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| 3GPP TR 37.718-21-11 V0.1.0 (2022-08) | |
| Technical Report | |
| 3rd Generation Partnership Project;  Technical Specification Group Radio Access Networks;  Dual Connectivity of 2 bands LTE inter-band CA and 1 NR band (Release 18) | |
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# Foreword

This Technical Report has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

In the present document, modal verbs have the following meanings:

**shall** indicates a mandatory requirement to do something

**shall not** indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

**should** indicates a recommendation to do something

**should not** indicates a recommendation not to do something

**may** indicates permission to do something

**need not** indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

**can** indicates that something is possible

**cannot** indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

**will** indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

**will not** indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

**might** indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

**might not** indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

**is** (or any other verb in the indicative mood) indicates a statement of fact

**is not** (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

# 1 Scope

The present document is a technical report for Dual Connectivity of 2 bands LTE inter-band CA (2DL/1UL) and 1 NR band (1DL/1UL) under Rel-18 time frame. The purpose is to gather the relevant background information and studies in order to address Dual connectivity (DC) band combinations of 3 different bands DL with 2 different bands UL (2 different LTE bands and 1 NR band) for the Rel-18 band combinations. The actual requirements are added to the corresponding technical specification.

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

…

[x] <doctype> <#>[ ([up to and including]{yyyy[-mm]|V<a[.b[.c]]>}[onwards])]: "<Title>".

# 3 Definitions of terms, symbols and abbreviations

## 3.1 Terms

For the purposes of the present document, the terms given in TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

Definition format (Normal)

**<defined term>:** <definition>.

**example:** text used to clarify abstract rules by applying them literally.

## 3.2 Symbols

For the purposes of the present document, the following symbols apply:

Symbol format (EW)

<symbol> <Explanation>

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

Abbreviation format (EW)

<ABBREVIATION> <Expansion>

# 4 Background

The present document is a technical report for Dual Connectivity (EN-DC) of 2 bands LTE inter-band CA and 1 NR band under Rel-18 timeframe. The document covers each band combination specific issues (i.e. one sub-clause defined per band combination)

## 4.1 TR Maintenance

A single company is responsible for introducing all approved TPs in the current TR, i.e. TR editor. However, it is the responsibility of the contact person of each band combination to ensure that the TPs related to the band combination have been implemented.

# 5 DC of 2 bands LTE inter-band CA and 1 NR band within FR1: Specific Band Combination Part

## 5.x DC\_a-b\_nc

### 5.x.1 Configurations for DC

*<Editor’s note: it is required to use the same table format as in TS 38.101-3>*

Table 5.x.1-1: Inter-band DC configurations (three bands)

| **EN-DC**  **configuration** | **Uplink EN-DC**  **configuration** |
| --- | --- |
|  |  |

### 5.x.2 Co-existence studies

*<Text will be added.>*

### 5.x.3 ∆TIB and ∆RIB values

*<Editor’s note: it is required to use the same table format as in TS 38.101-3>*

Table 5.X.3-1: ΔTIB,c

| Inter-band EN-DC configuration | E-UTRA or NR Band | ΔTIB,c (dB) |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

**Table 5.X.3-2: ΔRIB**

| **Inter-band EN-DC configuration** | **E-UTRA or NR Band** | **ΔRIB,c (dB)** |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

### 5.x.4 Reference sensitivity exceptions

< Editor’s note: text will be added only for reference sensitivity exceptions for intermodulation interference due to dual uplink operation for DC in NR FR1 involving three bands >

## 5.1 DC\_1-(n)7

5.1.1 Operating bands for EN-DC

Table 5.1.1-1: Band combinations EN-DC (three bands)

| EN-DC band | E-UTRA CA band | NR band | Single UL allowed |
| --- | --- | --- | --- |
| 1-(n)7 | CA\_1-7 | n7 | No |

### 5.1.2 Configuration for DC

Table 5.1.2-1: Inter-band EN-DC configurations (three bands)

| EN-DC  Configuration | Uplink EN-DC  configuration  (NOTE 1) | E-UTRA CA configuration | NR band |
| --- | --- | --- | --- |
| DC\_1A-(n)7AA | DC\_1A\_n7A | CA\_1A-7A | n7A |

5.1.3 ∆TIB and ∆RIB values

For DC\_1-(n)7, the ΔTIB,c and ΔRIB,c values are reused from DC\_1\_n7 and are given in the tables below.

