RRC_INACTIVE.docx) PTM configuration for multicast reception in RRC\_INACTIVE LG Electronics Inc. discussion Rel-18

[R2-2303308](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303308%20Multicast%20activationdeactivation%20notification%20and%20RRC%20state%20transitions.docx) Multicast activationdeactivation notification and RRC state transitions LG Electronics Inc. discussion Rel-18

[R2-2303419](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303419_PTM%20configuration%20for%20multicast%20reception%20in%20RRC_INACTIVE_v0.doc) PTM configuration for multicast reception in RRC\_INACTIVE Apple discussion Rel-18 NR\_MBS\_enh-Core

[R2-2303554](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303554%20Misc%20CP%20issues%20on%20multicast%20reception%20in%20RRC_INACTIVE.doc) Misc CP issues on multicast reception in RRC\_INACTIVE ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh

[R2-2303585](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303585.doc) Discussion on service continuity and RRC state transitions Spreadtrum Communications discussion Rel-18

[R2-2303620](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303620%20Multicast%20reception%20in%20RRC_INACTIVE.docx) Multicast reception in RRC\_INACTIVE Ericsson discussion Rel-18 NR\_MBS\_enh-Core Late

[R2-2303621](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303621%20MBS%20multicast%20with%20eDRX%20and%20MICO%20mode.docx) MBS multicast with eDRX and MICO mode Ericsson discussion Rel-18 NR\_MBS\_enh-Core Late

[R2-2303630](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303630_Ensuring%20desired%20level%20of%20reliability%20for%20an%20MBS%20session.doc) Ensuring desired level of reliability for an MBS session in RRC\_INACTIVE Interdigital Inc. discussion Rel-18 NR\_MBS\_enh-Core

*Moved from 7.11.2*

[R2-2303776](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303776%20RRC%20Resume%20for%20Multicast%20in%20RRC_INACTIVE.docx) RRC Resume for Multicast in RRC\_INACTIVE Sharp discussion

[R2-2303796](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303796 Discussion%20on%20PTM%20configuration%20related%20open%20issues.docx) Discussion on PTM configuration related open issues CMCC discussion Rel-18 NR\_MBS\_enh-Core Late

[R2-2303797](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303797 Discussion%20on%20RRC_INACTIVEUE%20join.docx) Discussion on RRC\_INACTIVE UE join procedure CMCC discussion Rel-18 NR\_MBS\_enh-Core Late

[R2-2303943](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303943%20Consideration%20on%20the%20notifications%20for%20multicast%20reception%20in%20RRC_INACTIVE.docx) Consideration on the notifications for multicast reception in RRC\_INACTIVE Beijing Xiaomi Software Tech discussion Rel-18

[R2-2303968](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303968%20Multicast%20reception%20for%20RRC%20INACTIVE%20UE.docx) Multicast reception for RRC INACTIVE UE Huawei, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core

[R2-2304021](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2304021.docx) Control plane aspects for multicast reception in RRC\_INACTIVE Intel Corporation discussion Rel-18 NR\_MBS\_enh-Core

[R2-2304121](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2304121%20Discussion%20on%20PTM%20configuration.docx) Discussion on PTM configuration Shanghai Jiao Tong University discussion

#### 7.11.2.2 User plane

Including aspects such as CFR configuration, MAC operation, identification of PHY layer impacts etc.

Including report of [Post121][607][eMBS] UP issues for Multicast in RRC Inactive (Apple)

**NOTE: Aspects covered by [Post121][607][eMBS] should not be discussed in company papers**

[R2-2303420](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303420_Report%20for%20%5bPost121%5d%5b607%5d%5beMBS%5d%20UP%20issues%20for%20Multicast%20in%20RRC%20Inactive%20(Apple)_v0.docx) Summary of [Post121][607][eMBS] UP issues for Multicast in RRC Inactive (Apple) Apple discussion Rel-18 NR\_MBS\_enh-Core

**[CFR]**

Proposal 1.1 (for agreement, 14/17): 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.

Proposal 1.2 (for agreement, 14/17): Multicast CFR in RRC\_INACTIVE and broadcast CFR can be configured differently.

