3GPP TSG-RAN WG4 Meeting #112 R4-2412383

Maastricht , Netherlands, 19th – 23th August, 2024

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-3** | **CR** | **1286** | **rev** | **1** | **Current version:** | **18.6.0** |  |
|  | | | | | | | | |
| *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 |  | Core Network |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | (NonCol\_intraB\_ENDC\_NR\_CA-Core) CR on 38.101-3 v18.6.0 Specifying different inter-band EN-DC operation with overlapping or partially overlapping DL bands UE types | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon, Nokia, Samsung | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NonCol\_intraB\_ENDC\_NR\_CA-Core | | | | |  | ***Date:*** | | | 2024-08-9 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | UE architecture types (type 1 and type 2) were removed from the specifications and reduced the readability and the comprehension of the specification.  To increase the readibility and understanding of the requirements we propose to introduce multiple UE types for inter-band EN-DC operation with overlapping or partially overlapping DL bands, for colocated and non-collocated deployment scenarios.  Note: the CR is based on merging R4-2412383 and R4-2411996 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Specify different UE types for inter-band EN-DC operation with overlapping or partially overlapping DL bands. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Inter-band EN-DC operation with overlapping or partially overlapping DL bands UE types will not be clearly known and readability of the spec will be impacted. The requirements for EN-DC band combinations for non-collocated deployment will remain complex to read and understand. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.5B.4.1, 7,1, 7.10B | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS 38.521-3 | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**<Start of change>**

## 5.5B.4.1 Inter-band EN-DC configurations within FR1 (two bands)

Table 5.5B.4.1-1: Inter-band EN-DC configurations within FR1 (two bands)

