3GPP TSG-RAN WG2 Meeting #110-e R2-2005821

Online, June 1 – June 12 , 2020

**Agenda item: 4.2.1**

**Source: Qualcomm**

**Title: Report for [AT110-e][401][eMTC] R15 Relaxed serving cell measurement for UEs using WUS (Qualcomm)**

**Document for: Report**

# 1 Scope of the email discussion

This document contains the report for the following email discussion:

* [AT110-e][401][eMTC] R15 Relaxed serving cell measurement for UEs using WUS (Qualcomm)

Scope: Check if there is support and update based on the comments if the CRs are agreeable

Intended outcome: Report provided in R2-2005821 and, if agreeable, updated CR(s).

Deadline: Friday, June 5th 10:00 UTC

# 2 Discussion

## Early implementation of Relaxed serving cell measurement

Relaxed serving cell measurement when using WUS is introduced from Release 16. This feature has no UE capability indication and is linked to support for WUS [1]. It was agreed in RAN2#109bis-e meeting that Release 15 UE supporting WUS is permitted to use the power saving feature provided network broadcasts *numDRX-CyclesRelaxed* and the UE meets the conditions specified for relaxed serving cell measurement by RAN4 in TS 36.133.

* Early implementation of relaxed serving cell measurement by Rel-15 UEs when configured with WUS is permitted. FFS whether to agree in TEI15.

As discussed in [2], majority companies preferred Rel-15 CR as better option. The Rel-15 CR is provided in [3]. If Rel-15 CR is agreed, then Rel-16 mirror CR is needed. In addition, existing *numDRX-CyclesRelaxed-r16* needs to be update to *numDRX-CyclesRelaxed-r15*, i.e., delete *wus-Config-v16xy* and add *wus-Config-v15a0* in *RadioResourceConfigCommonSIB*. The Rel-16 text proposal is provided in [4].

**Question 1: Do companies agree Rel-15 CR provided in [3] for the relaxed serving cell measurement for Rel-15 UEs using WUS?**

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| **Company** | **Yes/No** | **Comment** |
| Huawei | No | The agreement was to make the Rel-16 feature early implementable in Rel-15, however this CR implements directly in Rel-15. We also can’t have a Cat. B CR in a closed release. |
| Ericsson | No | Agree with HW that Cat B to closed release should not be done. In this particular case the configuration is in SI and there is no UE capability thus is should be enough to have it early implementable for UEs from Rel-15 and introduce the configuration changes in Rel-16. |
| Qualcomm | Yes | We agree the agreement is to make the feature early implementable. However, this was discussed in [2] in the last meeting, and majority companies preferred Rel-15 CR.  What should be the CR category can be discussed. |

**Question 2: If answer to question is NO, please elaborate your solution.**

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| **Company** | **Comment** |
| Huawei | Rel-16 CR, separate to the main WI CR, which separates the WUS config into a separate extension, and updates the early implementation table to reference this new “standalone” WUS CR.  The Rel-16 ASN.1 would need to be updated as follows, in RadioResourceConfigCommonSIB  [[  wus-Config-v16xy WUS-Config-v16xy OPTIONAL -- Need OR  ]],  [[  highSpeedConfig-v16xy HighSpeedConfig-v16xy OPTIONAL, -- Need OR  crs-ChEstMPDCCH-ConfigCommon-r16 CRS-ChEstMPDCCH-ConfigCommon-r16 OPTIONAL, -- Need OR  ~~wus-Config-v16xy WUS-Config-v16xy OPTIONAL, -- Need OR~~  gwus-Config-r16 GWUS-Config-r16 OPTIONAL, -- Need OR  uplinkPowerControlCommon-v16xy UplinkPowerControlCommon-v16xy OPTIONAL -- Need OR  ]]  By separating the wus-Config-v16xy extension in a separate [[]] extension from other Rel-16 IEs, and placing it first in the ASN.1 structure, it is simple to implement this part only in a Rel-15 UE without having to implement other Rel-16 IEs, and maintains backwards compatibility.  This would require only a Rel-16 CR to separate the WUS IE and update the early implementation table, and would be in line with the usual LTE practice. By having a separate CR for making this change (separate to the miscellaneous RRC CR in Rel-16) it would then be possible and clear to use the usual LTE early implementation method. |
| Ericsson | We agree to have a separate Rel-16 CR with the early implementation table updated.  Huawei suggestion looks OK to us, it should be possible for the UE to only implement the SI extension for this feature. |
| Qualcomm | In the last meeting, our understanding was that companies preferred to use Rel-15 CR. The proposed Rel-16 CR and Rel-15 CR would have the same signalling overhead. Then, we think it is clearer to do Rel-15 CR.  However, we are also fine with the Rel-16 CR, in which case, additional overhead due to the extension to be used for wus-Config-v16xy should be avoided. It should be enough to reorder the position of wus-Config-v16xy, as shown below. UE will just discard the IEs that are not supported.  [[  wus-Config-v16xy WUS-Config-v16xy OPTIONAL -- Need OR  highSpeedConfig-v16xy HighSpeedConfig-v16xy OPTIONAL, -- Need OR  crs-ChEstMPDCCH-ConfigCommon-r16 CRS-ChEstMPDCCH-ConfigCommon-r16 OPTIONAL, -- Need OR  ~~wus-Config-v16xy WUS-Config-v16xy OPTIONAL, -- Need OR~~  gwus-Config-r16 GWUS-Config-r16 OPTIONAL, -- Need OR  uplinkPowerControlCommon-v16xy UplinkPowerControlCommon-v16xy OPTIONAL -- Need OR  ]] |

