3GPP TR 37.717-33 V0.7.0 (2022-03)

Technical Report

3rd Generation Partnership Project;

Technical Specification Group Radio Access Network;

Rel-17 Dual Connectivity (DC) of x bands (x=1,2) LTE inter-band CA (xDL/xUL) and y bands (y=3-x) NR inter-band CA (yDL/yUL)

(Release 17)

** 

The present document has been developed within the 3rd Generation Partnership Project (3GPP TM) and may be further elaborated for the purposes of 3GPP.  
The present document has not been subject to any approval process by the 3GPPOrganizational Partners and shall not be implemented.  
This Specification is provided for future development work within 3GPPonly. The Organizational Partners accept no liability for any use of this Specification.  
Specifications and Reports for implementation of the 3GPP TM system should be obtained via the 3GPP Organizational Partners' Publications Offices.

***3GPP***

Postal address

3GPP support office address

650 Route des Lucioles - Sophia Antipolis

Valbonne - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Internet

http://www.3gpp.org

***Copyright Notification***

No part may be reproduced except as authorized by written permission.  
The copyright and the foregoing restriction extend to reproduction in all media.

© 2022, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).

All rights reserved.

UMTS™ is a Trade Mark of ETSI registered for the benefit of its members

3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners  
LTE™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners

GSM® and the GSM logo are registered and owned by the GSM Association

# Content

[Content 3](#_Toc16386)

[Foreword 6](#_Toc17619)

[1 Scope 7](#_Toc31670)

[2 References 7](#_Toc21081)

[3 Definitions, symbols and abbreviations 8](#_Toc15530)

[3.1 Definitions 8](#_Toc2235)

[3.2 Symbols 8](#_Toc17006)

[3.3 Abbreviations 8](#_Toc16080)

[4 Background 8](#_Toc938)

[4.1 TR Maintenance 8](#_Toc9165)

[5 DC with 3 bands DL and 3 bands UL: General Part 8](#_Toc24894)

[5.1 General 8](#_Toc20875)

[5.2 Treatment of ∆TIB and ∆RIB values 8](#_Toc16438)

[5.3 Maximum Sensitivity Degradation (MSD) analysis 9](#_Toc18736)

[5.3.1 MSD caused by Harmonic product 9](#_Toc13374)

[5.3.2 MSD caused by intermodulation products 9](#_Toc4691)

[5.4 Spurious emission band UE co-existence 10](#_Toc18117)

[6 DC with 3 bands DL and 3 bands UL:Specific Band Combination Part 10](#_Toc30737)

[6.1 Inter-band DC with LTE 1 band+NR 2 bands(including FR2) 10](#_Toc2100)

[6.1.1 DC\_41\_n79-n258 10](#_Toc31720)

[6.1.1.1 Operating bands for DC\_41\_n79-n258 10](#_Toc17379)

[6.1.1.2 Configurations for DC\_41\_n79-n258 10](#_Toc5209)

[6.1.1.4 REFSENS requirements 10](#_Toc13492)

[6.1.2 DC\_40\_n41-n258 11](#_Toc15769)

[6.1.2.1 Operating bands for DC\_40\_n41-n258 11](#_Toc18297)

[6.1.2.2 Configurations for DC\_40\_n41-n258 11](#_Toc21728)

[6.1.2.3 ∆T](#_Toc8588)[IB](#_Toc8588) [and ∆R](#_Toc8588)[IB](#_Toc8588) [values 11](#_Toc8588)

[6.1.2.4 REFSENS requirements 11](#_Toc15123)

[6.1.3 DC\_39\_n41-n258 11](#_Toc5453)

[6.1.3.1 Operating bands for DC\_39\_n41-n258 11](#_Toc25053)

[6.1.3.2 Configurations for DC\_39\_n41-n258 11](#_Toc15199)

[6.1.1.3 ∆T](#_Toc15991)[IB](#_Toc15991) [and ∆R](#_Toc15991)[IB](#_Toc15991) [values 11](#_Toc15991)

