3GPP TSG-RAN WG2 Meeting #119bis electronic DRAFT\_R2-2210807

Online, 10-19 October, 2022

Source: Session chair (Huawei)

Title: Report from MBS breakout session

Agenda Item: 9.7

# Email discussions

Kicked-off together with a meeting start:

* [AT119bis-e][600] Organizational - MBS session

Scope:

* + - Share plans and list of ongoing email discussions for MBS sessions
    - Share meeting notes and agreements for review and endorsement

Start after the online session on Monday 10 October:

* [AT119bis-e][601][MBS-R17] RRC corrections (Huawei)

Scope: Treat [R2-2209653](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209653%20Rapporteur%20Corrections%20on%20RRC.docx) and documents in 6.1.2

Outcome: Report, 38.331 CR

Deadline: Report available: Tuesday 2022-10-18 1000 UTC, agreeable CR: EOM

* [AT119bis-e][602][MBS-R17] Other CP corrections (CATT)

Scope: Treat remaining issues from documents in 6.1.3.

Outcome: Report (CATT) + CR(s) as needed:

* 38.300: Nokia
* 38.304: CATT
* 38.306/38.331 (capabilities): Mediatek

Deadline: Report available: Tuesday 2022-10-18 1000 UTC, agreeable CR(s): EOM

* [AT119bis-e][603][MBS-R17] UP corrections (Samsung)

Scope: Treat [R2-2210051](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210051%20Miscellaneous%20corrections%20for%20MBS%2038.323.docx) and remaining issues from documents in 6.1.4.

Outcome: Report (Samsung) + CR(s) as needed:

* 38.323: Xiaomi
* 38.321: OPPO

Deadline: Report available: Tuesday 2022-10-18 1000 UTC, agreeable CR(s): EOM

Start after the online session on Tuesday 11 October:

* [AT119bis-e][604][eMBS] Reply LS to SA2 (Huawei)

Scope: Discuss the reply to SA2 LS ([R2-2209356](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209356_S2-2207470.docx)) based on the draft reply in [R2-2209664](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209664%20Consideration%20on%20replying%20to%20the%20SA2%20LS%20on%20MBS%20progress.docx).

Outcome: Report, agreeable reply LS

Deadline: Report available: Tuesday 2022-10-18 1200 UTC, agreeable LS: EOM

* [AT119bis-e][605][eMBS] PTM configuration for INACTIVE (CATT)

Scope: Treat the remaining proposals from [R2-2210068](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210068.docx):

* Gather comments on the current proposals and refine them accordingly
* Identify a (hopefully big) set of easy proposals for offline agreement, capture FFS if needed
* Identify a (very small) set of proposals for online discussion

Outcome: Report

Deadline: Report available: Tuesday 2022-10-18 1200 UTC

## 2.4 Instructions

Not Treated Agenda Items

- The current agenda has a number of items marked tdoc limitation: 0 and Not treated. Such Agenda items may have LS ins, and they are also not expected to be treated, but exceptions could be considered if needed.

Tdoc limitations (reminder)

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

- Assigned Editor of Running CRs input to update the running CR and input of one tdoc to facilitate addressing of CR open issues.

- 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).

Tdoc limitations applies to all other submitted tdocs.

Rel-17 CR

General, all correction CRs / draft CRs:

1. Rapporteurs of Rel-17 WI CRs are asked to continue their volunteer responsibility.

2. Unless otherwise explicitly agreed/indicated, max one Cat F CR per TS per WI shall be produced as outcome of the meeting. Exception: NBC aspects, if any, may need to be in a separate CR per WI (decided case by case). Note that Impact analysis is required per CR.

3. No editorial corrections for this meeting

Rel-17 UE capabilities

For NR UE capabilities the following applies:

1: As previously, work on mega CRs (one mega CR for TS 38.306 and one for TS 38.331). This work is done under Agenda Item AI 6.0.2

2: Coordinate centrally incorporation in CRs of RAN1 / RAN4 features for all Rel17 WIs. This work is done under Agenda Item AI 6.0.2 and changes are done directly to the mega CRs. There could be exceptions, case by case, where RAN1 / RAN4 features are treated under a WI-specific Agenda Item instead.

3 At the end of R2 119bis-e, endorsed WI specific UE capability CRs will be merged into the mega CRs, and the mega CRs will be provided to TSG RAN. Any exception to this need to be decided case by case.

# 6 NR Rel-17

## 6.0 General

These AIs includes Aspects that does not fit under other morre specific AIs, multi-WI aspects,

Tdoc limitation: 2 tdoc (in addition to rapporteur input)

(…)

**FOR ATTENTION:** the aspects related to co-existence of MBS and Slicing frequency prioritization were moved to AI 6.0.4 and are handled via [AT119bis-e][005][NR17] offline discussion in the Main session (copied below for information).

### 6.0.4 Other

Rel-17 impacts to Cell Reselection Frequency Prioritization

Offline

* [AT119bis-e][005][NR17] Cell Reselection Frequency Prioritization (Kyocera)

Scope: Treat [R2-2210459](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210459_CoexistenceBwHighestPriorityAndSlice.doc), [R2-2210126](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210126%20Discussion%20and%20TP%20on%20reselection%20prioritization%20in%20release%2017.docx), [R2-2209415](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209415%20Discussion%20on%20MBS%20Frequency%20Prioritization%20and%20Slice-specific%20Reselection.docx), [R2-2209548](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209548%20Corrections%20to%20TS%2038.304%20for%20MBS.docx). Determine agreeable parts, for agreeable parts capture in CR,

Intended outcome: Report, Agreed-in-principle CR.

Deadline: Schedule 1

[R2-2210459](file:///C:\Users\mtk65284\Documents\3GPP\tsg_ran\WG2_RL2\TSGR2_119bis-e\Docs\R2-2210459.zip) Coexistence between the highest priority and slice specific cell reselection priority Kyocera Corporation discussion

Moved from 6.1.3

[R2-2210126](file:///C:\Users\mtk65284\Documents\3GPP\tsg_ran\WG2_RL2\TSGR2_119bis-e\Docs\R2-2210126.zip) Reselection prioritization in release-17 Nokia, Nokia Shanghai Bell CR Rel-17 38.304 17.2.0 0287 - F NR\_MBS-Core, NR\_slice-Core

Moved from 6.0.1

[R2-2209415](file:///C:\Users\mtk65284\Documents\3GPP\tsg_ran\WG2_RL2\TSGR2_119bis-e\Docs\R2-2209415.zip) Discussion on MBS Frequency Prioritization and Slice-specific Reselection vivo discussion Rel-17 NR\_MBS-Core

Moved from 6.1.3

[R2-2209548](file:///C:\Users\mtk65284\Documents\3GPP\tsg_ran\WG2_RL2\TSGR2_119bis-e\Docs\R2-2209548.zip) Corrections to TS 38.304 for MBS CATT, CBN CR Rel-17 38.304 17.2.0 0284 - F NR\_MBS-Core Late

Moved from 6.1.3 (only the part related to freq priority to be treated here)

## 6.1 NR Multicast

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

Tdoc Limitation: 4 tdocs

It is encouraged to contribute with draft CRs or provide TP(s) for the affected specifications in the Annex of the contribution to facilitate the inclusion in the rapporteur CR.

