**3GPP TSG-RAN WG2 Meeting #124R2-2313451**

**Chicago, USA, November 13 – November 17, 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.306** | **CR** | **1009** | **rev** | **-** | **Current version:** | **17.6.0** |  |
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| *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:*** | Correction to support higher power limit capability for inter-band UL EN-DC | | | | | | | | | |
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| ***Source to WG:*** | MediaTek Inc., Ericsson, Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | Power\_Limit\_CA\_DC | | | | |  | ***Date:*** | | | 2023-11-02 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | According to RAN4 requirements on higher power limit support in the LS R2-2309470 (R4-2314886), the RAN2 capability signalling should be used for NR inter-band UL CA and inter-band UL (NG)EN-DC band combinations. However, the parameter *higherPowerLimit-r17* is included in NR CA parameters IE which is not applicable for inter-band UL (NG)EN-DC band combinations with 1CC in NR SCG.  To support the higher power limit capability signalling for inter-band UL (NG)EN-DC, the new UE capability is required to be included in MRDC parameters IE. | | | | | | | | |
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| ***Summary of change:*** | | Introduce a new UE capability *higherPowerLimitMRDC-r17* in *MRDC-Parameters* IE (with suffix) and add the description to indicate supporting the higher power limit for inter-band UL (NG)EN-DC band combinations in the RAN4 specification reference.  **Impact analysis**  Impacted 5G architecture options:  NR SA, (NG)EN-DC, NR-DC, NE-DC  Impacted functionality:  UE capability signalling of higher power limit  Inter-operability:   1. If the UE is implemented according to the CR and the network is not, network cannot support higher power limit for inter-band UL (NG)EN-DC. 2. If the network is implemented according to the CR and the UE is not, the network could mistake the UE doesn’t support higher power limit for inter-band UL (NG)EN-DC. | | | | | | | | |
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| ***Consequences if not approved:*** | | The higher power limit for inter-band UL (NG)EN-DC is not supported. | | | | | | | | |
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| ***Clauses affected:*** | | 4.2.7.4 and 4.2.7.9 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 38.331 CR4494 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

Beginning of first change

# 4 UE radio access capability parameters

## 4.2 UE Capability Parameters

### 4.2.7 Physical layer parameters

#### 4.2.7.4 *CA-ParametersNR*

| Definitions for parameters | Per | M | FDD-TDD  DIFF | FR1-FR2  DIFF |
| --- | --- | --- | --- | --- |
| ***half-DuplexTDD-CA-SameSCS-r16***  Indicates whether the UE supports directional collision handling between reference and other cell(s) for half-duplex operation in TDD CA with same SCS. The UE can include this field for band combinations including only intra-band TDD CA or if *simultaneousRxTxInterBandCA* is not present for band combinations involving mix of intra-band TDD CA and inter-band TDD CA.  If this field is included in *ca-ParametersNR-forDC-v1610* for IAB-MT, it indicates IAB-MT supports directional collision handling between reference and other cells for half-duplex operation in TDD NR-DC with same SCS across MCG and SCG. | BC | No | TDD only | N/A |
| ***higherPowerLimit-r17***  Indicates whether UE supports increase in maximum output power above the power class indication for inter-band UL CA and NR-DC band combinations as defined in clause 6.2A of TS 38.101-1 [2]. | BC | No | N/A | FR1 only |
| ***interCA-NonAlignedFrame-r16***  Indicates whether the UE supports inter-band carrier aggregation operation where, within the same cell group, the frame boundaries of the SpCell and the SCell(s) are not aligned, the slot boundaries are aligned and the lowest subcarrier spacing of the subcarrier spacings given in scs-SpecificCarrierList for SpCell is smaller than or equal to the lowest subcarrier spacing of the subcarrier spacings given in scs-SpecificCarrierList for each of the non-aligned SCells. | BC | No | N/A | N/A |
| ***interCA-NonAlignedFrame-B-r16***  Indicates whether the UE supports inter-band carrier aggregation operation where, within the same cell group, the frame boundaries of the SpCell and the SCell(s) are not aligned, the slot boundaries are aligned and the lowest subcarrier spacing of the subcarrier spacings given in *scs-SpecificCarrierList* for SpCell is larger than the lowest subcarrier spacing of the subcarrier spacings given in *scs-SpecificCarrierList* for at least one of the non-aligned SCells.  A UE indicating support of interCA-NonAlignedFrame-B-r16 shall also indicate support of interCA-NonAlignedFrame-r16. | BC | No | N/A | N/A |
| ***pdcch-MonitoringCA-r16***  Indicates the number of CCs for monitoring a maximum number of blind detections and non-overlapped CCEs per span when configured with DL CA with Rel-16 PDCCH monitoring capability on all the serving cells. This field also indicates supported span arrangement for CA. UE indicating support of this feature shall also indicate support of *pdcch-Monitoring-r16.* Only one between *pdcch-MonitoringCA-r16* and *pdcch-MonitoringCA-NonAlignedSpan-r16* can be reported by UE. | BC | No | N/A | N/A |
| ***prioSCellPRACH-OverSP-PeriodicSRS-Support-r17***  Indicates whether the UE supports RRC configuration *prioSCellPRACH-OverSP-PeriodicSRS* as specified in TS 38.331 [9]. | BC | No | N/A | N/A |

