**3GPP T****SG-RAN WG2 Meeting #115-e R2-210xxxx**

**E-meeting, 9th – 27th August 2021**

**Agenda item:**8.1.3.3

**Source:** Huawei, HiSilicon

**Title:** Report of offline: [AT115-e][049][MBS] L3 Other (Huawei)

**Document for:** Discussion and Decision

# 1 Introduction

In [19], the following contributions submitted to AI 8.1.3.3 (miscellaneous L3 centric aspects of MBS) for RAN2#115-e were summarized:

1. R2-2107014, Discussion on beam sweeping transmission for delivery mode 2, OPPO
2. R2-2107038, Discussion on MCCH Contents and General RRC Aspects, CATT, CBN
3. R2-2107052, MCCH Configuration, MediaTek Inc.
4. R2-2107236, MCCH Contents and RRC Aspects for MBS, Samsung
5. R2-2107341, MCCH contents for NR MBS, ZTE, Sanechips
6. R2-2107366, RRC issues of multicast session, Spreadtrum Communications
7. R2-2107529, Configurations for MRB and scheduling via MCCH in DM2, Futurewei
8. R2-2107531, Handling MBS during conditional handover, Futurewei
9. R2-2107546, NR MBS control signalling aspects for UEs in different RRC states, Qualcomm Inc
10. R2-2107579, MBS reception in CONNECTED state, Apple
11. R2-2107691, Miscellaneous Aspects of MBS Provisioning, Nokia, Nokia Shanghai Bell
12. R2-2108036, MBS related configuration for delivery mode 2, CHENGDU TD TECH LTD.
13. R2-2108049, MBS BWP UE capability and MBS resources, Sony
14. R2-2108084, Other aspects for MBS, Ericsson
15. R2-2108203, MCCH acquisition in RRC\_CONNECTED state, Huawei, HiSilicon
16. R2-2108456, Details for MCCH design, Intel Corporation

Based on the summary, the following proposals were made in [19]:

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| **Proposal 1. RAN2 should discuss whether:****• TMGI is sufficient to identify MBS session or session ID parameter is required in addition (LS to SA2 should be considered)****• Whether/which SDAP, PDCP, RLC parameters need to be included in broadcast radio bearer configuration****Proposal 2. If RAN1 agrees MTCH can be provided within a BWP not overlapping with BWP where MCCH is provided, MCCH configuration via dedicated signalling will be supported.****Proposal 3. RAN2 discusses whether area specific MCCH is supported once MCCH contents are clarified.****Proposal 4. On-demand MCCH is not supported in Rel-17.****Proposal 5. Single MCCH channel with multiple modification/repetition periods is not supported, i.e. there is a single configuration of modification/repetition for MCCH.****Proposal 6. RAN2 to discuss whether MBS specific Access Categories and/or establishment cause(s) need to be specified.** |

This document aims at gathering companies views on these proposals.

# 2 Discussion

## 2.1 MBS bearer configuration

Contributions [2][3][5][7][12] proposed to add additional information for MRB configuration in the MCCH information, but the opinions on detailed parameters are diverse. For example, in the aspect of SDAP configuration, contribution [2] proposed not to include SDAP configuration in MCCH information, since for MBS (including broadcast session), SDAP layer is not needed at UE side. However, contribution [3][7] proposed to add MBS SDAP configuration in MCCH control information, since in NR the MBS SDAP and PDCP are configured in RAN. Contribution [4] proposed that RLC and PDCP configuration are preferably default due to the MCCH message size issue. There is also other MCCH information discussed in the above contributions, which are summarized as follows

* TMGI is used independently [2] or together with session ID [7] to identify a broadcast session
* Whether to include RB ID [5]
* Whether SDAP/PDCP/RLC configuration is needed in the *brb-list-r17* [3][7][12] or not [2][4]
* Add MBS SPS configuration [3]
* Add CFR related parameters [3]

Based on the above summary, in [19] it was suggested to further discuss two aspects:

* + - 1. **Whether TMGI is sufficient to identify MBS session or session ID parameter is required in addition (LS to SA2 should be considered)**
1. **Whether/which SDAP, PDCP, RLC parameters need to be included in broadcast radio bearer configuration**

With respect to the second issue, the running CR, as endorsed in [20], contains also the following editor’s note:

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| --- |
| -- Editor’s note: FFS which PDCP and RLC parameters are configurable and which are specified in section 9.1.1. |

Based on this, the companies are requested to answer the following questions.