### 6.1.1 Organizational and Stage-2

LS ins. CR Rapporteurs baseline correction CRs. For smaller corrections, text clarifications etc please contact CR Rapporteur before/instead of submitting a separate Tdoc.

Impact to stage-2 TS, and discussions on system level issues that need resolution, if any.

LSin, online W1

[R2-2209302](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209302_C1-225249.docx) Reply LS on AS-NAS layer interactions for MBS (C1-225249; contact: Huawei) CT1 LS in Rel-15 5MBS To:RAN2, SA2

* Noted

[R2-2209353](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209353_S2-2207409.docx) LS on AS-NAS layer interactions for MBS (S2-2207409; contact: Huawei) SA2 LS in Rel-17 5MBS, NR\_MBS-Core To:RAN2, CT1

* Noted
* Huawei clarifies that some indications we have in our specs might not be needed.
* OPPO asks what is the meaning of “The NAS is not aware of broadcast MBS sessions.”. Huawei thinks
* CATT think Paging needs to be updated.
* RRC specs needs to be updated based on the reply LS. To be treated offline ([601]).

[R2-2209352](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209352_S2-2207389.docx) Response LS on further outstanding issues in TS 23.247 (S2-2207389; contact: Huawei) SA2 LS in Rel-17 5MBS, NR\_MBS-Core To:RAN3, RAN2 Late

* Noted

[R2-2209360](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209360_S2-2207888.docx) LS on response to LS on parameters preconfigured in the UE to receive MBS service (S2-2207888; contact: Huawei) SA2 LS in Rel-17 5MBS To:CT, CT1 Cc:CT4, SA4, RAN2, SA, CT6

* Noted

*Stage-2 CR, online W1*

[R2-2209866](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209866%20CR%2038300%20MBS%20v2.docx) Corrections on MBS Nokia, Nokia Shanghai Bell CR Rel-17 38.300 17.2.0 0564 - F NR\_MBS-Core

* Nokia clarifies that previously agreed CR was not implemented due to violation of drafting rules (clause numbering change). The CR is the same as previously agreed one plus the change agreed during the RAN plenary.
* Huawei wonders if we need to update conclusion/minutes from the RAN plenary? Nokia clarifies this happened in the past and there is no need to update the minutes.
* Juha (MCC) clarifies that RAN leadership is aware of the situation and we can just re-agree the CR.
* The CR is in-principle agreed (IPA).
* Might consider updating based on the agreements from this meeting, if any.

*Rapporteur CRs – treated together with corresponding offlines*

[R2-2209653](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209653%20Rapporteur%20Corrections%20on%20RRC.docx) Rapporteur corrections on RRC Huawei, HiSilicon CR Rel-17 38.331 17.2.0 3500 - F NR\_MBS-Core

[R2-2210051](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210051%20Miscellaneous%20corrections%20for%20MBS%2038.323.docx) Miscellaneous corrections for MBS 38.323 Xiaomi CR Rel-17 38.323 17.2.0 0102 - F NR\_MBS-Core

***Week 2***

R2-2211024 Corrections on MBS Nokia, Nokia Shanghai Bell CR Rel-17 38.300 17.2.0 0564 1 F NR\_MBS-Core

### 6.1.2 RRC corrections

*Withdrawn*

[R2-2209748](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209748%20CR%20to%20TS%2038.331%20on%20MRB%20configuration.docx) CR to TS 38.331 on MRB configuration ZTE, Sanechips CR Rel-17 38.331 17.2.0 3504 - F NR\_MBS-Core Withdrawn

***Treated directly via offline [601]***

*LCH re-association*

[R2-2209654](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209654%20Discussion%20on%20LCH%20re-association%20for%20MRB.docx) Discussion on LCH re-association for MRB Huawei, HiSilicon discussion Rel-17 NR\_MBS-Core

[R2-2209399](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209399_CR3484_38331_RRC%20Corrections%20on%20MBS.docx) RRC Corrections on MBS vivo CR Rel-17 38.331 17.2.0 3484 - F NR\_MBS-Core

*Misc*

[R2-2209547](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209547%20Miscellaneous%20Corrections%20to%20TS%2038.331%20for%20MBS.docx) Miscellaneous Corrections to TS 38.331 for MBS CATT, CBN CR Rel-17 38.331 17.2.0 3494 - F NR\_MBS-Core Late

[R2-2209908](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209908.docx) RRC corrections for MBS Intel Corporation discussion Rel-17 NR\_MBS-Core

[R2-2210050](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210050%2038.331%20CR3521%20(Rel17)%20Broadcast%20MRB%20retention%20upon%20T300%20expiry.docx) Broadcast MRB retention upon T300 expiry Samsung CR Rel-17 38.331 17.2.0 3521 - F NR\_MBS-Core

[R2-2210130](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210130%20Draft%20CR%20for%2038331%20on%20various%20small%20aspects.docx) Various small corrections to 38.331 Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.2.0 3524 - F NR\_MBS-Core

[R2-2210576](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210576%2038.331%20CR%20Correction%20on%20the%20ASN.1%20violation%20or%20encoding%20error%20handling%20for%20MCCH%20message.docx) 38.331 CR Correction on the ASN.1 violation or encoding error handling for MCCH message Beijing Xiaomi Software Tech draftCR Rel-17 38.331 17.2.0 F NR\_MBS-Core

[R2-2210682](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210682%20CR%20to%20TS%2038.331%20on%20MRB%20configuration.docx) CR to TS 38.331 on MRB configuration ZTE, Sanechips CR Rel-17 38.331 17.2.0 3560 - F NR\_MBS-Core

[R2-2210712](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210712%20MBS%20service%20area%20and%20MCCH%20acquisition.docx) MBS service area and MCCH acquisition Ericsson discussion Rel-17 NR\_MBS-Core

[R2-2210713](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210713%20A%20closer%20look%20at%20the%20MBS%20broadcast%20neighbours.docx) A closer look at the MBS broadcast neighbours Ericsson discussion Rel-17 NR\_MBS-Core

[R2-2210717](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210717%20Correction%20to%20full%20configuration%20for%20MBS.docx) Correction to full configuration for MBS Google Inc. CR Rel-17 38.331 17.2.0 3562 - F NR\_MBS-Core

***Week 2***

[R2-2210870](C:\\Users\\Dwx974486\\Documents\\3GPP\\Extracts\\R2-2210870  Report of [AT119bis-e][601][MBS-R17] RRC corrections_v2.docx" \o "C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210870  Report of [AT119bis-e][601][MBS-R17] RRC corrections_v2.docx) Report of [AT119bis-e][601][MBS-R17] RRC corrections Huawei, HiSilicon discussion Rel-17 NR\_MBS-Core

R2-2210871 MBS corrections for RRC Huawei, HiSilicon CR Rel-17 38.331 17.2.0 3500 1 F NR\_MBS-Core

### 6.1.3 Other CP corrections

Including corrections to TS 38.304, features / UE caps developed in RAN2 (complementary to AI 6.0.2).