[6.1.3.3 ∆T](#_Toc24268)[IB](#_Toc24268) [and ∆R](#_Toc24268)[IB](#_Toc24268) [values 12](#_Toc24268)

[6.1.3.4 REFSENS requirements 12](#_Toc14242)

[6.1.4 DC\_39\_n79-n258 12](#_Toc7055)

[6.1.4.1 Operating bands for DC\_39\_n79-n258 12](#_Toc4271)

[6.1.4.2 Configurations for DC\_39\_n79-n258 12](#_Toc18952)

[6.1.4.3 ∆T](#_Toc8582)[IB](#_Toc8582) [and ∆R](#_Toc8582)[IB](#_Toc8582) [values 12](#_Toc8582)

[6.1.4.4 REFSENS requirements 12](#_Toc26464)

[6.1.5 DC\_8\_n40-n258 13](#_Toc27649)

[6.1.5.1 Operating bands for DC\_8\_n40-n258 13](#_Toc27133)

[6.1.5.2 Configurations for DC\_8\_n40-n258 13](#_Toc24866)

[6.1.5.3 ∆T](#_Toc10843)[IB](#_Toc10843) [and ∆R](#_Toc10843)[IB](#_Toc10843) [values 13](#_Toc10843)

[6.1.5.4 REFSENS requirements 13](#_Toc31972)

[6.1.6 DC\_39\_n40-n258 13](#_Toc3096)

[6.1.6.1 Operating bands for DC\_39\_n40-n258 13](#_Toc21952)

[6.1.6.2 Configurations for DC\_39\_n40-n258 13](#_Toc12273)

[6.1.6.3 ∆T](#_Toc25875)[IB](#_Toc25875) [and ∆R](#_Toc25875)[IB](#_Toc25875) [values 13](#_Toc25875)

[6.1.6.4 REFSENS requirements 13](#_Toc32506)

[6.1.7 DC\_3\_n40-n258 14](#_Toc14352)

[6.1.7.1 Operating bands for DC\_3\_n40-n258 14](#_Toc8289)

[6.1.7.2 Configurations for DC\_3\_n40-n258 14](#_Toc29921)

[6.1.7.3 ∆T](#_Toc13945)[IB](#_Toc13945) [and ∆R](#_Toc13945)[IB](#_Toc13945) [values 14](#_Toc13945)

[6.1.7.4 REFSENS requirements 14](#_Toc15901)

[6.2 Inter-band DC with LTE 2 bands+NR 1 band(including FR2) 14](#_Toc25820)

[6.2.x DC\_X-Y-nZ or DC\_nZ\_X-Y 14](#_Toc3788)

[6.2.x.1 Operating bands for DC configuration 14](#_Toc28903)

[6.2.x.2 Inter-band DC Configurations 14](#_Toc15232)

[6.2.x.3 ∆T](#_Toc5862)[IB](#_Toc5862) [and ∆R](#_Toc5862)[IB](#_Toc5862) [values 15](#_Toc5862)

[6.2.x.4 REFSENS requirements 15](#_Toc26964)

[Annex A: Change history 16](#_Toc16791)

# Foreword

This Technical Specification 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 drafting the TS/TR, pay particular attention to the use of modal auxiliary verbs! TRs shall not contain any normative provisions.

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 (DC) of x bands (x=1,2) LTE inter-band CA (xDL/xUL) and y bands (y=3-x) NR inter-band CA (yDL/yUL) under Rel-17 time frame, including EN-DC and NE-DC. The purpose is to gather the relevant background information and studies in order to address Dual Connectivity (DC) of x bands (x=1,2) LTE inter-band CA (xDL/xUL) and y bands (y=3-x) NR inter-band CA (yDL/yUL) for the Rel-17 band combinations, where:

* For only 1 NR band included (i.e. x=2 and y=1), only NR FR2 band is applied
* For only 2 NR bands included (i.e. x=1 and y=2), 1 NR FR1 band and 1 NR FR2 band are included and operated as inter-band CA

This TR contains a general part and band specific combination part. The actual requirements are added to the corresponding technical specifications.

# 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".

[2] 3GPP TS 38.101-1: "NR; User Equipment (UE) radio transmission and reception; Part 1: Range 1 Standalone".