DISCUSSION P1.1-P1.2

* ZTE has some concerns, i.e. in Connected the UE may already have a CFR with different SCS and in different BWP. Apple clarifies that in this case the NW will have to reconfigure the UEs (according to companies views), as otherwise BWP switching would be required.
* For P1.2 QCM would also like to add that that they need to be overlapping.
* Huawei, CATT prefers original wording. ZTE as well, we do not have to limit NW configuration.
* Huawei indicates we need to understand why there is an issue which requires such limitation.
* LG wonders whether P1.1 means we only have a single CFR for multicast INACTIVE? Apple clarifies this is not the point of this agreement.
* 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).

Proposal 1.3 (for discussion): Following issues on multicast CFR in RRC\_INACTIVE need further discussion:

* Issue 1: Whether case B and case D can be supported for multicast CFR in RRC\_INACTIVE;
* Issue 2: Whether multicast CFR in RRC\_CONNECTED and in RRC\_INACTIVE can be different;
* Issue 3: Whether multicast CFR for MCCH and MTCH can be configured differently.

DISCUSSION P1.3

* QCM think B and D should not be supported as R1 excluded this in Rel-17 for BC. For issue 2 – up to NW. For issue 3 – no need.
* CATT, CMCC think we can follow MBS BC principles.
* Samsung indicates we need to minimize RAN1 involvement, so no need for Case B and D. Intel, Ericsson agrees.
* For I2, Intel think this is up to NW.
* Nokia thinks Case B and D is supported for MBS broadcast. Huawei thinks this is not supported in Rel-17 for BC.
* Lenovo wonders if NW will schedule UEs in INACTIVE and CONNECTED separately? NEC sees the same issue and also thinks there is service continuity issue.
* ZTE asks whether this is related to RedCap UE.
* 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.
* Working Agreement: The same CFR is used for multicast MCCH and MTCH.
* ZTE objects to agreeing: “The same CFR is used for multicast MCCH and MTCH”.

**[HARQ]**

Proposal 2.1 (for agreement, 17/17): HARQ feedback related information in the DCI is not needed or can be ignored for multicast transmission to RRC\_INACTIVE UE.

Proposal 3.1 (for agreement 16/18): The HARQ operation for multicast reception in RRC\_INACTIVE is same as the operation without HARQ feedback in RRC\_CONNECTED state。

Proposal 4.1 (for agreement, 17/17): that the multicast transmission RRC\_INACTIVE is performed via beam sweeping based on SSB index like broadcast MBS (i.e. beam information is not need in DCI.

Proposal 5.1 (for agreement, 17/17): RAN1 to confirm whether it is feasible 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.

DISCUSSION

* For P4.1, Nokia thinks the indication would be useful to indicate Connected UE whether beam sweeping is used.
* CATT would like to agree/assume P5.1 and ask RAN1 only for confirmation. Apple agrees.
* TD Tech think HARQ feedback is related to DRX mode and to CFR configuration. TD Tech think P2.1 is not clear. Some UEs may use feedback information. Apple clarifies that we agreed that INACTIVE UEs will not provide feedback.
* On P5.1, QCM asks about how to handle MCCH.
* Ericsson asks whether format 4-0 is excluded for MTCH? Apple clarifies that in the e-mail discussion no one seemed to want it. Ericsson wonders if it means we always have the same resources for CONNECTED and INACTIVE and this may lead to some complications.
* ZTE asks about the need for 4-2, because we will not use beam indication. TD Tech agrees 4-2 is not useful for INACTIVE.
* HARQ feedback related information in the DCI is not needed or can be ignored for multicast transmission to RRC\_INACTIVE UE. (
* The HARQ operation for multicast reception in RRC\_INACTIVE is same as the operation without HARQ feedback in RRC\_CONNECTED state.
* The multicast transmission RRC\_INACTIVE is performed via beam sweeping based on SSB index like broadcast MBS (i.e. beam information is not need in DCI.
* For MTCH, RAN2 assumes to reuse the same DCI format of R17 multicast (i.e. DCI format 4-1/4-2) for dynamic scheduling of multicast in RRC INACTIVE. RAN2 assumes for MCCH scheduling, DCI format 4-0 is used. We will ask RAN1 to confirm whether it is feasible and whether both 4-1 and 4-2 are needed.
* We will also indicate other relevant agreements to RAN1 (e.g. on beam sweeping etc.)
* Chair: Continue the discussion via offline (Apple)

**[SPS]**

Observation: R17 multicast SPS in CONNECTED state can not be directly used for multicast SPS in RRC\_INACTIVE state.