**Table 5.1.3-1: ΔTIB,c**

| Inter-band DC Configuration | E-UTRA and NR Band | ΔTIB,c [dB] |
| --- | --- | --- |
| DC\_1-(n)7 | 1 | 0.5 |
| 7 | 0.6 |
| n7 | 0.6 |

**Table 5.1.3-2: ΔRIB**

| Inter-band DC Configuration | E-UTRA and NR Band | ΔRIB [dB] |
| --- | --- | --- |
| DC\_1-(n)7 | 1 | 0 |
| 7 | 0 |
| n7 | 0 |

5.1.4 REFSENS requirements

There are no IMD impact from UL 1\_7 affecting DL band 1 or band n7.

## 5.2 DC\_3-(n)7

5.2.1 Operating bands for EN-DC

Table 5.2.1-1: Band combinations EN-DC (three bands)

| EN-DC band | E-UTRA CA band | NR band | Single UL allowed |
| --- | --- | --- | --- |
| 3-(n)7 | CA\_3-7 | n7 | No |

### 5.2.2 Configuration for DC

Table 5.2.2-1: Inter-band EN-DC configurations (three bands)

| EN-DC  Configuration | Uplink EN-DC  configuration  (NOTE 1) | E-UTRA CA configuration | NR band |
| --- | --- | --- | --- |
| DC\_3A-(n)7AA | DC\_3A\_n7A | CA\_3A-7A | n7A |
| DC\_3C-(n)7AA | DC\_3A\_n7A | CA\_3C-7A | n7A |

5.2.3 ∆TIB and ∆RIB values

For DC\_3-(n)7, the ΔTIB,c and ΔRIB,c values are reused from DC\_3\_n7 and are given in the tables below.

**Table 5.2.3-1: ΔTIB,c**

| Inter-band DC Configuration | E-UTRA and NR Band | ΔTIB,c [dB] |
| --- | --- | --- |
| DC\_3-(n)7 | 3 | 0.5 |
| 7 | 0.5 |
| n7 | 0.5 |

**Table 5.2.3-2: ΔRIB**

| Inter-band DC Configuration | E-UTRA and NR Band | ΔRIB [dB] |
| --- | --- | --- |
| DC\_3-(n)7 | 3 | 0 |
| 7 | 0 |
| n7 | 0 |

5.2.4 REFSENS requirements

There are possible IMD4 impact from UL 3\_n7 affecting band 7.

| NR or E-UTRA Band / Channel bandwidth / NRB / MSD | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| EN-DC Configuration | EUTRA / NR band | UL Fc  (MHz) | UL/DL BW  (MHz) | UL  LCRB | DL Fc (MHz) | MSD  (dB) | IMD order |
| DC\_3A-(n)7AA  DC\_3C-(n)7AA | 3 | 1712.5 | 5 | 25 | 1807.5 | N/A | N/A |
|  | 7 | N/A | 5 | N/A | 2623.5 | [6.5] | IMD4 |
|  | n7 | 2508.5 | 5 | 25 | 2628.5 | [10.2] | IMD4 |

## 5.3 DC\_28-(n)7

5.3.1 Operating bands for EN-DC

Table 5.3.1-1: Band combinations EN-DC (three bands)

| EN-DC band | E-UTRA CA band | NR band | Single UL allowed |
| --- | --- | --- | --- |
| 28-(n)7 | CA\_28-7 | n7 | No |

### 5.3.2 Configuration for DC

Table 5.3.2-1: Inter-band EN-DC configurations (three bands)

| EN-DC  Configuration | Uplink EN-DC  configuration  (NOTE 1) | E-UTRA CA configuration | NR band |
| --- | --- | --- | --- |
| DC\_28A-(n)7AA | DC\_28A\_n7A | CA\_28A-7A | n7A |

5.3.3 ∆TIB and ∆RIB values

For DC\_28-(n)7, the ΔTIB,c and ΔRIB,c values are reused from DC\_28\_n7 and are given in the tables below.

**Table 5.3.3-1: ΔTIB,c**

| Inter-band DC Configuration | E-UTRA and NR Band | ΔTIB,c [dB] |
| --- | --- | --- |
| DC\_28-(n)7 | 28 | 0.3 |
| 7 | 0.3 |
| n7 | 0.3 |

**Table 5.3.3-2: ΔRIB**

| Inter-band DC Configuration | E-UTRA and NR Band | ΔRIB [dB] |
| --- | --- | --- |
| DC\_28-(n)7 | 28 | 0 |
| 7 | 0 |
| n7 | 0 |

5.3.4 REFSENS requirements

There are no IMD impact from UL 28\_7 affecting DL band 28 or band n7.

