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

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Contents

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Foreword

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

National transposition dates	
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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).

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Executive summary

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, PON 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 is handled in other documents, see ETSI EN 301 575 [i.6] for CPE [i.6] and ETSI EN 303 423 [i.9] for network standby.

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 in the ETSI docbox.

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.984.1: "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 oneM2M TR-100: "ADSL2/ADSL2plus; Performance Test Plan".

[10] Broadband Forum oneM2M TR-114: "VDSL2 Performance Test Plan".

[11] Recommendation ITU-T G.9807.1: "10-Gigabit-capable symmetric passive optical networks (XGS-PON)".

[12] Recommendation ITU-T G.9804.3: "50-Gigabit-capable passive optical networks (50G-PON): Physical media dependent (PMD) layer specification".

[13] 25GS-PON Specification Version 3.0 (November 2023): "25 Gigabit Symmetric Passive Optical Network".

[14] Recommendation ITU-T G.9805: "Coexistence of passive optical network systems".

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.

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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 (2009): "Asymmetric digital subscriber line transceivers 2 (ADSL2)".

[i.2] Recommendation ITU-T G.992.5 (2010): "Asymmetric Digital Subscriber Line (ADSL) transceivers - Extended bandwidth ADSL2 (ADSL2plus)".

[i.3] Recommendation ITU-T G.993.2 (2015): "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 oneM2M TR-202: "ADSL2/ADSL2plus Low-Power Mode Guidelines".

[i.6] ETSI EN 301 575: "Environmental Engineering (EE); Measurement method for energy consumption of Customer Premises Equipment (CPE)".

[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".

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

[i.9] ETSI EN 303 423: "Environmental Engineering (EE); Electrical and electronic household and office equipment; Measurement of networked standby power consumption of Interconnecting equipment".