**3GPP TSG-RAN2 Meeting #126R2-240xxxx**

**Fukuoka, Japan, 20May – 24 May, 2024**

**Agenda item: 7.24.2.2**

**Source: Apple**

**Title: Summary of Offline #002 ([AT126][002][XR] CR to 331 and 304)**

**Document for: Discussion and Decision**

# 1 Introduction

This summarizes the discussion on EM call handling discussion for RedCap, eRedCap and 2RX XR UEs. Based on the online discussion and guidance from the chair on 2 set of CRs ( one set with magic sentence in 38.331, and another for R18 eRedCap and XR features) are provided and this document intends to capture company views if any.

# 2 Discussion

In RAN2-126, the following was agreed regarding EM call support and the offline discussion was triggered.

[R2-2405645](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_126\Docs\R2-2405645.zip) Barring exemption for emergency calls Huawei, HiSilicon discussion Rel-18 TEI18

Proposal 1: A solution enabling barring exemption for emergency calls should not allow the UEs to ignore MIB barring.

*Proposal 2: RAN2 to introduce a general rule that barring exemption for emergency calls is allowed for eRedCap and 2Rx XR UEs (no other R18 features) in case there is no barring in MIB and discuss which of the barring exemption solutions to introduce:*

*• Option 1:*

*o Barring exemption bit is kept for RedCap UEs (as agreed)*

*o There is no additional barring exempt bit in SIB1 for eRedCap and 2Rx XR UEs*

*o New common CRs for eRedCap and 2Rx XR UEs are prepared while the endorsed CRs for RedCap UEs are kept as they are*

*• Option 2:*

*o barringExemptRedCap bit is replaced with a common barringExemptEmergencyCall bit applicable to RedCap, eRedCap and 2Rx XR UEs*

*o Separate CRs are prepared for TS 38.304 for RedCap UEs (early implementable) and for eRedCap and 2Rx XR UEs.*

- Lenovo thinks option 2, with common bit is preferable. Apple prefers option 1 as that will complicate things, we have R17 CR and then Rel-18 different solution

- TIM thinks that emergency call allowance should be done on a per use case basis. For example, if it is a robot it doesn’t make sense, but if it is a smartphone we can consider.

- Nokia prefers option 1.

- Qualcomm thinks option 2 will allow us to add more features in the future.

- TMobile is not sure any of this options.

- ZTE has a slight preference for option 2.

- Ericsson also wonders if we need to differentiate.

- Nokia and Oppo think we should have separate control to 2RX XR UEs. ZTE doesn’t understand why we won’t separate control. Nokia explains that redcap UEs can be 1Rx.

- Vodafone thinks that 2RX XR should be default behavior. CATT would like to have network control

*Discussion on whether to consider NES (i.e. ignore MIB barring)*

- Vodafone and Fraunhaufer thinks that it would be a fundamental change. Qualcomm thinks that this use case is not strong engouht. Nokia, Ericsson, ZTE, CATT, thinks we can leave NES out of this discussion.

- Apple thinks that in the future, the UE may not have a legacy layer.

- Oppo also thinks that NES should be out of scope as the intention and logic is quite different

- Lenovo thinks that all UEs should be allowed to make emergency calls.

- BT is not ready to make a decision.

- ZTE thinks that if we really want to fix NES is to not use MIB barring. Since we have MIB barring we don’t want to have exceptions for that purpose.

- Samsung and BT ask what happens if the NW doesn’t support this. Apple explains that there are other conditions the UE will have to check before it gets to the EM call barring. Huawei thinks that we can do this check in 304 CR.

=> Working assumption: NES (i.e. ingoring MIB barring) will not be considered in our common discussion

=> For Rel-18, we introduce 1 bit that enables EM call for RedCap, eRedCap, and 2Rx XR. One RRC Rel-18 with magic sentence that it is early implementable in Rel-17. A CR for 38.304 doesn’t need to have the magic sentence.