Proposal 6.1 (for discussion, 10/16): RAN2 to first discuss how multicast SPS work in RRC\_INACTIVE, before deciding whether to support it.

Proposal 7.1 (for discussion): Discuss whether the SPS activation is via MCCH or via L1 activation/deactivation command without HARQ feedback.

Proposal 7.2 (for discussion): For the SPS activation via L1 command without HARQ feedback, it should be further checked with RAN1.

**[DRX]**

Proposal 8.1 (for agreement, 14/17): For the DRX operation for multicast in RRC\_INACTIVE, take the multicast DRX but disable HARQ RTT and DRX Retransmission as baseline.

**[LCID and RNTI]**

Proposal 9 (for agreement, 17/17): 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).

Proposal 10 (for agreement, 15/17): Introduce a new LCID in Table 6.2.1-1 for multicast MCCH.

Proposal 11.1 (for agreement, 16/17): Introduce new RNTI in Table 7.1-1 for multicast MCCH.

Proposal 11.2 (for discussion): Following open issues on new RNTI for multicast MCCH need further discussion:

- Open issue 1: whether the RNTI is per cell or per multicast session;

- Open issue 2: whether the RNTI is fix value or configurable;

- Open issue 3: whether to consider reusing legacy RNTI(e.g., G-RNTI).

**[L2 operation during RRC state transistion]**

Proposal 12 (for agreement, 13/17): When entering RRC\_INACTIVE state, UE does not suspend multicast MRB(s) configured for the multicast reception in RRC\_INACTIVE.

Proposal 13 (for agreement, 13/17): When entering RRC\_INACTIVE state, UE doesnot stop the MAC DRX timers (i.e. drx-onDurationTimerPTM or drx-InactivityTimerPTM) configured for the multicast reception in RRC\_INACTIVE.

Proposal 14 (for discussion, 12/17): RAN2 to discuss whether to support the HARQ continuation for MBS multicast reception (i.e. not flushing the soft buffer used for MBS multicast) during the RRC state transition.

**[L2 operation during mobility]**

Proposal 15.1 (for agreement, 12/17): UE does not need to re-establish PDCP entity (i.e. re-initiate the PDCP variables) of the multicast MRB if PDCP COUNT can be sync between source and target cell during INACTIVE mobility.

Proposal 15.2 (for discussion): If PDCP count is sync between source and target cells, following open issues on PDCP handling during INACTIVE mobility need further discussion:

* Open issue 1: How does UE know PDCP count is sync between cells?
* Open issue 2: Whether to standardize the UE PDCP operation during INACTIVE mobility?

Proposal 16.1 (for discussion): If PDCP count is not sync between source and target cells, following open issues on PDCP operation during INACTIVE mobility needs to be considered:

* Open issue 1: What’s the UE operation if PDCP count is not sync between cells?
* Open issue 2: How does UE know PDCP count is not sync between cells?

**[Others]**

Proposal 17.1 (for discussion ): Check with RAN1 with the following two issues:

* Issue 1: Whether PDSCH aggregatiopn is supporte (HARQ related)?
* Issue 2: Whether separate CSS for R18 multicast MCCH/MTCH is supported (CFR configuration related)?

Proposal 17.2 (for discussion): Clarify that the R18 INACTIVE multicast reception scheme is only applicable for the UE in RRC\_INACTIVE state.

