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

Electronic Meeting, August 16 – 27, 2021

**Agenda item:** 8.1.3.1

**Source:** Xiaomi Communications

**Title:** Report of [AT115-e][047][MBS] Service Continuity deliver mode 2

**Document for:**  Discussion

# 1. Introduction

This document summarizes the following email discussion:

* [AT115-e][047][MBS] Service Continuity deliver mode 2 (Xiaomi)

      Scope: Continue discussion on R2-2108799. Reach agreements as far as possible, can also define FFSes when helpful.

      Intended outcome: Agreements, report

      Deadline: Wednesday W2 (CB if needed)

Deadline: Tuesday 2021-08-24 2200 UTC

The RAN2 agreements made in Wednesday 2021-08-19 are quoted as follows:

|  |
| --- |
| **For IDLE / INACTIVE:**   * The UE is allowed to prioritize the MBS frequency of interest when the cell of the MBS frequency provides MBS SIB carrying the MCCH configuration, as LTE SC-PTM. * The UE is allowed to prioritize the MBS frequency of interest when the UE is only capable of receiving the MBS service by camping on the MBS frequency, as LTE SC-PTM. |

## 1.1 Contacts

Contact person for each participating company:

|  |  |  |
| --- | --- | --- |
| Company | Name | Email Address |
| Xiaomi | Yumin Wu | wuyumin@xiaomi.com |
| Ericsson | Mats Folke | mats.folke@ericsson.com |
| Qualcomm | Prasad Kadiri | pkadiri@qti.qualcomm.com |
| LGE | SangWon Kim | sangwon7.kim@lge.com |
| TD Tech & Chengdu TD Tech | Limei WEI | limei.wei@td-tech.com |
| Kyocera | Masato Fujishiro | masato.fujishiro.fj@kyocera.jp |
| Samsung | Vinay Kumar Shrivastava | shrivastava@samsug.com |
| CATT | Rui Zhou | zhourui@catt.cn |
| NEC | ZHE CHEN | Chen\_zhe@nec.cn |
| Apple | Fangli XU | fangli\_xu@apple.com |
| CMCC | Xiaoman Liu | liuxiaoman@chinamobile.com |
| Lenovo, Motorola Mobility | Congchi Zhang | Zhangcc16@lenovo.com |
| TCL | Ahmed Mikaeil | ahmed.mikaeil@tcl.com |
| OPPO | Shukun Wang | wangshukun@oppo.com |
|  |  |  |
|  |  |  |

# 2. Discussion

## 2.1 Service continuity for delivery mode 2

|  |
| --- |
| **For IDLE/INACTIVE:**  **Proposal 3: The UE is allowed to set cell reselection candidate frequencies at which it cannot receive the MBS service to be of the lowest priority during the MBS session, as LTE SC-PTM.**  **Proposal 4: Send an LS to SA2 and SA4 to check whether the mapping between frequency and MBS service is provided in the upper layer signalling (e.g. USD), as LTE SC-PTM.**  **Proposal 5: The mapping between frequency and MBS service is provided in SIB, as LTE SC-PTM.**  **Proposal 6: The mapping between frequency and MBS service is allowed to be sent in cells not supporting MBS transmission, as LTE SC-PTM.**  **Proposal 7: The mapping between frequency and MBS service is provided in a new SIB different from the MBS SIB providing the MCCH configuration, as LTE SC-PTM.**  **Proposal 8: Send an LS to SA2, SA4 and RAN3 to check whether a group ID (e.g. SAI) of MBS services can be provided in SIB and USD, as LTE SC-PTM.**  **Proposal 9: The gNB indicate a list of neighbour cells where ongoing MBS service provided in the current cells are also provided, as LTE SC-PTM.**  **Proposal 13: The extra offset to cell (which provides the MBS service) for the cell ranking criterion is not supported in Rel-17.**  **For CONNECTED:**  **Proposal 10: The UE reports the following MBS interest information (as LTE SC-PTM):**   * **MBS frequency** * **priority between MBS bearer and unicast bearer** * **TMGI**   **Proposal 11: The MBS frequencies reported by the UE is sorted by decreasing order of interest, as LTE SC-PTM.**  **Proposal 12: Send an LS to SA3 to check whether the MBS interest information can be reported by the UE before security activation.**  **Proposal 14: Send an LS to RAN1 to check whether a UE is capble of receiving PTM simultaneously via multiple serving cells or via both serving cell and non-serving cell, within a band combination.**  **Proposal 15: FFS whether the frequencies in MII means that the UE shall be capable of simultaneously receiving MBS on the frequencies, as LTE SC-PTM. Wait for the feedbacks from RAN1 on the simultaneous MBS reception capability.**  **Proposal 16: FFS whether the frequencies in MII shall belong to the same band combination, as LTE SC-PTM. Wait for the feedbacks from RAN1 on the simultaneous MBS reception capability.** |