=> This replaces the previous agreement and we will notify RAN3 verbally via delegates

* [AT126][002][XR] CR to 331 and 304()

Intended outcome: Review CRs

Deadline: 05-24-24

## 2.1 Collection of views

The moderator has provided CRs [1][2][3] based on the discussion.

[1] and [2] are intended to allow R17 RedCap UEs to use this CR, while [3] introduced R18 specific changes that allow eRedCap and 2Rx XR UEs to use the barred cells for EM calls.

The coversheets attempt to reflect this as well. In [1], the moderator was not quite sure how to describe the coversheet and field descriptions, so that R17 UEs can take the CR without mentioning eRedCap and XR features completely. Any better wording suggestions is welcome!

While it is easier to directly edit the CRs (with revision marks and comments to the CRs directly in these files), this document is intended to capture any views/comments that companies feel are better expressed/captured in a separate document. The moderator prefers that companies provide views directly to [1][2][3], but companies are welcome to add more comments to the table below if needed.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Vodafone | We agree with not touching the MIB behaviour. On 1 bit for 1Rx/2Rx and 2RX XR, we feel, that if the operator would like to bar e.g. 2RX XR devices and ask to implement the feature, but the vendor has not implemented 1Rx and that’s why it has to be barred, the one bit solution emergency calls will lead to the case, that the vendor will need to implement at least emergency call handling for 1 RX devices as those would be able to make an EM after one EM call bit is implemented. We could see that 1 bit is working, but also feels that probably 1 bit for 1RX EM and 1 bit for 2RX emergency could be a bit better way to solve it, also not mixing the devices like 2RXXR and redcaps.  [Apple – moderator] While the original CRs submitted had separate bits, after extensive online discussion we agreed to having only “one” bit for all of the features. |
| Lenovo (on R2-240xxx\_R17\_RedCap\_331) | The field description of “barringExemptRx-Branch”  *“Indicates whether the cell allows IMS emergency bearer services for UEs that bar the cell based on their Rx branch support, if these UEs consider the cell as acceptable cell as specified in TS 38.304 [20].”*  I think this should not be limited just to “IMS emergency bearer” but also for CSFB case. We should allow the UE to initiate EM Call establishment – no matter if the EM call will be served using IMS bearer or CSFB in the end.  [Apple – moderator] The wording was like this for several meetings. Will change to allow emergenency calls without limiting to IMS bearer alone. Hope companies can work constructively on this. |
| Lenovo (on RedCap\_304 CRs) | 1. Made (so far only in the R17 CR) some editorial corrections just to increase readability. If agreed, the changes can be extended to other CRs. 2. Not sure where the “receive emergency information broadcast” is coming from?   “*barringExemptRX-Branch* is set to “true”” to be changed to “*barringExemptRX-Branch* is included” |
| Lenovo | We can use a more generic name than “*barringExemptRX-Branch*” assuming if this could be useful in future to other features. Otherwise, the naming can become a notional hurdle. |
| BT | Same option as Lenovo on naming.  We have concerns with this barringExemptRX-Branch-r18 naming in 331. Currently, excluding NES is a working assumption.  For a better understanding, we prefer a self-explanatory name. We propose allowedEmergencyCallException-r18.  [Apple – moderator] reverted to barringExemptEmergencyCall-r18. |
| BT - 304 | Agree with Lenovo.  We want to make clear that the absence of the new bit to allow emergency calls means that the UE should follow legacy behaviour. |
