**3GPP TSG-RAN2 WG2 Meeting #113-e *R2-210xxxx***

**Online, Jan 25 – Feb 5, 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.306** | **CR** | **0483** | **rev** | **1** | **Current version:** | **16.3.0** |  |
|  | | | | | | | | |
| *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:*** | CR for the supported max date rate for uplink Tx switching | | | | | | | | | |
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| ***Source to WG:*** | China Telecom, Huawei, HiSilicon, CATT | | | | | | | | | |
| ***Source to TSG:*** | TSG-RAN WG2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_RF\_FR1-Core | | | | |  | ***Date:*** | | | 2021-02-03 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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:*** | | In RAN1#103-e meeting, RAN1 discussed the supported max data rate for uplink Tx switching and has reached the agreements to add a note in TS 38.306, clause 4.1.2. Based on that, RAN1 has sent an LS [R2-2100025 \_R1-2009676] to ask RAN2 to take the related agreements into account.  In RAN1#104-e meeting, RAN1 discussed this issue again and agreed to modify the previous note to be added in TS 38.306, clause 4.1.2. RAN1 also approved an LS [R1-2102058] to inform RAN2 about the updates. | | | | | | | | |
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| ***Summary of change:*** | | To add the following note in TS 38.306, clause 4.1.2. based on the latest agreement in RAN1#104-e meeting.  *“NOTE 2: For UL Tx switching between carriers, only the supported MIMO layer combination across carriers that results in the highest combined data rate is counted for the carriers in the supported maximum UL data rate.”*  **Impact analysis**  Impacted 5G architecutre options: (NG)EN-DC, NR CA  Impacted functionality: UL Tx switching in case of (NG)EN-DC, SUL and inter-band NR CA  Inter-operability:   * If the UE is implemented according to the CR and the network is not, there is no inter-operability issue. The network may underestimate the supported maximum UL data rate for UL Tx switching and cannot fully use the UE capability. * If the network is implemented according to the CR and the UE is not, there is no inter-operability issue. | | | | | | | | |
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| ***Consequences if not approved:*** | | The network may underestimate the supported maximum UL data rate for UL Tx switching and cannot fully use the UE capability. | | | | | | | | |
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| ***Clauses affected:*** | | 4.1.2 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | R2-2100293 | | | | | | | | |

**< unchanged text omitted>**

### 4.1.2 Supported max data rate for DL/UL

For NR, the approximate data rate for a given number of aggregated carriers in a band or band combination is computed as follows.



wherein

J is the number of aggregated component carriers in a band or band combination

Rmax = 948/1024

For the j-th CC,

 is the maximum number of supported layers given by higher layer parameter *maxNumberMIMO-LayersPDSCH* for downlink and maximum of higher layer parameters *maxNumberMIMO-LayersCB-PUSCH* and *maxNumberMIMO-LayersNonCB-PUSCH* for uplink.

 is the maximum supported modulation order given by higher layer parameter *supportedModulationOrderDL* for downlink and higher layer parameter *supportedModulationOrderUL* for uplink.

is the scaling factor given by higher layer parameter *scalingFactor* and can take the values 1, 0.8, 0.75, and 0.4.

 is the numerology (as defined in TS 38.211 [6])

 is the average OFDM symbol duration in a subframe for numerology , i.e. . Note that normal cyclic prefix is assumed.

 is the maximum RB allocation in bandwidth  with numerology , as defined in 5.3 TS 38.101-1 [2] and 5.3 TS 38.101-2 [3], where  is the UE supported maximum bandwidth in the given band or band combination.

is the overhead and takes the following values

0.14, for frequency range FR1 for DL

0.18, for frequency range FR2 for DL

0.08, for frequency range FR1 for UL

0.10, for frequency range FR2 for UL

NOTE 1: Only one of the UL or SUL carriers (the one with the higher data rate) is counted for a cell operating SUL.

NOTE 2: For UL Tx switching between carriers, only the supported MIMO layer combination across carriers that results in the highest combined data rate is counted for the carriers in the supported maximum UL data rate.

**< unchanged text omitted>**