| **EN-DC**  **configuration** | **Uplink EN-DC**  **configuration**  **(NOTE 1)** | **Single UL allowed** | **DL interruption allowed**  **(Note 14)** |
| --- | --- | --- | --- |
| DC\_1A\_n3A  DC\_1C\_n3A | DC\_1A\_n3A  DC\_1C\_n3A | DC\_1\_n3 |  |
| DC\_1A\_n5A | DC\_1A\_n5A | No |  |
| DC\_1A\_n7A  DC\_1A\_n7B | DC\_1A\_n7A  DC\_1A\_n7B | No |  |
| DC\_1A-1A\_n7A  DC\_1A-1A\_n7B | DC\_1A\_n7A | No |  |
| DC\_1A\_n8A | DC\_1A\_n8A | No |  |
| DC\_1A\_n20A | DC\_1A\_n20A | No |  |
| DC\_1A\_n28A | DC\_1A\_n28A | No |  |
| DC\_1A\_n26A | DC\_1A\_n26A | No |  |
| DC\_1A-1A\_n28A | DC\_1A\_n28A | No |  |
| DC\_1A\_n38A  DC\_1C\_n38A | DC\_1A\_n38A | No |  |
| DC\_1A\_n40A  DC\_1A\_n40B | DC\_1A\_n40A | No |  |
| DC\_1A\_n41A7 | DC\_1A\_n41A | No |  |
| DC\_1A\_n50A | DC\_1A\_n50A | No |  |
| DC\_1A\_n51A | DC\_1A\_n51A | No |  |
| DC\_1A\_n71A  DC\_1A\_n71B | DC\_1A\_n71A | No |  |
| DC\_1A\_n77A7  DC\_1A\_n77C7 | DC\_1A\_n77A | DC\_1\_n77 | No |
| DC\_1A\_n77(2A)7,21  DC\_1A\_n77(3A)7 | DC\_1A\_n77A21 | DC\_1\_n77 | No |
| DC\_1A\_n78A7  DC\_1A\_n78C7, 21 | DC\_1A\_n78A21 | No | No |
| DC\_1A\_n78(2A)7,21  DC\_1A\_n78(A-C)7 | DC\_1A\_n78A21 | No | No |
| DC\_1A-1A\_n78A | DC\_1A\_n78A | No | No |
| DC\_1A\_n79A7  DC\_1A\_n79C7 | DC\_1A\_n79A | No | No |
| DC\_1A\_n105A | DC\_1A\_n105A | No |  |
| DC\_2A\_n5A | DC\_2A\_n5A | No |  |
| DC\_2A-2A\_n5A | DC\_2A\_n5A | No |  |
| DC\_2A\_n7A  DC\_2C\_n7A | DC\_2A\_n7A | No |  |
| DC\_2A\_n7(2A) | DC\_2A\_n7A | No |  |
| DC\_2A-2A\_n7A | DC\_2A\_n7A | No |  |
| DC\_2A\_n12A | DC\_2A\_n12A | No |  |
| DC\_2A-2A\_n12A | DC\_2A\_n12A | No |  |
| DC\_2A\_n25A11, 13, 20 | N/A | N/A |  |
| DC\_2A\_n28A  DC\_2C\_n28A | DC\_2A\_n28A | No |  |
| DC\_2A\_n30A | DC\_2A\_n30A | No |  |
| DC\_2A-2A\_n30A | DC\_2A\_n30A | No |  |
| DC\_2A\_n38A | DC\_2A\_n38A | No |  |
| DC\_2A-2A\_n38A | DC\_2A\_n38A | No |  |
| DC\_2A\_n41A  DC\_2A\_n41C  DC\_2C\_n41A | DC\_2A\_n41A  DC\_2C\_n41A | No |  |
| DC\_2A\_n41(2A) | DC\_2A\_n41A | No |  |
| DC\_2A-2A\_n41A | DC\_2A\_n41A | No |  |
| DC\_2A\_n46A | DC\_2A\_n46A | No |  |
| DC\_2A\_n48A  DC\_2A\_n48B | DC\_2A\_n48A | No |  |
| DC\_2A\_n66A | DC\_2A\_n66A | DC\_2\_n66 |  |
| DC\_2A\_n66(2A) | DC\_2A\_n66A | DC\_2\_n66 |  |
| DC\_2A-2A\_n66A | DC\_2A\_n66A | DC\_2\_n66 |  |
| DC\_2A\_n71A  DC\_2A\_n71B  DC\_2C\_n71A | DC\_2A\_n71A | No |  |
| DC\_2A-2A\_n71A | DC\_2A\_n71A | No |  |
| DC\_2A\_n77A  DC\_2A\_n77C21 | DC\_2A\_n77A21 | DC\_2\_n77 |  |
| DC\_2A\_n77(2A)21 | DC\_2A\_n77A21 | DC\_2\_n77 |  |
| DC\_2A-2A\_n77A21  DC\_2A-2A\_n77C21 | DC\_2A\_n77A21 | DC\_2\_n77 |  |
| DC\_2A-2A\_n77(2A)21 | DC\_2A\_n77A21 | DC\_2\_n77 |  |
| DC\_2A\_n78A | DC\_2A\_n78A | DC\_2\_n78 |  |
| DC\_2A-2A\_n78(2A) | DC\_2A\_n78A | DC\_2\_n78 |  |
| DC\_2A\_n78(2A)21 | DC\_2A\_n78A21 | DC\_2\_n78 |  |
| DC\_2A-2A\_n78A | DC\_2A\_n78A | DC\_2\_n78 |  |
| DC\_3A\_n1A  DC\_3C\_n1A | DC\_3A\_n1A  DC\_3C\_n1A | DC\_3\_n1 |  |
| DC\_3A-3A\_n1A | DC\_3A\_n1A | DC\_3\_n1 |  |
| DC\_3A\_n5A  DC\_3C\_n5A | DC\_3A\_n5A | DC\_3\_n5 |  |
| DC\_3A\_n7A  DC\_3A\_n7B  DC\_3C\_n7A  DC\_3C\_n7B | DC\_3A\_n7A  DC\_3A\_n7B  DC\_3C\_n7A | No |  |
| DC\_3A-3A\_n7A  DC\_3A-3A\_n7B | DC\_3A\_n7A | No |  |
| DC\_3A\_n8A | DC\_3A\_n8A | No |  |
| DC\_3A-3A\_n8A | DC\_3A\_n8A | No |  |
| DC\_3A\_n20A  DC\_3C\_n20A | DC\_3A\_n20A | No |  |
| DC\_3A\_n26A  DC\_3C\_n26A | DC\_3A\_n26A  DC\_3C\_n26A | Yes |  |
| DC\_3A\_n28A  DC\_3C\_n28A | DC\_3A\_n28A  DC\_3C\_n28A | No |  |
| DC\_3A\_n34A | DC\_3A\_n34A | No |  |
| DC\_3A\_n38A  DC\_3C\_n38A | DC\_3A\_n38A | No |  |
| DC\_3A\_n40A  DC\_3A\_n40B  DC\_3C\_n40A | DC\_3A\_n40A | No |  |
| DC\_3A\_n41A7  DC\_3A\_n41C  DC\_3C\_n41A7 | DC\_3A\_n41A  DC\_3C\_n41A | DC\_3\_n41 | No |
| DC\_3A\_n50A | DC\_3A\_n50A | No |  |
| DC\_3A\_n51A | DC\_3A\_n51A | No |  |
| DC\_3A\_n71A  DC\_3A\_n71B | DC\_3A\_n71A | No |  |
| DC\_3A\_n77A7  DC\_3A\_n77C7  DC\_3C\_n77A7,21 | DC\_3A\_n77A21  DC\_3C\_n77A | DC\_3\_n77 | No |
| DC\_3A\_n77(2A)7,21  DC\_3A\_n77(3A)7  DC\_3C\_n77(2A)7,21 | DC\_3A\_n77A,21  DC\_3C\_n77A | DC\_3\_n77 | No |
| DC\_3A-3A\_n77A7 | DC\_3A\_n77A | DC\_3\_n77 | No |
| DC\_3A\_n78A7,23  DC\_3A\_n78C7  DC\_3C\_n78A7,21 | DC\_3A\_n78A,21,23  DC\_3C\_n78A | DC\_3\_n78 | No |
| DC\_3A\_n78(2A)7,21  DC\_3A\_n78(A-C)7  DC\_3C\_n78(2A)7,21 | DC\_3A\_n78A,21  DC\_3C\_n78A | DC\_3\_n78 | No |