[3] 3GPP TS 38.101-2: "NR; User Equipment (UE) radio transmission and reception; Part 2: Range 2 Standalone".

[4] 3GPP TS 38.101-3: "NR; User Equipment (UE) radio transmission and reception; Part 3: Range 1 and Range 2 Interworking operation with other radios".

# 3 Definitions, symbols and abbreviations

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP 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 3GPP TR 21.905 [1].

## 3.2 Symbols

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

ΔRIB,c Allowed reference sensitivity relaxation due to support for CA or DC operation, for serving cell *c*.

ΔTIB,c Allowed maximum configured output power relaxation due to support for CA or DC operation, for serving cell *c*.

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP 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 3GPP TR 21.905 [1].

# 4 Background

The present document is a technical report for Dual Connectivity (DC) of x bands (x=1,2) LTE inter-band CA (xDL/xUL) and y bands (y=3-x) NR inter-band CA (yDL/yUL) under Rel-17 time frame, including EN-DC and NE-DC.

## 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 with 3 bands DL and 3 bands UL: General Part

## 5.1 General

In order to support 3 bands DL and 3 bands UL EN-DC/NE-DC band combination in rel-17, the corresponding fallback modes shall be shall be completed and specified in advance.

Unless otherwise stated, the requirements for EN-DC and NE-DC configuration for the same band combination are the same.

## 5.2 Treatment of ∆TIB and ∆RIB values

For the 3 bands DL and 3 bands UL EN-DC band combination, RAN4 should consider to reuse agreed additional insertion losses for all EN-DC band combinations when new RF components are not introduced to support this basket WI. If the new RF components are introduced, then more detail decription will be captured in some specific EN-DC band combinations.

In the 3 bands DL and 3 bands UL EN-DC combination, at least one NR FR2 band is included, which means the other two bands can be LTE 2 bands or LTE 1 band + NR 1 FR1 band. It shall be noted that the inter-band EN-DC combination with all the 3UL FR1 bands is excluded since the corresponding RF requirements have not been finished yet.

Unless otherwise stated, for inter-band 3 bands DL and 3 bands UL EN-DC configurations including FR2,there are no additional requirements of and ∆TIB and ∆RIB values for NR FR2 band, which means ∆TIB and ∆RIB for constituent FR2 NR bands is set to zero.

For Inter-band EN-DC with LTE 2 band+NR 1 band (i.e. NR 1 FR2 band):

* ΔTIB,c and ΔRIB,c for constituent E-UTRA bands is the same as those for the corresponding E-UTRA inter-band CA configuration specified in TS 36.101.

For Inter-band EN-DC with LTE 1 band+NR 2 bands (i.e. NR 1 FR1 band + NR 1 FR2 band):

* ΔTIB,c and ΔRIB,c for E-UTRA and FR1 NR band is the same as those for the corresponding inter-band EN-DC combinations specified in TS 38.101-3.

## 5.3 Maximum Sensitivity Degradation (MSD) analysis

5.3.1 MSD caused by Harmonic product

The harmonic product analysis for the inter-band EN-DC combination within FR1 and including FR2 have been captured in the TRs, such as TR 37.716-11-11 and 37.716-21-11. Considering:

- the frequency between E-UTRA band and NR FR2 band are very large, and the NR FR2 band frequency is larger than 3rd harmonic frequencies (even 7th harmonic frequencies) of all E-UTRA band, which means the NR FR2 band will not be impacted by the harmonic products of the E-UTRA band.

- the NR FR2 band frequency is larger than 3rd harmonic frequencies of all NR FR1 band, which means the NR FR2 band will not be impacted by the 3rd harmonic products of the NR FR1 band.

Therefore, unless otherwise stated, for inter-band 3 bands DL and 3 bands UL EN-DC configurations including FR2, there are no MSD requirements caused by harmonic products for constituent FR2 NR band, and MSD caused by harmonic products for constituent E-UTRA and NR FR1 bands are the same as those for the corresponding E-UTRA inter-band CA in TS36.101 or inter band EN-DC configuration without the FR2 bands in TS38.101-3, respectively.

