**3GPP TSG RAN2 #117-e R2-22xx**

**Electronic Meeting, 21 Feb – 03 Mar 2022**

**Agenda Item:**  **9.3**

**Source: Qualcomm Inc. (rapporteur)**

**Title:** **Report on [AT117-e][204][LTE] CRs LTE-based 5G terrestrial broadcast (Qualcomm)**

**Document for: Discussion and decision**

### **1 Introduction**

This is the email discussion report of the following:

* [AT117-e][204][LTE] CRs LTE-based 5G terrestrial broadcast (Qualcomm)

Scope: Review CRs for LTE-based 5G terrestrial broadcast. In case critical issues are found, those can be raised also online prior to the discussion deadline.

Intended outcome: Agreeable CRs in [R2-2203633](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_117-e\R2-2203633.zip) (36.331) and [R2-2203634](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_117-e\R2-2203634.zip) (36.306) (to be submitted to RANP approval).

Deadline: Deadline 4

**Deadline 4 (discussions for 2nd week Wed online):**

* **Comment deadline:** MondayW2, 1200 UTC (for collecting views)
* **Rapporteur proposals:** Tuesday W2, 1200 UTC (proposed resolution of issues)
* **Document deadline:** Tuesday W2, 1600 UTC (report or agreed CRs)

#### **1.1 Contact Information**

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| --- | --- | --- |
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| Qualcomm | Umesh Phuyal | uphuyal@qti.qualcomm.com |
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### **2 Discussion**

#### **2.1 Background**

RAN1 CRs for the WI were approved by RAN#94e in RP-212975. RAN1 concluded the RRC parameter in R1-2112975 and sent LS to RAN2 in R2-2200095. Further, RAN1 sent LS to RAN2 in R2-2200090/R1-2112900 regarding UE capabilities for the feature.

These CRs are to introduce the RRC parameter and UE capabilities to the RAN2 specifications.

#### **2.2 Discussion on CRs**

The CRs under discussion are

[R2-2202237](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_117-e/Docs/R2-2202237.zip) Introduction of new bands and bandwidth allocation for LTE-based 5G terrestrial broadcast Qualcomm Incorporated CR Rel-17 36.331 16.7.0 4750 1 B LTE\_terr\_bcast\_bands\_part1-Core R2-2200209

[R2-2202238](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_117-e/Docs/R2-2202238.zip) Introduction of new bands and bandwidth allocation for LTE-based 5G terrestrial broadcast Qualcomm Incorporated CR Rel-17 36.306 16.7.0 1836 - B LTE\_terr\_bcast\_bands\_part1-Core

