3GPP TSG-RAN WG4 Meeting #111 R4-2408503

Fukuoka City, Fukuoka, Japan, 20th – 24th May, 2024

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-1** | **CR** | **1235** | **rev** |  | **Current version:** | **18.5.1** |  |
|  | | | | | | | | |
| *For* [***HELP***](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 |  | Core Network |  |

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| ***Title:*** | CR to TS 38.101-3 Rel18 Removal of Unnecessary NE-DC Requirements | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, Hisilicon | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | DC\_R18\_xBLTE\_yBNR\_zDL2UL-Core | | | | |  | | ***Date:*** | | 2024-05-13 |
|  |  | | | |  | | |  | |  |
| ***Category:*** | **F** |  | | | | | | ***Release:*** | | Rel-18 |
|  | *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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Despite specification in 4.2 which indicates that NE-DC requirements are similar to EN-DC (unless specified otherwise) some unnecessary requirements have been specified. With this CR we plan to remove them and replace some of them with general statements.  Some editorial corrections are performed, too.  NOTE: This CR is not for block approval | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | clean up of the unnecessary NE-DC requirements | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | unnecessary NE-DC requirements will remain specified | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6,7 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | |  | | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | TS/TR ... CR ... | | | |
| ***affected:*** | | **X** |  | Test specifications | | | TS38.521-1 | | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | TS/TR ... CR ... | | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |

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| ***This CR's revision history:*** |  |

## << Start changes >>

## 6.1 General

Unless otherwise stated the transmitter characteristics are specified at the antenna connector(s) of the UE for the bands operating on frequency range 1 and over the air of the UE for the bands operating on frequency range 2. The requirements for frequency range 1 and frequency range 2 can be verified separately. For the carrier in frequency range 1, requirements can be verified with NR FR2 link disabled. For the carrier in frequency range 2, requirements can be verified in OTA mode with E-UTRA or NR FR1 connecting to the network by OTA without calibration.

Unless otherwise stated, requirements for NR transmitter written in TS 38.101-1 [2] and TS 38.101-2 [3] apply and are assumed anchor agnostic. Requirements are verified under conditions where anchor resources do not interfere NR operation. If UE indicates IE *powerClassNRPart-r16* as defined in TS 38.331 [9] in EN-DC, UE shall meet NR requirements according to this power class.

For sub-clauses with suffix A or B: the minimum requirements for band combinations including Band n41 also apply for the corresponding band combinations with Band n90 replacing Band n41 but with otherwise identical parameters. For brevity the said band combinations with Band n90 are not listed in the tables below but are covered by this specification.

The requirements for EN-DC applies for NE-DC unless otherwise specified.

## << Next changes >>

#### 6.2B.1.4a (Void)

## << Next changes >>

##### 6.2B.2.1a (Void)

## << Next changes >>

#### 6.2B.2.4a (Void)

## << Next changes >>

#### 6.2B.3.3A Inter-band NE-DC within FR1

For inter-band NE-DC between E-UTRA and FR1 NR, UE additional maximum output power reduction specified in TS 36.101 [4] and TS 38.101-1 [2] apply for E-UTRA and NR respectively.

Unless specified in Table 6.2B.3.3A-1, for inter-band carrier aggregation with uplink assigned to LTE and NR bands, the requirements in [2] clause 6.2.3 apply for NR uplink component carrier and the requirements in [4] clause 6.2.4 apply for LTE uplink component carrier.

Unless otherwise stated, for inter-band NE-DC with uplink assigned to NR and LTE bands and specified in Table 6.2B.3.3A-1, the combined requirements and allowed A-MPR are applicable on both LTE and NR bands when LTE and NR component carriers are active. The requirements in Table 6.2B.3.3A-1 are specified in terms of an additional spectrum emission requirement. The emission requirements specified in Table 6.2B.3.3A-1 also apply for the frequency ranges that are less than FOOB (MHz) from the edge of the channel bandwidth specified in TS 36.101 [4] and TS 38.101-1 [2], respectively.