5.3.2 MSD caused by intermodulation products

There are two types intermodulation frequencies for 3 bands UL configuration, the first one is choosing desirable UL band configurations for each use scenarios (i.e. 2UL intermodulation frequencies), and the second one is all the possible intermodulation frequencies occur while all three UL’s are active concurrently (i.e. 3UL intermodulation frequencies).

For the first type intermodulation frequencies, the study for 2UL intermodulation frequencies have been captured in TR 37.716-21-11 and TR 37.716-21-21, especially for the 2UL band configuration of E-UTRA band and NR FR1 band. It is no need to recalculate the 2UL frequencies intermudulation products forinter-band 3 bands DL and 3 bands EN-DC combinations.

For the second type intermodulation frequencies, on top of 2UL intermodulation frequencies, some additional intermodulation frequencies shall be studied for all three UL frequencies are active concurrently for inter-band 3UL EN-DC conbination, which is shown in Table 5.2.2-1.

Table 5.3.2-1. intermodulation frequencies all three UL frequencies are active concurrently

|  |  |  |  |
| --- | --- | --- | --- |
| Intermodulation # | IMD3 | IMD4 | IMD5 |
| Intermodulation frequencies | |F1+F2+F3|  |F1+F2-F3|  |F1-F2+F3|  |F1-F2-F3| | |2F1+F2+F3|,|2F1+F2-F3|  |2F1-F2+F3|,|2F1-F2-F3|  |F1+2F2+F3|,|F1+2F2-F3|  |F1-2F2+F3|,|F1-2F2-F3|  |F1+F2+2F3|,|F1+F2-2F3|  |F1-F2+2F3|,|F1-F2-2F3| | |3F1+F2+F3| , |3F1+F2-F3|, |3F1-F2+F3|, |3F1-F2-F3|  |F1+3F2+F3|, |F1+3F2-F3|, |F1-3F2+F3|,|F1-3F2-F3|  |F1+F2+3F3|, |F1+F2-3F3|, |F1-F2+3F3|, |F1-F2-3F3|  |2F1+2F2+F3|, |2F1+2F2-F3|,|2F1-2F2+F3|,|2F1-2F2-F3|  |F1+2F2+2F3|, |F1+2F2-2F3|,|F1-2F2+2F3|,|F1-2F2-2F3|  |2F1+F2+2F3|,|2F1+F2-2F3|,|2F1-F2+2F3|,|2F1-F2-2F3| |

Considering the larger frequency difference between FR1 band and FR2 band, it can be foreseen that the IMDs product caused by FR1 band and FR2 band will not fall into its own Rx band. Hence, it is no need to calculate the IMDs product in table 5.2.2-1 for inter-band EN-DC combinations including FR2 band.

Therefore, unless otherwise stated, for inter-band 3 bands DL and 3 bands UL EN-DC configurations including FR2, there are no MSD requirements caused by intermodulation products for constituent FR2 NR band, and MSD caused by intermodulation products caused by harmonic products for constituent E-UTRA and NR FR1 bands are the same as those for the corresponding E-UTRA inter-band CA in TS36.101 or inter band EN-DC configuration without the FR2 bands in TS38.101-3.

5.4 Spurious emission band UE co-existence

Unless otherwise stated, for inter-band 3 bands DL and 3 bands UL EN-DC configurations including FR2, there are no additional requirements of spurious emission band UE co-existence.

For Inter-band EN-DC with LTE 2 band+NR 1 band (i.e. NR 1 FR2 band):

* For spurious emission band UE co-existence, no requirements for FR2 NR bands to protect E-UTRAbands are applied to the constituent FR2 NR bands. Spurious emission band UE co-existence requirements specified in TS 36.101 are applied to the constituent E-UTRA bands..

For Inter-band EN-DC with LTE 1 band+NR 2 bands (i.e. NR 1 FR1 band + NR 1 FR2 band):

* Spurious emission band UE co-existence requirements for constituent E-UTRA and FR1 NR bands for the inter-band EN-DC are the same as those for the corresponding EN-DC configuration without the FR2 bands specified in TS38.101-3.