| QC | Can the rapporteur clarify what happened to BT’s request to address the case where the network only supports 2Rx operation of RedCap?  In this case, the barring cellBarredRedCap1Rx-r17 is set to barred for normal services and emergency calls, and cellBarredRedCap2Rx-r17 is set to barred for normal service only.  cellBarredRedCap-r17 SEQUENCE {  cellBarredRedCap1Rx-r17 ENUMERATED {barred, notBarred},  cellBarredRedCap2Rx-r17 ENUMERATED {barred, notBarred}  } OPTIONAL, -- Need R  How can the solution on the table allow emergency call only for 2Rx RedCap UEs?  [Apple – moderator] If I understand correctly, the usecase is that the cell does NOT support RedCap operation in both 1Rx and 2Rx (and so barred both), but is ok to allow EM calls on 2Rx redcap UEs? As was discussed before, the main assumption on which the allowing of EM calls over barred cells (barred by the UE over support of Rx) is that, if the NW supports 2Rx, it should also support 1Rx. Afterall, even when the UE is configured with 2 layer MIMO, the channel conditions might not allow 2 layers, and only 1 layer is possible. So support of 2Rx needs support of operating in 1Rx as well. Also, the operation of 2Rx is minimum requirements in all bands for legacy features (Which the NW is expected to support). There are some bands where 4Rx is mandatory which implies the support of 2Rx and 1Rx for these bands.  Also, pls note, we made an agreement on having only 1 bit, and this for all features – redcap/eredcap/XR. Adding more bits did not appear to gain traction online.  Have informed BT as well. We might need online time again if this needs to be re-opened. Another option that I mentioned to BT was (the same as Huawei mentioned below), is if there exist such NWs as above, then the field ***barringExemptEmergencyCall*** should not be turned ON by this NW. |
| Huawei | Comments on the CRs:   * There is no need to mention “after R18 ASN.1 is frozen” on the cover pages anymore as we will freeze ASN.1 including this change already.   [Apple – moderator] removed.  We agree that the name does not have to mention “Rx branches”. We propose *barringExemptEmergencyCall*.  [Apple – moderator] renamed..   * Similarly, we do not have to mention “based on their Rx branch support”. We can simply mention the features this refers to directly. We propose the following field description:   “Indicates whether the cell allows IMS emergency bearer services for UEs which would otherwise consider the cell as barred, as specified in TS 38.304 [20]. This field applies to RedCap, eRedCap and 2Rx XR UEs.”  [Apple – moderator] edited.  Since RedCap is mentioned in the field description, it is clear this field can be implemented by RedCap UEs and mentioning eRedCap and 2 Rx XR UE is not an issue here.  When it comes to the issue raised by QCM, we acknowledge it is possible in theory. We think we can either accept that in this case the network will have to disallow EM calls for both 1Rx and 2Rx UEs, or we may actually drop a common solution. This would mean we go back to original (e)RedCap CRs while for 2 Rx we think we can enable EM call by default, i.e. without any additional control bit. |
| ZTE | **Regarding 1 bit vs 2 bits:** When we agreed to have one bit, the main motivation is that there is no need to distinguish between different features (RedCap/eRedCap/XR) as far as EM calls are concerned. We think this motivation still stays and we should not rediscuss this. This is what we refer to as common solution (for different features). We in general agree with the explanation from the rapporteur above for this.  The only potential issue now is whether 1RX operation may not be supported (e.g. MIMO mode not supported) in some networks (i.e. specific implementation by some network vendors) but 2 layer MIMO mode is supported. May be network vendors can check and confirm if this is a real issue. At least from our side, we don’t think this is a problem in network implementation.  **Regarding the name of the IE**: We agree with the new name.  **On the magic sentence and number of CRs:** No strong view, but since we mention also the Rel-18 features in RRC (although not as extensively as the 304), I wonder if it would be cleaner to split the RRC CR also into Rel-18 with magic sentence and Rel-18 without magic sentence (to keep both of these as a package for RRC and IDLE mode)?? |

# Conclusion

**To be filled**

# References

[1] [R2-240xxxx](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_125\Docs\R2-2401347.zip) R2-240xxx\_R17\_RedCap\_331 ( 38.331 CR with magic sentence)

[2] [R2-240xxxx](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_125\Docs\R2-2401347.zip) R2-240xxx\_R17\_RedCap\_304 ( 38.304 CR which can be used by R17 RedCap UEs)

[3] [R2-240xxxx](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_125\Docs\R2-2401347.zip) R2-240xxx\_R18\_eRedCap\_XR\_304 ( 38.304 CR that is separate from [1] and [2], has different title, and is a standalone CR )