| DC\_3A-3A\_n78A7, 21 | DC\_3A\_n78A21 | DC\_3\_n78 | No |
| DC\_3A\_n79A7  DC\_3A\_n79C7  DC\_3C\_n79A7 | DC\_3A\_n79A  DC\_3C\_n79A | No | No |
| DC\_3A-3A\_n79A7 | DC\_3A\_n79A | No |  |
| DC\_3A\_n105A | DC\_3A\_n105A | No |  |
| DC\_4A\_n2A | DC\_4A\_n2A | No |  |
| DC\_4A\_n5A | DC\_4A\_n5A | DC\_4\_n5 |  |
| DC\_4A\_n7A | DC\_4A\_n7A | No |  |
| DC\_4A\_n28A | DC\_4A\_n28A | No |  |
| DC\_4A\_n38A | DC\_4A\_n38A | No |  |
| DC\_4A\_n41A | DC\_4A\_n41A | No |  |
| DC\_4A\_n78A | DC\_4A\_n78A | No |  |
| DC\_4A\_n78(2A) | DC\_4A\_n78A | No |  |
| DC\_5A\_n1A | DC\_5A\_n1A | No |  |
| DC\_5A\_n2A  DC\_5B\_n2A | DC\_5A\_n2A | No |  |
| DC\_5A\_n2(2A) | DC\_5A\_n2A | No |  |
| DC\_5A-5A\_n2A | DC\_5A\_n2A | No |  |
| DC\_5A\_n3A | DC\_5A\_n3A | DC\_5\_n3 |  |
| DC\_5A\_n7A | DC\_5A\_n7A | DC\_5\_n7 |  |
| DC\_5A\_n7(2A) | DC\_5A\_n7A | DC\_5\_n7 |  |
| DC\_5A\_n12A | DC\_5A\_n12A | No |  |
| DC\_5A\_n25A | DC\_5A\_n25A | No |  |
| DC\_5A\_n28A | DC\_5A\_n28A | No |  |
| DC\_5A\_n30A | DC\_5A\_n30A | No |  |
| DC\_5A\_n38A | DC\_5A\_n38A | DC\_5\_n38 |  |
| DC\_5A\_n40A | DC\_5A\_n40A | No |  |
| DC\_5A\_n41A | DC\_5A\_n41A | No |  |
| DC\_5A\_n48A  DC\_5A\_n48B | DC\_5A\_n48A | No |  |
| DC\_5A\_n66A  DC\_5B\_n66A | DC\_5A\_n66A | DC\_5\_n66 |  |
| DC\_5A-5A\_n66A | DC\_5A\_n66A | DC\_5\_n66 |  |
| DC\_5A\_n77A  DC\_5A\_n77C21 | DC\_5A\_n77A21 | No |  |
| DC\_5A\_n77(2A)21  DC\_5A\_n77(3A) | DC\_5A\_n77A21 | No |  |
| DC\_5A\_n71A | DC\_5A\_n71A | No |  |
| DC\_5A\_n78A7  DC\_5A\_n78C7 | DC\_5A\_n78A | No | No |
| DC\_5A\_n78(2A)7,21  DC\_5A\_n78(A-C)7 | DC\_5A\_n78A21 | No | No |
| DC\_5A\_n79A | DC\_5A\_n79A | No | No |
| DC\_7A\_n1A  DC\_7C\_n1A | DC\_7A\_n1A  DC\_7C\_n1A | No |  |
| DC\_7A-7A\_n1A | DC\_7A\_n1A | No |  |
| DC\_7A\_n2A  DC\_7C\_n2A | DC\_7A\_n2A | No |  |
| DC\_7A\_n2(2A) | DC\_7A\_n2A | No |  |
| DC\_7A\_n3A  DC\_7C\_n3A | DC\_7A\_n3A  DC\_7C\_n3A | No |  |
| DC\_7A\_n5A  DC\_7C\_n5A | DC\_7A\_n5A  DC\_7C\_n5A | DC\_7\_n5 |  |
| DC\_7A-7A\_n5A | DC\_7A\_n5A | DC\_7\_n5 |  |
| DC\_7A\_n8A | DC\_7A\_n8A | No |  |
| DC\_7A-7A\_n8A | DC\_7A\_n8A | No |  |
| DC\_7A\_n12A | DC\_7A\_n12A | No |  |
| DC\_7A-7A\_n78(2A)7,21 | DC\_7A\_n78A21 | No |  |
| DC\_7A\_n20A | DC\_7A\_n20A | No |  |
| DC\_7A\_n25A  DC\_7C\_n25A | DC\_7A\_n25A | No |  |
| DC\_7A\_n26A  DC\_7C\_n26A | DC\_7A\_n26A  DC\_7C\_n26A | Yes |  |
| DC\_7A-7A\_n25A | DC\_7A\_n25A | No |  |
| DC\_7A\_n28A  DC\_7C\_n28A | DC\_7A\_n28A  DC\_7C\_n28A | No |  |
| DC\_7A\_n40A | DC\_7A\_n40A | Yes |  |
| DC\_7A-7A\_n40A | DC\_7A\_n40A | Yes |  |
| DC\_7A-7A\_n28A | DC\_7A\_n28A | No |  |
| DC\_7A\_n51A | DC\_7A\_n51A | No |  |
| DC\_7A\_n66A  DC\_7C\_n66A | DC\_7A\_n66A | No |  |
| DC\_7A-7A\_n66A | DC\_7A\_n66A | No |  |
| DC\_7A\_n71A | DC\_7A\_n71A | No |  |
| DC\_7A\_n77A7  DC\_7C\_n77A | DC\_7A\_n77A | No |  |
| DC\_7A\_n77(2A)  DC\_7A\_n77(3A)  DC\_7C\_n77(2A) | DC\_7A\_n77A | No |  |
| DC\_7A-7A\_n77A7 | DC\_7A\_n77A | No |  |
| DC\_7A-7A\_n77(2A)  DC\_7A-7A\_n77(3A) | DC\_7A\_n77A | No |  |
| DC\_7A\_n78A7,23  DC\_7C\_n78A7,21  DC\_7A\_n78C7 | DC\_7A\_n78A21,23  DC\_7C\_n78A | No |  |
| DC\_7A\_n78(2A)7,21  DC\_7A\_n78(A-C)7  DC\_7C\_n78(2A)7, 21 | DC\_7A\_n78A21  DC\_7C\_n78A | No |  |
| DC\_7A-7A\_n78A7, 21  DC\_7A-7A\_n78C7 | DC\_7A\_n78A21 | No |  |
| DC\_7A-7A\_n78(A-C)7 | DC\_7A\_n78A | No |  |
| DC\_7A\_n79A  DC\_7A\_n79C | DC\_7A\_n79A | No |  |
| DC\_7A-7A\_n79A | DC\_7A\_n79A | No |  |
| DC\_7A\_n105A | DC\_7A\_n105A | No |  |
| DC\_8A\_n1A  DC\_8B\_n1A | DC\_8A\_n1A  DC\_8B\_n1A | No |  |
| DC\_8A\_n2A | DC\_8A\_n2A | DC\_8\_n2 |  |
| DC\_8A\_n3A  DC\_8B\_n3A | DC\_8A\_n3A | No |  |
| DC\_8A\_n7A | DC\_8A\_n7A | No |  |
| DC\_8A\_n20A | DC\_8A\_n20A | Yes |  |
| DC\_8A\_n28A | DC\_8A\_n28A | No |  |
| DC\_8A\_n34A | DC\_8A\_n34A | No |  |
| DC\_8A\_n38A | DC\_8A\_n38A | No |  |
| DC\_8A\_n39A | DC\_8A\_n39A | No |  |
| DC\_8A\_n40A7 | DC\_8A\_n40A | No |  |
| DC\_8A\_n41A7  DC\_8A\_n41C | DC\_8A\_n41A | No | No |
| DC\_8A\_n41(2A) | DC\_8A\_n41A | No | No |
| DC\_8A\_n77A7  DC\_8B\_n77A7 | DC\_8A\_n77A | No | No |
| DC\_8A\_n77(2A)7,21  DC\_8B\_n77(2A)7  DC\_8A\_n77(3A)7 | DC\_8A\_n77A21 | No | No |
| DC\_8A\_n78A7,23  DC\_8B\_n78A7, 21 | DC\_8A\_n78A21,23  DC\_8B\_n78A | No | No |
| DC\_8A\_n78(2A)7, 21 | DC\_8A\_n78A21 | No | No |
| DC\_8A\_n79A7  DC\_8A\_n79C | DC\_8A\_n79A  DC\_8A\_n79C | No | No |