# 6 DC with 3 bands DL and 3 bands UL:Specific Band Combination Part

## 6.1 Inter-band DC with LTE 1 band+NR 2 bands(including FR2)

6.1.1 DC\_41\_n79-n258

6.1.1.1 Operating bands for DC\_41\_n79-n258

**Table 6.1.1.1-1: Band combinations EN-DC (three bands)**

| **EN-DC Band** | **E-UTRA Band** | **NR Band** |
| --- | --- | --- |
| DC\_41\_n79-n258 | 41 | n79, n258 |

6.1.1.2 Configurations for DC\_41\_n79-n258

**Table 6.1.1.2-1: Inter-band EN-DC configurations (three bands)**

| **EN-DC**  **configuration** | **Uplink EN-DC**  **configuration** |
| --- | --- |
| DC\_41A\_n79A-n258A | DC\_41A\_n79A-n258A |

6.1.1.4 REFSENS requirements

There are no additional MSD issue need to be specified.

6.1.2 DC\_40\_n41-n258

6.1.2.1 Operating bands for DC\_40\_n41-n258

**Table 6.1.2.1-1: Band combinations EN-DC (three bands)**

| **EN-DC Band** | **E-UTRA Band** | **NR Band** |
| --- | --- | --- |
| DC\_40A\_n41A-n258A | 40 | n41, n258 |

6.1.2.2 Configurations for DC\_40\_n41-n258

**Table 6.1.2.2-1: Inter-band EN-DC configurations (three bands)**

| **EN-DC**  **configuration** | **Uplink EN-DC**  **configuration** |
| --- | --- |
| DC\_40A\_n41A-n258A | DC\_40A\_n41A-n258A |

6.1.2.3 ∆TIB and ∆RIB values

For DC\_40\_n41-n258, the ΔTIB,c and ΔRIB,c for band n258 equals to 0, and ΔTIB,c and ΔRIB,c for the band 40 and band n41 are the same with the values of the constiture DC\_40\_n41 defined in TS38.101-3.

6.1.2.4 REFSENS requirements

There are no additional MSD issue need to be specified.

6.1.3 DC\_39\_n41-n258

6.1.3.1 Operating bands for DC\_39\_n41-n258

**Table 6.1.3.1-1: Band combinations EN-DC (three bands)**

| **EN-DC Band** | **E-UTRA Band** | **NR Band** |
| --- | --- | --- |
| DC\_39A\_n41A-n258A | 39 | n41, n258 |

6.1.3.2 Configurations for DC\_39\_n41-n258

**Table 6.1.3.2-1: Inter-band EN-DC configurations (three bands)**

| **EN-DC**  **configuration** | **Uplink EN-DC**  **configuration** |
| --- | --- |
| DC\_39A\_n41A-n258A | DC\_39A\_n41A-n258A |

6.1.1.3 ∆TIB and ∆RIB values

For DC\_41\_n79-n258, the ΔTIB,c and ΔRIB values are given in the tables below.

**Table 6.1.1.4-2: ΔTIB,c**

| Inter-band DC Configuration | E-UTRA and NR Band | ΔTIB,c [dB] |
| --- | --- | --- |
| DC\_41\_n79-n258 | 41 | 0.3 |
| n79 | 0.8 |
| n258 | 0 |

**Table 6.1.1.4-2: ΔRIB,c**

| Inter-band DC Configuration | E-UTRA and NR Band | ΔRIB [dB] |
| --- | --- | --- |
| DC\_41\_n79-n258 | 41 | 0 |
| n79 | 0.5 |
| n258 | 0 |

6.1.3.3 ∆TIB and ∆RIB values

For DC\_39\_n41-n258, the ΔTIB,c and ΔRIB,c for band n258 equals to 0, and ΔTIB,c and ΔRIB,c for the band 39 and band n41 are the same with the values of the constiture DC\_39\_n41 defined in TS38.101-3.

6.1.3.4 REFSENS requirements

There are no additional MSD issue need to be specified.