## 5.4 DC\_1-26\_n78

5.4.1 Operating bands for EN-DC

Table 5.4.1-1: Band combinations EN-DC (three bands)

| EN-DC band | E-UTRA CA band | NR band | Single UL allowed |
| --- | --- | --- | --- |
| DC\_1-26\_n78 | CA\_1-26 | n78 | No |

### 5.4.2 Configuration for DC

Table 5.4.2-1: Inter-band EN-DC configurations (three bands)

| EN-DC  Configuration | Uplink EN-DC  configuration  (NOTE 1) | E-UTRA CA configuration | NR band |
| --- | --- | --- | --- |
| DC\_1A-26A\_n78A | DC\_1A\_n78A  DC\_26A\_n78A | CA\_1A-26A | n78A |

5.4.3 ∆TIB and ∆RIB values

For DC\_1-26\_n78, the ΔTIB,c and ΔRIB,c values are reused from DC\_1-5\_n78 and are given in the tables below.

**Table 5.4.3-1: ΔTIB,c**

| Inter-band DC Configuration | E-UTRA and NR Band | ΔTIB,c [dB] |
| --- | --- | --- |
| DC\_1-26\_n78 | 1 | 0.3 |
| 26 | 0.6 |
| n78 | 0.8 |

**Table 5.4.3-2: ΔRIB**

| Inter-band DC Configuration | E-UTRA and NR Band | ΔRIB [dB] |
| --- | --- | --- |
| DC\_1-26\_n78 | 1 | 0.2 |
| 26 | 0.2 |
| n78 | 0.5 |

5.4.4 REFSENS requirements

There are IMD3 impact from UL 26\_n78 affecting DL band 1.

There are IMD5 impact from UL 1\_n78 affecting DL band 26.

MSD values are reused from DC\_1A-5A\_n78A.

Table 7.3B.2.3.5.2-1: MSD test points for Scell due to dual uplink operation for EN-DC in NR FR1 (three bands)

| NR or E-UTRA Band / Channel bandwidth / NRB / MSD | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| EN-DC Configuration | EUTRA / NR band | UL Fc  (MHz) | UL/DL BW  (MHz) | UL  LCRB | DL Fc (MHz) | MSD  (dB) | IMD order |
| DC\_1A-26A\_n78A | 1 | 1932 | 5 | 25 | 2122 | 18.1 | IMD3 |
|  | 26 | 829 | 5 | 25 | 874 | N/A | N/A |
|  | n78 | 3780 | 10 | 50 | 3780 | N/A | N/A |
|  | 1 | 1975 | 5 | 25 | 2165 | N/A | N/A |
|  | 26 | 840 | 5 | 25 | 885 | 3.1 | IMD5 |
|  | n78 | 3405 | 10 | 50 | 3405 | N/A | N/A |

## 5.5 DC\_3-26\_n78

5.5.1 Operating bands for EN-DC

Table 5.5.1-1: Band combinations EN-DC (three bands)

| EN-DC band | E-UTRA CA band | NR band | Single UL allowed |
| --- | --- | --- | --- |
| DC\_3-26\_n78 | CA\_3-26 | n78 | No |

### 5.5.2 Configuration for DC

Table 5.5.2-1: Inter-band EN-DC configurations (three bands)

| EN-DC  Configuration | Uplink EN-DC  configuration  (NOTE 1) | E-UTRA CA configuration | NR band |
| --- | --- | --- | --- |
| DC\_3A-26A\_n78A  DC\_3C-26A\_n78A | DC\_3A\_n78A  DC\_26A\_n78A | CA\_3A-26A | n78A |

5.5.3 ∆TIB and ∆RIB values

For DC\_3-26\_n78, the ΔTIB,c and ΔRIB,c values are reused from DC\_3-5\_n78 and are given in the tables below.