| DC\_8A\_n93A | DC\_8A\_n93A\_ULSUP-TDM | N/A |  |
| DC\_8A\_n94A | DC\_8A\_n94A\_ULSUP-TDM | N/A |  |
| DC\_11A\_n1A | DC\_11A\_n1A | No |  |
| DC\_11A\_n3A | DC\_11A\_n3A | No |  |
| DC\_11A\_n28A | DC\_11A\_n28A | No |  |
| DC\_11A\_n41A7 | DC\_11A\_n41A | No |  |
| DC\_11A\_n77A7 | DC\_11A\_n77A | No | No |
| DC\_11A\_n77(2A)7  DC\_11A\_n77(3A)7 | DC\_11A\_n77A | No | No |
| DC\_11A\_n78A7 | DC\_11A\_n78A | No | No |
| DC\_11A\_n78(2A) | DC\_11A\_n78A | No | No |
| DC\_11A\_n79A7 | DC\_11A\_n79A | No |  |
| DC\_12A\_n2A | DC\_12A\_n2A | No |  |
| DC\_12A\_n2(2A) | DC\_12A\_n2A | No |  |
| DC\_12A\_n5A | DC\_12A\_n5A | No |  |
| DC\_12A\_n7A | DC\_12A\_n7A | No |  |
| DC\_12A\_n7(2A) | DC\_12A\_n7A | No |  |
| DC\_12A\_n25A | DC\_12A\_n25A | No |  |
| DC\_12A\_n30A | DC\_12A\_n30A | No |  |
| DC\_12A\_n38A | DC\_12A\_n38A | No |  |
| DC\_12A\_n41A | DC\_12A\_n41A | No |  |
| DC\_12A\_n66A | DC\_12A\_n66A | No |  |
| DC\_12A\_n66(2A) | DC\_12A\_n66A | No |  |
| DC\_12A\_n71A | DC\_12A\_n71A18,19 | DC\_12\_n71 |  |
| DC\_12A\_n77A | DC\_12A\_n77A | DC\_12\_n77 |  |
| DC\_12A\_n77(2A)21 | DC\_12A\_n77A21 | DC\_12\_n77 |  |
| DC\_12A\_n78A | DC\_12A\_n78A | DC\_12\_n78 |  |
| DC\_12A\_n78(2A) | DC\_12A\_n78A | DC\_12\_n78 |  |
| DC\_13A\_n2A | DC\_13A\_n2A | No |  |
| DC\_13A\_n5A | DC\_13A\_n5A | DC\_13\_n5 |  |
| DC\_13A\_n7A | DC\_13A\_n7A | No |  |
| DC\_13A\_n7(2A) | DC\_13A\_n7A | No |  |
| DC\_13A\_n25A | DC\_13A\_n25A | No |  |
| DC\_13A\_n48A  DC\_13A\_n48B | DC\_13A\_n48A | No |  |
| DC\_13A\_n66A | DC\_13A\_n66A | No |  |
| DC\_13A\_n71A | DC\_13A\_n71A | No |  |
| DC\_13A\_n77A  DC\_13A\_n77C21 | DC\_13A\_n77A21 | No |  |
| DC\_13A\_n78A | DC\_13A\_n78A | No |  |
| DC\_13A\_n78(2A)21 | DC\_13A\_n78A21 | No |  |
| DC\_14A\_n2A | DC\_14A\_n2A | No |  |
| DC\_14A\_n5A | DC\_14A\_n5A | DC\_14\_n5 |  |
| DC\_14A\_n30A | DC\_14A\_n30A | No |  |
| DC\_14A\_n41A | DC\_14A\_n41A | No |  |
| DC\_14A\_n66A | DC\_14A\_n66A | No |  |
| DC\_14A\_n77A | DC\_14A\_n77A | No |  |
| DC\_14A\_n77(2A)21 | DC\_14A\_n77A21 | No |  |
| DC\_18A\_n3A | DC\_18A\_n3A | No |  |
| DC\_18A\_n28A | DC\_18A\_n28A | No |  |
| DC\_18A\_n41A16 | DC\_18A\_n41A | No |  |
| DC\_18A\_n77A7  DC\_18A\_n77(2A)7 | DC\_18A\_n77A | No | No |
| DC\_18A\_n78A7 | DC\_18A\_n78A | No | No |
| DC\_18A\_n78(2A)7 | DC\_18A\_n78A | No | No |
| DC\_20A\_n91A | DC\_20A\_n91A\_ULSUP-TDM | N/A |  |
| DC\_20A\_n92A | DC\_20A\_n92A\_ULSUP-TDM | N/A |  |
| DC\_18A\_n79A7 | DC\_18A\_n79A | No |  |
| DC\_19A\_n1A | DC\_19A\_n1A | No |  |
| DC\_19A\_n77A7  DC\_19A\_n77C7 | DC\_19A\_n77A | No |  |
| DC\_19A\_n77(2A)7, 21 | DC\_19A\_n77A21 | No |  |
| DC\_19A\_n78A7  DC\_19A\_n78C7 | DC\_19A\_n78A | No | No |
| DC\_19A\_n78(2A)7, 21 | DC\_19A\_n78A21 | No | No |
| DC\_19A\_n79A7  DC\_19A\_n79C7 | DC\_19A\_n79A | No | No |
| DC\_20A\_n1A | DC\_20A\_n1A | No |  |
| DC\_20A\_n3A | DC\_20A\_n3A | No |  |
| DC\_20A\_n7A | DC\_20A\_n7A | DC\_20\_n7 |  |
| DC\_20A\_n8A | DC\_20A\_n8A | DC\_20\_n8 |  |
| DC\_20A\_n28A8,11,13 | DC\_20A\_n28A | No |  |
| DC\_20A\_n38A | DC\_20A\_n38A | No |  |
| DC\_20A\_n40A | DC\_20A\_n40A | No |  |
| DC\_20A\_n41A | DC\_20A\_n41A | DC\_20\_n41 |  |
| DC\_20A\_n50A | DC\_20A\_n50A | No |  |
| DC\_20A\_n51A | DC\_20A\_n51A | No |  |
| DC\_20A\_n77A7 | DC\_20A\_n77A | No |  |
| DC\_20A\_n78A7,23  DC\_20A\_n78C7 | DC\_20A\_n78A23 | No |  |
| DC\_20A\_n78(2A)7 | DC\_20A\_n78A | No |  |
| DC\_21A\_n1A | DC\_21A\_n1A | No |  |
| DC\_21A\_n28A17 | DC\_21A\_n28A | DC\_21\_n28 |  |
| DC\_21A\_n77A7  DC\_21A\_n77C7 | DC\_21A\_n77A | No |  |
| DC\_21A\_n77(2A)7,21 | DC\_21A\_n77A21 | No |  |
| DC\_21A\_n78A7  DC\_21A\_n78C7 | DC\_21A\_n78A | No | No |
| DC\_21A\_n78(2A)7,21 | DC\_21A\_n78A21 | No | No |
| DC\_21A\_n79A7  DC\_21A\_n79C7 | DC\_21A\_n79A | No | No |
| DC\_25A\_n41A | DC\_25A\_n41A | No |  |
| DC\_25A-25A\_n41A | DC\_25A\_n41A | No |  |
| DC\_25A\_n77A | DC\_25A\_n77A | DC\_25\_n77 |  |
| DC\_25A-25A\_n77A | DC\_25A\_n77A | DC\_25\_n77 |  |
| DC\_25A\_n78A | DC\_25A\_n78A | DC\_25\_n78 |  |
| DC\_25A-25A\_n78A | DC\_25A\_n78A | DC\_25\_n78 |  |
| DC\_26A\_n25A | DC\_26A\_n25A | No |  |
| DC\_26A\_n41A | DC\_26A\_n41A | No |  |
| DC\_26A\_n77A7 | DC\_26A\_n77A | No |  |
| DC\_26A\_n78A7 | DC\_26A\_n78A | No |  |
| DC\_26A\_n78(2A) | DC\_26A\_n78A | No |  |
| DC\_26A\_n79A7 | DC\_26A\_n79A | No |  |
| DC\_28A\_n1A | DC\_28A\_n1A | No |  |
