**3GPP TSG-RAN4 WG4 Meeting # 94-e *R4-2002811***

**Electronic meeting, 24 Feb- 06 Mar, 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-1** | **CR** | 0266 | **rev** | **1** | **Current version:** | **16.2.0** |  |
|  | | | | | | | | |
| *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 |  | Radio Access Network |  | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | CR for intra-band CA configuration and DL RF requirements | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_RF\_FR1-Core | | | | |  | ***Date:*** | | | 2019-12-04 |
|  |  | | | |  | |  | | |  |
| ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | There is requirement on Bandwidth class D and the specific RF requiement study has been already completed.. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Adding Bandwidth class D CA configuration and corresponding general requirement. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | There is no Bandwidth class D configuration and requirement in the spec. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.5A, 7.4A, 7.5A, 7.6A, 7.7A, 7.8A | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR … CR … | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS 38.521-1 | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR … CR … | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |

|  |  |
| --- | --- |
| ***This CR’s revision history:*** |  |

***<Start of change>***

## 5.5A Configurations for CA

### 5.5A.0 General

The configurations for CA operating band including Band n41 also apply for the corresponding CA operating bands with Band n90 replacing Band n41 but with otherwise identical parameters. For brevity the said configuration for CA operating bands with Band n90 are not listed in the tables below but are covered by this specification.

### 5.5A.1 Configurations for intra-band contiguous CA

Table 5.5A.1-1: NR CA configurations and bandwidth combination sets defined for intra-band contiguous CA for fallback group 1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NR CA configuration / Bandwidth combination set | | | | | | | | |
| NR CA configuration | Uplink CA configurations | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | Channel bandwidths for carrier (MHz) | Maximum aggregated  bandwidth (MHz) | Bandwidth combination set |
| CA\_n1B | - | 10 | 10,15 |  |  |  | 40 | 0 |
| 15 | 15,20 |  |  |  |
| 20 | 20 |  |  |  |
| CA\_n7B | CA\_n7B | 10, 15, 20 | 10, 15, 20, 30, 35, 40 |  |  |  | 50 | 0 |
| CA\_40B | - | 20 | 80 |  |  |  | 100 | 0 |
| 50 | 50 |  |  |  |
| CA\_n41C | - | 40 | 80, 100 |  |  |  | 180 | 0 |
| 50, 60, 80 | 60, 80, 100 |  |  |  |
| 10, 15, 20, 40, 50, 60, 80, 90 | 15, 20, 40, 50, 60, 80, 90, 100 |  |  |  | 190 | 1 |
| CA\_n48B | CA\_n48B | 51, 10 | 10, 15, 20 |  |  |  | 40 | 0 |
| 15, 20 | 5, 10, 15, 20 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| - | 10 | 50, 60, 80, 90 |  |  |  | 100 | 1 |
| 15, 20 | 40, 50, 60, 80 |  |  |  |
| 40 | 40, 50, 60 |  |  |  |
| 50 | 50 |  |  |  |
| CA\_n48C | - | 10, 15 | 90, 100 |  |  |  | 150 | 0 |
| 20 | 80, 90, 100 |  |  |  |
| 40 | 60, 80, 90, 100 |  |  |  |
| 50 | 50, 60, 80, 90, 100 |  |  |  |
| 60 | 40, 50, 60, 80, 90 |  |  |  |
| 80 | 20, 40, 50, 60 |  |  |  |
| 90 | 10, 15, 20, 40, 50, 60 |  |  |  |
| 100 | 10, 15, 20, 40, 50 |  |  |  |
| CA\_n66B | - | 5 2 | 20, 40 |  |  |  | 50 | 0 |
| 10 | 15, 20, 40 |  |  |  |
| 15 | 10, 15, 20 |  |  |  |
| 20 | 5 2, 10, 15 |  |  |  |
| 40 | 5 2, 10 |  |  |  |
| CA\_n71B |  | 5 | 20 |  |  |  | 25 | 0 |
| 10 | 15 |  |  |  |
| 15 | 10 |  |  |  |
| 20 | 5 |  |  |  |
| CA\_n77C  CA\_n78C  CA\_n79C | - | 50 | 60, 80, 100 |  |  |  | 200 | 0 |
| 60 | 60, 80, 100 |  |  |  |
| 80 | 80, 100 |  |  |  |
| 100 | 100 |  |  |  |
| CA\_n78B | - | 20 | 50 |  |  |  | 70 | 0 |
| CA\_n77D  CA\_n78D  CA\_n79D | - | 100 | 100 | 100 |  |  | 300 | 0 |
| NOTE 1: Unless otherwise stated, minimum requirements are applicable irrespective of the order of the component carriers.  NOTE 2: 5 MHz is not applicable for 30/60 kHz SCS. | | | | | | | | |

