**3GPP TSG-RAN WG2 Meeting #123 bis R2-231XXXX**

**Xiamen, China, Oct.9th- 18th, 2023**

**Agenda item: 7.14.5**

**Title: Report of [Post123bis][619][QoE] UE capabilities CRs update and open issues (CMCC)**

**Source: CMCC**

**Document for:** **Discussion and decision**

# 1. Introduction

This document captures the following UE capabilities discussion,

* [Post123bis][619][QoE] UE capabilities CRs update and open issues (CMCC)

Scope: Running CRs update and open issues

Intended outcome:

* Endorsed running CRs
* List of open issues for UE capabilities (separate document)

Deadline: Friday Oct.27th，2023

The email discussion participants are kindly asked to fill in the following table.

**Contact List**

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| Company name | Delegate name | Email address |
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# 2. Discussion

## 2.1 AS buffer size for RedCap/eRedCap UE

There are still some controversies within RAN2 regarding UE's AS layer buffer size for paused and/or non-connected state QoE [1], especially for RedCap/eRedCap UE:

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| * For non-RedCap UE, minimum memory requirement for IDLE/INACTIVE reports is 64KB. This memory is in addition to 64KB used for QoE report storage during pause. * FFS For RedCap/eRedCap UE, the minimum requirement is 64 KB total for both IDLE/INACTIVE and paused reports * Introduce an optional UE capability indicates whether UE supports 128, 256, 512 and 1024KB buffer size. |

Also, for eRedCap UE, whether the AS layer buffer size requirement would be the same as that of RedCap UE still needs consideration.

Hence, comments from companies are invited for this discussion.

#### Q1. Does company agree that the minimum memory requirement is 64KB total for both IDLE/INACTIVE and paused QoE reports for RedCap/eRedCap UE?

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| **Company** | **Yes or no** | **Comments** |
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**Summary:**

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#### Q2. If company puts No to Q1, does company agree the minimum memory requirement is the same for both RedCap and eRedCap UE?

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| **Company** | **Yes or no** | **Comments** |
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**Summary:**

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## 2.2 MBS QoE capability

For MBS QoE capability, it’s agreed to introduce a UE capability for QoE in RRC\_IDLE and RRC\_INACTIVE. But in RRC\_CONNECTED, it’s suggested to wait for RAN3’s conclusion since RAN3 may introduce delivery mode in MBS QoE configuration.

Regarding RAN3 agreement for QoE in RAN3#121bis [2], RAN3 agrees to introduce MBS broadcast and MBS multicast, but doesn’t decide whether introduce MBS unicast.

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| **QMC is supported for MBS broadcast and multicast. Accordingly, define new extensible IEs with “multicast” and “broadcast” in XnAP and NGAP for QMC configuration.**  **MBS Service Area and MBS Session ID will not be added as explicit IE for MBS related QoE configuration in Rel-18.**  **FFS whether the new communication service mode IE also contains a third codepoint - for unicast.** |

For broadcast, NW cannot predetermine which UE receives MBS broadcasts, therefore, there is no need to introduce relevant capability signaling.

But for multicast, it seems that there is no dedicated UE capability indicating whether UE supports MBS multicast delivery mode, hence a new UE capability may be introduced indicating whether UE supports MBS multicast QoE in RRC\_CONNECTED to assist NW in determining QoE configuration. The following description can be regarded as an early attempt.

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| ***qoe-MBSMulticast-MeasReport-r18***  Indicates whether the UE supports MBS multicast delivery mode QoE Measurement Collection in RRC\_CONNECT, see TS 38.331[9] | UE | No | No | No |

For RRC\_IDLE and RRC\_INACTIVE, Rel-18 only intends to support MBS Broadcast QoE. So, no impact for former UE capability indicating whether UE can perform MBS QoE in RRC\_IDLE and RRC\_INACTIVE.

#### Q3. Does company agree to introduce a new UE capability indicating whether UE supports MBS multicast QoE in RRC\_CONNECT?

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| **Company** | **Yes or no** | **Comments** |
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**Summary:**

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## 2.3 NR-DC QoE capability description

It is agreed to introduce an overall UE capability for NR-DC and a separate UE capability for supporting SRB5. But there can be some ambiguity for the overall NR-DC capability description. Hence, comments from companies are invited.

The following description serves an early attempt and any comments are welcome.

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| ***qoe-NRDC-MeasReport-r18***  Indicates whether the UE supports to receive QoE configuration via SRB1 and SRB3, and send QoE report via SRB4 | UE | No | No | No |

And for SRB5 capability, companies can consider the following description and provide comments.

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| ***srb5***  Indicates whether the UE supports direct SRB5 between the SN and the UE as specified in TS 37.340 [7]. A UE supporting this feature shall also indicate support of *qoe-NRDC-MeasReport-r18* and any of *qoe-Streaming-MeasReport-r17*, *qoe-MTSI-MeasReport-r17* or *qoe-VR-MeasReport-r17*. | UE | No | No | No |

#### Q4. Does company agree to the above NR-DC QoE UE capability IE? If not or if there are any suggestions on the wording, please provide your comment.

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| **Company** | **Yes or no** | **Comments** |
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**Summary:**

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## 2.4 Open issue for QoE UE capability

Apart from the open issue in R2-2310204, there are still some potential open issues pending on other WG’s progress. For the convenience of further discussion, comments from company is always appreciated.

The following is the open issue identified based on the contributions from companies and agreements from other WGs:

Open issue 1: MBS unicast capability (pending on RAN3)

RAN3 is discuss whether codepoint for MBS unicast should be included in QMC configurations in XnAP and NGAP. If agreed, UE capability for MBS unicast QoE may need to be introduced. Suggest to wait for SA3 progress.

Open issue 2: AR/MR QoE capability (pending on SA4)

RAN3 has agreed to introduce AR/MRccccccc as a service type for QoE, but SA4 hasn’t formulated the metric for AR/MR. Suggest to wait for SA4 progress.

Open issue 3: Clarification of Rel-17 legacy QoE capability is only for RRC\_CONNECTED

Companies wonders whether to clarify Rel-17 QoE capability (e.g.,*qoe-Streaming-MeasReport-r17*, *qoe-MTSI-MeasReport-r17* or *qoe-VR-MeasReport-r17*) that they only apply in RRC\_CONNECTED.

Open issue 4: Impact of priority and assistance information in QoE configuration

RAN3 has agreed to introduce priority information as assistance information over NG for QoE report upon RAN overload (see R3-235346), it seems that a new UE capability can be helpful for RAN.

For buffer level threshold-based RVQoE reporting, RAN3 has confirm it will not be pursued in Rel-18[1]. Therefore, it seems no need to add an open issue for that.

#### Q5. Does company have any comments on the above open issues?

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| **Company** | **Comments** |
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**Summary:**

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#### Q6. Does company have any further open issue? If so, please provide feedback.

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**Summary:**

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# 3. Conclusion

# 4. References

[1] R2-2311277, Report from session on MBS, QoE and LTE legacy

[2] RAN3\_121bis\_agenda\_20231013\_EOM