| DC\_28A\_n2A | DC\_28A\_n2A | No |  |
| DC\_28A\_n3A | DC\_28A\_n3A | No |  |
| DC\_28A\_n5A | DC\_28A\_n5A | No |  |
| DC\_28A\_n7A  DC\_28A\_n7B | DC\_28A\_n7A  DC\_28A\_n7B | No |  |
| DC\_28A\_n51A | DC\_28A\_n51A | No |  |
| DC\_28A\_n8A | DC\_28A\_n8A | No |  |
| DC\_28A\_n20A8,11,13 | DC\_28A\_n20A | No |  |
| DC\_28A\_n38A | DC\_28A\_n38A | No |  |
| DC\_28A\_n40A  DC\_28C\_n40A | DC\_28A\_n40A | No |  |
| DC\_28A\_n41A7 | DC\_28A\_n41A | No |  |
| DC\_28A\_n50A | DC\_28A\_n50A | No |  |
| DC\_28A\_n66A | DC\_28A\_n66A | No |  |
| DC\_28A\_n77A7  DC\_28A\_n77C7 | DC\_28A\_n77A | No | No |
| DC\_28A\_n77(2A)7 | DC\_28A\_n77A | No | No |
| DC\_28A\_n78A7,23  DC\_28A\_n78C7 | DC\_28A\_n78A23 | No | No |
| DC\_28A\_n78(2A)7 | DC\_28A\_n78A | No | No |
| DC\_28A\_n79A7  DC\_28A\_n79C7 | DC\_28A\_n79A | No |  |
| DC\_28A\_n105A | DC\_28A\_n105A18 | DC\_28\_n105 |  |
| DC\_30A\_n2A | DC\_30A\_n2A | No |  |
| DC\_30A\_n5A | DC\_30A\_n5A | No |  |
| DC\_30A\_n66A | DC\_30A\_n66A | No |  |
| DC\_30A\_n77A | DC\_30A\_n77A | No |  |
| DC\_30A\_n77(2A)21 | DC\_30A\_n77A21 | No |  |
| DC\_38A\_n1A | DC\_38A\_n1A | No |  |
| DC\_38A\_n3A | DC\_38A\_n3A | No |  |
| DC\_38A\_n8A | DC\_38A\_n8A | No |  |
| DC\_38A\_n28A | DC\_38A\_n28A | No |  |
| DC\_38A\_n78A7 | DC\_38A\_n78A | No |  |
| DC\_38A\_n79A  DC\_38A\_n79C | DC\_38A\_n79A | No |  |
| DC\_39A\_n40A3 | DC\_39A\_n40A | No |  |
| DC\_39A\_n41A  DC\_39C\_n41A  DC\_39A\_n41C | DC\_39A\_n41A  DC\_39C\_n41A | No | No |
| DC\_39A\_n78A5,7 | DC\_39A\_n78A | No |  |
| DC\_39A\_n79A7  DC\_39A\_n79C7 | DC\_39A\_n79A | No | No |
| DC\_40A\_n1A  DC\_40C\_n1A | DC\_40A\_n1A | No |  |
| DC\_40A\_n3A | DC\_40A\_n3A | No |  |
| DC\_40A\_n7A | DC\_40A\_n7A | No |  |
| DC\_40A\_n41A  DC\_40A\_n41C  DC\_40C\_n41A | DC\_40A\_n41A | No |  |
| DC\_40A\_n41(2A) | DC\_40A\_n41A | No |  |
| DC\_40A\_n77A  DC\_40A\_n77C  DC\_40C\_n77A21  DC\_40C\_n77C  DC\_40D\_n77A21 | DC\_40A\_n77A21 | No |  |
| DC\_40A\_n78A  DC\_40A\_n78C  DC\_40C\_n78A21  DC\_40C\_n78C  DC\_40D\_n78A21 | DC\_40A\_n78A21, 23  DC\_40C\_n78A | No |  |
| DC\_40A\_n78(2A)  DC\_40C\_n78(2A) | DC\_40A\_n78A  DC\_40C\_n78A | No |  |
| DC\_40A\_n79A7,12  DC\_40A\_n79C7,12  DC\_40C\_n79A7,12 | DC\_40A\_n79A | No | No |
| DC\_41A\_n1A  DC\_41C\_n1A | DC\_41A\_n1A  DC\_41C\_n1A | No | DC\_41A\_n1A  DC\_41C\_n1A |
| DC\_41A\_n3A7  DC\_41C\_n3A7 | DC\_41A\_n3A  DC\_41C\_n3A | No |  |
| DC\_41A\_n28A7  DC\_41C\_n28A7 | DC\_41A\_n28A  DC\_41C\_n28A | No |  |
| DC\_41A\_n77A  DC\_41C\_n77A21 | DC\_41A\_n77A21  DC\_41C\_n77A | No |  |
| DC\_41A\_n77(2A)  DC\_41C\_n77(2A) | DC\_41A\_n77A  DC\_41C\_n77A | No |  |
| DC\_41A\_n78A23  DC\_41C\_n78A  DC\_41D\_n78A | DC\_41A\_n78A23  DC\_41C\_n78A | No |  |
| DC\_41A\_n78(2A)  DC\_41C\_n78(2A) | DC\_41A\_n78A  DC\_41C\_n78A | No |  |
| DC\_41A\_n79A6,7  DC\_41A\_n79C6,7  DC\_41C\_n79A6,7 | DC\_41A\_n79A  DC\_41A\_n79C  DC\_41C\_n79A | No | No |
| DC\_42A\_n1A7  DC\_42C\_n1A7 | DC\_42A\_n1A  DC\_42C\_n1A | No |  |
| DC\_42A\_n3A**7**  DC\_42C\_n3A7 | DC\_42A\_n3A  DC\_42C\_n3A | DC\_42\_n3 |  |
| DC\_42A\_n28A7  DC\_42C\_n28A7 | DC\_42A\_n28A  DC\_42C\_n28A | No |  |
| DC\_42A\_n51A | DC\_42A\_n51A | No |  |
| DC\_42A\_n77A3,4,9,11,13 DC\_42A\_n77C3,4,9  DC\_42C\_n77A3,4,9,11  DC\_42C\_n77C3,4,9  DC\_42D\_n77A3,4,9,11  DC\_42D\_n77C  DC\_42E\_n77A3,4,9,11  DC\_42E\_n77C | N/A | N/A |  |
| DC\_42A\_n77(2A)3,4,9  DC\_42C\_n77(2A)3,4,9 | N/A | N/A |  |
| DC\_42A\_n78A3,4,9,11,13  DC\_42A\_n78C3,4,9  DC\_42C\_n78A3,4,9,11  DC\_42C\_n78C3,4,9  DC\_42D\_n78A3,4,9,11  DC\_42D\_n78C3,4,9  DC\_42E\_n78A3,4,9,11  DC\_42E\_n78C3,4,9 | N/A | N/A |  |
| DC\_42A\_n79A9,15  DC\_42A\_n79C9,15  DC\_42C\_n79A9,15  DC\_42C\_n79C9,15  DC\_42D\_n79A9,15  DC\_42D\_n79C9,15  DC\_42E\_n79A9,15  DC\_42E\_n79C9,15 | N/A | N/A |  |
| DC\_46A\_n77A2 | N/A | N/A |  |
| DC\_46A\_n78A2  DC\_46C\_n78A2  DC\_46D\_n78A2  DC\_46E\_n78A2 | N/A | N/A |  |
| DC\_48A\_n2A  DC\_48C\_n2A  DC\_48D\_n2A  DC\_48E\_n2A | DC\_48A\_n2A | No |  |
| DC\_48A\_n5A  DC\_48C\_n5A  DC\_48D\_n5A  DC\_48E\_n5A | DC\_48A\_n5A | No |  |
| DC\_48A\_n12A | DC\_48A\_n12A | No |  |
| DC\_48A\_n25A  DC\_48C\_n25A  DC\_48D\_n25A | DC\_48A\_n25A | No |  |
| DC\_48A\_n46A  DC\_48B\_n46A  DC\_48C\_n46A  DC\_48D\_n46A  DC\_48E\_n46A  DC\_48A\_n46B  DC\_48B\_n46B  DC\_48C\_n46B  DC\_48D\_n46B  DC\_48E\_n46B  DC\_48A\_n46C  DC\_48B\_n46C  DC\_48C\_n46C  DC\_48D\_n46C  DC\_48E\_n46C  DC\_48A\_n46D  DC\_48B\_n46D  DC\_48C\_n46D  DC\_48D\_n46D  DC\_48E\_n46D | DC\_48A\_n46A  DC\_48B\_n46A | No |  |