Table 5.5A.1-2: Void

## 7.4A Maximum input level for CA

### 7.4A.1 Maximum input level for Intra-band contiguous CA

For intra-band contiguous carrier aggregation maximum input level is defined as the maximum mean power received at the UE antenna port, over the Transmission bandwidth configuration of each CC.

The throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexs A.3.2 and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD as described in Annex A.5.1.1/A.5.2.1) with parameters specified in Table 7.4A.1-1 for each component carrier.

Table 7.4A.1-1: Maximum input level for Intra-band contiguous CA

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Rx Parameter | Units | NR CA Bandwidth Class | | | | |
| B | C | D |  |  |
| Power in largest transmission bandwidth configuration CC, Plargest BW | dBm | -232 | -232 | -252 |  |  |
| -253 | -253 | -273 |  |  |
| Power in each other CC | dBm | Plargest BW +10\*log{(NRB,c\*SCSc)/(NRB,largest BW\*SCSlargest BW)} | | | | |
| NOTE 1: The transmitter shall be set to 4 dB below PCMAX\_L,f,c at the minimum uplink configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c as defined in clause 6.2.4.  NOTE 2: Reference measurement channel is A.3.2.3 or A.3.3.3 for 64 QAM.  NOTE 3: Reference measurement channel is A.3.2.4 or A.3.3.4 for 256 QAM. | | | | | | |

## 7.5A Adjacent channel selectivity for CA

### 7.5A.1 Adjacent channel selectivity for Intra-band contiguous CA

For intra-band contiguous carrier aggregation the downlink SCC(s) shall be configured at nominal channel spacing to the PCC. The UE shall fulfil the minimum requirement specified in Table 7.5A.1-1 and 7.5A.1-1a for an adjacent channel interferer on either side of the aggregated downlink signal at a specified frequency offset and for an interferer power up to -25 dBm.

The throughput of each carrier shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2, A.2.3, A.3.2, and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1) with parameters specified in Tables 7.5A.1-2, 7.5A.1-2a, 7.5A.1-3 and 7.5A.1-3a.

Table 7.5A.1-1: ACS for intra-band contiguous CA with FDL\_low ≥ 3300 MHz and FUL\_low ≥ 3300 MHz

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | NR CA bandwidth class | | | |
| Rx Parameter | Units | B | C | D |  |
| ACS | dB | 26.0 | 33.0 | 25.2 |  |

Table 7.5A.1-1a: ACS for intra-band contiguous CA with FDL\_low < 2700 MHz and FUL\_low < 2700 MHz

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | NR CA bandwidth class | | |
| Rx Parameter | Units | B | C |
| ACS | dB | 20.0 | 17.0 |

Table 7.5A.1-2: Test parameters for intra-band contiguous CA with FDL\_low ≥ 3300 MHz and FUL\_low ≥ 3300 MHz, case 1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Rx Parameter | Units | NR CA bandwidth class | | | |
| B | C | D |  |
| Pw in Transmission Bandwidth Configuration, per CC | dBm | REFSENS + 14 dB | REFSENS + 14 dB | REFSENS + 14 dB |  |
| PInterferer | dBm | Aggregated power + 24.5 dB | Aggregated power + 31.5 dB | Aggregated power + 23.7 dB |  |
| BWInterferer | MHz | 20 | BWchannel CA | 50 |  |
| FInterferer (offset) | MHz | 10 + Foffset  /  -10 - Foffset | BWchannel CA  /  -BWchannel CA | 25 + Foffset  /  -25 -Foffset |  |
| NOTE 1: The transmitter shall be set to 4 dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4 .  NOTE 2: The absolute value of the interferer offset Finterferer (offset) shall be further adjusted to MHz with SCS the sub-carrier spacing of the carrier closest to the interferer in MHz. The interferer is an NR signal with an SCS equal to that of the closest carrier.  NOTE 3: The interferer consists of the RMC specified in Annexes A.3.2.2 and A.3.3.2 with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1. | | | | | |