*FG 33-1-1 handling, online W1*

[R2-2209909](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209909.docx) Remaining MBS UE capability open issues Intel Corporation discussion Rel-17 NR\_MBS-Core

Proposal 1: FG 33-1-1 (DCI indicated slot-level repetition for broadcast) is implemented in TS 38.306 clause 5.10 as an optional feature without UE capability signalling. FG 33-1-1 is optional for UEs supporting FG 33-1.

Proposal 2: RAN1 components of FG 33-1 Broadcast should be captured in TS 38.306 clause 5.10.

[R2-2210029](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210029%20Correction%20on%20MBS%20capabilities.docx) Correction on MBS capabilities MediaTek inc. discussion Rel-17 NR\_MBS-Core

Proposal 1: Introduce the UE capability with capability bit for FG33-1-1 and add to the specs.

[R2-2210714](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210714%20DCI%20indicated%20repetitions%20for%20MBS%20broadcast.docx) DCI indicated repetitions for MBS broadcast Ericsson discussion Rel-17 NR\_MBS-Core

Proposal: If the UE supports broadcast reception the UE also supports up to 8 DCI indicated repetitions.

DISCUSSION (common for the three Tdocs above):

* QCM thinks that RRC configured and DCI configured repetitions are two different things and we should not merge. QCM thinks capability bit is useful as it can be used when UE is in RRC Connected.
* Xiaomi thinks DCI based repetitions has additional complexity so we need a capability bit.
* Nokia agrees 8 DCI based repetitions should be mandatory for broadcast UEs and 16 can be optional with capability signalling.
* LG does not see a value of capability bit for 33-1-1 as we do not have capability for 33-1 as well. LG prefers optional with no capability bit. Samsung agrees. Samsung indicates transmission is common for UEs in all RRC states. OPPO agrees.
* Lenovo supports having a capability bit.
* QCM thinks we can use FG 33-1-2 as an example. In case we have a capability bit, it can be used at least for Connected. MTK agrees.
* Ericsson thinks the feature will be practically unusable (DCI-based repetitions).
* No agreement to include DCI based repetitions as part of FG 33-1
* We have a capability bit for FG 33-1-1

*Withdrawn*

[R2-2210549](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210549%20CR%20to%20TS%2038.304%20on%20NR%20MBS.docx) CR to TS 38.304 on NR MBS ZTE, Sanechips CR Rel-17 38.304 17.2.0 0290 - F NR\_MBS-Core Withdrawn

***Treated directly via offline [602]***

*Misc*

[R2-2209548](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209548%20Corrections%20to%20TS%2038.304%20for%20MBS.docx) Corrections to TS 38.304 for MBS CATT, CBN CR Rel-17 38.304 17.2.0 0284 - F NR\_MBS-Core Late

*(the aspects related to MBS and Slicing frequency prioritization co-existence of this Tdoc are handled via [AT119bis-e][005][NR17] offline discussion in the Main session)*

[R2-2209655](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209655%20Corrections%20on%20UE%20capability%20for%20MBS.doc) Correction on UE capability for MBS Huawei, CBN, HiSilicon CR Rel-17 38.306 17.2.0 0809 - F NR\_MBS-Core

[R2-2210069](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210069%2038.304%20CR0285%20(Rel17)%20Correction%20to%20PEI%20monitoring%20for%20group%20notification.docx) Correction to PEI monitoring for group notification Samsung CR Rel-17 38.304 17.2.0 0285 - F NR\_MBS-Core

[R2-2210131](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210131%20Draft%20CR%20for%2038304%20on%20various%20small%20aspects.docx) Various small corrections to 38.304 Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.2.0 3525 - F NR\_MBS-Core

[R2-2210683](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210683%20CR%20to%20TS%2038.304%20on%20NR%20MBS.docx) CR to TS 38.304 on NR MBS ZTE, Sanechips CR Rel-17 38.304 17.2.0 0294 - F NR\_MBS-Core

[R2-2210711](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210711%20When%20to%20monitor%20the%20MCCH%20on%20the%20MBS%20frequency.docx) When to monitor the MCCH on the MBS frequency Ericsson, Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_MBS-Core

*(moved from 6.1.1)*

***Week 2***

[R2-2210872](C:\\Users\\Dwx974486\\Documents\\3GPP\\Extracts\\R2-2210872 summary of [AT119bis-e][602][MBS-R17] Other CP corrections.docx" \o "C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210872 summary of [AT119bis-e][602][MBS-R17] Other CP corrections.docx) Summary of offline discussion: [AT119bis-e][602][MBS-R17] Other CP corrections (CATT) CATT discussion Rel-17 NR\_MBS-Core

R2-2210876 Draft 38.306 CR for MBS UE capability corrections MediaTek Inc. draftCR Rel-17 38.306 17.2.0 NR\_MBS-Core

R2-2210877 Draft 38.331 CR for MBS UE capability corrections MediaTek Inc. draftCR Rel-17 38.331 17.2.0 NR\_MBS-Core

R2-2210881 MBS corrections for 38.304 CATT CR Rel-17 38.304 17.2.0 0297 - F NR\_MBS-Core

### 6.1.4 UP corrections

Including corrections to MAC, PDCP, RLC and SDAP.

HARQ buffers, online W1

[R2-2209416](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209416%20UP%20Corrections%20on%20MBS.docx) UP Corrections on MBS vivo discussion Rel-17 NR\_MBS-Core

Proposal 2: HARQ buffer(s) being used for MBS broadcast is not flushed upon uplink time alignment loss.

[R2-2210594](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210594%20Discussion%20on%20flushing%20HARQ%20buffer%20for%20MBS%20%20broadcast.docx) Discussion on flushing HARQ buffers for MBS broadcast LG Electronics Inc. discussion Rel-17 NR\_MBS-Core

Proposal 1. Remove the exception part for MBS broadcast in flushing the soft buffers for all DL HARQ processes at MAR reset.

Proposal 2. Confirm that no change is needed for flushing HARQ buffers for MBS broadcast at TAT expiry.

Proposal 3. Check whether the term of HARQ buffer in MAC spec. indicates only HARQ buffer for UL HP or both HARQ buffer for UL HP and soft buffer for DL HP.

DISCUSSION (common for the two Tdocs above):

* After reading Tdocs, vivo agrees HARQ buffer refers to UL only (similar as LG).
* Huawei has a concern with P1 from LG Tdoc, as it can impact processing of MBS PDU. Prefers not to agree P1, but agrees with P2, i.e. no change is needed. Samsung agrees. vivo agrees. Intel, Lenovo as well.
* OPPO supports all proposals from LG, including removal of MBS exception. CATT agrees with LGE.
* QCM does not want to remove the exception.
* LG thinks soft combining cannot be achieved anyway acc to current specs. QCM thinks this should be clarified in the specifications to make it possible. Samsung agrees with QCM.
* Do not remove the exception for MBS for flushing soft buffers.
* Clarify that the transmission after MAC reset should not (always) be treated as a new transmission for MBS broadcast soft buffer. E.g. add “except for MBS broadcast” for the relevant bullet.
* DL HARQ buffers (soft buffers) are not flushed due to TAT expiry. No change needed for HARQ buffers flushing due to TAT expiry.