| DC\_48A\_n66A  DC\_48C\_n66A  DC\_48D\_n66A  DC\_48E\_n66A | DC\_48A\_n66A | No |  |
| DC\_48A\_n71A  DC\_48B\_n71A  DC\_48C\_n71A  DC\_48D\_n71A | DC\_48A\_n71A | No |  |
| DC\_48A-48A\_n71A  DC\_48A-48A-48A\_n71A | DC\_48A\_n71A | No |  |
| DC\_48A\_n77A3. 4. 9, 11  DC\_48C\_n77A3. 4. 9, 11  DC\_48A\_n77C3. 4. 9, 11  DC\_48C\_n77C3. 4. 9, 11  DC\_48D\_n77A3. 4. 9, 11  DC\_48D\_n77C3. 4. 9, 11  DC\_48E\_n77A3. 4. 9, 11 | N/A | N/A |  |
| DC\_48A-48A\_n77A | N/A | N/A |  |
| DC\_48A-48A-48A\_n77A | N/A | N/A |  |
| DC\_66A\_n2A  DC\_66B\_n2A  DC\_66C\_n2A | DC\_66A\_n2A | DC\_66\_n2 |  |
| DC\_66A\_n2(2A) | DC\_66A\_n2A | DC\_66\_n2 |  |
| DC\_66A-66A\_n2A | DC\_66A\_n2A | DC\_66\_n2 |  |
| DC\_66A-66A-66A\_n2A | DC\_66A\_n2A | DC\_66\_n2 |  |
| DC\_66A\_n5A  DC\_66B\_n5A  DC\_66C\_n5A | DC\_66A\_n5A | DC\_66\_n5 |  |
| DC\_66A-66A\_n5A | DC\_66A\_n5A | DC\_66\_n5 |  |
| DC\_66A-66A-66A\_n5A | DC\_66A\_n5A | DC\_66\_n5 |  |
| DC\_66A\_n7A | DC\_66A\_n7A | No |  |
| DC\_66A\_n7(2A) | DC\_66A\_n7A | No |  |
| DC\_66A-66A\_n7A | DC\_66A\_n7A | No |  |
| DC\_66A-66A\_n7(2A) | DC\_66A\_n7A | No |  |
| DC\_66A\_n12A | DC\_66A\_n12A | No |  |
| DC\_66A\_n25A | DC\_66A\_n25A | DC\_66\_n25 |  |
| DC\_66A\_n28A | DC\_66A\_n28A | No |  |
| DC\_66A\_n30A | DC\_66A\_n30A | No |  |
| DC\_66A-66A\_n30A | DC\_66A\_n30A | No |  |
| DC\_66A\_n38A | DC\_66A\_n38A | No |  |
| DC\_66A-66A\_n38A | DC\_66A\_n38A | No |  |
| DC\_66A\_n41A  DC\_66A\_n41C | DC\_66A\_n41A | No |  |
| DC\_66A\_n41(2A) | DC\_66A\_n41A | No |  |
| DC\_66A\_n46A | DC\_66A\_n46A | No |  |
| DC\_66A\_n48A  DC\_66A\_n48B | DC\_66A\_n48A | No |  |
| DC\_66A-66A\_n48A  DC\_66A-66A\_n48B | DC\_66A\_n48A | No |  |
| DC\_66A\_n71A  DC\_66C\_n71A  DC\_66A\_n71B | DC\_66A\_n71A | No |  |
| DC\_66A-66A\_n71A | DC\_66A\_n71A | No |  |
| DC\_66A\_n77A  DC\_66A\_n77C21 | DC\_66A\_n77A21 | DC\_66\_n77 |  |
| DC\_66A\_n77(2A)21 | DC\_66A\_n77A21 | DC\_66\_n77 |  |
| DC\_66A-66A\_n77A21  DC\_66A-66A\_n77C21 | DC\_66A\_n77A21 | DC\_66\_n77 |  |
| DC\_66A-66A\_n77(2A)21 | DC\_66A\_n77A21 | DC\_66\_n77 |  |
| DC\_66A-66A-66A\_n77A21  DC\_66A-66A-66A\_n77C21 | DC\_66A\_n77A21 | DC\_66\_n77 |  |
| DC\_66A-66A-66A\_n77(2A)21 | DC\_66A\_n77A21 | DC\_66\_n77 |  |
| DC\_66A\_n78A | DC\_66A\_n78A | No |  |
| DC\_66A\_n78(2A) 21 | DC\_66A\_n78A21 | No |  |
| DC\_66A-66A\_n78A21 | DC\_66A\_n78A21 | No |  |
| DC\_66A-66A\_n78(2A)21 | DC\_66A\_n78A21 | No |  |
| DC\_71A\_n2A | DC\_71A\_n2A | No |  |
| DC\_71A\_n2(2A) | DC\_71A\_n2A | No |  |
| DC\_71A\_n5A | DC\_71A\_n5A | No |  |
| DC\_71A\_n12A | DC\_71A\_n12A18,19 | Yes |  |
| DC\_71A\_n38A | DC\_71A\_n38A | No |  |
| DC\_71A\_n7A | DC\_71A\_n7A | No |  |
| DC\_71A\_n25A | DC\_71A\_n7A | No |  |
| DC\_71A\_n41A | DC\_71A\_n41A | No |  |
| DC\_71A\_n48A | DC\_71A\_n48A | No |  |
| DC\_71A\_n66A | DC\_71A\_n66A | No |  |
| DC\_71A\_n77A  DC\_71A\_n77C | DC\_71A\_n77A | No |  |
| DC\_71A\_n77(2A) | DC\_71A\_n77A | No |  |
| DC\_71A\_n78A | DC\_71A\_n78A | No |  |
| DC\_71A\_n78(2A)21 | DC\_71A\_n78A21 | No |  |
| NOTE 1: Uplink EN-DC configurations are the configurations supported by the present release of specifications.  NOTE 2: Restricted to E-UTRA operation when inter-band carrier aggregation is configured. The downlink operating band for Band 46 is paired with the uplink operating band (external E-UTRA band) of the carrier aggregation configuration that is supporting the configured Pcell.  NOTE 3: The minimum requirements apply only when there is non-simultaneous Tx/Rx operation between E-UTRA and NR carriers. This restriction applies also for these carriers when applicable EN-DC configuration is part of a higher order EN-DC configuration.  NOTE 4: If a UE does not indicate *interBandMRDC-WithOverlapDL-Bands-r16* or a UE indicates both *interBandMRDC-WithOverlapDL-Bands-r16* and *requirementTypeIndication-r18* and IE *nonCollocatedTypeMRDC-r18* is provided, the minimum requirements for intra-band non-contiguous EN-DC apply for the Band 42/48 and Band n77/n78 combination. If a UE does not indicate *interBandMRDC-WithOverlapDL-Bands-r16* or a UE indicates both *interBandMRDC-WithOverlapDL-Bands-r16* and *requirementTypeIndication-r18* and IE *nonCollocatedTypeMRDC-r18* is provided and UE indicates *interBandContiguousMRDC*, the minimum requirements for intra-band contiguous EN-DC also apply in addtion to intra-band non-contiguous EN-DC*.