Table 7.5A.1-2a: Test parameters for intra-band contiguous CA with FDL\_low<2700 MHz and FUL\_low<2700 MHz, case 1

|  |  |  |  |
| --- | --- | --- | --- |
| Rx Parameter | Units | NR CA bandwidth class | |
| B | C |
| Pw in Transmission Bandwidth Configuration, per CC | dBm | REFSENS + 14 dB | REFSENS + 14 dB |
| PInterferer | dBm | Aggregated power + 18.5 dB | Aggregated power + 15.5 dB |
| BWInterferer | MHz | 5 | 5 |
| FInterferer (offset) | MHz | 2.5 + Foffset  /  -2.5 - Foffset | 2.5 + Foffset  /  -2.5 - Foffset |
| NOTE 1: The transmitter shall be set to 4 dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4 .  NOTE 2: The absolute value of the interferer offset Finterferer (offset) shall be further adjusted to MHz with SCS the sub-carrier spacing of the carrier closest to the interferer in MHz. The interferer is an NR signal with 15 kHz SCS.  NOTE 3: The interferer consists of the RMC specified in Annexes A.3.2.2 and A.3.3.2 with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1. | | | |

Table 7.5A.1-3: Test parameters for intra-band contiguous CA with FDL\_low ≥ 3300 MHz and FUL\_low ≥ 3300 MHz, case 2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Rx Parameter | Units | NR CA bandwidth class | | | |
| B | C | D |  |
| Pw in Transmission Bandwidth Configuration, per CC | dBm | -49.5 + 10log(NRB,c/NRB\_agg) | -56.5 | -48.7 + 10log(NRB,c/NRB\_agg) |  |
| PInterferer | dBm | -25 | -25 | -25 |  |
| BWInterferer | MHz | 20 | BWchannel CA | 50 |  |
| FInterferer (offset) | MHz | 10 + Foffset  /  -10 -Foffset | BWchannel CA  /  -BWchannel CA | 25 + Foffset  /  -25 -Foffset |  |
| NOTE 1: The transmitter shall be set to 4 dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4.  NOTE 2: The absolute value of the interferer offset Finterferer (offset) shall be further adjusted to MHz with SCS the sub-carrier spacing of the carrier closest to the interferer in MHz. The interferer is an NR signal with an SCS equal to that of the closest carrier.  NOTE 3: The interferer consists of the RMC specified in Annexes A.3.2.2 and A.3.3.2 with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1. | | | | | |

Table 7.5A.1-3a: Test parameters for intra-band contiguous CA with FDL\_low <2700 MHz and FUL\_low<2700 MHz, case 2

|  |  |  |  |
| --- | --- | --- | --- |
| Rx Parameter | Units | NR CA Bandwidth Class | |
| B | C |
| Pw in Transmission Bandwidth Configuration, per CC | dBm | -43.5 + 10log(NRB,c/NRB\_agg) | -40.5 + 10log(NRB,c/NRB\_agg) |
| PInterferer | dBm | -25 | -25 |
| BWInterferer | MHz | 5 | 5 |
| FInterferer (offset) | MHz | 2.5 + Foffset  /  -2.5 - Foffset | 2.5 + Foffset  /  -2.5 - Foffset |
| NOTE 1: The transmitter shall be set to 4 dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4.  NOTE 2: The absolute value of the interferer offset Finterferer (offset) shall be further adjusted to MHz with SCS the sub-carrier spacing of the carrier closest to the interferer in MHz. The interferer is an NR signal with 15 kHz SCS.  NOTE 3: The interferer consists of the RMC specified in Annexes A.3.2.2 and A.3.3.2 with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1. | | | |

## 7.6A Blocking characteristics for CA

### 7.6A.1 General

### 7.6A.2 In-band blocking for CA

#### 7.6A.2.1 In-band blocking for Intra-band contiguous CA

For intra-band contiguous carrier aggregation the downlink SCC(s) shall be configured at nominal channel spacing to the PCC. The UE shall fulfil the minimum requirement specified in Table 7.6A.2.1-1 and 7.6A.2.1-1a for an adjacent channel interferer on either side of the aggregated downlink signal at a specified frequency offset and for an interferer power up to -25 dBm. The throughput of each carrier shall be ≥ 95% of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2, A.2.3, A.3.2, and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1).