[R2-2302494](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302494%20HARQ%20operation%20during%20RRC%20state%20transitions%20for%20multicast%20reception.docx) HARQ operation during RRC state transitions for multicast reception NEC discussion NR\_MBS\_enh-Core

[R2-2302609](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302609%20User%20plane%20for%20multicast%20reception%20in%20RRC_INACTIVE%20state.docx) User plane for multicast reception in RRC\_INCTIVE state TD Tech, Chengdu TD Tech discussion Rel-18

[R2-2302670](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302670%20Further%20Discussion%20on%20eMBS%20from%20UP.docx) Further Discussion on eMBS from UP vivo discussion Rel-18 NR\_MBS\_enh-Core

[R2-2303050](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303050-cfr-config-rrc-inactive.docx) Further views on multicast CFR configuration aspects Qualcomm Incorporated discussion Rel-18 NR\_MBS\_enh-Core

[R2-2303130](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303130%20User%20plane%20details%20for%20multicast%20reception%20in%20RRC_INACTIVE%20state.docx) User plane aspects of multicast reception in RRC\_INACTIVE Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MBS\_enh-Core

[R2-2303153](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303153%20Discussion%20on%20UP%20issues%20for%20Multicast%20in%20RRC%20Inactive.docx) Discussion on UP issues for Multicast in RRC Inactive LG Electronics Inc. discussion Rel-18 NR\_MBS\_enh-Core

[R2-2303201](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303201%20Discussion%20on%20UP%20issues%20for%20multicast%20in%20RRC%20INACTIVE.docx) Discussion on UP issues for multicast in RRC INACTIVE MediaTek inc. discussion Rel-18 NR\_MBS\_enh-Core

[R2-2303229](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303229%20MBS_UP.docx) Discussion on UP aspects for multicast reception in RRC\_INACTIVE Lenovo discussion Rel-18

[R2-2303555](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303555%20BWP%20and%20CFR%20for%20multicast%20reception%20in%20RRC_INACTIVE.doc) BWP and CFR for multicast reception in RRC\_INACTIVE ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh

[R2-2303959](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303959%20Consideration%20on%20the%20support%20of%20PDCP%20count%20continuity.docx) Consideration on the support of PDCP count continuity Beijing Xiaomi Software Tech discussion Rel-18

[R2-2303969](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303969%20Remaining%20UP%20issues%20for%20multicast%20reception%20in%20RRC_INACTIVE.docx) Remaining UP issues for multicast reception in RRC\_INACTIVE Huawei, CBN, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core

[R2-2304022](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2304022.docx) User plane aspects for multicast reception in RRC\_INACTIVE Intel Corporation discussion Rel-18 NR\_MBS\_enh-Core

[R2-2304151](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2304151%20MBS%20UP.docx) User Plane Aspects for Multicast in INACTIVE Samsung discussion Rel-18 NR\_MBS\_enh-Core

### 7.11.3 Shared processing for MBS broadcast and Unicast reception

Objective: 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 [RAN2]

Including aspects such as:

- Granularity of capability signalling for MBS broadcast reception from non-serving cell

- What additional information and exact parameters should be reported

- Scenarios for UE to report additional info in MII and whether/how network can control when UE should report it

*UE capability and network control*

[R2-2304149](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2304149 Discussion%20on%20Shared%20processing.docx) Discussion on Shared processing for MBS broadcast and unicast reception CMCC discussion Rel-18 NR\_MBS\_enh-Core

Proposal 1: It is proposed to indicate the capability at FeatureSetDownlinkPerCC level.

Proposal 3: Whether to include additional information in MII can be controlled by the network.

Proposal 4: gNB can refresh the new IE’s value in SIB1to avoid repeated reporting by different UEs.

[R2-2302671](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302671%20Further%20Discussion%20on%20Shared%20Processing%20in%20eMBS.docx) Further Discussion on Shared Processing in eMBS vivo discussion Rel-18 NR\_MBS\_enh-Core

Proposal 1 The granularity for capability of receiving MBS broadcast from a non-serving cell is at FeatureSetDownlinkPerCC level.

Proposal 4 UE reports directly the whole additional information in MII when indicated by SIB1 of its unicast serving cell, i.e. one step reporting enough.