[R2-2209948](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209948%20Correction%20on%20HARQ%20buffer%20flushing%20of%20MBS%20broadcast.docx) Correction on HARQ buffer flushing of MBS broadcast Lenovo discussion Rel-17

[R2-2210575](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210575%2038.321%20CR%20Correction%20on%20the%20HARQ%20buffer%20flush%20for%20the%20MBS%20broadcast.docx) 38.321 CR Correction on the HARQ buffer flush for the MBS broadcast Beijing Xiaomi Software Tech draftCR Rel-17 38.321 17.2.0 F NR\_MBS-Core

*MRB type changes, online W1*

[R2-2210052](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210052%20Clarification%20on%20the%20PDCP%20state%20variables.docx) Clarification on the PDCP state variables Xiaomi discussion Rel-17 NR\_MBS-Core

Proposal 1: RAN2 is kindly requested to discuss whether a NOTE in the PDCP specification is needed to clarify that the MRB type is determined by the target configuration when the RLC entity associated to the PDCP entity is changed between UM and AM:

NOTE x: At PDCP re-establishment, the MRB type (i.e. UM MRB or AM MRB) is determined by the target configuration.‎

[R2-2210519](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210519%20Removal%20of%20concept%20of%20UM%20MRB%20and%20AM%20MRB.docx) Removal of concept of UM MRB and AM MRB LG Electronics Inc. discussion Rel-17 NR\_MBS-Core

Proposal 1: Remove the concept of UM MRB and AM MRB, and only use MRB in the PDCP specification.

DISCUSSION (common for the two Tdocs above):

* Samsung agrees with Xiaomi’s observations, but think no clarification is needed (as it is obvious already). Samsung think removing MRB types concept from PDCP would require too extensive changes. Huawei agrees and think there can be additional unexpected issues. vivo, ZTE agree.
* ZTE indicates LG’s proposal would also impact RAN3 specifications. QCM agrees
* QCM has sympathy for Xiaomi’s note.
* We keep the principle of UM MRB and AM MRB in PDCP specs (no change to PDCP specs).
* For PDCP procedures, MRB type is determined by the target/latest/received configuration when the RLC entity associated to the PDCP entity is changed between UM and AM. (capture as a NOTE at least in PDCP specs, the exact wording discussed as part of CR update, can consider adding a NOTE in RRC specs as well).

*PDCP state variables handling, online W1*

[R2-2209551](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209551%20MBS%20Remaining%20PDCP%20Issues.docx) Remaining PDCP issues for MBS Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_MBS-Core

Proposal 1: Do not reset TX\_NEXT, RX\_NEXT and RX\_DELIV to the initial value when MRB PDCP is suspended.

Proposal 2: Continue PDCP COUNT when a deactivated MBS multicast session is activated.

Proposal 3: There is no need for configuration of initial value of RX\_DELIV when PDCP is re-established for AM MRB.

[R2-2209746](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209746%20PDCP%20initialisation%20for%20multicast%20MRB.doc) PDCP initialisation for multicast MRB ZTE, Sanechips discussion Rel-17 NR\_MBS-Core

Proposal 1 Change initialRXDELIV to an optional Need N parameter in RRC reconfiguration without condition limit.

DISCUSSION (common for the two Tdocs above):

* Xiaomi thinks ZTE’s solution does not resolve the issue as suspension happens during RRC Release, not during RRC Reconfiguration. Xiaomi prefers Nokia’s way. Samsung, LG, Lenovo as well. LG thinks simplest change is proposed by Xiaomi in [R2-2210052](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210052%20Clarification%20on%20the%20PDCP%20state%20variables.docx).
* QCM asks whether P2 excludes network configuration update? Nokia clarifies this is not allowed by this proposal.
* Mediatek agrees with P2, but it is not clear how it is realized in specifications, perhaps we need some additional clarification for RRC Resume procedure.
* Do not reset RX\_NEXT and RX\_DELIV to the initial value when MRB PDCP is suspended unless a serious issue is found.
* Continue offline with other proposals

[R2-2209417](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209417%20Handling%20of%20PDCP%20State%20Variables%20for%20PDCP.docx) Handling of PDCP State Variables vivo discussion Rel-17 NR\_MBS-Core

[R2-2209550](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209550%20Discussion%20on%20RX_DELIV%20for%20AM%20MRB.docx) Discussion on RX\_DELIV for AM MRB CATT discussion Rel-17 NR\_MBS-Core Late

[R2-2209657](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209657%20Discussion%20on%20AM%20PDCP%20re-establishment%20and%20PDCP%20suspend%20of%20MRB.docx) Discussion on PDCP window handling during PDCP suspend and AM PDCP re-establishment Huawei, HiSilicon discussion Rel-17 NR\_MBS-Core

[R2-2209875](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209875%20PDCP%20initialization%20for%20multicast%20MRB.docx) PDCP initialization for multicast MRB MediaTek inc. discussion Rel-17 NR\_MBS-Core

[R2-2209910](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209910.docx) UP corrections for MBS Intel Corporation discussion Rel-17 NR\_MBS-Core

[R2-2209949](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209949%20Discussion%20on%20PDCP%20initial%20values%20handling.docx) Discussion on PDCP initial values handling Lenovo discussion Rel-17

[R2-2210609](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210609%20MBS%20PDCP%20Initial%20Variables.docx) PDCP Variable Handling for Multicast Samsung discussion Rel-17 NR\_MBS-Core

[R2-2210681](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210681%20CR%20to%20TS%2038.323%20on%20PDCP%20initialisation.docx) CR to TS 38.323 on PDCP initialisation ZTE, Sanechips CR Rel-17 38.323 17.2.0 0103 - F NR\_MBS-Core

*Withdrawn*

[R2-2209747](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209747%20CR%20to%20TS%2038.323%20on%20PDCP%20initialisation.docx) CR to TS 38.323 on PDCP initialisation ZTE, Sanechips CR Rel-17 38.323 17.2.0 0100 - F NR\_MBS-Core Withdrawn

***Treated directly via offline [603]***

*CSI masking*

[R2-2209438](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209438%20Considerations%20on%20HARQ%20buffer%20flushing%20and%20CSI%20masking.docx) Considerations on HARQ buffer flushing and CSI masking Samsung discussion Rel-17 38.321

*DRX*

[R2-2209656](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209656%20Clarifications%20on%20DRX%20and%20HARQ%20buffer%20handling.docx) Clarifications on DRX and HARQ buffer handling Huawei, CBN, HiSilicon discussion Rel-17 NR\_MBS-Core