Table 7.6A.2.1-1: In-band blocking parameters for intra-band contiguous CA with FDL\_low ≥ 3300 MHz and FUL\_low ≥ 3300 MHz

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Rx Parameter | Units | NR CA bandwidth class | | | |
| B | C | D |  |
| Pw in Transmission Bandwidth Configuration, per CC | dB | REFSENS + CA bandwidth class specific value below | | | |
| 10.0 | 6 | 13.8 |  |
| BWInterferer | MHz | 20 | BWchannel CA | 50 |  |
| FIoffset, case 1 | MHz | 30 | BWchannel CA+ BWchannel CA/2 | 75 |  |
| FIoffset, case 2 | MHz | 50 | BWInterferer + FIoffset, case 1 | 125 |  |
| NOTE 1: The transmitter shall be set to 4dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4.  NOTE 2: The interferer consists of the Reference measurement channel specified in Annexes A.3.2 and A.3.3 with one sided dynamic OCNG Pattrn OP.1 FDD/TDD as described in Annex A.5.1.1/A.5.2.1 and set-up according to Annex C.3.1 | | | | | |

Table 7.6A.2.1-1a: In-band blocking parameters for intra-band contiguous CA with FDL\_low < 2700 MHz and FUL\_low < 2700 MHz

|  |  |  |  |
| --- | --- | --- | --- |
| Rx Parameter | Units | NR CA bandwidth class | |
| B | C |
| Pw in Transmission Bandwidth Configuration, per CC | dBm | REFSENS + NR CA bandwidth class specific value below | |
| 16.0 | 19.0 |
| BWInterferer | MHz | 5 | 5 |
| FIoffset, case 1 | MHz | 7.5 | 7.5 |
| FIoffset, case 2 | MHz | 12.5 | 12.5 |
| NOTE 1: The transmitter shall be set to 4 dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4.  NOTE 2: The interferer consists of the Reference measurement channel specified in Annexes A.3.2 and A.3.3 with one sided dynamic OCNG Pattern OP.1 FDD/TDD as described in Annex A.5.1.1/A.5.2.1 and set-up according to Annex C.3.1 | | | |

Table 7.6A.2.1-2: In-band blocking for intra-band contiguous CA with FDL\_low ≥ 3300 MHz and FUL\_low ≥ 3300 MHz

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NR band | Parameter | Unit | Case 1 | Case 2 |
| Pinterferer | dBm | -56 | -44 |
| n77, n78, n79 | Finterferer (offset) | MHz | -BWchannel CA/2 –FIoffset, case 1  and  BWchannel CA/2 +FIoffset, case 1 | ≤ -BWchannel CA/2 –FIoffset, case 2  and  ≥ BWchannel CA/2 +FIoffset, case 2 |
| Finterferer | MHz | NOTE 2 | FDL\_low – 3BWchannel CA  to  FDL\_high + 3BWchannel CA |
| NOTE 1: The absolute value of the interferer offset Finterferer (offset) shall be further adjusted to MHz with SCS the sub-carrier spacing of the carrier closest to the interferer in MHz. The interferer is an NR signal with an SCS equal to that of the closest carrier.  NOTE 2: For each carrier frequency, the requirement applies for two interferer carrier frequencies: a: -BWchannel CA/2 – FIoffset, case 1; b: BWchannel CA/2 + FIoffset, case 1  NOTE 3: BWchannel CA denotes the aggregated channel bandwidth of the wanted signal | | | | |

Table 7.6A.2.1-2a: In-band blocking for intra-band contiguous CA with FDL\_low < 2700 MHz and FUL\_low < 2700 MHz