6.1.4 DC\_39\_n79-n258

6.1.4.1 Operating bands for DC\_39\_n79-n258

**Table 6.1.4.1-1: Band combinations EN-DC (three bands)**

| **EN-DC Band** | **E-UTRA Band** | **NR Band** |
| --- | --- | --- |
| DC\_39A\_n79A-n258A | 39 | n79, n258 |

6.1.4.2 Configurations for DC\_39\_n79-n258

**Table 6.1.4.2-1: Inter-band EN-DC configurations (three bands)**

| **EN-DC**  **configuration** | **Uplink EN-DC**  **configuration** |
| --- | --- |
| DC\_39A\_n79A-n258A | DC\_39A\_n79A-n258A |

6.1.4.3 ∆TIB and ∆RIB values

For DC\_39\_n79-n258, the ΔTIB,c and ΔRIB,c for band n258 equals to 0, and ΔTIB,c and ΔRIB,c for the band 39 and band n79 are the same with the values of the constiture DC\_39\_n79 defined in TS38.101-3.

6.1.4.4 REFSENS requirements

There are no additional MSD issue need to be specified.

6.1.5 DC\_8\_n40-n258

6.1.5.1 Operating bands for DC\_8\_n40-n258

**Table 6.1.5.1-1: Band combinations EN-DC (three bands)**

| **EN-DC Band** | **E-UTRA Band** | **NR Band** |
| --- | --- | --- |
| DC\_8A\_n40A-n258A | 8 | n40, n258 |

6.1.5.2 Configurations for DC\_8\_n40-n258

**Table 6.1.5.2-1: Inter-band EN-DC configurations (three bands)**

| **EN-DC**  **configuration** | **Uplink EN-DC**  **configuration** |
| --- | --- |
| DC\_8A\_n40A-n258A | DC\_8A\_n40A-n258A |

6.1.5.3 ∆TIB and ∆RIB values

For DC\_8\_n40-n258, the ΔTIB,c and ΔRIB,c for band n258 equals to 0, and ΔTIB,c and ΔRIB,c for the band 8 and band n40 are the same with the values of the constiture DC\_8\_n40 defined in TS38.101-3.

6.1.5.4 REFSENS requirements

There are no additional MSD issue need to be specified.

6.1.6 DC\_39\_n40-n258

6.1.6.1 Operating bands for DC\_39\_n40-n258

**Table 6.1.6.1-1: Band combinations EN-DC (three bands)**

| **EN-DC Band** | **E-UTRA Band** | **NR Band** |
| --- | --- | --- |
| DC\_39A\_n40A-n258A | 39 | n40, n258 |

6.1.6.2 Configurations for DC\_39\_n40-n258

**Table 6.1.6.2-1: Inter-band EN-DC configurations (three bands)**

| **EN-DC**  **configuration** | **Uplink EN-DC**  **configuration** |
| --- | --- |
| DC\_39A\_n40A-n258A | DC\_39A\_n40A-n258A |

6.1.6.3 ∆TIB and ∆RIB values

For DC\_39\_n40-n258, the ΔTIB,c and ΔRIB,c for band n258 equals to 0, and ΔTIB,c and ΔRIB,c for the band 39 and band n40 are the same with the values of the constiture DC\_39\_n40 defined in TS38.101-3.

6.1.6.4 REFSENS requirements

There are no additional MSD issue need to be specified.

6.1.7 DC\_3\_n40-n258

6.1.7.1 Operating bands for DC\_3\_n40-n258

**Table 6.1.7.1-1: Band combinations EN-DC (three bands)**

| **EN-DC Band** | **E-UTRA Band** | **NR Band** |
| --- | --- | --- |
| DC\_3A\_n40A-n258A | 3 | n40, n258 |

6.1.7.2 Configurations for DC\_3\_n40-n258

**Table 6.1.7.2-1: Inter-band EN-DC configurations (three bands)**

| **EN-DC**  **configuration** | **Uplink EN-DC**  **configuration** |
| --- | --- |
| DC\_3A\_n40A-n258A | DC\_3A\_n40A-n258A |

6.1.7.3 ∆TIB and ∆RIB values

For DC\_3\_n40-n258, the ΔTIB,c and ΔRIB,c for band n258 equals to 0, and ΔTIB,c and ΔRIB,c for the band 3 and band n40 are the same with the values of the constiture DC\_3\_n40 defined in TS38.101-3.

