ETSI TS 105 174-2 V1.3.1 (2020-01)

Access, Terminals, Transmission and Multiplexing (ATTM); Broadband Deployment and Lifecycle Resource Management; Part 2: ICT Sites: Implementation of energy and lifecycle management practices

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Access, Terminals, Transmission and Multiplexing (ATTM).

The present document is part 2 of a multi-part deliverable, covering lifecycle resource management of broadband deployment as identified below:

ETSI EN 305 174-1: "Overview, common and generic aspects";

ETSI TS 105 174-2: "ICT Sites: Implementation of energy and lifecycle management practices";

ETSI TS 105 174-4: "Access Networks";

ETSI EN 305 174-5: "Customer network infrastructures";

ETSI TS 105 174-6: "Cable Access Networks";

ETSI TS 105 174-7: "Digital multiservice cities";

ETSI EN 305 174-8: " Implementation of WEEE practices for ICT equipment during maintenance and at end-of-life".

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Introduction

The increasing interaction between the different elements of the Information Communication Technology (ICT) sector (hardware, middleware, software and services) supports the concept of convergence in which:

- multi-service packages can be delivered over a common infrastructure;
- a variety of infrastructures is able to deliver these packages;
- a single multi-service-package may be delivered over different infrastructures.

As a result of this convergence, the development of new services, applications and content has resulted in:

- an increased demand for bandwidth, reliability, quality and performance, with a consequent increase in the demand for power which has implications for cost and, in some cases, availability;
- an associated continuous evolution of ICT equipment.

It is therefore important to consider the environmental viability of all network elements necessary to deliver the required services in terms of the management of their operational aspects i.e. energy management (including energy efficiency) and the management of the End-of-Life (EoL) of the ICT equipment.

NOTE: The term "environmental viability" is used while recognizing that well established treatments of "sustainability" feature three separate viability objectives (environmental, economic and social). For the purposes of the ETSI EN 305 174 series, only operational aspects of environmental viability are considered. A wider approach to environmental viability takes other factors into account including the use of raw materials and avoidance of hazardous substances in the construction of infrastructure or ICT equipment- these factors are not considered.

New technologies and infrastructure strategies are expected to enable operators to decrease the energy consumption, for a given level of service, of their existing and future infrastructures, thus decreasing their costs. This requires a common understanding among market participants that only standards can produce.

The ETSI EN 305 174 series specifies the general engineering of various broadband infrastructures to enable the most effective energy management (and management of other resources) and the appropriate measures for EoL treatment of ICT equipment. Certain of the standards may specify requirements for interoperability.

The ETSI TS 105 174 series provide further details of the implementation of specific parts of standards in the ETSI EN 305 174 series.

The present document specifies requirements for ICT sites within broadband deployment infrastructures.

The present document has been produced by ETSI Technical Committees Access, Terminals, Transmission and Multiplexing (ATTM) and Cable in close collaboration with CENELEC, via the Installations and Cabling Co-ordination Group (ICCG).

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1 Scope

ETSI EN 305 174-2 [3] specifies a minimum set of required practices for energy management which are applicable to ICT sites of all sizes and business models. These are taken from a sub-set of those practices recommended by CLC/TR 50600-99-1 [1].

CLC/TR 50600-99-1 [1] also contains a much wider range of recommended practices which are applicable to specific designs of ICT site and may be applied to improve the energy management beyond the minimum requirements of ETSI EN 305 174-2 [3].

The present document:

- maps the practices of CLC/TR 50600-99-1 [1] to general application of ETSI EN 305 174-2 [3] and also to the specific design options which may apply in a given ICT site;
- details examples of the impact of such practices in relation to reductions in energy consumption or improvements in energy efficiency or management.

In addition, the present document addresses the end-of-life and maintenance aspects of WEEE (as in ETSI EN 305 174-8 [4] and ETSI TS 105 174-8 [5]).

2 References

2.1 Normative references

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

[1] CLC/TR 50600-99-1:2019: "Information technology - Data centre facilities and infrastructures - Part 99-1: Recommended practices for energy management".

[2] ETSI EN 305 174-1: "Access, Terminals, Transmission and Multiplexing (ATTM); Broadband Deployment and Lifecycle Resource Management; Part 1: Overview, common and generic aspects".

[3] ETSI EN 305 174-2: "Access, Terminals, Transmission and Multiplexing (ATTM); Broadband Deployment and Lifecycle Resource Management; Part 2: ICT sites".

[4] ETSI EN 305 174-8: "Access, Terminals, Transmission and Multiplexing (ATTM); Broadband Deployment and Lifecycle Resource Management; Part 8: Management of end of life of ICT equipment (ICT waste/end of life)".

[5] ETSI TS 105 174-8: "Access, Terminals, Transmission and Multiplexing (ATTM); Broadband Deployment and Lifecycle Resource Management; Part 8: Implementation of WEEE practices for ICT equipment during maintenance and at end-of-life".

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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] CLC/TR 50600-99-2:2019: "Information technology - Data centre facilities and infrastructures - Part 99-2: Recommended practices for environmental sustainability".

[i.2] CENELEC EN 50173 series: "Information technology - Generic cabling systems".

[i.3] CENELEC EN 50174-2: "Information technology - Cabling installation - Part 2: Installation planning and practices inside buildings".

