

TTA Technical  
Specification

정보통신단체표준(기술규격)

제정일: 2017년 7월

TTAT.3G-36.411(R12-12.0.0)

3GPP – Technical Specification Group  
Radio Access Network;  
Evolved Universal Terrestrial Radio  
Access Network (E-UTRAN);  
S1 layer 1  
(Release 12)



본 문서에 대한 저작권은 TTA 에 있으며, TTA 와 사전 협의 없이 이 문서의 전체 또는 일부를 상업적 목적으로 복제 또는 배포해서는 안 됩니다.

Copyright© Telecommunications Technology Association 017.

All Rights Reserved

# 3GPP TS 36.411 V12.0.0 (2014-09)

---

*Technical Specification*

**3rd Generation Partnership Project;  
Technical Specification Group Radio Access Network;  
Evolved Universal Terrestrial Radio Access Network  
(E-UTRAN);  
S1 layer 1  
(Release 12)**



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

---

Keywords

---

LTE, radio, layer 1

**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.

© 2014, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, 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

---

# Contents

Foreword.....	4
1 Scope.....	5
2 References.....	5
3 Abbreviations.....	5
4 Introduction.....	5
5 Layer 1 specifications.....	6
6 Interface to management plane.....	6
<b>Annex A (informative): Change history.....</b>	<b>7</b>

---

## Foreword

This Technical Specification has been produced by the 3<sup>rd</sup> 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.

---

## 1 Scope

The present document specifies the standards allowed to implement layer 1 on the S1 interface.

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 TR 21.905: "Vocabulary for 3GPP Specifications".

[2] Void

[3] Void

[4] Void

[5] Void

[6] Void

---

## 3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following abbreviations apply:

E-UTRAN Evolved Universal Terrestrial Radio Access Network

---

## 4 Introduction

The main functions of layer 1 are summarized in the following:

- Interface to physical medium;
- Frame delineation;
- Line clock extraction capability;
- Layer 1 alarms extraction and generation;
- Transmission quality control.

---

## 5 Layer 1 specifications

The support of any suitable layer 1 technique - like point-to-point or point-to-multipoint techniques - shall not be prevented.

---

## 6 Interface to management plane

The description of the interface towards the management plane is out of scope of this document, but at least the following O&M functions should be foreseen:

- Performance monitoring functions;
- Alarm status reporting functions;
- Synchronisation source management.

## Annex A (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2007-09	37	RP-070586			specification presented to TSG-RAN for information	0.0.2	1.0.0
2007-11	38	RP-070849			specification presented to TSG-RAN for approval	1.0.0	2.0.0
2007-12	38				specification approved at TSG-RAN and placed under change control	2.0.0	8.0.0
2008-12	42	RP-080844	001		Rapporteurs Cut	8.0.0	8.1.0
2009-12					Created Rel-9 version based on v8.1.0	8.1.0	9.0.0
2010-12					Created Rel-10 version based on v 9.0.0	9.0.0	10.0.0
2011-06	52	RP-110684	004		Correction of references	10.0.0	10.1.0
2012-09					Update to Rel-11 version (MCC)	10.1.0	11.0.0
2014-09					Update to Rel-12 version (MCC)	11.0.0	12.0.0