Also, an LS to RAN4 is needed and draft is available in [5].

**Question 3: Do companies agree to send LS to RAN4 to inform RAN2 agreement on the implementation of relaxed serving cell measurement by Rel-15 UEs using WUS?**

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| **Company** | **Yes/No** | **Comment** |
| Huawei | No | It is needed only if we have a Rel-15 CR because RAN4 would have to implement in Rel-15. With a Rel-16 early implementable CR, as suggested above, this won’t be needed because there is no RAN4 impact – UE would clearly have to implement RAN2 and RAN4 parts to support the feature. |
| Ericsson | Depends | If it is implemented in Rel-15 specifications, then LS should be sent.  For the Rel-16 CR approach and early implementation no LS should be needed. |
| Qualcomm | Yes/No | If this feature introduced from Release 15 then RAN4 needs to be informed so they can introduce relaxed serving cell measurement requirements from Release 15.  If this feature is kept in Release 16 with early implementation from Release 15 then RAN4 does not need to do anything in release 15. |

Summary:

Three companies responded to the email discussion. Two companies prefer Rel-16 CR to minimize the specification impact & easy traceability by RAN5 and one company is fine with Rel-15 CR or Rel-16 CR. All companies are fine with the Rel-16 CR.

1. One company suggested to remove the *wus-Config-v16xy* and add a separate extension marker for *wus-Config-v16xy* such that Rel-15 UEs would not need to implement other Rel-16 IEs. However, rapporteur thinks that such separate extension marker adds at least one byte of overhead in system information message which is not necessary. The Rel-15 UEs can simply discard the IEs that it does not support in the system information. The Rel-16 CR is available in [6]. The only change in this CR would be to move *wus-Config-v16xy* to the start of the R16 IE group and updating the Annex G Table G-1: List of CRs Containing Early Implementable Features and Corrections.RAN2 agree the Rel-16 CR provided in R2-200xxxx to allow early implementation of relaxed serving cell measurements from Release 15.

# 3 Conclusion

Based on the feedback from the companies, following is proposed.

Proposal 1 RAN2 agree the Rel-16 CR provided in R2-200xxxx to allow early implementation of relaxed serving cell measurements from Release 15.

# 3 References

[1] R2-2003188 Permit early implementation of relaxed serving cell measurement.

[2] R2-2003928 Report for [AT109bis-e][413][eMTC] Mobility enhancements - Open issues (Qualcomm).

[3] R2-2004627 Relaxed serving cell measurement for UEs using WUS, CR Rel-15 36.331.

[4] R2-2004634 Relaxed serving cell measurement for UEs using WUS, draftCR Rel-16 36.331.

[5] R2-2004654 [Draft] LS on implementation of relaxed serving cell measurement by Rel-15 UEs, LS out Rel-15, To: RAN4.

[6] R2-200xxxx Relaxed serving cell measurement for UEs using WUS, CR Rel-16 36.331.