**3GPP TSG-RAN WG2 Meeting #117-e *DRAFT* R2-2203699**

**Online, 21 Feb – 03 Mar, 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.300** | **CR** | **1360** | **rev** | **-** | **Current version:** | **16.7.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** | Introduction of new bands and bandwidth allocation for LTE-based 5G terrestrial broadcast | | | | | | | | | |
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| ***Source to WG:*** | Qualcomm Inc. | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_terr\_bcast\_bands\_part1-Core | | | | |  | ***Date:*** | | | 2022-03-xx |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | RAN1 CRs for the WI were approved by RAN#94e in RP-212975.  RAN2 CR for RRC configuration was agreed in R2-2203633.  RAN1 sent LS to RAN2 in R2-2204128/R1-2202825 requesting updates to stage 2.  This CR is to introduce the stage 2 description to the specification. | | | | | | | | |
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| ***Summary of change:*** | | Following changes are introduced:   1. Introduce the stage 2 description as requested by RAN1. | | | | | | | | |
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| ***Consequences if not approved:*** | | New bands and bandwidth allocation for LTE-based 5G terrestrial broadcast cannot be supported. RAN2 specification remains incomplete and misaligned with RAN1 specifications. | | | | | | | | |
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| ***Clauses affected:*** | | 5.1.1 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 36.306 CR 1836  TS 36.331 CR 4780 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**First Change**

### 5.1.1 Basic transmission scheme based on OFDM

The downlink transmission scheme is based on conventional OFDM using a cyclic prefix. The OFDM sub-carrier spacing is *Δf* = 15 kHz. 12 consecutive sub-carriers during one slot correspond to one downlink *resource block*. In the frequency domain, the number of resource blocks, NRB, can range from NRB-min = 6 to NRB-max = 110 per CC or per Cell in case of CA or DC.

In addition, there are also four reduced sub-carrier spacings, *Δflow* = 7.5 kHz, *Δflow1* = 2.5 kHz, *Δflow2* = 1.25 kHz and *Δflow3* ≈ 0.37 kHz for both MBMS-dedicated cell and MBMS/Unicast-mixed cell.

In case of 15 kHz sub-carrier spacing there are two cyclic-prefix lengths, corresponding to seven and six OFDM symbols per slot respectively.

- Normal cyclic prefix: TCP = 160×Ts (OFDM symbol #0) , TCP = 144×Ts (OFDM symbol #1 to #6)

- Extended cyclic prefix: TCP-e = 512×Ts (OFDM symbol #0 to OFDM symbol #5)

where Ts = 1/ (2048 × Δf)

In case of 7.5 kHz sub-carrier spacing, there is only a single cyclic prefix length TCP-low = 1024×Ts, corresponding to 3 OFDM symbols per slot.

In case of 2.5 kHz sub-carrier spacing, there is only a single cyclic prefix length TCP-low1 = 3072×Ts, corresponding to 1 OFDM symbol per slot.

In case of 1.25 kHz sub-carrier spacing, there is only a single cyclic prefix length TCP-low2 = 6144×Ts, corresponding to 1 OFDM symbol per subframe.

In case of 0.37 kHz sub-carrier spacing, there is only a single cyclic prefix length TCP-low3 = 9216×Ts, corresponding to 1 OFDM symbol per 3 ms slot as defined in TS 36.211 [4], clause 4.1.

For MBMS-dedicated cells, the PMCH bandwidth can be indicated to be larger than the carrier bandwidth. In particular, a PMCH bandwidth of 30, 35 or 40 PRBs (corresponding to 6/ 7/ 8MHz) can be indicated when the carrier bandwidth is 15 or 25 PRBs (corresponding to 3/ 5 MHz).

In case of FDD, operation with half duplex from UE point of view is supported.

**End of Changes**