ATIS-0600004.2017

Equipment Surface Temperature

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American National Standard for Telecommunications

Equipment Surface Temperature

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Abstract

This standard sets forth the test methods and temperature limits for verifying surface temperatures of network telecommunications equipment. High exterior temperatures of exposed surfaces on equipment may cause injury or accidents to personnel working with or around the equipment. The purpose of the standard is to establish guidelines for verification testing and temperature limits with which equipment surfaces must be in conformance. The test methods described in this standard apply to all network communication equipment that may be installed in equipment areas.

Foreword

The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with the American National Standards Institute's (ANSI) requirements for an ANS. As such, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Standard.

The Alliance for Telecommunication Industry Solutions (ATIS) serves the public through improved understanding between providers, customers, and manufacturers. The Sustainability in Telecom: Energy and Protection (STEP) Committee – formerly the Network Interface, Power, and Protection (NIPP) Committee – engages industry expertise to develop standards and technical reports for telecommunications equipment and environments in the areas of energy efficiency, environmental impacts, power and protection. The work products of STEP enable vendors, operators, and their customers to deploy and operate reliable, environmentally sustainable, energy efficient communications technologies. STEP is committed to proactive engagement with national, regional, and international standards development organizations and forums that share its scope of work.

ANSI guidelines specify two categories of requirements: mandatory and recommendation. The mandatory requirements are designated by the word shall and recommendations by the word should. Where both a mandatory requirement and a recommendation are specified for the same criterion, the recommendation represents a goal currently identifiable as having distinct compatibility or performance advantages.

Suggestions for improvement of this document are welcome. They should be sent to the Alliance for Telecommunications Industry Solutions, STEP, 1200 G Street NW, Suite 500, Washington, DC 20005.

At the time it approved this document, STEP, which is responsible for the development of this Standard, had the following leadership:

E. Gallo, STEP Chair (Ericsson)

J. Fuller, STEP Vice Chair (AT&T)

C. Forbes, STEP NPP Chair (NTS)

C. Von Hagel, STEP NPP Vice Chair (Intertek)

The Network Physical Protection (NPP) Subcommittee was responsible for the development of this document.

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1.1 Scope

The surface temperature considerations and criteria in this standard are applicable to equipment intended to be installed in environmentally-controlled Information and Communications Technology (ICT) facilities and to network equipment that is designed for use in unprotected outdoor environments. Examples of environmentally controlled locations are inside of Central Offices, Controlled Environmental Vaults, Data Centers, aboveground Huts, Outside Plant Cabinets, and Pedestals. This standard does not apply to auxiliary monitoring equipment such as oscilloscopes, personal computers, portable test equipment, etc., which are not integral to the equipment.

1.2 Purpose & Application

The purpose of this standard is to provide test methods and define limits for surface temperatures of equipment. Equipment shall not have hot exterior surfaces that would cause injury or accident through deliberate or accidental contact. Limiting surface temperatures or preventing contact will reduce the potential risk of injury to craft personnel or the possibility of damage to equipment that could result in an operational failure.

The equipment surfaces that face aisles or surfaces where normal maintenance functions are anticipated shall be in conformance with temperature limits established in Table 1.1. Passive equipment, wherein no heat is generated, is exempt from testing.

Surfaces protected from normal craft access are not subject to temperature limits described. These protected surfaces are as follows:

1) Equipment side surfaces shielded by cable bundles, cabinet side panels, and/or rack uprights;
2) Top and bottom panels isolated by equipment vertically stacked above/below;
3) Protective shields, backplanes inboard of cables/rear.

The surfaces to which a craftsperson may be exposed are typically equipment parts that are used for normal function of the operation or servicing of the equipment:

1) Equipment surfaces that the hands, arms, or face of the craftsperson may contact.
2) Equipment surfaces that could cause burns or result in unexpected reaction of the craftsperson.

These surfaces shall have lower temperature limits than surfaces with shorter exposure time.

The stated temperature limits do not include the direct exhaust air discharge temperatures of equipment. However, if applicable equipment surface temperatures should become elevated by the heated exhaust airflow, the temperature limits would apply to those surfaces.

1.3 Temperature Limits & Duration of Exposure

Limits apply to equipment installed in indoor environments and outside environments.

Thermal conductivity of materials may be used to evaluate and mitigate the surface temperature exposure risks.

See Annex A for instruction on how to calculate example limits. Definition of contact or exposure times for equipment installed in indoor environments or outside environments protected from weather by an enclosure is established in Table 1.1. Definition of contact or exposure times for equipment installed directly in outside plant environments that are not protected from weather is established in Table 1.2.