**Table 1: Comments on RRC CR R2-2202237.**

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| --- | --- | --- |
| **Company** | **Support/No Support** | **Comments** |
| Lenovo | Partly | MBSFN-AreaInfoList IE:   * Is there a need to signal the value kHz15-r17 in subcarrierSpacingMBMS-r16? So far we understood the new BWs of 6/7/8 MHz are only applicable for 15kHz SCS. * If there is no need to introduce 15 kHz SCS for MBMS then new MBSFN-AreaInfo-r17 IE can be defined reusing the fields of MBSFN-AreaInfo-r16 except of subcarrierSpacingMBMS-r16.   The capability signaling is still tbd in RAN1, so for the time being we prefer to leave out the capability part. |
| Qualcomm | Support | We are proponent of the CR.  **In response to Lenovo’s questions/comments:**  **Regarding SCS:**  According to our understanding, the new BWs are applicable for all SCS values (including but not limited to 15 kHz). After checking the WID and the RAN1 CRs again, I cannot find any restriction about the SCS for new PMCH BWs in terms of SCS.  Note that 15kHz was not applicable for MBSFN-AreaInfo-r16 and hence currently there is no way to configure 15kHz using signalling for Rel-16 MBSFN Areas. So, only when included in Rel-17, the spare value would be set to indicate 15kHz SCS. This is further clarified in the field description by adding “Value kHz15-r17 is applicable only when the field is included in *mbsfn-AreaInfo-r17”*  In this case, it would be equivalent to copy-paste everything from MBSFN-AreaInfo-r16 into MBSFN-AreaInfo-r17, change them to -r17 fields, change one spare in SCS to 15 kHz as done in the current CR, and add a new field pmch-Bandwidth-r17. The approach taken in the CR is to minimize changes with the same end result.  **[Lenovo2]** After further checking the RAN1 specs our comment on the applicability of the 15kHz SCS solely for the new BWs may not be correct. We may have misinterpreted the RAN1 specs since only for 15kHz SCS the new BWs were explicitly mentioned. But this was done due to the fact that for 15kHz SCS an MBSFN subframe contains a non-MBSFN region, see TS 38.211, subclause 6.5.  **[QC2]** Thanks for confirming.  **Regarding Capability:**  RAN1 has already concluded that there will be new optional UE capabilities per band. What is still TBD in RAN1 is whether to have single bit for all new PMCH BWs, or multiple bits for different new supported PMCH BWs. So, the CR attempts to show related other changes such as the structure to include it in the MBMS supported band list etc. Depending on RAN1 conclusion the following would be 3 fields or one field, as captured by Editor’s note there.  -- Editor’s Note: Following assumes one capability bit for each new supported PMCH BW, which is still TBD in RAN1 and may need further update.  pmch-Bandwidth-n40-r17 ENUMERATED {supported} OPTIONAL,  pmch-Bandwidth-n35-r17 ENUMERATED {supported} OPTIONAL,  pmch-Bandwidth-n30-r17 ENUMERATED {supported} OPTIONAL  It is expected RAN1 will conclude this during ongoing meeting. If RAN1 confirms to have a single capability bit per band, then the above 3 fields would be merged into the following single field (and the top level OPTIONAL tag removed):  pmch-Bandwidth-r17 ENUMERATED {supported} OPTIONAL  Consequently, in the field description, “40/ 35/ 30 PRBs” would change to “40, 35 and 30 PRBs”. With these in mind, we would be interested to know if there are other comments on the capability section. |
| Ericsson | Partly | The capability bits shouldn’t be included unless we get ACK from RAN1 on this.  Regarding which SCS the new BWs can be use with, after checking with our RAN1 colleague we do not think there is a restriction on the SCSs.  **[QC2]** Agree, we can remove capability part before CR agreement unless we get RAN1 confirmation on time. With that understanding, please check and provide feedback whether the structure and descriptions are ok for the time being. |
| Huawei, HiSilicon | We can conclude after RAN1 concludes  **[QC2]**: to confirm, I assume this comment is only for capability part of the CR. RAN1 already concluded the WI except for 1-vs-3 bit capability per band. | One comment for the asn.1 part, the “optional” in MBMS-Parameters-v17xy should be moved to UE-EUTRA-Capability-v17xy-IEs as below to avoid mandate all rel-17 UE report mbms-Parameters-v17xy :  UE-EUTRA-Capability-v17xy-IEs ::= SEQUENCE {      mbms-Parameters-v17xy        MBMS-Parameters-v17xy               OPTIONAL,      nonCriticalExtension             SEQUENCE {}                      OPTIONAL  }  MBMS-Parameters-v17xy ::=    SEQUENCE {      mbms-SupportedBandInfoList-v17xy     SEQUENCE (SIZE (1..maxBands)) OF MBMS-SupportedBandInfo-v17xy      ~~OPTIONAL~~  }  **[QC2]** Thanks for the comment. Signalling-wise both are equivalent and encoded exactly the same way. The CR is written following this guideline from TS 36.331:  “The addition of OPTIONAL keywords for capability groups is based on the following guideline. If there is more than one field in the lower level IE, then OPTIONAL keyword is added at the group level. If there is only one field in the lower level IE, OPTIONAL keyword is not added at the group level.”  In the above case, there is only one field in the lower level IE (even though it is a list). |
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**Summary:**

**TBD**

**Table 2: Comments on 36.306 CR R2-2202238.**

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| **Company** | **Support/No Support** | **Comments** |
| Lenovo | No support | The capability signaling is still tbd in RAN1, so for the time being we prefer to leave out the capability part. |
| Qualcomm | Support | Please see above. |
| Ericsson | TBD | See above |
| Huawei, HiSilicon | We can conclude after RAN1 concludes |  |
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**Summary:**

**TBD**

#### **2.3 Other**

**Table 3: Anything else that is not covered by above questions? Please explain.**

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| **Company** | **Comments** |
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### **3 Conclusion**

TBD

### **4 References**

[1] [R2-2202237](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_117-e/Docs/R2-2202237.zip) Introduction of new bands and bandwidth allocation for LTE-based 5G terrestrial broadcast Qualcomm Incorporated CR Rel-17 36.331 16.7.0 4750 1 B LTE\_terr\_bcast\_bands\_part1-Core R2-2200209

[2] [R2-2202238](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_117-e/Docs/R2-2202238.zip) Introduction of new bands and bandwidth allocation for LTE-based 5G terrestrial broadcast Qualcomm Incorporated CR Rel-17 36.306 16.7.0 1836 - B LTE\_terr\_bcast\_bands\_part1-Core