[i.4] CENELEC EN 50600-1: "Information technology - Data centre facilities and infrastructures - Part 1: General concepts".

[i.5] CENELEC EN 50600-2-1: "Information technology - Data centre facilities and infrastructures - Part 2-1: Building construction".

[i.6] CENELEC EN 50600-2-2:2019: "Information technology - Data centre facilities and infrastructures - Part 2-2: Power supply and distribution".

[i.7] CENELEC EN 50600-2-3:2019: "Information technology - Data centre facilities and infrastructures - Part 2-3: Environmental control".

[i.8] CENELEC EN 50600-2-4: "Information technology - Data centre facilities and infrastructures - Part 2-4: Telecommunications cabling infrastructure".

[i.9] CENELEC EN 50600-4-2: "Information technology - Data centre facilities and infrastructures - Part 4-2: Power Usage Effectiveness".

[i.10] CENELEC EN 50600-4-6: "Information technology - Data centre facilities and infrastructures - Part 4-6: Energy Reuse Factor".

[i.11] CENELEC EN 62040 series: "Uninterruptible power systems (UPS)".

[i.12] ETSI EN 300 019-1-3: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-3: Classification of environmental conditions; Stationary use at weatherprotected locations".

[i.13] ETSI EN 300 132 series: "Environmental Engineering (EE); Power supply interface at the input of Information and Communication Technology (ICT) equipment".

[i.14] ETSI EN 300 132-3 series: "Environmental Engineering (EE); Power supply interface at the input of Information and Communication Technology (ICT) equipment; Part 3: Up to 400 V Direct Current (DC)".

[i.15] ETSI EN 300 132-3-1: "Environmental Engineering (EE); Power supply interface at the input to telecommunications and datacom (ICT) equipment; Part 3: Operated by rectified current source, alternating current source or direct current source up to 400 V; Sub-part 1: Direct current source up to 400 V".

[i.16] ETSI EN 301 605: "Environmental Engineering (EE); Earthing and bonding of 400 VDC data and telecom (ICT) equipment".

[i.17] ETSI EN 303 470: "Environmental Engineering (EE); Energy Efficiency measurement methodology and metrics for servers".

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[i.18] ETSI EN 305 200-2-1: "Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Operational infrastructures; Global KPIs; Part 2: Specific requirements; Sub-part 1: ICT Sites".

[i.19] ETSI EN 305 200-1: "Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Operational infrastructures; Global KPIs; Part 1: General requirements".

[i.20] ETSI EN 305 200-3-1: "Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Operational infrastructures; Global KPIs; Part 3: ICT Sites; Sub-part 1: DCEM".

[i.21] ETSI ES 202 336-9: "Environmental Engineering (EE); Monitoring and Control Interface for Infrastructure Equipment (Power, Cooling and Building Environment Systems used in Telecommunication Networks); Part 9: Alternative Power Systems".

[i.22] ETSI ES 202 336-12: "Environmental Engineering (EE); Monitoring and control interface for infrastructure equipment (power, cooling and building environment systems used in telecommunication networks); Part 12: ICT equipment power, energy and environmental parameters monitoring information model".

[i.23] ETSI ES 203 199: "Environmental Engineering (EE); Methodology for environmental Life Cycle Assessment (LCA) of Information and Communication Technology (ICT) goods, networks and services".

[i.24] ETSI TR 102 489: "Environmental Engineering (EE); European telecommunications standard for equipment practice; Thermal management guidance for equipment and its deployment".

[i.25] ETSI TS 103 199: "Environmental Engineering [EE]; Life Cycle Assessment (LCA) of ICT equipment, networks and services; General methodology and common requirements".

[i.26] ETSI TS 105 200-3-1: "Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Operational infrastructures; Implementation of Global KPIs; Part 3: ICT sites: Sub-part 1: DCEM".

[i.27] ISO 14040: "Environmental management. Life cycle assessment. Principles and framework".

[i.28] ISO 14044: "Environmental management. Life cycle assessment. Requirements and guidelines".

[i.29] ISO 14045: "Environmental management. Eco-efficiency assessment of product systems. Principles, requirements and guidelines".

[i.30] ISO 14511 series: "Air conditioners, liquid chilling packages and heat pumps for space heating and cooling and process chillers, with electrically driven compressors".

[i.31] ISO 14644-1:2015: "Cleanrooms and associated controlled environments. Classification of air cleanliness by particle concentration".

[i.32] ISO 16890-1: "Air filters for general ventilation. Technical specifications, requirements and classification system based upon particulate matter efficiency (ePM)".

[i.33] ISO 50001: "Energy management systems. Requirements with guidance for use".

[i.34] ISO/IEC 20000 series: "Information technology - Service management".

[i.35] ISO/IEC 21836: "Information technology - Data centres - Server Energy Effectiveness Metric".

[i.36] Void.

[i.37] ISO/IEC 30134-6: "Information technology - Data centres - Key performance indicators: Part 6: Energy re-sue factor (ERF)".

[i.38] ISO/IEC TR 22237-50: "Information technology - Data centre facilities and infrastructures - Part 50: Earthquake risk and impact analysis".

[i.39] ISO/IEC TS 22237-2: "Information technology - Data centre facilities and infrastructures - Part 2: Building construction".

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https://standards.iteh.ai/catalog/standards/sist/a9a8fb5f-a0b0-4bc9-9220-ets-ts-105-174-2-v1.3.1-2020-01