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Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Operational infrastructures; Global KPIs; Part 2: Specific requirements; Sub-part 1: ICT Sites

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Foreword

This European Standard (EN) has been produced by ETSI Technical Committee Access, Terminals, Transmission and Multiplexing (ATTM).

The present document is part 2, sub-part 1 of a multi-part deliverable covering Global Key Performance Indicators for energy management of operational broadband deployment infrastructures as identified below:

Part 1: "General requirements";

Part 2: "Specific requirements";

Sub-part 1: "ICT sites";

Sub-part 2: "Fixed broadband access networks";

Sub-part 3: "Mobile broadband access networks";

Part 3: "ICT sites";

Part 4: "Design assessments".

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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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Introduction

Energy costs continue to rise, a trend that will continue in the future, while broadband penetration is introducing new active equipment to the network architecture. In this context, and to reflect other environmental aspects of sustainability, it is vital that the main telecommunication operators implement effective general engineering of fixed and mobile broadband networks and sites provisioning, managing or using those networks (i.e. ICT sites) in order to respond to critical issues of energy consumption while proposing essential solutions to broadband deployment. To guide this process, it is essential that metrics are defined, termed Global Key Performance Indicators (KPIs), that enable energy usage to be managed more effectively.

The Global Key Performance Indicators specified in the ETSI EN 305 200 [i.11] series address operational infrastructures and do not consider design or operation of individual components comprising those infrastructures.

The ETSI EN 305 200 [i.11] series of standards comprises:

- ETSI EN 305 200-1 [i.12] a generic requirements document addressing Global KPIs for operational infrastructures;
- a sub-series ETSI EN 305 200-2 that defines the Global KPIs, and drives energy management targets, for specific operational networks and sites and which describes how the Global KPIs are to be applied (which may be used to support future regulatory objectives):
  - ETSI EN 305 200-2-1 ((the present document) which replaces the earlier ETSI ES 205 200-2-1): ICT sites;
  - ETSI EN 305 200-2-2 [i.13]: Fixed broadband access networks;

NOTE: Excluding cable access networks.

  - ETSI EN 305 200-2-3 [i.14]: Mobile broadband access networks.

  The standards do not define weightings of Objective KPIs or targets or limits for Global KPIs but may contain information on values that have been used by certain organizations.
- a sub-series ETSI EN 305 200-3 including ETSI EN 305 200-3-1 [i.15] that defines particular implementations of Global KPIs within ICT sites based on the requirements of the present document, and which may define levels of performance to simplify and provide clearer understanding of Global KPIs allowing the evaluation of performance of energy use management in ICT sites.

  The standards do not define weightings of Objective KPIs or targets or limits for Global KPIs but may contain information on values that have been used by certain organizations.
- a sub-series ETSI EN 305 200-4 including ETSI EN 305 200-4-4 [i.16] that defines design assessments of Global KPIs, and drives energy management targets, for specific operational networks and sites and which describes how the Global KPIs are to be applied (which may be used to support future regulatory objectives).

These standards may be considered to be a contribution to the application of ISO 50001 [i.17] in relation to the development of policy for the continuous improvement of energy management and will accelerate:

- the availability of operational infrastructure architectures and network implementations that use energy more efficiently;
- the definition and attainment objectives for other environmental aspects of sustainability for operational broadband networks.

The present document specifies the requirement for a Global KPI for energy management (KPI_{EM}) and its underpinning Objective KPIs for the ICT sites of broadband deployment. The requirements are mapped to the general requirements of ETSI EN 305 200-1 [i.12].

1 Scope

The present document specifies the requirements for a Global KPI for energy management (KPI_{EM}) and its underpinning Objective KPIs addressing the following objectives for the ICT sites of broadband deployment:

- energy consumption;
- task effectiveness;
- energy reuse;
- renewable energy.

The requirements are mapped to the general requirements of ETSI EN 305 200-1 [i.12].

Energy management of ICT sites comprises a number of independent layers. The present document addresses performance of infrastructures that supports the normal function of hosted ICT equipment (e.g. power distribution, environmental control, security and safety). The present document does not address other layers such as performance of ICT equipment itself, performance of usage of available processing power, and layers related to final service delivered (e.g. processing power required per itemized outcome) or overlay layers (e.g. energy consumption per itemized outcome).

The environmental impact and management of different energy sources are outside the scope of the present document.

Within the present document:

- clause 4 describes the energy parameters for ICT sites together with inclusions/exclusions of different energy contributions;
- clause 5 specifies the requirements for measurement, calculation, classification and reporting of KPI_{EM}.

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 https://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] CEN EN 1434 series: "Heat meters".

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

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] Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings.

[i.2] CENELEC CLC/TR 50600-99-1: "Information technology; Data centre facilities and infrastructures; Part 99-1: Recommended practices for energy management".

[i.3] CENELEC EN 50600-1: "Information technology; Data centre facilities and infrastructures; Part 1: General concepts".

[i.4] CENELEC EN 50600-2-3: "Information technology; Data centre facilities and infrastructures; Part 2-3: Environmental control".

[i.5] CENELEC EN 50600-2-4: "Information technology; Data centre facilities and infrastructures - Part 2-4: Telecommunications infrastructure".

[i.6] CENELEC EN 50600-4-2: "Information technology; Data centre facilities and infrastructures; Part 4-2: Power usage effectiveness".

[i.7] CENELEC EN 50600-4-3: "Information technology; Data centre facilities and infrastructures; Part 4-3: Renewable energy factor".

[i.8] CENELEC EN 50600-4-6: "Information technology; Data centre facilities and infrastructures; Part 4-6: Energy reuse factor".

[i.9] ETSI ES 203 228: "Environmental Engineering (EE); Assessment of mobile network energy efficiency".

[i.10] ETSI EN 305 174-2: "Access, Terminals, Transmission and Multiplexing (ATTM); Broadband Deployment and Lifecycle Resource Management; Part 2: ICT Sites".

[i.11] ETSI EN 305 200 series: "Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Operational infrastructures; Global KPIs".

[i.12] ETSI EN 305 200-1: "Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Operational infrastructures; Global KPIs; Part 1: General requirements".

[i.13] ETSI EN 305 200-2-2: "Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Operational infrastructures; Global KPIs; Part 2: Specific requirements; Sub-part 2: Fixed broadband access networks".

[i.14] ETSI EN 305 200-2-3: "Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Operational infrastructures; Global KPIs; Part 2: Specific requirements; Sub-part 3: Mobile broadband access networks".

[i.15] 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.16] ETSI EN 305 200-4-4: "Integrated broadband cable telecommunication networks (CABLE); Energy management; Operational infrastructures; Global KPIs; Part 4: Design assessments; Sub-part 4: Cable access networks".

[i.17] ISO 50001: "Energy management systems - Requirements with guidance for use".

[i.18] ISO/IEC 30134: "Information technology -- Data centres -- Key performance indicators".