**Question 1: Do you think TMGI is sufficient to identify MBS session or session ID parameter is required in addition to that? Should LS to SA2 be sent on this issue?**

|  |  |
| --- | --- |
| **Company** | **Reply** |
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|  |  |

When it comes to SDAP, it was agreed that no SDAP header is needed for MBS. Current running RRC CR in [20] assumes that no SDAP configuration is provided to the UE for neither broadcast nor multicast MRBs.

**Question 2: Do you agree that SDAP configuration is not needed at the UE for neither broadcast nor multicast? If not, then which parameters do you think are needed and why?**

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| --- | --- | --- |
| **Company** | **Yes/no** | **Comments** |
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PDCP and RLC configuration for multicast is believed to follow the PDCP configuration for a DRB mostly. In the following question, it is proposed to focus on the required PDCP/RLC configuration for broadcast only. With that respect, in addition to deciding which parameters are needed, RAN2 needs to agree which of the parameters are configurable via MCCH and which parameters can use pre-defined values. In the below table the rapporteur gathered the parameters which seem relevant for broadcast MRB configuration. For each parameter, companies are requested to indicate whether they think the parameter should be configurable or pre-defined.

**Question 3: Companies are requested to provide their views by filling in the table below.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | RLC | PDCP | Any missing parameters? |
| sn-FieldLength | t-Reassembly | pdcp-SN-SizeDL  | headerCompression | t-Reordering |
| Company1 (example) | Predefined | Configurable | Configurable | Predefined | Configurable | No |
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##  2.2 Dedicated signalling for MCCH configuration

As discussed in the email discussion “[AT114-e][039][MBS] MCCH and MCCH change notification”, UE might be configured with a dedicated BWP not overlapping with MCCH while the UE is in RRC CONNECTED state. Since there was no agreement on this issue achieved in the email discussion, there was the following decision in RAN2#114-e meeting: “Postpone the discussion on whether dedicated MCCH configuration is required until RAN1 makes progress on BWP/CFR for MCCH.”

As agreed in RAN1#105-e meeting, for broadcast reception, RRC\_IDLE/RRC\_INACTIVE UEs can use a configured/defined CFR with the same size as the initial BWP, where the initial BWP has the same frequency resources as CORESET0 (i.e., Case A), to receive GC-PDCCH/PDSCH carrying MCCH.

Contribution [15][16] have made proposals on the dedicated signalling for MCCH configuration. In contribution [16], it is assumed that there is no motivation to configure a UE receiving MBS a dedicated BWP not overlapping with MCCH as currently RAN1 assumes that both MCCH and MTCH are in the initial BWP. However, in contribution [15], the authors think the situation with the MCCH is equivalent to SIB/Paging reception in RRC\_CONNECTED state where the network can either configure the UE with a common search space to monitor SI/Paging on the dedicated BWP or provide system information through dedicated signalling using the RRCReconfiguration message. Furthermore, [15] indicates that having a possibility to provide MCCH in dedicated signalling is useful for service continuity during handover.

Based on the summary above, the rapporteur concluded in [19] that the usefulness of introducing MCCH provisioning with dedicated signalling depends on whether MCCH can be provided in a BWP different than MTCH, and proposed that: “If RAN1 agrees MTCH can be provided within a BWP not overlapping with BWP where MCCH is provided, MCCH configuration via dedicated signalling will be supported”.

**Question 4: Do you agree that it should be possible to provide MCCH configuration via dedicated signalling, under the condition that RAN1 agrees MTCH can be provided within a BWP not overlapping with BWP where MCCH is provided.**

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| --- | --- | --- |
| **Company** | **Yes/no** | **Reasoning / comments** |
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## 2.3 Area specific MCCH

As discussed in previous meetings, one issue is whether MCCH can be area specific, similar to area specific SIB introduced in Rel-15. Contributions [2][9][16] have provided proposals on the area specific MCCH. Specifically, contribution [2] proposed to support the area specific PTM configuration (e.g. in MCCH), considering the use of area specific PTM configuration can help to ensure better service continuity during mobility. However, contribution [16] proposed to not consider area specific MCCH, since there is increased overhead, unclear benefit, and potential issues, e.g. having to update MBS SIB frequently due MCCH version change or limiting how fast MCCH contents can be changed. On the other hand, in contribution [9] both area specific and cell specific NR MCCH configuration is supported as configuration choice. The benefits that are mentioned include signalling overhead reduction and UE power consumption gains.

In [19] it was proposed to wait with the decision on whether area-specific MCCH is supported until the MCCH contents are clarified. However, the companies are invited to express their views by answering the below question and in case their view depends on the exact contents of MCCH, this can be clarified in the answer.