The above proposals are arranged as two groups (i.e. Agreements and Working Assumptions). The working assumptions can be confirmed later after receiving the feedbacks from other groups.

|  |
| --- |
| **Potential agreements:**  **For IDLE/INACTIVE:**  **Proposal 4: Send an LS to SA2 and SA4 to check whether the mapping between frequency and MBS service is provided in the upper layer signalling (e.g. USD), as LTE SC-PTM.**  **Proposal 8: Send an LS to SA2, SA4 and RAN3 to check whether a group ID (e.g. SAI) of MBS services can be provided in SIB and USD, as LTE SC-PTM.**  **Proposal 13: The extra offset to cell (which provides the MBS service) for the cell ranking criterion is not supported in Rel-17.**  **For CONNECTED:**  **Proposal 12: Send an LS to SA3 to check whether the MBS interest information can be reported by the UE before security activation.**  **Proposal 14: Send an LS to RAN1 to check whether a UE is capable of receiving PTM simultaneously via multiple serving cells or via both serving cell and non-serving cell, within a band combination.**  **Proposal 15: FFS whether the frequencies in MII means that the UE shall be capable of simultaneously receiving MBS on the frequencies, as LTE SC-PTM. Wait for the feedbacks from RAN1 on the simultaneous MBS reception capability.**  **Proposal 16: FFS whether the frequencies in MII shall belong to the same band combination, as LTE SC-PTM. Wait for the feedbacks from RAN1 on the simultaneous MBS reception capability.** |

|  |
| --- |
| **Potential working assumptions: (To be revisited after receiving the feedbacks from other working groups)**  **For IDLE/INACTIVE:**  **Proposal 3: The UE is allowed to set cell reselection candidate frequencies at which it cannot receive the MBS service to be of the lowest priority during the MBS session, as LTE SC-PTM.**  **Proposal 5: The mapping between frequency and MBS service is provided in SIB, as LTE SC-PTM.**  **Proposal 6: The mapping between frequency and MBS service is allowed to be sent in cells not supporting MBS transmission, as LTE SC-PTM.**  **Proposal 7: The mapping between frequency and MBS service is provided in a new SIB different from the MBS SIB providing the MCCH configuration, as LTE SC-PTM.**  **Proposal 9: The gNB indicate a list of neighbour cells where ongoing MBS service provided in the current cells are also provided, as LTE SC-PTM.**  **For CONNECTED:**  **Proposal 10: The UE reports the following MBS interest information (as LTE SC-PTM):**   * **MBS frequency** * **priority between MBS bearer and unicast bearer** * **TMGI**   **Proposal 11: The MBS frequencies reported by the UE is sorted by decreasing order of interest, as LTE SC-PTM.** |

For Proposal 9, the guidance for the UE application layer is removed, as it does not touch any 3GPP specification. The FFS issues of Proposal 15 and Proposal 16 are added due to the discussion on the following questions:

* Question 12: When a list of frequencies are indicated in MII, should the UE be capable of simultaneously receiving MBS on the set of MBS frequencies of interest (regardless of whether a serving cell is configured on each of these frequencies or not), as LTE SC-PTM?
* Question 13: When a list of frequencies are indicated in MII, should the set of MBS frequencies of interest be part of a band combination of the UE, as LTE SC-PTM?

The above proposals are based on the majority views in R2-2108799 [1]. The number of majority companies are dominant, due to the eagerness of reusing the LTE SC-PTM baseline. Companies which object any of the above Proposals are encouraged to provide the detailed technical obstacles on why the LTE SC-PTM baseline cannot be reused. Wording improvement are welcome as always.

