ATIS-0600328.2018(R2023)

Protection of Telecommunications Links from Physical Stress and Radiation Effects and Associated Requirements for DC Power Systems (A Baseline Standard)

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Is an American National Standard developed by the ATIS **Sustainability in Telecom: Energy and Protection Committee (STEP)**.

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American National Standard for Telecommunications

Protection of Telecommunications Links from Physical Stress and Radiation Effects and Associated Requirements for DC Power Systems (A Baseline Standard)

Alliance for Telecommunications Industry Solutions

Approved January 2018

American National Standards Institute, Inc.

Abstract

This standard provides baseline measures describing the durability (survivability) of outside plant copper-conductor and optical fiber telecommunications distribution links to various levels of physical stress and radiation effects. The standard applies to optical fiber and metallic links for trunk, feeder, and local distribution. The standard includes information for the design and installation of aerial, buried, and underground plant, and applies to all telecommunications networks including – but not limited to – exchange carriers and interexchange carriers. The standard is intended for new installations, and not necessarily for replacement of existing systems. The standard addresses protection against threats such as wind, temperature, fire, water penetration, and the means to keep the links energized (telecommunications power).

Foreword

The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's 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 Committee (NIPP) – 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 of initiation or issuance of the letter ballot for this document, STEP, which was responsible for its development, 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 Scope

1.1 Telecommunications Facilities Covered

The purpose of this standard is to describe measures that provide a baseline level of protection for the interconnecting links (Figure 17.1) of telecommunications networks against typical geographic and local environmental conditions. The measures are intended to help provide protection from damage caused by specific physical stresses and radiation effects.

The protection measures of this standard apply to the telecommunications links that interconnect environmentally-controlled centers of telecommunications networks including feeder and local distribution plant. The links are optical fiber, metallic-conductor, or coaxial cables of trunk, feeder, and local distribution plant. They include connections and repeater points that are on towers, antennas, poles, or in manholes and pedestals, and that are not necessarily environmentally controlled. The terminations of the links in environmentally controlled structures and their power sources are included, but the structures themselves and their contents are excluded.

The standard addresses protection against such physical threats as vibration, water penetration, temperature, fire, lightning, wind, ice, construction stresses, corrosion, loss of telecommunications power systems, and radiation effects. The radiation effects encompass electromagnetic interference from transmitting antennas, solar activity, and limited nuclear disaster (e.g., nuclear power plant failure).

1.2 Application of Protection Measures

The protection measures described in this standard are intended to be applied for installation of new telecommunications facilities, but not necessarily for repair of existing installations. The measures include information for the design and construction of aerial, buried, and underground telecommunications plant and apply to all providers of telecommunications networks, including but not limited to exchange carriers and interexchange carriers (see Figure 17.1).

Not every telecommunications link requires the same degree of protection from the various physical stresses. This baseline standard shall be coordinated with local codes, which may dictate more stringent requirements. This baseline standard is intended to establish foundation-level protection from damage due to physical stress and radiation under typical geographic and local environmental conditions.

1.3 Items Not Covered

Central office and similar-type environmentally controlled structures that contain telecommunications centers are not included in this standard. Customer detailed site-specific measures are beyond the scope of this standard and are subject to negotiation between user and supplier. The measures described in this standard apply at the facility level and do not provide techniques for the protection of specific network equipment or components.

These measures do not apply to telecommunications links serving specialized locations, such as the high-voltage environment that may be encountered at power-generating stations and substations.