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NR band | Parameter | Unit | Case 1 | Case 2 | Case 3 |
| Pinterferer | dBm | -56 | -44 |  |
| n41, n66, n484,n40 | Finterferer (offset) | MHz | -BWchannel CA/2 –FIoffset, case 1  and  BWchannel CA/2 +FIoffset, case 1 | ≤ -BWchannel CA/2 –FIoffset, case 2  and  ≥ BWchannel CA/2 +FIoffset, case 2 |  |
| Finterferer | MHz | NOTE 2 | FDL\_low – 15  to  FDL\_high + 15 |  |
| n71 | Finterferer | MHz | NOTE 2 | FDL\_low – 12  to  FDL\_high + 15 | FDL\_low – 12 |
| NOTE 1: The absolute value of the interferer offset Finterferer (offset) shall be further adjusted to MHz with SCS the sub-carrier spacing of the carrier closest to the interferer in MHz. The interferer is an NR signal with 15 kHz SCS.  NOTE 2: For each carrier frequency, the requirement applies for two interferer carrier frequencies: a: -BWchannel CA/2 – FIoffset, case 1; b: BWchannel CA/2 + FIoffset, case 1  NOTE 3: BWchannel CA denotes the aggregated channel bandwidth of the wanted signal  NOTE 4: n48 follows the requirement in this frequency range according to the general requirement defined in Clause 7.1A. | | | | | |

### 7.6A.3 Out-of-band blocking for CA

#### 7.6A.3.1 Out-of-band blocking for Intra-band contiguous CA

For intra-band contiguous carrier aggreagation the downlink SCC(s) shall be configured at nominal channel spacing to the PCC. For FDD, the PCC shall be configured closest to the uplink band. All downlink carriers shall be active throughout the test.

The UE shall fulfil the minimum requirement in presence of an interfering signal specified in Table 7.6A.3-1 and Table 7.6A.3-2 being on either side of the aggregated signal. The throughput of each carrier shall be ≥ 95% of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2, A.2.3, A.3.2, and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1).

Table 7.6A.3-1: Out-of-band blocking parameters for intra-band contiguous CA

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| RX parameter | Units | CA bandwidth class | | | |
| B | C | D |  |
| Power in transmission bandwidth configuration | dBm | REFSENS + CA bandwidth class specific value below | | | |
| dB | 9 | 9 | 9 |  |
| NOTE 1: The transmitter shall be set to 4 dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4. | | | | | |

Table 7.6A.3-1a: Void

Table 7.6A.3-2: Out of-band blocking for intra-band contiguous CA

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NR band | Parameter | Unit | Range1 | Range 2 | Range 3 |
|  | Pinterferer | dBm | -45 | -30 | -15 |
| n41,n66,n71,n48,n40 | Finterferer (CW) | MHz | -60 < f – FDL\_low < -15  or  15 < f – FDL\_high < 60 | -85 < f – FDL\_low ≤ -60  or  60 ≤ f – FDL\_high < 85 | 1 ≤ f ≤ FDL\_low – 85  or  FDL\_high + 85 ≤ f  ≤ 12750 |
| n77, n78  (NOTE 3) | Finterferer (CW) | MHz | N/A | N/A | 1 ≤ f ≤ FDL\_low – MAX(200,3CBWchannel CA)  or  FDL\_high+ MAX(200,3CBWchannel CA)  ≤ f ≤ 12750 |
| n79  (NOTE 4) | Finterferer (CW) | MHz | N/A | N/A | 1 ≤ f ≤ FDL\_low – MAX(150,3CBWchannel CA)  or  FDL\_high + MAX(150,3CBWchannel CA)  ≤ f ≤ 12750 |
| NOTE 1: The power level of the interferer (PInterferer) for Range 3 shall be modified to -20 dBm for FInterferer > 6000 MHz.  NOTE 2: CBW denotes the channel bandwidth of the wanted signal  NOTE 3: The power level of the interferer (PInterferer) for Range 3 shall be modified to -20 dBm, for FInterferer > 2700 MHz and FInterferer < 4800 MHz. For CBW > 15 MHz, the requirement for Range 1 is not applicable and Range 2 applies from the frequency offset of 3CBW from the band edge. For CBW larger than 60 MHz, the requirement for Range 2 is not applicable and Range 3 applies from the frequency offset of 3CBW from the band edge.  NOTE 4: The power level of the interferer (PInterferer) for Range 3 shall be modified to -20 dBm, for FInterferer > 3650 MHz and FInterferer < 5750 MHz. For CBW ≥ 40 MHz, the requirement for Range 2 is not applicable and Range 3 applies from the frequency offset of 3CBW from the band edge. | | | | | |

**Table 7.6A.3-2a: Void**

## 7.7A Spurious response for CA

### 7.7A.1 Spurious response for Intra-band contiguous CA

Table 7.7A-1: Spurious response parameters for intra-band contiguous CA

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| RX parameter | Units | NR CA bandwidth class | | | |
| B | C | D |  |
| Power in transmission bandwidth configuration | dBm | REFSENS + CA bandwidth class specific value below | | | |
| dB | 9 | 9 | 9 |  |
| NOTE 1: The transmitter shall be set to 4 dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4. | | | | | |

