

Presentation of Specification to TSG or WG

Presentation to: TSG RAN Meeting #28

Document for presentation: TR25.814 Physical Layer Aspects for Evolved UTRA endorsed by RAN1

Presented for: Information

Abstract of document:

At the 3GPP TSG RAN WG1 #40bis meeting, the skeleton TR regarding the “Physical Layer Aspects for Evolved UTRA” was endorsed.

Changes since last presentation :

None

Outstanding Issues:

None

Contentious Issues:

None

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Technical Report

3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Physical Layer Aspects for Evolved UTRA (Release 7)



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Keywords

Evolved UTRA, radio, packet mode, 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>

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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.

1 Scope

This document is related to the technical report for physical layer aspect of the study item “Evolved UTRA and UTRAN” [1]. The purpose of this TR is to help TSG RAN WG1 to define and describe the potential physical layer evolution under consideration and compare the benefits of each evolution techniques, along with the complexity evaluation of each technique.

This activity involves the Radio Access work area of the 3GPP studies and has impacts both on the Mobile Equipment and Access Network of the 3GPP systems.

This document is intended to gather all information in order to compare the solutions and gains vs. complexity, and draw a conclusion on way forward.

This document is a ‘living’ document, i.e. it is permanently updated and presented to TSG-RAN meetings.

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 TD RP-040461: "Proposed Study Item on Evolved UTRA and UTRAN".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

<defined term>: <definition>.

3.2 Symbols

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

<symbol> <Explanation>

3.3 Abbreviations

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

4 Introduction

At the 3GPP TSG RAN #26 meeting, the SI description on “Evolved UTRA and UTRAN” was approved [1].

The justification of the study item was, that with enhancements such as HSDPA and Enhanced Uplink, the 3GPP radio-access technology will be highly competitive for several years. However, to ensure competitiveness in an even longer time frame, i.e. for the next 10 years and beyond, a long-term evolution of the 3GPP radio-access technology needs to be considered.

Important parts of such a long-term evolution includes reduced latency, higher user data rates, improved system capacity and coverage, and reduced cost for the operator. In order to achieve this, an evolution of the radio interface as well as the radio network architecture should be considered.

Considering a desire for even higher data rates and also taking into account future additional 3G spectrum allocations the long-term 3GPP evolution should include an evolution towards support for wider transmission bandwidth than 5 MHz. At the same time, support for transmission bandwidths of 5MHz and less than 5MHz should be investigated in order to allow for more flexibility in whichever frequency bands the system may be deployed.

5 Requirements

(Editor’s note: we refer the related requirement in TR25.812)

6 General description of layer 1

6.1 Multiband operation

6.2 Duplexing

7 Downlink concept

7.1 Basic transmission scheme

7.1.1 Modulation scheme

7.1.2 Multiplexing including pilot structure

7.1.3 Channel coding and physical channel mapping

7.1.4 MIMO

7.2 Physical layer procedure

7.2.1 Scheduling

7.2.2 Link adaptation

7.2.3 HARQ

7.2.4 Cell search

7.2.5 Power control

7.3 Physical layer measurements

7.3.1 UE measurements

8 Evaluation of techniques for evolved UTRA DL

8.1 Performance evaluation

8.2 Analysis of UE complexity

8.3 Analysis of Node B impacts

9 Overview of techniques for evolved UTRA UL

9.1 Basic transmission scheme

9.1.1 Modulation scheme

9.1.2 Multiplexing including pilot structure

9.1.3 Channel coding and physical channel mapping

9.1.4 MIMO

9.2 Physical channel procedure

9.2.1 Random access procedure

9.2.2 Scheduling

9.2.3 Link adaptation

9.2.4 Power control

9.2.5 HARQ

9.3 Physical layer measurements

9.3.1 Node B measurements

10 Evaluation of techniques for evolved UTRA UL

10.1 Performance evaluation

10.2 Analysis of UE complexity

10.3 Analysis of Node B impacts

ANNEX A: simulation scenarios

A.1 Link simulation assumptions

A.2 System simulation assumptions

ANNEX B: Change History

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New