End of first change

Beginning of second change

#### 4.2.7.9 *MRDC-Parameters*

| Definitions for parameters | Per | M | FDD-TDD  DIFF | FR1-FR2  DIFF |
| --- | --- | --- | --- | --- |
| ***dynamicPowerSharingENDC***  Indicates whether the UE supports dynamic (NG)EN-DC power sharing between NR FR1 carriers and the LTE carriers. If the UE supports this capability the UE supports the dynamic power sharing behaviour as specified in clause 7 of TS 38.213 [11]. In this release of the specification, the UE supporting (NG)EN-DC shall set this field to *supported.* | BC | Yes | N/A | FR1 only |
| ***dynamicPowerSharingNEDC***  Indicates whether the UE supports dynamic NE-DC power sharing between NR FR1 carriers and the LTE carriers. If the UE supports this capability, the UE supports the dynamic power sharing behavior as specified in clause 7 of TS 38.213 [11]. | BC | Yes | N/A | FR1 only |
| ***higherPowerLimitMRDC-r17***  Indicates whether UE supports increase in maximum output power above the power class indication for inter-band UL (NG)EN-DC band combinations as defined in clause 6.2B of TS 38.101-3 [4]. | BC | No | N/A | FR1 only |
| ***intraBandENDC-Support***  Indicates whether the UE supports intra-band (NG)EN-DC with only non-contiguous spectrum, or with both contiguous and non-contiguous spectrum for the (NG)EN-DC combination as specified in TS 38.101-3 [4].  If the UE does not include this field for an intra-band (NG)EN-DC combination the UE only supports the contiguous spectrum for the intra-band (NG)EN-DC combination.  If *intrabandENDC-Support-UL* is absent and the band combination supports intra-band (NG)EN-DC only in DL, this field indicates the DL capability. If *intrabandENDC-Support-UL* is absent and the band combination supports intra-band (NG)EN-DC in DL and UL, this field indicates the common capability for both DL and UL. If *intrabandENDC-Support-UL* is included, *intraBandENDC-Support* indicates the DL capability. | BC | No | N/A | N/A |
| ***intrabandENDC-Support-UL***  Indicates whether the UE supports intra-band (NG)EN-DC in UL with only non-contiguous spectrum, or with both contiguous and non-contiguous spectrum for the intra-band (NG)EN-DC combination as specified in TS 38.101-3 [4]. The UE includes this field only if the UE supports different UL and DL capabilities for the intra-band (NG)EN-DC band combination.  When 'both' is indicated in *intrabandENDC-Support* and in *intraBandENDC-Support-UL*, the UE supports the following three cases of intra-band (NG)EN-DC: contiguous DL/contiguous UL, non-contiguous DL/non-contiguous UL, contiguous DL/non-contiguous UL. | BC | No | N/A | N/A |
| ***interBandContiguousMRDC***  Indicates for an inter-band (NG)EN-DC/NE-DC combination, where the frequency range of the E-UTRA band is a subset of the frequency range of the NR band (as specified in Table 5.5B.4.1-1 of TS 38.101-3 [4]), that the UE supports intra-band contiguous (NG)EN-DC/NE-DC requirements (see TS 38.101-3 [4]). If the field is absent for such an inter-band (NG)EN-DC/NE-DC combination, the UE supports intra-band non-contiguous (NG)EN-DC/NE-DC requirements. | BC | CY | N/A | N/A |
| ***interBandMRDC-WithOverlapDL-Bands-r16***  Indicates the UE supports FDD-FDD or TDD-TDD inter-band (NG)EN-DC/NE-DC operation with overlapping or partially overlapping DL bands with an (NG)EN-DC/NE-DC MRTD according to clause 7.6.2/7.6.5 in 38.133 [5] and inter-band RF requirements (i.e Type 2 UE). If the capability is not reported, the UE supports FDD-FDD or TDD-TDD inter-band operation with overlapping or partially DL bands with (NG)EN-DC/NE-DC MRTD<3us according to clause 7.6.3 in 38.133 [5] and intra-band RF requirements (i.e. Type 1 UE). | BC | No | N/A | FR1 only |

End of second change