#### **Question: Which of the above Proposals from P3 to P16 are not acceptable to you?**

(The proposal number indicated in the “Answer” column will be considered as an objection to the Proposal. Companies only providing wording improvement are invited to provide the rewording in the “Comments” column without indicating the Proposal number in the “Answer” column, so as to avoid misunderstandings.)

|  |  |  |
| --- | --- | --- |
| **Company** | **Answer**  **(P3 – P16)** | **Comments** |
| Ericsson | P3, P5, P6, P7, P9, P13, P10, P11 | P3, P5, P6, P7, P9, P13:  We would prefer to resolve existence, availability, and function of USD, SAI, higher layer signalling etc. before deciding on a design which assumes availability of such. That is, we ask other groups for information before making decisions. The agreement in RAN2#113 states that we need to revisit this topic based on progress in other groups. Therefore it makes sense to send the LSs now and design later.   * Assume that some information for purpose of service continuity can be provided for NR MBS delivery mode 2. (FFS what – need to be revisited, e.g. based on progress in other groups, e.g. USD, SAI/TMGI etc)   P10, P11:  We think only TMGI is necessary. Other parameters can be FFS.  [Rap-1] P13 does not rely on the progress in other groups. For the sake of progress, P3, P5, P6, P7, P9, P10, P11 which could be considered as working assumption can be revisited after receiving feedbacks from other groups.  Regarding P10 and P11, it is not clear why other parameters are not need unlike LTE. Probably companies can provide more technical reasons. |
| Qualcomm |  | In order to make progress in RAN2, these proposals can be agreed or use them as working assumptions. Based on LS reply received from other WGs, we can always revisit them if needed. |
| LGE | P9/P10/P11 | P9) If a single neighbour cell list is provided as in LTE SCPTM, UE should read MCCH of neighbour cells to verify whether the broadcast session of interest is provided from the cell during cell reselection. If the neighbour cell list is provided per broadcast session provided by serving cell, UE can perform the cell reselection without reading MCCH of neighbour cell. Therefore, it would be better to provide the neighbour cell list per broadcast session.  [Rap-1] The UE does not need to read the MCCH of neighbour cells. As explained, Proposal 9 as in LTE is to allow the UE to initiate the unicast PDU session immediately after the reselection, when the reselected cell does not provide the MBS service interested by the UE. LGE seems proposing some other functions different from LTE, which could be discussed later based on company’s contributions.  P10) If gNB knows the MCCH of neighbour cells, i.e. which neighbour cell provides which broadcast session, MBS frequency doesn’t need to be reported by UE.  [Rap-1] Whether the list of information (e.g. MBS frequency and TMGI) in Proposal 10 are reported together or separately can be discussed based on company’s contributions.  P11) If the ordering is required, the TMGI reported by the UE can be sorted by decreasing order of interest.  [Rap-1] This could be discussed based on company’s contributions. |
| Rap-1 |  | We are open to make some agreements as working assumption, if companies have very strong concern on the feedbacks from other working groups.  Regarding the comments from LG, it seems those are new issues which have not been discussed in the email discussion, and can be discussed later based on company contributions. Listing issues not discussed during the last  post-meeting email discussion seems difficult. |
| TD Tech, Chengdu TD Tech | Maybe proposal 6 | 1. **For all related proposals, the clarification for the mapping between frequency and MBS service shall be added before the description of all proposals to make the related proposals more clear. As shown below, we suggest that the clarification is added before the item “Potential agreements” and applied to each related proposal.**   **In the related proposals below, the mapping between frequency and MBS service indicates the frequency which provides the associated MBS service or supports the associated SAI, where each cell using the frequency provides the associated MBS service or belongs to the associated SAI.**  **Potential agreements:**  **……**  **Potential working assumptions:**  **……**   1. **For proposal 6: As we know, the mapping between the frequency and MBS service is provided in SIB 15 in LTE SC-PTM. We don’t understand why such mapping will be provided in a cell not supporting MBS. From our point of view, if a cell doesn’t support MBS, it will not support SIB15 which is introduced for MBSFN and applied to both MBSFN and SC-PTM. Maybe proposal 6 can be updated as below?**   **Proposal 6: The mapping between frequency and MBS service is allowed to be sent in cells supporting MBS function but with no MBS transmission (no MBS session is now broadcasting in the cell).**   1. **For proposal 10, the following update is suggested**   **Proposal 10: The UE reports the following MBS interest information (as LTE SC-PTM):**   * **MBS frequency** * **priority between MBS bearer and unicast bearer** * **TMGI list** |