**Table 5.5.3-1: ΔTIB,c**

| Inter-band DC Configuration | E-UTRA and NR Band | ΔTIB,c [dB] |
| --- | --- | --- |
| DC\_3-26\_n78 | 3 | 0.6 |
| 26 | 0.6 |
| n78 | 0.8 |

**Table 5.5.3-2: ΔRIB**

| Inter-band DC Configuration | E-UTRA and NR Band | ΔRIB [dB] |
| --- | --- | --- |
| DC\_3-26\_n78 | 3 | 0.2 |
| 26 | 0.2 |
| n78 | 0.5 |

5.5.4 REFSENS requirements

There are IMD3 impact from UL 26\_n78 affecting DL band 3. MSD values are reused from DC\_5A\_n3A-n78A.

Table 7.3B.2.3.5.2-1: MSD test points for Scell due to dual uplink operation for EN-DC in NR FR1 (three bands)

| NR or E-UTRA Band / Channel bandwidth / NRB / MSD | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| EN-DC Configuration | EUTRA / NR band | UL Fc  (MHz) | UL/DL BW  (MHz) | UL  LCRB | DL Fc (MHz) | MSD  (dB) | IMD order |
| DC\_3A-26A\_n78A  DC\_3C-26A\_n78A | 3 | 1767 | 5 | 25 | 1862 | 15.7 | IMD3 |
|  | 26 | 839 | 5 | 25 | 884 | N/A | N/A |
|  | n78 | 3540 | 10 | 50 | 3540 | N/A | N/A |

## 5.6 DC\_7-26\_n78

5.6.1 Operating bands for EN-DC

Table 5.6.1-1: Band combinations EN-DC (three bands)

| EN-DC band | E-UTRA CA band | NR band | Single UL allowed |
| --- | --- | --- | --- |
| DC\_7-26\_n78 | CA\_7-26 | n78 | No |

### 5.6.2 Configuration for DC

Table 5.6.2-1: Inter-band EN-DC configurations (three bands)

| EN-DC  Configuration | Uplink EN-DC  configuration  (NOTE 1) | E-UTRA CA configuration | NR band |
| --- | --- | --- | --- |
| DC\_7A-26A\_n78A  DC\_7C-26A\_n78A | DC\_7A\_n78A  DC\_26A\_n78A | CA\_7A-26A | n78A |

5.6.3 ∆TIB and ∆RIB values

For DC\_7-26\_n78, the ΔTIB,c and ΔRIB,c values are reused from DC\_5-7\_n78 and are given in the tables below.

**Table 5.6.3-1: ΔTIB,c**

| Inter-band DC Configuration | E-UTRA and NR Band | ΔTIB,c [dB] |
| --- | --- | --- |
| DC\_7-26\_n78 | 7 | 0.6 |
| 26 | 0.6 |
| n78 | 0.8 |

**Table 5.6.3-2: ΔRIB**

| Inter-band DC Configuration | E-UTRA and NR Band | ΔRIB [dB] |
| --- | --- | --- |
| DC\_7-26\_n78 | 7 | 0.2 |
| 26 | 0.2 |
| n78 | 0.5 |

5.6.4 REFSENS requirements

There are IMD2 and IMD5 impact from UL 7\_n78 affecting DL band 26. MSD values are reused from DC\_5A-7A\_n78A.

There are IMD2 impact from UL 26\_n78 affecting DL band 7. MSD values are reused from DC\_5A-7A\_n78A.

Table 7.3B.2.3.5.2-1: MSD test points for Scell due to dual uplink operation for EN-DC in NR FR1 (three bands)

| NR or E-UTRA Band / Channel bandwidth / NRB / MSD | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| EN-DC Configuration | EUTRA / NR band | UL Fc  (MHz) | UL/DL BW  (MHz) | UL  LCRB | DL Fc (MHz) | MSD  (dB) | IMD order |
| DC\_7A-26A\_n78A  DC\_7C-26A\_n78A | 7 | 2525 | 5 | 25 | 2645 | 30.1 | IMD2 |
|  | 26 | 844 | 5 | 25 | 889 | N/A | N/A |
|  | n78 | 3489 | 10 | 50 | 3489 | N/A | N/A |
|  | 7 | 2550 | 5 | 25 | 2670 | N/A | N/A |
|  | 26 | 834 | 5 | 25 | 879 | 30.2 | IMD2 |
|  | n78 | 3429 | 10 | 50 | 3429 | N/A | N/A |
|  | 7 | 2525 | 5 | 25 | 2645 | N/A | N/A |
|  | 26 | 830 | 5 | 25 | 875 | 3.3 | IMD5 |
|  | n78 | 3350 | 10 | 50 | 3350 | N/A | N/A |