[R2-2210592](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\38.321_CR1437_(Rel-17)_R2-2210592%20Clarification%20on%20reception%20of%20DRX%20Command%20%20MAC%20CE.docx) Clarification on reception of DRX Command MAC CE LG Electronics Inc. CR Rel-17 38.321 17.2.0 1437 - F NR\_MBS-Core

[R2-2210684](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210684%20Correction%20to%20DRX%20command%20reception.docx) Correction to DRX command reception Google Inc. CR Rel-17 38.321 17.2.0 1441 - F NR\_MBS-Core

*Misc*

[R2-2209549](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209549%20Corrections%20to%20TS%2038%20321%20for%20MBS.doc) Corrections to TS 38.321 for MBS CATT CR Rel-17 38.321 17.2.0 1413 - F NR\_MBS-Core Late

***Week 2***

[R2-2210873](C:\\Users\\Dwx974486\\Documents\\3GPP\\Extracts\\R2-2210873 Offline 603 MBS UP_v23_rapp.docx" \o "C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210873 Offline 603 MBS UP_v23_rapp.docx) Report of Offline 603: UP Correction for Rel-17 MBS Samsung discussion Rel-17 NR\_MBS-Core

R2-2210874 Miscellaneous corrections for MBS 38.323 Xiaomi CR Rel-17 38.323 17.2.0 0102 1 F NR\_MBS-Core

[R2-2210875](C:\\Users\\Dwx974486\\Documents\\3GPP\\Extracts\\R2-2210875 38.321 corrections for MBS.docx" \o "C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210875 38.321 corrections for MBS.docx) MBS corrections for 38.321 OPPO CR Rel-17 38.321 17.2.0 1447 - F NR\_MBS-Core

## 8.11 Enhancements of NR Multicast and Broadcast Services

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

Time budget: 0.5 TU

Tdoc Limitation: 2 tdocs

### 8.11.1 Organizational

LS in, rapporteur input etc.

[R2-2209356](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209356_S2-2207470.docx) LS on FS\_5MBS\_Ph2 progress (S2-2207470; contact: Huawei) SA2 LS in Rel-18 FS\_5MBS\_Ph2, NR\_MBS\_enh To:RAN2, RAN3 Cc:RAN1

* Noted
* We reply, discuss the reply LS offline

[R2-2209664](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209664%20Consideration%20on%20replying%20to%20the%20SA2%20LS%20on%20MBS%20progress.docx) Consideration on replying to the SA2 LS on MBS progress Huawei, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core

***Week 2***

[R2-2210878](C:\\Users\\Dwx974486\\Documents\\3GPP\\Extracts\\R2-2210878 Report of [AT119bis-e][604][eMBS] Reply LS to SA2 (Huawei)_v2.doc" \o "C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210878 Report of [AT119bis-e][604][eMBS] Reply LS to SA2 (Huawei)_v2.doc) Report of [AT119bis-e][604][eMBS] Reply LS to SA2 (Huawei) Huawei, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core

[R2-2210879](C:\\Users\\Dwx974486\\Documents\\3GPP\\Extracts\\R2-2210879 [Draft] Reply LS on FS_5MBS_Ph2 progress_v09_Rapp.docx" \o "C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210879 [Draft] Reply LS on FS_5MBS_Ph2 progress_v09_Rapp.docx) Reply LS on FS\_5MBS\_Ph2 progress RAN2 LS out Rel-18 NR\_MBS\_enh-Core, FS\_5MBS\_Ph2 To:SA2, RAN3 Cc:RAN1

RAN2 Answer to Q1-a) If there are significant differences in the quality and reliability of the reception of MBS data between UEs in RRC Connected state and UEs in RRC Inactive state:

- The quality and reliability of the reception of MBS data between UEs in RRC\_CONNECTED state and UEs in RRC\_INACTIVE state may be different, as HARQ feedback and PTP transmission are not supported and seamless/lossless mobility is not required for multicast reception in RRC\_INACTIVE.

DISCUSSION

* Ericsson thinks it was converging well, but reversed to the initial proposal, which is not OK. Ericsson thinks we can have similar QoS for INACTIVE as for CONNECTED. AT&T agrees with Ericsson and believes that multicast in INACTIVE is not necessarily worse in terms of QoS than Connected. Network can handle this.
* ZTE has similar view to AT&T and Ericsson, i.e. the WN needs to fulfil QoS requirements. ZTE believes that QoS has to be the same in INACTIVE and Connected.
* Huawei clarifies the answer is based on majority view and the current wording is “may be different” which is according to current RAN2 understanding. The difference between Connected and INACTIVE have not been discussed by RAN2.
* QCM thinks the current reply is correct and what Ericsson/AT&T/ZTE say is also correct, but these views are not misaligned with the proposed answer. Nokia agrees, it is obvious they can be different as there are things reserved for Connected operation that cannot be used in INACTIVE.
* FirstNet agrees with Ericsson/AT&T.
* TD Tech thinks the UE can be brought to Connected inf the QoS cannot be satisfied in INACTIVE.
* RAN2 Answer to Q1-a) If there are significant differences in the quality and reliability of the reception of MBS data between UEs in RRC Connected state and UEs in RRC Inactive state:

The quality and reliability of the reception of MBS data between UEs in RRC\_CONNECTED state and UEs in RRC\_INACTIVE state may or may not be different, as HARQ feedback and PTP transmission are not supported and seamless/lossless mobility is not required for multicast reception in RRC\_INACTIVE.

* Revised LS to be provided for final (editorial) review
* Final LS to be provided in R2-XXXXX

### 8.11.2 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].

Including aspects such as:

- how is PTM configuration delivered to the UE, how is the configuration updated (e.g. due to UE mobility), what does the configuration contain (e.g. compared to Rel-17 PTM configuration), mobility of the UE etc.

- service continuity during RRC states changes, how does the network indicate the UE to switch RRC state for multicast reception, notifications/group paging enhancements due to session activation/deactivation or due to Inactive mutlicast reception enable/disable by the network etc.

Report of [Post119-e][610][eMBS] PTM configuration for INACTIVE (CATT). The aspects covered by [Post119-e][610] e-mail discussion should not be repeated in the Tdocs

[R2-2210068](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210068.docx) Report of [Post119-e][610][eMBS] PTM configuration for INACTIVE (CATT) CATT discussion Rel-18 NR\_MBS\_enh-Core

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

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

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

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

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

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

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

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

DISCUSSION P1, P2:

* vivo wonders why we limit to RRC Reconfiguration and RRC Release in (1-b). vivo thinks RRC Resume can also be used. OPPO agrees.
* Vivo wonders for P2b) why we need FFS part. CATT replies this is just a general description and some companies believe the configuration can be reused and this needs to be discussed.
* OPPO wonders about the security concern for P2. OPPO wonders if we need to send an LS to SA3.
* Nokia is OK with a baseline approach, but indicates that MCCH configuration can also be provided via dedicated signaling. QCM agrees.
* The following general description is taken as baseline for PTM configuration delivery Option 1:

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

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

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

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

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

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

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

Proposal 3 Dedicated RRC signalling (i.e. RRC release message with suspendConfig) is used for switching a multicast receiving UE from RRC\_CONNECTED to RRC\_INACTIVE (details FFS).