6.1.7.4 REFSENS requirements

There are no additional MSD issue need to be specified.

## 6.2 Inter-band DC with LTE 2 bands+NR 1 band(including FR2)

### 6.2.x DC\_X-Y-nZ or DC\_nZ\_X-Y

6.2.x.1 Operating bands for DC configuration

*<Editor’s note: there is no such table in the TS38.101-3, here is only for information. Including EN-DC and/or EN-DC if any>*

Table 6.2.x.1-1: Band combinations EN-DC (three bands)

| EN-DC Band | E-UTRA CA Band | NR Band |
| --- | --- | --- |
|  |  |  |

Table 6.2.x.1-2: Band combinations NE-DC (three bands)

| NE-DC Band | NR Band | E-UTRA CA Band |
| --- | --- | --- |
|  |  |  |

6.2.x.2 Inter-band DC Configurations

*<Editor’s note: it is required to use the same table format as in TS 38.101-3.Including EN-DC and/or EN-DC if any>*

Table 6.2.x.2-1: Inter-band EN-DC configurations (three bands)

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

Table 6.2.x.2-2: Inter-band NE-DC configurations (three bands)

| NE-DC configuration | Uplink NE-DC  configuration |
| --- | --- |
|  |  |

<Editor Note: Sub-clause 6.2.x.3 and 6.2.x.4 are optional, since the ∆TIB and ∆RIB values for E-UTRA intra-band CA in TS36.101-1 and for NR FR2 band in TS38.101-2 can be reused, as specified in TS38.101-3.>

6.2.x.3 ∆TIB and ∆RIB values

<Text will be added.>

6.2.x.4 REFSENS requirements

<Text will be added.>

## Annex A: Change history

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Change history** | | | | | | | |
| **Date** | **Meeting** | **TDoc** | **CR** | **Rev** | **Cat** | **Subject/Comment** | **New version** |
| 2020-08 | RAN4#96-e | R4-2010658 |  |  |  | TR skeleton | 0.0.1 |
| 2020-08 | RAN4#96-e | R4-2010659 |  |  |  | Implemented TP´s from RAN4 #95-e:   1. R4-2010646, TP for TR 37.717-33\_DC\_41A\_n79A-n258A, ,ZTE Corporation | v0.1.0 |
| 2021-02 | RAN4#98-e | R4-2102230 |  |  |  | Implemented TP´s from RAN4 #98-e:  R4-2102218 TP for TR 37.717-33\_DC\_40A\_n41A-n258A ,ZTE Corporation | v0.2.0 |
| 2021-03 | RAN4#98bis-e | R4-2106384 |  |  |  | Implemented TP´s from RAN4 #98-e:  R4-2106381 TP for TR 37.717-33\_DC\_39A\_n41A-n258A ,ZTE Corporation | v0.3.0 |
| 2021-05 | RAN4#99-e | R4-2110470 |  |  |  | Implemented TP´s from RAN4 #99-e:   1. R4-2110457 TP for TR 37.717-33\_DC\_39A\_n79A-n258A | v0.4.0 |
| 2021-10 | RAN4#100-e | R4-2112949 |  |  |  | Implemented TP´s from RAN4 #100-e:   1. R4-2110457 TP for TR 37.717-33\_DC\_39A\_n79A-n258A | 0.5.0 |
| 2021-11 | RAN4#101-e | R4-2118214 |  |  |  | Implemented TP´s from RAN4 #101-e:   1. R4-2118202 TP for TR 37.717-33\_DC\_39A\_n40A-n258A | 0.6.0 |
| 2022-02 | RAN4#102-e | R4-2204774 |  |  |  | Implemented TP´s from RAN4 #102-e:  1. R4-2204749 TP for TR 37.717-33\_DC\_3A\_n40A-n258A | 0.7.0 |