## 5.7 DC\_1A-8A\_n7A

5.7.1 Configurations for DC

Table 5.239.1-1: Inter-band EN-DC configurations (three bands)

| EN-DC  configuration | Uplink EN-DC  configuration  (NOTE 1) |
| --- | --- |
| DC\_1A-8A\_n7A | DC\_8A\_n7A  DC\_1A\_n7A |

5.7.2 Co-existence studies

For 2UL/3DL(DC\_1A-8A\_n7A with UL DC\_1A\_n7A) UE coexistence study 2nd, 3rd, 4th and 5th order harmonics and 2nd, 3rd, 4th and 5th order intermodulation products were calculated and presented in Table 5.239.2-1.

Table 5.239.2-1: Harmonic and IMD analysis for DC\_1A\_n7A

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **UE UL carriers** | **fx\_low** | **fx\_high** | **fy\_low** | **fy\_high** |
| **UL frequency (MHz)** | **1920** | **1980** | **2500** | **2570** |
| **2nd harmonics frequency limits** | **2\*fx\_low** | **2\*fx\_high** | **2\* fy\_low** | **2\* fy\_high** |
| **2nd harmonics frequency limits (MHz)** | **3840** | **3960** | **5000** | **5140** |
| **3rd harmonics frequency limits** | **3\*fx\_low** | **3\*fx\_high** | **3\* fy\_low** | **3\* fy\_high** |
| **3rd harmonics frequency limits (MHz)** | **5760** | **5940** | **7500** | **7710** |
| **4th harmonics frequency limits** | **4\*fx\_low** | **4\*fx\_high** | **4\* fy\_low** | **4\* fy\_high** |
| **4th harmonics frequency limits (MHz)** | **7680** | **7920** | **10000** | **10280** |
| **5th harmonics frequency limits** | **5\*fx\_low** | **5\*fx\_high** | **5\* fy\_low** | **5\* fy\_high** |
| **5th harmonics frequency limits (MHz)** | **9600** | **9900** | **12500** | **12850** |
| **2nd order IMD products** | **|fy\_low – fx\_high|** | **|fy\_high – fx\_low|** | **|fy\_low + fx\_low|** | **|fy\_high + fx\_high|** |
| **IMD frequency limits (MHz)** | **520** | **650** | **4420** | **4550** |
| **Two-tone 3rd order IMD products** | **|2\*fx\_low – fy\_high|** | **|2\*fx\_high – fy\_low|** | **|2\*fy\_low – fx\_high|** | **|2\*fy\_high – fx\_low|** |
| **IMD frequency limits (MHz)** | **1270** | **1460** | **3020** | **3220** |
| **Two-tone 3rd order IMD products** | **|2\*fx\_low + fy\_low|** | **|2\*fx\_high + fy\_high|** | **|2\*fy\_low + fx\_low|** | **|2\*fy\_high + fx\_high|** |
| **IMD frequency limits (MHz)** | **6340** | **6530** | **6920** | **7120** |
| **Two-tone 4th order IMD products** | **|3\*fx\_low –1\* fy\_high|** | **|3\*fx\_high – 1\*fy\_low|** | **|3\*fy\_low – 1\*fx\_high|** | **|3\*fy\_high – 1\*fx\_low|** |
| **IMD frequency limits (MHz)** | **3190** | **3440** | **5520** | **5790** |
| **Two-tone 4th order IMD products** | **|3\*fx\_low +1\* fy\_low|** | **|3\*fx\_high + 1\*fy\_high|** | **|3\*fy\_low + 1\*fx\_low|** | **|3\*fy\_high + 1\*fx\_high|** |
| **IMD frequency limits (MHz)** | **8260** | **8510** | **9420** | **9690** |
| **Two-tone 4th order IMD products** | **|2\*fx\_low –2\* fy\_high|** | **|2\*fx\_high –2\* fy\_low|** | **|2\*fx\_low +2\* fy\_low|** | **|2\*fx\_high +2\* fy\_high|** |
| **IMD frequency limits (MHz)** | **1300** | **1040** | **8840** | **9100** |
| **Two-tone 5th order IMD products** | **|fx\_low – 4\*fy\_high|** | **|fx\_high – 4\*fy\_low|** | **|fy\_low – 4\*fx\_high|** | **|fy\_high – 4\*fx\_low|** |
| **IMD frequency limits (MHz)** | **8360** | **8020** | **5420** | **5110** |
| **Two-tone 5th order IMD products** | **|2\*fx\_low - 3\*fy\_high|** | **|2\*fx\_high - 3\*fy\_low|** | **|2\*fy\_low - 3\*fx\_high|** | **|2\*fy\_high -3\*fx\_low|** |
| **IMD frequency limits (MHz)** | **3870** | **3540** | **940** | **620** |
| **Two-tone 5th order IMD products** | **|fx\_low + 4\*fy\_low|** | **|fx\_high + 4\*fy\_high|** | **|fy\_low + 4\*fx\_low|** | **|fy\_high + 4\*fx\_high|** |
| **IMD frequency limits (MHz)** | **11920** | **12260** | **10180** | **10490** |
| **Two-tone 5th order IMD products** | **|2\*fx\_low + 3\*fy\_low|** | **|2\*fx\_high + 3\*fy\_high|** | **|2\*fy\_low + 3\*fx\_low|** | **|2\*fy\_high + 3\*fx\_high|** |
| **IMD frequency limits (MHz)** | **11340** | **11670** | **10760** | **11080** |