DISCUSSION P3:

* Ericsson asks if the proposal means that configuration is provided via dedicated signalling? CATT clarifies this is only about how the UE is moved to INACTIVE for MBS multicast reception.
* vivo aggress with the intention, but wonders whether it refers to both scenarios where the UE has active session and does not have an active session. CATT clarifies that this proposal is for the UE with active session.
* OPPO thinks this proposal is not necessary.
* AT&T thinks this was not discussed sufficiently and perhaps there are other ways of making the state transition.
* Dedicated RRC signalling (i.e. RRC release message with suspendConfig) is used for switching a multicast receiving UE from RRC\_CONNECTED to RRC\_INACTIVE and continue multicast reception (details FFS).

Proposal 4 Group paging can be used to switch UEs receiving multicast from RRC\_INACTIVE to RRC\_CONNECTED, and UEs continue the multicast reception in CONNECTED. FFS if there is any potential issue if Rel-17 group paging is reused. FFS if there are other cases when UE triggers resume, and FFS if UE triggers RRC connection resume in the new cell or in the current cell.

DISCUSSION P4:

* TD Tech thinks MCCH can be used to switch the UE from RRC INACTIVE to RRC Connected. CATT clarifies the intention is to agree this for both options.
* OPPO wonders why the UE needs to connect when the session is activated. CATT clarifies the proposal is for the UE which is receiving multicast in INACTIVE already.
* Vivo, Ericsson, Samsung, Lenovo, ZTE agree with P4.
* QCM wonders how to trigger just part of UEs. Also, how to differentiate the case of temporary data inactivity and the session being deactivated.
* TD Tech thinks we can leave this open for this meeting. AT&T aggress.
* Huawei wonders what the FFS about resuming in the current vs new cell is about.
* For both option 1 and option 2, as a baseline, group paging can be used to switch UEs receiving multicast from RRC\_INACTIVE to RRC\_CONNECTED, and UEs continue the multicast reception in CONNECTED. FFS if there is any potential issue if Rel-17 group paging is reused. FFS if there are other cases when UE triggers resume. FFS if MCCH can also be used in case of option 2.

Proposal 5 Further discuss the need of PTM configuration applicable area, i.e., the mechanism that the PTM configurations, once acquired by a UE, may apply to a certain area (i.e., a set of cells instead of a single cell).

DISCUSSION P5:

* QCM thinks we need PTM configuration applicable area.
* Ericsson we can agree to have this as a baseline.
* OPPO, TD Tech agrees with QCM and Ericsson.
* Ericsson thinks RAN3 should check whether this is OK, e.g. for inter-gNB scenarios. Xn interface may be impacted.
* CMCC, Samsung agree with P5.
* ZTE has a strong concern on this design, because it is hard to align configuration between the cells. ZTE would like to keep it FFS and wait for RAN3 discussion. Huawei, Intel agree.
* Nokia thinks this is not essential, it is just an optimization.
* Lenovo thinks one possibility is using the same configuration for different cells, but another possibility is to have different configurations for different cells.
* CATT thinks RAN3 is already discussing this, so we can wait for their progress and not send an LS.
* FFS whether to introduce PTM configuration applicable area, i.e., the mechanism that the PTM configurations, once acquired by a UE, may apply to a certain area (i.e., a set of cells instead of a single cell).

***Week 2***

[R2-2210880](C:\\Users\\Dwx974486\\Documents\\3GPP\\Extracts\\R2-2210880.docx" \o "C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210880.docx) Report of [AT119bis-e][605][eMBS] PTM configuration for INACTIVE (CATT) CATT discussion Rel-18 NR\_MBS\_enh-Core

\*\*Easy proposals\*\*

Session activation

Proposal 1 Rel-18 UE in INACTIVE can be informed when the session is activated (Details FFS).

Proposal 2 As a baseline, group paging can be used to inform Rel-18 UE(s) about the session activation (Details FFS, e.g., UE behavior when receiving such group notification).

Session deactivation

Proposal 4 If a UE is in RRC\_INACTIVE and is configured to receive a multicast session in RRC\_INACTIVE, the UE may be notified when the multicast session is deactivated. FFS how (e.g., informed via group paging, MCCH, or other ways).

Session release

Proposal 5 Rel-17 mechanism (NAS-based indication) is applicable for multicast session release. FFS if any enhancement is needed.

* Rel-18 UE in INACTIVE can be informed when the session is activated (Details FFS).
* As a baseline, group paging can be used to inform Rel-18 UE(s) about the session activation (Details FFS, e.g., UE behavior when receiving such group notification).
* If a UE is in RRC\_INACTIVE and is configured to receive a multicast session in RRC\_INACTIVE, the UE may be notified when the multicast session is deactivated. FFS how (e.g., informed via group paging, MCCH, or other ways).
* Rel-17 mechanism (NAS-based indication) is applicable for multicast session release. FFS if any enhancement is needed.

\*\*Proposals for online discussions\*\*

Session activation

Proposal 3 FFS how UE determines whether it can receive the multicast session in RRC\_INACTIVE or not when the session is activated, taking into account the following alternatives (can further update the descriptions of the alternatives if needed, and these alternatives may not be mutually exclusive)

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

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

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

- Other possible alternative(s) if any.

DISCUSSION P3:

* QCM agrees in principle, but these are not necessarily alternatives, i.e. they may all be needed for different scenarios.
* MTK thinks the proposal is a bit complicated as it addresses several issues, e.g. configuration options are mixed with notifications. Nokia somewhat agrees and some alternatives may not be needed for certain configuration options.
* OPPO does not understand why we discuss two options in parallel.
* Ericsson wonders whether we need to mention that the UE has already joined the session. QCM clarifies that this is a pre-requisite for multicast reception.
* FFS how UE determines whether it can receive the multicast session in RRC\_INACTIVE or not when the session is activated, taking into account the following solutions (can further update the descriptions if needed, and several solutions may be needed, some solutions may apply only for certain configuration options)

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

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

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

Option 1

Proposal 6 If option 1 is supported for PTM configuration

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

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

DISCUSSION P6:

* Mediatek thinks we can use legacy Paging as well.
* QCM thinks adding unicast Paging here just brings us back in the discussion.
* Mediatek clarifies that UE can request resume without group Paging notification, e.g. based on self-detection of service interruption.
* Nokia thinks group paging seems the most reasonable solution for option 1. Nokia is not sure how the UE self-detection works. OPPO agrees.
* If option 1 is supported for PTM configuration

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

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

Option 2

Proposal 7 FFS if there is an issue that a UE can obtain all the PTM configurations for a multicast service via Option 2 without/before joining the multicast session on the condition that security is enabled by service layer. And if yes FFS how to solve the issue (e.g., dedicated configuration + MCCH).