*Information signalled in MII*

[R2-2303354](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303354%20Remaining%20issues%20for%20shared%20processing%20of%20MBS.docx) Remaining issues for shared processing of MBS Xiaomi discussion Rel-18 NR\_MBS\_enh-Core [R2-2301702](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2301702%20Remaining%20issues%20for%20shared%20processing%20of%20MBS.docx)

Proposal 2: The TDM pattern should be included in the UE reporting for shared processing.

Proposal 3: The UE can indicate the DRX reception configuration of MBS.

Proposal 4: The UE can indicate the PDSCH configuration (e.g. mcs-Table) of MBS.

Proposal 5: All NR values for broadcast frequency, subcarrier spacing, and bandwidth are included.

[R2-2303202](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303202%20Discuss%20on%20shared%20processing%20for%20broadcast%20and%20unicast%20reception.docx) Discuss on Shared processing for broadcast and unicast reception MediaTek inc. discussion Rel-18 NR\_MBS\_enh-Core

Proposal 2: The number of component carriers used for broadcast reception in non-serving cell can be signalled in MBSInterestIndication.

Proposal 4: RAN2 to discuss whether to report the following configurations used for broadcast reception in non-serving cell in MBSInterestIndication:

• CFR configuration

• MIMO layer

• Modulation order

• Supported band combination

[R2-2302526](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302526%20Remaining%20issues%20on%20Shared%20Processing.docx) Remaining issues on Shared Processing CATT, CBN discussion NR\_MBS\_enh-Core

[R2-2302610](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302610%20Simultaneous%20unicast%20reception%20and%20broadcast%20reception.docx) Simultaneous unicast reception and broadcast reception TD Tech, Chengdu TD Tech discussion Rel-18

[R2-2302770](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302770%20Discussion%20on%20shared%20process%20for%20MBS%20broadcast%20and%20unicast.docx) Discussion on shared process for MBS broadcast and unicast NEC Corporation discussion Rel-18 NR\_MBS\_enh-Core

[R2-2302961](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2302961%20Shared%20processing%20for%20MBS%20broadcast%20and%20unicast%20reception.docx) Shared processing for MBS broadcast and unicast reception Samsung R&D Institute India discussion Rel-18

[R2-2303051](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303051-MBS-capability-sharing.docx) Shared processing for MBS broadcast and Unicast reception Qualcomm Incorporated discussion Rel-18 NR\_MBS\_enh-Core

[R2-2303273](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303273_eMBS_shared-processing.doc) Shared processing for inter-PLMN MBS broadcast reception Kyocera discussion Rel-18 [R2-2301588](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2301588_eMBS_shared-processing.doc)

[R2-2303421](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303421_Shared%20processing%20of%20MBS%20broadcast%20and%20unicast%20reception_v0.doc) Shared processing of MBS broadcast and unicast reception Apple discussion Rel-18 NR\_MBS\_enh-Core

[R2-2303556](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303556%20Shared%20processing%20for%20MBS%20broadcast%20and%20Unicast%20reception.doc) Shared processing for MBS broadcast and Unicast reception ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh

[R2-2303622](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303622%20Shared%20processing%20for%20MBS%20broadcast%20and%20Unicast%20reception.docx) Shared processing for MBS broadcast and Unicast reception Ericsson discussion Rel-18 NR\_MBS\_enh-Core [R2-2301207](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2301207%20Shared%20processing%20for%20MBS%20broadcast%20and%20Unicast%20reception.docx) Late

[R2-2303970](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2303970%20Discussion%20on%20shared%20processing%20for%20MBS%20broadcast%20and%20unicast%20reception.docx) Discussion on shared processing for MBS broadcast and Unicast reception Huawei, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core

[R2-2304023](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2304023.docx) Shared processing for simultaneous MBS broadcast and Unicast reception Intel Corporation discussion Rel-18 NR\_MBS\_enh-Core

[R2-2304060](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2304060%20Bandwidth%20signalling%20for%20shared%20processing.docx) Bandwidth signalling and scenarios for shared processing Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MBS\_enh-Core [R2-2301753](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2301753%20Bandwidth%20signalling%20for%20shared%20processing.docx)