* The intra-band requirements also apply for these carriers when applicable EN-DC configuration is a subset of a higher order EN-DC configuration.  NOTE 5: The frequency range above 3600 MHz for Band n78 is not used in this combination.  NOTE 6: The frequency range below 2506 MHz for Band 41 is not used in this combination.  NOTE 7: Applicable for UE supporting inter-band EN-DC with mandatory simultaneous Rx/Tx capability.  NOTE 8: The frequency range in band n28 /28 is restricted for this band combination to 703 - 733 MHz for the UL and 758-788 MHz for the DL. This restriction also applies for any band combinations when DC\_20\_n28/DC\_28\_n20/CA\_20-28/CA\_n20-n28 is a subset of a higher order band combination.  NOTE 9: The combination is not used alone as fall-back mode of other band combinations in which UL in Band 42 or Band 48 is not used.  NOTE 10: Void.  NOTE 11: If a UE does not indicate *interBandMRDC-WithOverlapDL-Bands-r16*, the minimum requirements apply when the maximum power spectral density imbalance between downlink carriers is within 6 dB (type 1 in Table 7.10B.3-1). If the UE indicates *interBandMRDC-WithOverlapDL-Bands-r16* but does not indicate *requirementTypeIndication-r18* or a UE indicates both *interBandMRDC-WithOverlapDL-Bands-r16* and *requirementTypeIndication-r18* and IE *nonCollocatedTypeMRDC-r18* is not provided when *maxMIMO-Layers* with value less than or equal to 2, the power imbalance requirement defined in clause 7.10B.3 apply (type 2 in Table 7.10B.3-1). If a UE indicates both *interBandMRDC-WithOverlapDL-Bands-r16* and *requirementTypeIndication-r18* and IE *nonCollocatedTypeMRDC-r18* is provided, the minimum requirements apply when the maximum power spectral density imbalance between downlink carriers is within 6 dB (type 1 in Table 7.10B.3-1). For these UEs, the power spectral density imbalance condition also applies for these carriers when applicable EN-DC configuration is a subset of a higher order EN-DC configuration.  NOTE 12: Applicable for frequency range above 4800 MHz for Band n79 in this combination.  NOTE 13: If a UE does not indicated *interBandMRDC-WithOverlapDL-Bands-r16* or a UE indicates both *interBandMRDC-WithOverlapDL-Bands-r16* and *requirementTypeIndication-r18* and IE *nonCollocatedTypeMRDC-r18* is provided, the minimum requirements apply for synchronized DL carriers with a maximum receive time difference ≤ 3 usec. The requirements also apply for these carriers when applicable EN-DC configuration is a subset of a higher order EN-DC configuration.  NOTE 14: Applicable when dynamic switching between two uplink carriers is conducted. The DL interruption requirements for NR DL carrier(s) and E-UTRA DL carrier(s) are specified in clause 8.2.1.2.14 of 38.133 [15] and clause 7.32.2.12 of 36.133 [16] respectively.  NOTE 15: Simultaneous Rx/Tx capability does not apply for UEs supporting band 42 with a n77 implementation only. Same restrictions are applied to related higher order configurations.  NOTE 16: The frequency range in band n41 is restricted for this band combination to 2595 – 2645 MHz.  NOTE 17: The frequency range in band n28 is restricted for this band combination to 728 - 738 MHz for the UL and 783 - 793 MHz for the DL. This restriction applies also for these band combinations when applicable EN-DC configuration is part of a higher order EN-DC configuration.  NOTE 18: Only single switched UL is supported.  NOTE 19: The implementation with 4 antennas is targeted for FWA form factor for this band combination.  NOTE 20: The combination is not used alone as fallback mode of other band combinations in which UL in Band 2 is not used.  NOTE 21: Minimum requirements for PC2 are applicable for this uplink EN-DC configuration in this downlink/uplink EN-DC configuration with 1Tx antenna connector in each band.  NOTE 22: The PC2 Uplink EN-DC configuration supported in Table 6.2B.1.3-1 is applicable to the same EN-DC configuration without additional indication of NOTE 21.  NOTE 23: Minimum requirements for Power Class 2 are applicable for this EN-DC configuration with 1Tx antenna connector in one band and 2Tx antenna connectors in the other band. | | | |

