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Practical verification of ETSI TS 102 706 V1.2.1

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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Environmental Engineering (EE).

Introduction

The need for a fair comparison of RBSs from different manufactures, in terms of energy efficiency (EE), has been an important issue for both operators and vendors. ETSI started a work item in 2008 to standardize a measurement method to measure the energy efficiency of Macro RBSs. The first standard (TS 102 706 [i.2]) was published in August 2009 and provided a static EE measurement method for RBSs. Two years later ETSI published the second version of the standard (TS 102 706 [i.1]) which includes both static and dynamic EE measurement methods.

The results from the energy efficiency measurements are intended for use by operators for comparison purposes, enabling the selection of the most energy efficient RBS for installation in a live network. In order to have reliable measurement results and valid RBS comparisons, the RBS should be tested under conditions which resemble a typical usage environment.

The present document has highlighted a number of practical issues in the existing released standard and also a number of items that can evolve the existing approved TS 102 706 [i.1] standard. The result of the present document will be used as an input when specifying the scope of a possible new work item for Release 3 of TS 102 706 [i.1].

1 Scope

The present document discusses the current energy efficiency measurement method specified in TS 102 706 [i.1]. Practical results obtained by following the specified measurement method as well as the potential need for clarification of the method are presented. Furthermore, the present document identifies the benefits of methodology enhancements such as fast fading, interference/noise, energy efficiency measurements related to temperature variances both inside and outside the RBS, energy efficiency measurements related to signal quality, multi carrier test setup for WCDMA and dynamic measurement methods for GSM.

The present document may be used as the basis of a possible revision of the TS 102 706 [i.1].

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

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2.1 Normative references

The following referenced documents are necessary for the application of the present document.

Not applicable.

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI TS 102 706 (V1.2.1): "Environmental Engineering (EE); Measurement Method for Energy Efficiency of Wireless Access Network Equipment".

[i.2] ETSI TS 102 706 (V1.1.1): "Environmental Engineering (EE) Energy Efficiency of Wireless Access Network Equipment".

3 Abbreviations

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

ACLR	Adjacent Channel Leakage power Ratio
ATIS	Alliance for Telecommunications Industry Solutions
BTS	Base Transceiver Station
CCN	Cellular Coaxial Network
DL	Down Link
DPD	Digital Pre-Distortion
EVM	Error Vector Magnitude
GMSK	Gaussian Minimum Shift Keying
GSM	Global System for Mobile Communications
IM	Inter Modulation
IPERF	Internet Performance Working Group
LTE-A	Long Term Evolution - Advanced