Table 6.2B.3.3A-1: Additional Requirements for inter-band NE-DC (two-bands)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| NR CA combination | Band | Applied  NS | Requirements  (clause)  (TS 36.101 [4]) | Requirements  (clause)  (TS 38.101-1 [2]) | A-MPR  (table/clause)  (TS 36.101 [4]) | A-MPR  (table/clause)  (TS 38.101-1 [2]) | Note |
| DC\_n1\_28 | n1 | 05 | N/A | 6.5.3.3.4 | N/A | Clause 6.2.3.4 | 1, 2 |
| 05U | N/A | 6.5.3.3.4, 6.5.2.4.2 | N/A | Clause 6.2.3.4 |
| 28 | 17 | 6.6.3.3.10 | N/A | Table 6.2.4-1 (NS\_17) | N/A |
| DC\_n78\_1 | 1 | 05 | 6.6.3.3.1 | N/A | Table 6.2.4-1 (NS\_05) | N/A |  |
| NOTE 1: NS\_05U can be signalled for NR bands that have UTRA services deployed and protected range is specified in clause 6.5.2.4.2 of TS38.101-1[2] and the requirements in clause 6.5.2.4.2 are only appliable to the signalling band.  NOTE 2: Applicable when the assigned NR carrier is confined within 718 MHz and 748 MHz and when the channel bandwidth used is 5 or 10 MHz. | | | | | | | |

## << Next changes >>

#### 6.2B.3.4A (Void)

## << Next changes >>

##### 6.2B.4.1.4a (Void)

## << Next changes >>

##### 6.2B.4.2.1a (Void)

## << Next changes >>

##### 6.2B.4.2.4a (Void)

## << Next changes >>

### 6.3B.1a (Void)

## << Next changes >>

### 6.3B.2a (Void)

## << Next changes >>

### 6.3B.3a (Void)

## << Next changes >>

#### 6.4B.1.4a (Void)

## << Next changes >>

##### 6.4B.2.1a.3 In-band emissions

For the MCG the in-band emission requirements in Table 6.4.2.3-1 in TS 38.101-1 [2] are applied within the aggregated transmission bandwidth configuration of the NE-DC bandwidth with the carriers of both CGs active and one single contiguous PRB allocation of bandwidth *LCRB* within the MCG at the edge of the aggregated transmission bandwidth configuration.

For the SCG the in-band emission requirements in Table 6.5.2A.3.1-1 and 6.5.2A.3.1-2 in TS 36.101 [4] are applied, within the aggregated transmission bandwidth configuration of the NE-DC bandwidth with the carriers of both CGs active and one single contiguous PRB allocation of bandwidth *LCRB* within the SCG at the edge of the said aggregated transmission bandwidth configuration.

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#### 6.4B.2.4a (Void)

## (Void)<< Next changes >>

#### 6.5B.1.3a (Void)

## << Next changes >>

#### 6.5B.1.4a (Void)

## << Next changes >>

#### 6.5B.2.3a (Void)

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## << Next changes >>

##### 6.5B.3.3a.1 General spurious emissions(Void)

## << Next changes >>

#### 6.5B.3.4a (Void)

##### 6.5B.3.4a.1 (Void)

## << Next changes >>

#### 6.5B.4.4a (Void)

## << Next changes >>

#### 6.5B.5.1a (Void)

## << Next changes >>

#### 6.5B.5.3a (Void)

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#### 6.5B.5.4a (Void)

## << Next changes >>

### 6.6B.4a (Void)

## << Next changes >>

## 7.1 General

Unless otherwise stated the receiver characteristics are specified at the antenna connector(s) of the UE for the bands operating on frequency range 1 and over the air of the UE for the bands operating on frequency range 2. The requirements for frequency range 1 and frequency range 2 can be verified separately. For the carrier in frequency range 1, requirements can be verified with NR FR2 link disabled. For the carrier in frequency range 2, requirements can be verified in OTA mode with E-UTRA or NR FR1 connecting to the network by OTA without calibration.

The requirements defined in this clause are the extra requirements compared with the single carrier requirements defined in TS 38.101-1 [2] and TS 38.101-2 [3].

Unless otherwise stated, the UL and DL reference measurement channels are the same with the configurations specified in TS 38.101-1 [2] and TS 38.101-2 [3].

Unless otherwise stated, requirements for NR receiver written in TS 38.101-1 [2] and TS 38.101-2 [3] apply and are assumed anchor agnostic. Requirements are verified under conditions where anchor resources do not interfere NR operation.

For intra-band EN-DC, the output power is configured as follows:

- One E-UTRA uplink carrier with the output power set to 29 dB below PCMAX\_L and the NR band whose downlink is being tested has its uplink carrier output power set to 4 dB below PCMAX\_L,f,c.

- One NR uplink carrier with the output power set to 29 dB below PCMAX\_L,f,c and the E-UTRA band whose downlink is being tested has its uplink carrier output power set to 4 dB below PCMAX\_L,c.

