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Environmental Engineering (EE); Power supply interface at the input of Information and Communication Technology (ICT) equipment; Part 2: -48 V Direct Current (DC)

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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 - APE 7112B
Association à but non lucratif enregistrée à la
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Foreword

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

The present document concerns the requirements for the interface between ICT equipment and its power supply, and includes requirements relating to its stability and measurement. Various other references and detailed measurement and test arrangements are contained in informative annexes.

The present document is part 2 of a multi-part deliverable covering Environmental Engineering (EE); Power supply interface at the input of Information and Communication Technology (ICT) equipment, as identified below:

- Part 1: "Alternating Current (AC)";
- Part 2: "-48 V Direct Current (DC)";
- Part 3: "Up to 400 V Direct Current (DC)".

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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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1 Scope

The present document contains requirements and measurements methods for the physical interface "A" that is situated between the power supply system(s) and the power consuming ICT equipment.

The nominal voltage at power interface "A" of ICT equipment defined in the present document is DC voltage -48 V.

The DC power can be supplied by a DC output power system (e.g. based on AC rectifiers on grid or DC/DC converters on solar system, fuel cell, DC engine or fuel cell generator) and also directly supplied by a battery backup in this DC power system. The purpose of the present document is to be able to use a power supply system with the same characteristics for all ICT equipment defined in the area of application:

- to facilitate inter working of different types of load units;
- to facilitate the standardization of ICT equipment;
- to facilitate the installation, operation and maintenance in the same network of ICT equipment and systems from different origins.

The present document aims at providing electrical compatibility between the power supply equipment and the power consuming ICT equipment, between different system blocks and loads connected to the same power supply feeding the interface "A" (e.g. control/monitoring, cooling system, etc.).

The requirements are defined for:

- the power supply input of any type of ICT equipment installed at telecommunication centres that are connected to interface "A" powered by DC;
- any type of ICT equipment, installed in access networks and customers' premises, the DC interface "A" of which is also used by equipment requiring a DC supply source;
- any type of ICT equipment powered by DC, used in the fixed and mobile networks installed in different locations such as buildings, shelters, street cabinets, outdoor installations.

Disturbances on the power supply interface "A" relating to the continuous wave phenomena below 20 kHz are covered within the present document.

The present document does not cover safety requirements, they are covered by relevant safety standards.

The present document does not cover EMC requirements, they are covered by relevant EMC standards.

NOTE: Annex B gives guidance on -60 VDC supply systems.

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.

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

- [1] [ETSI EN 300 253](#): "Environmental Engineering (EE); Earthing and bonding of ICT equipment powered by -48 VDC in telecom and data centres".

- [2] Void.
- [3] Void.
- [4] Void.
- [5] [EN 61000-4-5](#): "Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test" (produced by CENELEC).
- [6] Void.
- [7] [EN 61000-4-29](#): "Electromagnetic compatibility (EMC) - Part 4-29: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests" (produced by CENELEC).

2.2 Informative references

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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 Q.551: "Transmission characteristics of digital exchanges".
- [i.2] Recommendation ITU-T Q.552: "Transmission characteristics at 2-wire analogue interfaces of digital exchanges".
- [i.3] Recommendation ITU-T Q.553: "Transmission characteristics at 4-wire analogue interfaces of digital exchanges".
- [i.4] Recommendation ITU-T Q.554: "Transmission characteristics at digital interfaces of digital exchanges".
- [i.5] ETSI TR 100 283: "Environmental Engineering (EE); Transient voltages at Interface "A" on telecommunications direct current (dc) power distributions".
- [i.6] US Department of Defence MIL-STD-461E: "Requirements for the control of electromagnetic interference characteristics of subsystems and equipment".
- [i.7] Void.
- [i.8] Recommendation ITU-T O.41: "Psophometer for use on telephone-type circuits".
- [i.9] IEC 60050-601: "International Electrotechnical Vocabulary. Chapter 601: Generation, transmission and distribution of electricity - General" (Area 826 "Electrical installations", section 826-11 "Voltages and currents").
- [i.10] EN 60269-1: "Low-voltage fuses - Part 1: General requirements" (produced by CENELEC).
- [i.11] EN 60934: "Circuit-breakers for equipment (CBE)" (produced by CENELEC).
- [i.12] IEC 60050-351: 2013: "International Electrotechnical Vocabulary. Part 351: Control technology".

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