**<Next change>**

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.

Unless otherwise stated, for the FR1 requirements 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.

If a UE indicates both *interBandMRDC-WithOverlapDL-Bands-r16* and *requirementTypeIndication-r18* , it shall be verified with type 2 Rx requirements (type 2 in Table 7.10B.3-1) as specified in clause 7.10B and type 1 Rx requirements (type 1 in Table 7.10B.3-1) in clauses 7.3 – 7.9.

If a UE indicates *interBandMRDC-WithOverlapDL-Bands-r16* but does not indicate *requirementTypeIndication-r18*, it shall be verified with type 2 Rx requirements (type 2 in Table 7.10B.3-1) as specified in clause 7.10B.

**<Next change>**

## 7.10B power imbalance for DC in FR1

### 7.10B.3 Inter-band EN-DC within FR1

Power imbalance requirement is a measure of the receiver’s ability to receive a wanted signal (LTE or NR) in the presence of another carrier signal (NR or LTE) with 6~25dB power imbalance at a specific frequency offset from the wanted signal.

For inter-band EN-DC operation with overlapping or partially overlapping DL bands, the following UE types are identified:

Table 7.10B.3-1: Inter-band EN-DC operation with overlapping or partially overlapping DL bands UE types

|  |  |  |
| --- | --- | --- |
| For inter-band EN-DC operation with overlapping or partially overlapping DL bands UE types | Type description | Dedicated UE capability |
| Type 1 | It supports intra-band RF requirements (with a maximum power spectral density imbalance between downlink carriers, within 6 dB) and an (NG)EN-DC/NE-DC MTTD/MRTD according to clause 7.5.3/7.6.3 in TS 38.133. | N/A |
| Type 2 | The UE supports inter-band RF requirements (with DL power imbalance as specified in caluse 7.10A in TS 38.101-3) and an (NG)EN-DC MTTD/MRTD according to clause 7.5.2/7.6.2 in TS 38.133 and NE-DC MTTD/MRTD according to clause 7.5.5/7.6.5 in TS 38.133 | *interBandMRDC-WithOverlapDL-Bands-r16,*  *requirementTypeIndication-r18* |

Power imbalance requirement in this subclause is only applicable for a UE capable of *interBandMRDC-WithOverlapDL-Bands-r16* and not capable of *requirementTypeIndication-r18* or a UE capable of *interBandMRDC-WithOverlapDL-Bands-r16* and *requirementTypeIndication-r18* but is not provided with *nonCollocatedTypeMRDC-r18* and is configured with *maxMIMO-Layers* with value less than or equal to 2*.* (i.e. type 2 in Table 7.10B.3-1)

For these test parameters in table 7.10B.3-1, the throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.2, 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 in 38.101-1).

Table 7.10B.3-2: Test parameters for FDD-FDD or TDD-TDD inter-band EN-DC operation with overlapping or partially overlapping DL bands

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test configurations | Carriers | Rx Power in transmission bandwidth configuration (dBm) | channel bandwidth | Frequency relationship  (Center of BWanother Relative to edge of BWwanted) |
| 1 | Wanted carrier | REFSENS + 1 | BWwanted ≤ BWanother | < max (5/2\* BWanother, 50MHz) |
| Another wanted carrier with overlapping DL bands | Power of wanted carrier + 25 |
| 2 | Wanted carrier | REFSENS + 1 | BWwanted > BWanother |
| Another wanted carrier with overlapping DL bands | Power of wanted carrier + 25 – 10\*log10(BWwanted /BWanother) |
| 3 | Wanted carrier | REFSENS + 1 | NA | ≥ max (5/2\* BWanother, 50MHz) |
| Another wanted carrier with overlapping DL bands | Power of wanted carrier + 25 |
| NOTE 1: For NR carrier, the transmitter shall be set to 24dB below PCMAX\_L,f,c,NR at the minimum uplink configuration specified in Table 7.3.2-3 [2] with PCMAX\_L,f,c,NR as defined in clause 6.2B.4.  NOTE 2: For E-UTRA carrier, the transmitter shall be set to 24 dB below PCMAX\_L\_E-UTRA,c at the minimum uplink configuration specified in Table 7.3.1-2 [4] with PCMAX\_L\_E-UTRA,c as defined in clause 6.2B.4 for single carrier.  NOTE 3: BWwanted is the channel bandwidth of wanted carrier. BWanother is the channel bandwidth of another wanted carrier with overlapping DL bands  NOTE 4: REFSENS is the reference sensitivity level or two antenna port in Table 7.3.2-1a or in Table 7.3.2-1b of TS 38.101-1, or in Table 7.3.1-1 of TS 36.101.  NOTE 5: For TDD-TDD combination, the minimum requirements apply only when there is non-simultaneous Rx/Tx operation between E-UTRA and NR carriers for the EN-DC combinations in Table 7.10B.3-2. This restriction applies also for these carriers when applicable EN-DC configuration is part of a higher order EN-DC configuration.  NOTE 6: For Inter-band EN-DC configurations with multiple contiguous E-UTRA CCs in one band, REFSENS in this table equals to 5MHz REFSENS+10\*log(aggregated BW(MHz)/5) of all the contiguous E-UTRA CCs of the wanted band. BWwanted and BWanother represent the aggregated BWs of all the CCs of the wanted and another band, respectively. The maximum power spectral density imbalance between the contiguous E-UTRA CCs in one band, is within 6 dB.” | | | | |

The applicability of these test configurations is shown below:

When the capability *interBandContiguousMRDC* is indicated, test configuration 1 or 2 can be used to verify the RX power imbalance requirement for a UE indicating capability *interBandMRDC-WithOverlapDL-Bands-r16*.

When the capability *interBandContiguousMRDC* is absent, test configuration 1, 2 or 3 can be used to verify the RX power imbalance requirement for a UE indicating capability *interBandMRDC-WithOverlapDL-Bands-r16*.

It’s allowed to only use one of the test configurations to verify the RX power imbalance requirement for a UE indicating capability *interBandMRDC-WithOverlapDL-Bands-r16*.

If the UE indicates *interBandMRDC-WithOverlapDL-Bands-r16* but does not indicate *requirementTypeIndication-r18* or a UE indicates both *interBandMRDC-WithOverlapDL-Bands-r16* and *requirementTypeIndication-r18* and IE *nonCollocatedTypeMRDC-r18* is not provided when *maxMIMO-Layers* with value less than or equal to 2*,* the Rx requirements for two Rx ports are applicable for each band in EN-DC operating mode for the following EN-DC band combinations in Table 7.10B.3-2. (i.e. type 2 in Table 7.10B.3-1)

Table 7.10B.3-2: TDD-TDD EN‑DC combinations

|  |
| --- |
| EN-DC combination |
| DC\_42\_n771 |
| DC\_42\_n781 |
| NOTE 1: Note 9 in table 5.5B.4.1-1 is applicable. |

**<End of change>**