For the additional requirements for intra-band non-contiguous EN-DC of two sub-blocks, an in-gap test refers to the case when the interfering signal is located at a negative offset with respect to the assigned lowest channel frequency of the highest sub-block and located at a positive offset with respect to the assigned highest channel frequency of the lowest sub-block.

For the additional requirements for intra-band non-contiguous EN-DC of two sub-blocks, an out-of-gap test refers to the case when the interfering signal(s) is (are) located at a positive offset with respect to the assigned channel frequency of the highest carrier frequency or located at a negative offset with respect to the assigned channel frequency of the lowest carrier frequency.

For the additional requirements for intra-band non-contiguous EN-DC of two sub-blocks with channel bandwidth larger than or equal to 5 MHz, the existing adjacent channel selectivity requirements, in-band blocking requirements (for each case), and narrow band blocking requirements apply for in-gap tests only if the corresponding interferer frequency offsets with respect to the two measured carriers satisfy the following condition in relation to the sub-block gap size Wgap for at least one of the E-UTRA or NR sub-blocks, so that the interferer frequency position does not change the nature of the core requirement tested:

Wgap ≥ 2∙|FInterferer (offset)| – BWChannel

For the E-UTRA sub-block, the FInterferer (offset), for a sub-block with a single component carrier is the interferer frequency offset with respect to carrier as specified in clause 7.5.1, clause 7.6.1 and clause 7.6.3 for the respective requirement in TS 36.101 [4] and BWChannel. FInterferer (offset) for the E-UTRA sub-block with two or more contiguous component carriers is the interference frequency offset with respect to the carrier adjacent to the gap is specified in clause 7.5.1A, 7.6.1A and 7.6.3A in TS 36.101 [4].

For the NR sub-block, the FInterferer (offset), for a sub-block with a single component carrier is the interferer frequency offset with respect to carrier as specified in clause 7.5.1, clause 7.6.1 and clause 7.6.3 for the respective requirement in TS 38.101-1 [2] and BWChannel.

The interferer frequency offsets for adjacent channel selectivity, each in-band blocking case and narrow-band blocking shall be tested separately with a single in-gap interferer at a time.

For sub-clauses with suffix A or B: the minimum requirements for band combinations including Band n41 also apply for the corresponding band combinations with Band n90 replacing Band n41 but with otherwise identical parameters. For brevity the said band combinations with Band n90 are not listed in the tables below but are covered by this specification.

For the requirements of FR1 in this clause, the UE shall be verified with four Rx antenna ports and skip two Rx antenna ports requirements in operating bands where the UE is equipped with four Rx antenna ports, the UE shall be verified with eight antenna ports and skip both two and four Rx antenna ports requirements in operating bands where the UE is equipped with eight Rx antenna ports unless UE is not supporting 8Rx ports for band(s) in band combination in which case those band(s) shall be verified with four Rx antenna ports in that band combination, otherwise, the UE shall be verified with two Rx antenna ports.

Unless otherwise stated, the receiver requirements of inter-band EN-DC are applicable to UE with one or two Tx antenna connectors in NR band.

The requirements for EN-DC applies for NE-DC unless otherwise specified.

## << Next changes >>

#### 7.3B.2.1a (Void)

## << Next changes >>

##### 7.3B.2.3a.4 MSD for intermodulation interference due to dual uplink operation for NE-DC in NR FR1

## << Next changes >>

#### 7.3B.3.4a (Void)

## << Next changes >>

### 7.4B.1a (Void)



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### 7.4B.3a (Void)

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### 7.4B.4a (Void)

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### 7.5B.1a (Void)







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### 7.5B.3a (Void)

## << Next changes >>

### 7.5B.4a (Void)

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#### 7.6B.2.1a (Void)



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#### 7.6B.2.3a (Void)

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#### 7.6B.2.4a (Void)

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## << Next changes >>

#### 7.6B.3.3a (Void)

## << Next changes >>

#### 7.6B.3.4a (Void)

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#### 7.6B.4.1a (Void)



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#### 7.6B.4.3a (Void)

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#### 7.6B.4.4a (Void)

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### 7.7B.1a (Void)



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7.7B.3a (Void)

## << Next changes >>

### 7.7B.4a (Void)

## << Next changes >>

#### 7.8B.2.1a (Void)



## << Next changes >>

#### 7.8B.2.3a (Void)

## << Next changes >>

#### 7.8B.2.4a (Void)

## << Next changes >>

### 7.9B.1a (Void)

## << Next changes >>

### 7.9B.3a (Void)

## << Next changes >>

### 7.9B.4a (Void)

## << End changes >>