Table 7.7A-2: Spurious response for CA

|  |  |  |
| --- | --- | --- |
| Parameter | Unit | Level |
| PInterferer (CW) | dBm | -44 |
| FInterferer | MHz | Spurious response frequencies |

Table 7.7A-3: Void

Table 7.7A-4: void

## 7.8A Intermodulation characteristics for CA

### 7.8A.1 General

### 7.8A.2 Wide band intermodulation for CA

#### 7.8A.2.1 Wide band intermodulation for Intra-band contiguous CA

Table 7.8A.2.1-1: Wide band intermodulation parameters for intra-band contiguous CA with FDL\_low ≥ 3300 MHz and FUL\_low ≥ 3300 MHz

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Rx parameter | | Units | NR CA bandwidth class | | | |
| B | C | D |  |
| Pw in Transmission Bandwidth Configuration, per CC | | dBm | REFSENS + 10 | REFSENS + 6 | REFSENS + 13.8 |  |
| PInterferer 1 (CW) | | dBm | -46 | | | |
| PInterferer 2  (Modulated) | | dBm | -46 | | | |
| BWInterferer 2 | | MHz | 20 | BWChannel\_CA | 50 |  |
| FInterferer 1  (Offset) | | MHz | -Foffset-30  /  Foffset+30 | -2BWChannel\_CA  /  +2BWChannel\_CA | -Foffset-75  /  Foffset+75 |  |
| FInterferer 2  (Offset) | | MHz |  | 2\*FInterferer 1 | | |
|  | NOTE 1: The transmitter shall be set to 4 dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4.  NOTE 2: Reference measurement channel is specified in Annexes A.2.2, A.2.3, A.3.2, and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1).  NOTE 3: The modulated interferer consists of the Reference measurement channel specified in Annexes A.3.2.2 and A.3.3.2 with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1 and the same SCS as the closest carrier.  NOTE 4: The Finterferer 1 (offset) is the frequency separation of the center frequency of the carrier closest to the interferer and the center frequency of the CW interferer and Finterferer 2 (offset) is the frequency separation of the center frequency of the carrier closest to the interferer and the center frequency of the modulated interferer. | | | | | |

Table 7.8A.2.1-2: Wide band intermodulation parameters for intra-band contiguous CA with FDL\_low < 2700 MHz and FUL\_low < 2700 MHz

|  |  |  |  |
| --- | --- | --- | --- |
| Rx parameter | Units | NR CA bandwidth class | |
| B | C |
| Pw in Transmission Bandwidth Configuration, per CC | dBm | REFSENS + 16 | REFSENS + 19 |
| PInterferer 1 (CW) | dBm | -46 | -46 |
| PInterferer 2  (Modulated) | dBm | -46 | -46 |
| BWInterferer 2 | MHz | 5 | 5 |
| FInterferer 1  (Offset) | MHz | -Foffset-7.5  /  Foffset+7.5 | -Foffset-7.5  /  Foffset+7.5 |
| FInterferer 2  (Offset) | MHz | 2\*FInterferer 1 | 2\*FInterferer 1 |
| NOTE 1: The transmitter shall be set to 4 dB below PCMAX\_L,f,c at the minimum UL configuration specified in Table 7.3.2-3 with PCMAX\_L,f,c defined in clause 6.2.4.  NOTE 2: Reference measurement channel is specified in Annexes A.2.2, A.2.3, A.3.2, and A.3.3 (with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1).  NOTE 3: The modulated interferer consists of the Reference measurement channel specified in Annexes A.3.2.2 and A.3.3.2 with one sided dynamic OCNG Pattern OP.1 FDD/TDD for the DL-signal as described in Annex A.5.1.1/A.5.2.1 and the same SCS as the 15 kHz SCS.  NOTE 4: The Finterferer 1 (offset) is the frequency separation of the center frequency of the carrier closest to the interferer and the center frequency of the CW interferer and Finterferer 2 (offset) is the frequency separation of the center frequency of the carrier closest to the interferer and the center frequency of the modulated interferer. | | | |

***<End of change>***