**Question 5: Do you think area specific MCCH is required and why/why not?**

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| --- | --- | --- |
| **Company** | **Yes/no** | **Reasoning / comments** |
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## 2.4 On demand MCCH

Contributions [2][9][16] discuss whether to support on-demand MCCH. Contribution [9] think on-demand MCCH is important to reduce network overhead, and it can be network configuration choice to transmit MCCH either by using broadcast mode or on demand. However, contribution [2] indicates the overhead savings will be limited compared to UP resource consumption while there are disadvantages in terms of extra latency for service setup time, extra interruption during cell reselection, extra interaction with network for broadcast session. [16] also proposes not to support on-demand MCCH due to similar reasons.

In [19], the rapporteur proposed not to support on-demand MCCH due to numerous issues that were identified, i.e. latency for service setup time, extra service interruption and network interaction. The companies are invited to express their on the need to have on-demand MCCH by replying to the below question.

**Question 6: Do you think on-demand MCCH is required and why/why not?**

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| --- | --- | --- |
| **Company** | **Yes/no** | **Reasoning / comments** |
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## 2.5 Single MCCH with multiple modification/Repetition

In RAN2#114-e meeting, it was agreed that only a single MCCH is supported in this release and multiple MCCH support was excluded. However, contribution [5] proposes that a single MCCH channel can be configured with multiple modification/repetition. In this approach, the mapping between MBS session and related modification/repetition should be signalled in SIB. According to [5], this can help in reducing the overhead and UE power consumption On the hand, contribution [16] proposes not to support such scheme, because of the requirement to signal the mapping between MBS session and related modification/repetition in SIB. According the contribution, this results in large latency for MBS session start and impacts power consumption of UEs not receiving MBS service.

In [19] the rapporteur proposed that single MCCH channel with multiple modification/repetition periods is not supported. Companies are requested to express their view on this aspect.

**Question 7: Do you agree that a single MCCH channel with multiple modification/repetition periods is NOT supported, i.e. there is a single configuration of modification/repetition for MCCH.**

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| **Company** | **Yes/no** | **Reasoning / comments** |
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## 2.6 Unified Access Control and establishment cause for MBS multicast

Contributions [2][4][6][9] discuss the impact of MBS on UAC and on connection establishment. Some papers just discuss the applicability of UAC to MBS while others propose some enhancements e.g. MBS specific Access Categories. Some papers also propose to introduce MBS specific establishment cause(s). The rationale given for these enhancements is for the gNB to have a possibility to control MBS multicast related access attempts separately from legacy access attempts as well as to allow the gNB to distinguish MBS access attempts from legacy access attempts and also potentially the priority of the MBS access attempt.

In [19] the rapporteur expressed an understanding that legacy UAC and establishment cause can be reused directly for MBS, but noted there are companies that see the benefit of introducing MBS specific enhancements in these areas. Companies are requested to express their view on this issue.

**Question 8: Do you think MBS specific UAC (e.g. MBS specific Access Categories) is required and why/why not?**

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| --- | --- | --- |
| **Company** | **Yes/no** | **Reasoning / comments** |
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**Question 9: Do you think MBS specific connection establishment cause is required and why/why not?**

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| --- | --- | --- |
| **Company** | **Yes/no** | **Reasoning / comments** |
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# 3 Summary

TBD

# References

1. R2-2107014, Discussion on beam sweeping transmission for delivery mode 2, OPPO
2. R2-2107038, Discussion on MCCH Contents and General RRC Aspects, CATT, CBN
3. R2-2107052, MCCH Configuration, MediaTek Inc.
4. R2-2107236, MCCH Contents and RRC Aspects for MBS, Samsung
5. R2-2107341, MCCH contents for NR MBS, ZTE, Sanechips
6. R2-2107366, RRC issues of multicast session, Spreadtrum Communications
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12. R2-2108036, MBS related configuration for delivery mode 2, CHENGDU TD TECH LTD.
13. R2-2108049, MBS BWP UE capability and MBS resources, Sony
14. R2-2108084, Other aspects for MBS, Ericsson
15. R2-2108203, MCCH acquisition in RRC\_CONNECTED state, Huawei, HiSilicon
16. R2-2108456, Details for MCCH design, Intel Corporation
17. R2-2108204, Summary of e-mail discussion “[Post114-e][074][MBS] RRC running CR” and RRC open issues list, Huawei, HiSilicon
18. R2-2108799, Summary of [Post114-e][073][MBS] Service continuity for Delivery Mode 2 (Xiaomi), Xiaomi Communications
19. R2-2109035, Pre115-e][004][MBS] Summary 8.1.3.3 L3 Centric Other, Huawei, HiSilicon
20. [R2-2108205](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_115-e%5CDocs%5CR2-2108205.zip), 38.331 running CR for NR MBS Huawei, HiSilicon