DISCUSSION P7:

* QCM, vivo are OK with P7.
* TD Tech thinks dedicated configuration + MCCH can be regarded as improved version of option 2.
* Apple is not sure whether we can decide the security issue ourselves or should we send an LS to SA3.
* Samsung thinks we should send an LS to SA3. Samsung indicates that SA3 did not recommend sending TMGI in MII. OPPO agrees to send an LS.
* QCM thinks this is not about security issue.
* Nokia is not sure why we need an LS.
* Chair: No LS to SA3 from this meeting.
* FFS if there is an issue that a UE can obtain all the PTM configurations for a multicast service via Option 2 without/before joining the multicast session on the condition that security is enabled by service layer. And if yes FFS how to solve the issue (e.g., dedicated configuration + MCCH).

*Not treated*

[R2-2209412](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209412%20Supporting%20Multicast%20Reception%20in%20RRC_INACTIVE.docx) Supporting Multicast Reception in RRC\_INACTIVE vivo discussion Rel-18 NR\_MBS\_enh-Core [R2-2207227](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2207227%20Supporting%20Multicast%20Reception%20in%20RRC_INACTIVE.docx)

[R2-2209449](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209449-multicast-rrc-inactive.docx) Multicast reception by UEs in RRC\_INACTIVE state Qualcomm Incorporated discussion Rel-18 NR\_MBS\_enh-Core

[R2-2209458](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209458%20Discussion%20on%20multicast%20reception%20in%20RRC_INACTIVE%20state.docx) Discussion on multicast reception in RRC\_INACTIVE state TD Tech Ltd, Chengdu TD Tech discussion Rel-18

[R2-2209513](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209513%20Discussion%20on%20multicast%20reception%20in%20RRC_INACTIVE%20state.doc) Discussion on multicast reception in RRC\_INACTIVE state OPPO discussion Rel-18 NR\_MBS\_enh

[R2-2209514](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209514-Draft%20LS%20on%20multicast%20reception%20in%20RRC_INACTIVE.doc) LS on multicast reception in RRC\_INACTIVE OPPO LS out Rel-18 NR\_MBS\_enh To:RAN1

[R2-2209533](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209533_MBS%20pre-configuration%20and%20PTM%20configuration%20in%20RRC_INACTIVE%20state.docx) MBS pre-configuration and PTM configuration in RRC\_INACTIVE state CANON Research Centre France discussion Rel-18

[R2-2209587](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209587%20Multicast%20Reception%20in%20RRC_INACTIVE.docx) Multicast Reception in RRC\_INACTIVE Samsung discussion Rel-18

[R2-2209613](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209613.docx) Session state change for UEs receiving Multicast in RRC\_INACTIVE state TCL Communication Ltd. discussion

[R2-2209614](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209614.docx) PTM configuration for UEs receiving Multicast in RRC\_INACTIVE state TCL Communication Ltd. discussion

[R2-2209623](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209623%20Discussion%20on%20multicast%20reception%20in%20RRC_INACTIVE.docx) Discussion on multicast reception in RRC\_INACTIVE NEC Europe Ltd discussion Rel-18 NR\_MBS\_enh-Core

[R2-2209662](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209662%20PTM%20configuration%20and%20mobility.docx) Multicast reception for RRC\_INACTIVE Huawei, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core

[R2-2209744](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209744%20Multicast%20reception%20in%20RRC_INACTIVE.doc) Multicast reception in RRC\_INACTIVE ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh-Core

[R2-2209806](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209806_%20Multicast%20reception%20in%20RRC_INACTIVE%20state_v0.doc) Multicast Reception in INACTIVE State Apple discussion Rel-18 NR\_MBS\_enh-Core

[R2-2209876](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209876%20Discussion%20on%20multicast%20reception%20in%20RRC%20INACTIVE.docx) Discussion on multicast reception in RRC INACTIVE MediaTek inc. discussion Rel-18 NR\_MBS\_enh-Core

[R2-2209919](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209919%20Multicast%20reception%20in%20RRC_INACTIVE.doc) Multicast reception in RRC\_INACTIVE LG Electronics Inc. discussion Rel-18

[R2-2209946](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209946%20PTM%20configuration.docx) PTM configuration for multicast reception in RRC\_INACTIVE Lenovo discussion Rel-18

[R2-2209947](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209947%20Mobility%20and%20state%20transition.docx) Mobility and state transition for multicast reception in RRC\_INACTIVE Lenovo discussion Rel-18

[R2-2209988](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209988.doc) Discussion on Multicast Reception in RRC\_INACTIVE Spreadtrum Communications discussion Rel-18

[R2-2210026](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210026%20Considerations%20on%20the%20security%20issue%20for%20multicast%20MCCH.docx) Considerations on security issues for multicast MCCH Beijing Xiaomi Software Tech discussion Rel-18

[R2-2210066](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210066.docx) Discussion on multicast reception in RRC\_INACTIVE CATT, CBN discussion Rel-18 NR\_MBS\_enh-Core

[R2-2210114](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210114.docx) Discussion on supporting group scheduling for RRC\_INACTIVE UEs FGI discussion

[R2-2210132](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210132%20MBS%20Inactive%20Principles_final.docx) Multicast reception in RRC\_INACTIVE Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MBS\_enh-Core

[R2-2210146](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210146%20Discussion%20on%20multicast%20reception%20in%20RRC_INACTIVE.docx) Discussion on multicast reception in RRC\_INACTIVE CMCC discussion Rel-18 NR\_MBS\_enh-Core

[R2-2210384](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210384.docx) Multicast reception in RRC\_INACTIVE Intel Corporation discussion Rel-18 NR\_MBS\_enh-Core

[R2-2210423](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210423%20%20PTM%20Configuration%20for%20RRC_INACTIVE.docx) PTM Configuration for RRC\_INACTIVE Sharp discussion

[R2-2210424](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210424%20%20Paging%20message%20for%20Multicast%20session%20received%20in%20RRC_INACTIVE.docx) Paging message for Multicast session received in RRC\_INACTIVE Sharp discussion

[R2-2210428](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210428_eMBS_multicast-inactive.doc) Details of multicast reception in RRC INACTIVE Kyocera discussion Rel-18

[R2-2210453](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210453.doc) Discussion on Mobility during Multicast Reception in RRC Inactive State TCL Communication Ltd. discussion Rel-18

[R2-2210458](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210458.doc) Discussion on RAN based Notification Area for Multicast Mobility in Inactive State TCL Communication Ltd. discussion Rel-18 [R2-2207191](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2207191.doc)

[R2-2210557](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210557_MBS%20support%20in%20RRC_INACTIVE.doc) Provision of reliable MBS in RRC\_INACTIVE InterDigital, Inc. discussion Rel-18 NR\_MBS\_enh-Core

[R2-2210715](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210715%20MBS%20multicast%20reception%20in%20RRC_INACTIVE.docx) Service availability for mission critical UEs during RAN congestion Ericsson discussion Rel-18 NR\_MBS\_enh-Core

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

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]

[R2-2210385](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210385.docx) Shared processing for simultaneous MBS broadcast and Unicast reception Intel Corporation discussion Rel-18 NR\_MBS\_enh-Core

Proposal 1: LTE solution on shared processing for broadcast and unicast reception is the baseline for NR, i.e. 1) new IE is added in system information to control whether MBSInterestIndication for shared processing can be sent or not; 2) MBSInterestIndication message content and related procedure is updated for shared processing.

