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NG-RAN;

F1 layer 1

(Release 16)

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# Foreword

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

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Version x.y.z

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x the first digit:

1 presented to TSG for information;

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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.

# 1 Scope

The present document specifies the standards allowed to implement Layer 1 on the F1 interface. The F1 interface provides means for interconnecting a gNB-CU and a gNB-DU of a gNB within an NG-RAN, or for interconnecting a gNB-CU and a gNB-DU of an en-gNB within an E-UTRAN.

The specification of transmission delay requirements and O&M requirements are not in the scope of the present document.

In the following 'Layer 1' and ‘Physical Layer’ are assumed to be synonymous.

# 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 TS 38.411: "NG-RAN; NG layer 1".

[2] 3GPP TS 38.401: "NG-RAN; Architecture Description".

[3] 3GPP TS 38.300: "NR; Overall description; Stage-2".

[4] 3GPP TS 37.340: "NR; Multi-connectivity; Overall description; Stage-2".

# 3 Definitions, symbols and abbreviations

## 3.1 Definitions

gNB-CU: as defined in TS 38.401 [2]

gNB-DU: as defined in TS 38.401 [2]

gNB: as defined in TS 38.300 [3]

en-gNB: as defined in TS 37.340 [4]

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TS 38.411 [1] apply.

# 4 Introduction

The F1 Layer 1 shall comply with the requirements of clauses 4 through 6 in TS 38.411 [1].

Annex A (informative):  
Change history

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Change history** | | | | | | | |
| **Date** | **Meeting** | **TDoc** | **CR** | **Rev** | **Cat** | **Subject/Comment** | **New version** |
| 2017-06 | RAN3-NR#2 | R3-172602 |  |  |  | Replace sections 4, 5 and 6 by a reference to NG Layer 1 requirements. | 0.2.0 |
| 2017-10 | RAN3#97bis | R3-174245 |  |  |  | Implementing the agreed pCR from RAN3#97bis meeting: R3-174127 | 0.3.0 |
| 2017-12 | RAN#78 | RP-172493 |  |  |  | Version submitted to RAN for approval. Correction of the references in "Definitions, symbols and abbreviations" section. Table of contents changes | 1.0.0 |
| 2017-12 | RAN#78 |  |  |  |  | TR approved by RAN plenary | 15.0.0 |
| 2020-07 | SA#88-e | - | - | - | - | Update to Rel-16 version (MCC) | 16.0.0 |