ICS 33.050.01 SLOVENSKÁ TECHNICKÁ NORMA November 2015

STN	**Environmentálne inžinierstvo (EE). Metódy merania a limity spotreby energie v zariadeniach širokopásmových telekomunikačných sietí.**	**STN EN 303 215 V1.3.1** 87 3215

Environmental Engineering (EE); Measurement methods and limits for power consumption in broadband telecommunication networks equipment

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 10/15

Obsahuje: EN 303 215 V1.3.1:2015

121639

ETSI EN 303 215 V1.3.1 (2015-04)

Environmental Engineering (EE); Measurement methods and limits for power consumption in broadband telecommunication networks equipment

Reference
REN/EE-EEPS008

Keywords
broadband, energy efficiency, power supply

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

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

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Contents

Intellectual Property Rights 4

Foreword 4

Modal verbs terminology 4

Introduction 4

1 Scope 5

2 References 5
2.1 Normative references 5
2.2 Informative references 6

3 Definitions and abbreviations 6
3.1 Definitions 6
3.2 Abbreviations 7

4 Definition of power consumption 8
4.1 Definition of power consumption per port of broadband network equipment 8
4.2 Power consumption taking into account the low-power states 8

5 Measurement methods 8
5.1 General requirements 9
5.1.1 Measurement conditions 9
5.1.2 Measurement instruments requirements 9
5.1.3 Considered equipment 9
5.1.4 Not considered equipment 10
5.1.5 Measurement reference points 10
5.1.6 Traffic profile 11
5.2 Measurement method for DSLAM/MSAN equipment 11
5.2.1 Equipment configuration 11
5.2.2 Reference measurement method 13
5.3 Measurement method for OLT equipment 14
5.3.1 Equipment configuration 14
5.3.2 Reference measurement method 14
5.4 Alternative measurement method 15
5.5 Reporting of the measurements 16

Annex A (informative): Example hourly traffic distribution profiles 17

Annex B (informative): NPC definition and calculation examples 18

Annex C (informative): Measurement power consumption for DSLAM/MSAN and OLT equipment for different number of active ports 19

History 20

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (http://ipr.etsi.org).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This European Standard (EN) has been produced by ETSI Technical Committee Environmental Engineering (EE).

National transposition dates	
Date of adoption of this EN:	6 April 2015
Date of latest announcement of this EN (doa):	31 July 2015
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 January 2016
Date of withdrawal of any conflicting National Standard (dow):	31 January 2016

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Introduction

The present document defines the energy consumption metrics and measurement methods for fixed broadband telecommunication network equipment.

1 Scope

The present document defines the power consumption metrics, the methodology and the test conditions to measure the power consumption of broadband fixed telecommunication networks equipment. The present document does not cover all possible configuration of equipment but only homogenous configurations.

The types of broadband access technologies covered by the present document are the ones widely deployed at the date of publication. Currently, the present document considers DSLAM DSL, MSAN, GPON OLT and Point to Point OLT equipment. Other access technologies may be included in further versions of the present document.

The present document also considers measurement methodology for VDSL2 equipment with vectoring functionality.

In addition to the full power state, power-saving states as defined in DSL standards [i.1] and [i.2] are also covered.

The present document focuses on Network Equipment. The end-user equipment will be handled in another document.

2 References

2.1 Normative 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 referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

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

[1] ETSI TS 101 388: "Access Terminals Transmission and Multiplexing (ATTM); Access transmission systems on metallic access cables; Asymmetric Digital Subscriber Line (ADSL) - European specific requirements [ITU-T Recommendation G.992.1 modified]".

[2] ETSI EN 300 132-2: "Environmental Engineering (EE); Power supply interface at the input to telecommunications and datacom (ICT) equipment; Part 2: Operated by -48 V direct current (dc)".

[3] ETSI TS 101 271 (V1.1.1): "Access Terminals Transmission and Multiplexing (ATTM); Access transmission system on metallic pairs; Very High Speed digital subscriber line system (VDSL2); [ITU-T Recommendation G.993.2 modified]".

[4] Void.

[5] ETSI ES 201 970: "Access and Terminals (AT); Public Switched Telephone Network (PSTN); Harmonized specification of physical and electrical characteristics at a 2-wire analogue presented Network Termination Point (NTP)".

[6] Recommendation ITU-T G.984: "Gigabit-capable passive optical networks (GPON)".

[7] Recommendation ITU-T G.984.2: "Gigabit-capable Passive Optical Networks (G-PON): Physical Media Dependent (PMD) layer specification".

[8] IEEE 802.3: "IEEE Standard for Information technology -- Telecommunications and information exchange between systems --Local and metropolitan area networks -- Specific requirements -- Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications".

[9] Broadband Forum TR-100: "ADSL2/ADSL2plus; Performance Test Plan".

[10] Broadband Forum TR-114: "VDSL2 Performance Test Plan".

2.2 Informative 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 referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

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] Recommendation ITU-T G.992.3 (2005): "Asymmetric digital subscriber line transceivers 2 (ADSL2)".

[i.2] Recommendation ITU-T G.992.5 (2005): "Asymmetric Digital Subscriber Line (ADSL) transceivers - Extended bandwidth ADSL2 (ADSL2plus)".

[i.3] Recommendation ITU-T G.993.2 (2006): "Very high speed digital subscriber line 2 (VDSL2)".

[i.4] ETSI TR 102 530: "Environmental Engineering (EE); The reduction of energy consumption in telecommunications equipment and related infrastructure".

[i.5] Broadband Forum TR-202: "ADSL2/ADSL2plus Low-Power Mode Guidelines".

[i.6] Void.

[i.7] IEC 60050: "International Electrotechnical Vocabulary - Electrical and electronic measurements and measuring instruments - Part 311: General terms relating to measurements - Part 312: General terms relating to electrical measurements - Part 313: Types of electrical measuring instruments - Part 314: Specific terms according to the type of instrument".

NOTE: Available at http://webstore.iec.ch/webstore/webstore.nsf/artnum/027448!opendocument.

[i.8] IEC 62018: "Power consumption of information technology equipment - Measurement methods".

NOTE: Equivalent to CENELEC EN 62018.