Proposal 2: If Proposal 1 is agreed, new IE to control whether MBSInterestIndication for shared processing can be sent or not is added to SIB1.

DISCUSSION P1, P2:

* OPPO agrees to use LTE as a baseline, but the content of the MII message can be FFS.
* TD Tech supports proposal 1.
* vivo wonders we can consider other mechanisms, e.g. UE capabilities update procedure discussed for MUSIM. But if we go for specific solution, then we can use LTE as a baseline.
* Ericsson, Xiaomi, LG, Lenovo supports P1.
* Samsung, Xiaomi thinks there is no need to mix MBS solution with MUSIM solution. Propose to exclude MUSIM solution. Nokia’s understanding is that in case there is some harmony between the solutions, we do not have to exclude this.

Proposal 3: If Proposal 1 is agreed, in MBSInterestIndication, for each broadcast service that the UE is receiving or is interested to receive, the following parameters are signalled: carrier frequency (ARFCN-ValueNR), subcarrier spacing, and bandwidth of the CFR (i.e. there is no need to include the whole channel bandwidth of a carrier frequency).

DISCUSSION P3:

* QCM thinks ARFCN is not enough, no need to mention it explicitly.
* ZTE thinks it is too early to agree to report this information before we clarify the scenarios. E.g. for same PLMN case not everything needs to be reported.
* OPPO thinks broadcast frequency is not clear.
* Xiaomi, QCM think bandwidth of the CFR alone is not sufficient.
* CATT thinks we do not have to mention “each” service.
* Samsung thinks some time domain information may also be needed to avoid over-estimation of shared processing.
* Ericsson wonders whether it is a valid scenario that the UE is receiving unicast and broadcast from the same operator but different gNB?
* Nokia wonders if non-MBS UE gNB can support MII for shared processing. QCM thinks eMBS does not have to be supported by the gNB, just needs to support enhanced MII and understand how to interpret it. Intel agrees
* For shared processing we adopt the following as a baseline:

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

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

* New IE to control whether MBSInterestIndication for shared processing can be sent or not is added to SIB1.
* In MBSInterestIndication, for a broadcast service that the UE is receiving or is interested to receive, at least the following information can be signalled: broadcast frequency, subcarrier spacing, and bandwidth. FFS details/exact parameters and other information. FFS in which scenarios the UE reports this information (e.g. intra-PLMN case, inter-PLMN case)
* FFS whether UE capability is needed to enable shared processing.

*Not treated*

[R2-2209413](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209413%20Supporting%20Shared%20Processing%20for%20MBS%20Broadcast%20and%20Unicast.docx) Supporting Shared Processing for MBS Broadcast and Unicast vivo discussion Rel-18 NR\_MBS\_enh-Core [R2-2207228](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2207228%20Supporting%20Shared%20Processing%20for%20MBS%20Broadcast%20and%20Unicast.docx)

[R2-2209448](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209448-MBS-capability-sharing.docx) Shared processing for MBS broadcast and unicast reception Qualcomm Incorporated discussion Rel-18 NR\_MBS\_enh-Core [R2-2208097](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2208097-MBS-capability-sharing.docx)

[R2-2209459](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209459%20CFR%20configuration%20for%20multicast%20reception%20in%20RRC_INACTIVE%20state.docx) CFR configuration for multicast reception in RRC\_INACTIVE state TD Tech Ltd, Chengdu TD Tech discussion Rel-18

[R2-2209624](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209624%20Discussion%20on%20shared%20process%20for%20unicast%20and%20broadcast%20reception.docx) Discussion on shared process for unicast and broadcast reception NEC Europe Ltd discussion Rel-18 NR\_MBS\_enh-Core

[R2-2209663](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209663%20Discussion%20on%20shared%20processing%20for%20MBS%20broadcast%20and%20unicast%20reception.docx) Discussion on shared processing for MBS broadcast and Unicast reception Huawei, CBN, HiSilicon discussion Rel-18 NR\_MBS\_enh-Core

[R2-2209745](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209745%20On%20signaling%20framework%20for%20shared%20processing.doc) On signaling framework for shared processing ZTE, Sanechips discussion Rel-18 NR\_MBS\_enh-Core

[R2-2209807](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209807_%20Sharing%20processing%20of%20MBS%20broadcast%20and%20unicast%20reception_v0.doc) Sharing processing of MBS broadcast and unicast reception Apple discussion Rel-18 NR\_MBS\_enh-Core

[R2-2209867](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209867%20MBS%20Shared%20Processing_final.docx) Shared Processing for MBS broadcast and unicast reception Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_MBS\_enh-Core

[R2-2209877](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209877%20Discussion%20on%20broadcast%20coexistence%20and%20signaling%20enhancement.docx) Discussion on broadcast coexistence and signaling enhancement MediaTek inc. discussion Rel-18 NR\_MBS\_enh-Core [R2-2207567](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2207567%20Discussion%20on%20broadcast%20coexistence%20and%20signaling%20enhancement.docx)

[R2-2209920](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209920%20Shared%20processing%20for%20broadcast%20and%20unicast.doc) Shared processing for broadcast and unicast LG Electronics Inc. discussion Rel-18

[R2-2209989](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2209989.doc) Discussion on shared processing for MBS broadcast and Unicast Reception Spreadtrum Communications discussion Rel-18

[R2-2210054](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210054%20Discussion%20on%20shared%20processing%20for%20MBS%20broadcast%20and%20unicast%20reception.docx) Discussion on shared processing for MBS broadcast and unicast reception Xiaomi discussion Rel-18 NR\_MBS\_enh-Core

[R2-2210067](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210067.docx) Discussions on shared processing for MBS broadcast and unicast reception CATT, CBN discussion Rel-18 NR\_MBS\_enh-Core

[R2-2210147](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210147%20Discussion%20on%20shared%20processing%20for%20broadcast%20and%20unicast%20reception.docx) Discussion on shared processing for broadcast and unicast reception CMCC discussion Rel-18 NR\_MBS\_enh-Core

[R2-2210427](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210427_eMBS_shared-processing.doc) Shared processing for inter-PLMN MBS broadcast reception Kyocera discussion Rel-18 [R2-2208290](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2208290_eMBS_shared-processing.doc)

[R2-2210610](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210610%20MBS%20Uu%20Signaling.docx) Uu Signalling Enhancements for MBS Samsung discussion Rel-18 NR\_MBS\_enh-Core

[R2-2210716](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2210716%20MBS%20broadcast%20and%20unicast%20reception%20with%20shared%20resources.docx) MBS broadcast and unicast reception with shared resources Ericsson discussion Rel-18 NR\_MBS\_enh-Core [R2-2208092](file:///C:\Users\Dwx974486\Documents\3GPP\Extracts\R2-2208092%20MBS%20broadcast%20and%20unicast%20reception%20with%20shared%20resources.docx)