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PLANT

Assessment of energy efficiency on infrastructure in data centres and telecom centres

Recommendation ITU-T L.1302

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Assessment of energy efficiency on infrastructure in data centres and telecom centres

Summary

Recommendation ITU-T L.1302 specifies an energy efficiency assessment methodology for data centres and telecom centres, test equipment accuracy requirements, assessment period, assessment conditions and calculation methods.

Concerning the data centres and telecom centres, the Recommendation considers assessment methods for the efficiency of the whole data centre/telecom centre and of a part of the data centre/telecom centre.

As the main energy-consuming infrastructure in data centres and telecom centres are the power feeding system (power supply system) and the cooling system, this Recommendation covers energy efficiency measurement methodologies for both types of systems.

The Recommendation takes into account methodologies and best practices currently in use or under development in networks, and data centres and telecom centres.

This Recommendation is aimed at reducing the negative impact of data centres and telecom centres through by providing methodologies for energy efficiency assessment. It is commonly recognized that data centres and telecom centres will have an ever-increasing impact on the environment in the future. The application of the assessment methods defined in this Recommendation can help owners and managers to build future data centres and telecom centres, or improve existing ones, that will operate in an environmentally responsible manner.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T L.1302	2015-11-29	5	11.1002/1000/12630

Keywords

Cooling system, data centre, energy efficiency, power feeding system, telecom centre.

* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

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Recommendation ITU-T L.1302

Assessment of energy efficiency on infrastructure in data centre and telecom centre

1 Scope

This Recommendation specifies an energy efficiency assessment methodology of the infrastructure of data centres and telecom centres under running conditions. The assessment methodology includes an assessment methodology of the energy efficiency for the whole data centre/telecom centre infrastructure (or facility), for a partial data centre/telecom centre infrastructure (or facility), for the power feeding system and for the cooling system.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

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|----------------|---|
| [ITU-T L.1200] | Recommendation ITU-T L.1200 (2012), <i>Direct current power feeding interface up to 400 V at the input to telecommunication and ICT equipment.</i> |
| [ITU-T L.1201] | Recommendation ITU-T L.1201 (2014), <i>Architecture of power feeding systems of up to 400 VDC.</i> |
| [ITU-T L.1202] | Recommendation ITU-T L.1202 (2015), <i>Methodologies for evaluating the performance of up to 400 VDC power feeding system and its environmental impact.</i> |
| [ITU-T L.1300] | Recommendation ITU-T L.1300 (2014), <i>Best practices for green data centres.</i> |
| [ITU-T L.1320] | Recommendation ITU-T L.1320 (2014), <i>Energy efficiency metrics and measurement for power and cooling equipment for telecommunications and data centres.</i> |
| [IEC 60038] | IEC 60038:2009, <i>IEC Standard Voltages.</i> |

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 energy [b-ISO 16818]: Capacity for doing work; having several forms that may be transformed from one to another, such as thermal (heat), mechanical (work), electrical or chemical, and is expressed in Joule. For the purpose of this Recommendation, energy will be expressed in Watt-hours (Wh) or kilo Watt-hours (kWh).

3.1.2 power [b-ISO 16818]: Rate at which energy is transmitted.