As we can see from the above table，for 3DL\_DC\_1A-8A\_n7A with 2UL\_1A\_n7A，Two-tone 5th order IMD products |2\*fy -3\*fx |may fall into DL reception frequency of Band 8.

5.7.3 ∆TIB and ∆RIB values

The requirements of ∆TIB values in Table 6.2.5-3: ΔTIB,c (three bands) “CA\_1-7-8 , CA\_1-7-7-8”from TS36.101 [2] can be applied for DC\_1-8\_n7.

The requirements of ∆RIB values in Table 7.3.1-1B: ΔRIB,c (three bands) “CA\_1-7-8 , CA\_1-7-7-8” from TS36.101 [2] can be applied for DC\_1-8\_n7.

Table 5.7.3-1: ΔTIB,c

| Inter-band DC Configuration | E-UTRA and NR Band | ΔTIB,c [dB] |
| --- | --- | --- |
| DC\_1-8\_n7 | 1 | 0.5 |
|  | 8 | 0.6 |
|  | n7 | 0.6 |

Table 5.7.3-2: ΔRIB,c

| Inter-band DC Configuration | E-UTRA and NR Band | ΔRIB [dB] |
| --- | --- | --- |
| DC\_1-8\_n7 | 1 | 0 |
|  | 8 | 0.2 |
|  | n7 | 0 |

5.7.4 Reference sensitivity exceptions

Table 5.7.4-1 shows the required MSD levels for the DC configuration. The required MSD values are derived from DC\_1A-8A\_n7A.

Table 5.7.4-1: Reference sensitivity exceptions for Scell due to dual uplink operation for EN-DC in NR FR1 (three bands)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| E-UTRA and NR Band / Channel bandwidth / NRB / MSD | | | | | | | |
| EN-DC  Configuration | EUTRA / NR band | UL Fc  (MHz) | UL/DL BW  (MHz) | UL  LCRB | DL Fc (MHz) | MSD  (dB) | IMD order |
| DC\_1A-8A\_n7A | 1 | 1977.5 | 5 | 25 | 2167.5 | N/A | N/A |
| n7 | 2502.5 | 5 | 25 | 2622.5 | N/A | N/A |
| 8 | 882.5 | 5 | 25 | 927.5 | 1.0 | IMD5 |

Annex A (informative):  
Change history

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Change history** | | | | | | | |
| **Date** | **Meeting** | **TDoc** | **CR** | **Rev** | **Cat** | **Subject/Comment** | **New version** |
| 2022-8 | RAN4#104-e | R4-2212499 |  |  |  | TR skeleton | 0.0.1 |
| 2022-8 | RAN4#104-e | R4-2212500 |  |  |  | The following approved TPs were implemented:  R4-2215008 TP for TR 37 718-21-11 to include DC\_1-(n)7  R4-2215009 TP for TR 37 718-21-11 to include DC\_3-(n)7  R4-2215010 TP for TR 37 718-21-11 to include DC\_28-(n)7  R4-2215011 TP for TR 37 718-21-11 to include DC\_1-26\_n78  R4-2215012 TP for TR 37 718-21-11 to include DC\_3-26\_n78  R4-2215013 TP for TR 37 718-21-11 to include DC\_7-26\_n78  R4-2215031 TP for TR 37.718-21-11 DC\_1A-8A\_n7A | 0.1.0 |