| Kyocera |  | We can accept all the proposals since these are the majority’s view, although some of them are not what we prefer, e.g., P13 is different from LTE.  Just for wording improvement, we’re wondering if P3 can be aligned with the LTE wording, i.e., to be changed to “**The UE ~~is allowed to set~~ may consider cell reselection candidate frequencies at which it cannot receive the MBS service to be of the lowest priority during the MBS session, as LTE SC-PTM.**”, since “set” is a bit unclear to us. |
| Samsung |  | We accept all the proposals for the progress of the WI |
| CATT | P6,P9,P10/P15/P16 | 1) For P6, The cell not capable of MBS belongs to “cells not supporting MBS transmission”. A cell not supporting MBS feature is not supposed to transmit MBS related information.  2) We agree with the intention to reuse the SC-PTM mechanism as much as possible. But it is a bit strange to firstly agree to adopt them in NR MBS before we agree on the purpose/how to use them in NR MBS. E.g.,     * For P9, It seems companies have different understanding on how to use the list of neighbour cells where ongoing MBS service provided. Is it used for mobility between MBS cell to MBS cell, or for mobility from MBS cell to non-MBS cell? * In P10, it is proposed to include MBS frequency in MII message. On the other hand, we even do not know what does the frequencies in MII means, according to P15/P16. |
| Nokia | Comments on details of P5, P8,  P9 and P10 | P5: In LTE there is no mapping between services and frequencies only mapping between MBMS SAIs and frequency.  P8: we should not talk about group ID but just and “ID (e.g. SAIs)  P9: I guess intention is to say that it should be possible to advertise MBS services in neighbour cells. It would not be mandated e.g. legacy gNB would not be able to advertise.  P10: This much of information prior security activation is likely not acceptable for SA3 from security point of view. We should also consider an indication prior to MII, which just indicates that a UE is receiving some broadcast service, when moving to connected state prior security activation. This is to avoid NW reconfiguring BWP so that UE is not able to receive broadcast as NW would likely not receive detailed MII until security is activated. Then the priority between unicast bearer and MBS bearer is bit vague in the proposal – Does it mean that whenever new unicast bearer is configured UE needs to indicate again what are priorities. Should this proposal more talk about priority between unicast and MBS reception not per bearer information as the UE could be interested in multiple MBS broadcast services? |
| NEC | P9 | P5 needs further clarification, whether the ongoing MBS service is supported by multicast, unicast, or both. |
| Apple | P9, P12 | For P9, some clarification is needed on the UE operation to use this neighbor cell’s information.  For P12, it’s obvious that all the information reporting (including MII) before security activation will have the security risk. We are not sure whether MII reporting before security activation is really needed. |
| CMCC |  | Most of the proposals reuse LTE SC-PTM solutions, we are fine to accept for the progress of the WI. |
| Lenovo, Motorola Mobility |  | P4 and P8 seem a bit overlapped? E.g. MBS services in USD.  P10 may need further clarification as companies commented, we are fine to have is as WA.  Other proposals seem agreeable to us, we don’t have strong objection. It is also reasonable to send LS to other WGs consulting relevant questions. |
| TCL | Proposal 10 | For proposal 10, we agree on service IDs and frequency list. However, for the priority indication; we think it wold be better to consider the reception modes agreed in RAN1 (i.e., unicast (PTP) or MBS (PTP/PTM) or simultaneous reception of unicast (PTP) and MBS via PTP/PTM in a slot or different slots in a TDM manner). Under such an assumption, we think it would be better to provide an explicit indication of these three reception modes instead of priority indication. Such a kind of indication could assist gNB to decide/select the best way to provide MBS to UE (e.g., via unicast or via MBS, via PTP or PTM or both). Additionally, it may also help gNB to avoid providing MBS service multiplexed with unicast for UEs who are not interested in simultaneous reception especially in the case of broadcast service reception in connected mode (which is indeed a great favour for those specific UEs). |
| OPPO | None | All proposals are acceptable for us. |

# 3. Summary

# 4. Reference

[1] [R2-2108799](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_115-e\Docs\R2-2108799.zip) Summary of [Post114-e][073][MBS] Service continuity for Delivery Mode 2 (Xiaomi) Xiaomi Communications discussion Rel-17 NR\_MBS-Core