IEC 61300-2-44

Edition 4.0 2024-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Fibre optic interconnecting devices and passive components – Basic test and measurement procedures –
Part 2-44: Tests – Flexing of the strain relief of fibre optic devices and components

Dispositifs d'interconnexion et composants passifs fibroniques – Procédures fondamentales d'essais et de mesures –
Partie 2-44: Essais – Flexion du serre-câble des dispositifs et composants fibroniques

IEC 61300-2-44:2024-02(en-fr)

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IEC 61300-2-44 has been prepared by subcommittee SC86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2013. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) replaced active monitoring with transient loss for measurements during test;

b) harmonized recommended severities according to IEC 61753-1.

The text of this International Standard is based on the following documents:

Draft	Report on voting
86B/4847/FDIS	86B/4870/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts of IEC 61300 series, published under the general title *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – BASIC TEST AND MEASUREMENT PROCEDURES –

Part 2-44: Tests – Flexing of the strain relief of fibre optic devices and components

1 Scope

This part of IEC 61300 specifies a test to determine the influence of flexing under tensile load of the strain relief of fibre optic interconnecting devices or components. The intention is to simulate the number of flexing cycles which would typically be experienced during service life. This test is applied to both single fibre cable and multiple fibre cable.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61300-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 1: General and guidance*

IEC 61300-3-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-1: Examinations and measurements – Visual examination*

IEC 61300-3-28, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-28: Examinations and measurements – Transient loss*

IEC 61753 (all parts), *Fibre optic interconnecting devices and passive components – Performance standard*

IEC 62005 (all parts), *Fibre optic interconnecting devices and passive components – Reliability*

3 Terms, definitions, and abbreviated terms

3.1 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

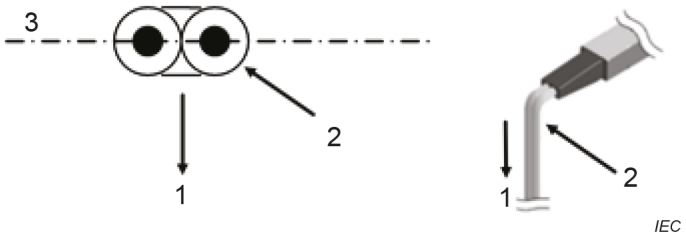
- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.2 Abbreviated terms

DUT device under test

4 General description

During the test, the DUT is rotated ±90° in the plane of the cable about an axis perpendicular to the axis of the attached cable. In the case of non-circular cable (ribbon, duplex, etc.), the loads shall not be doubled and the rotation is parallel to the width of the minor axis of the cable as shown in Figure 1. This causes flexing of the strain relief and cable close to the DUT. During the flexing, a tensile force, but no torque, is applied.



Key

1 tensile load

2 duplex cordage

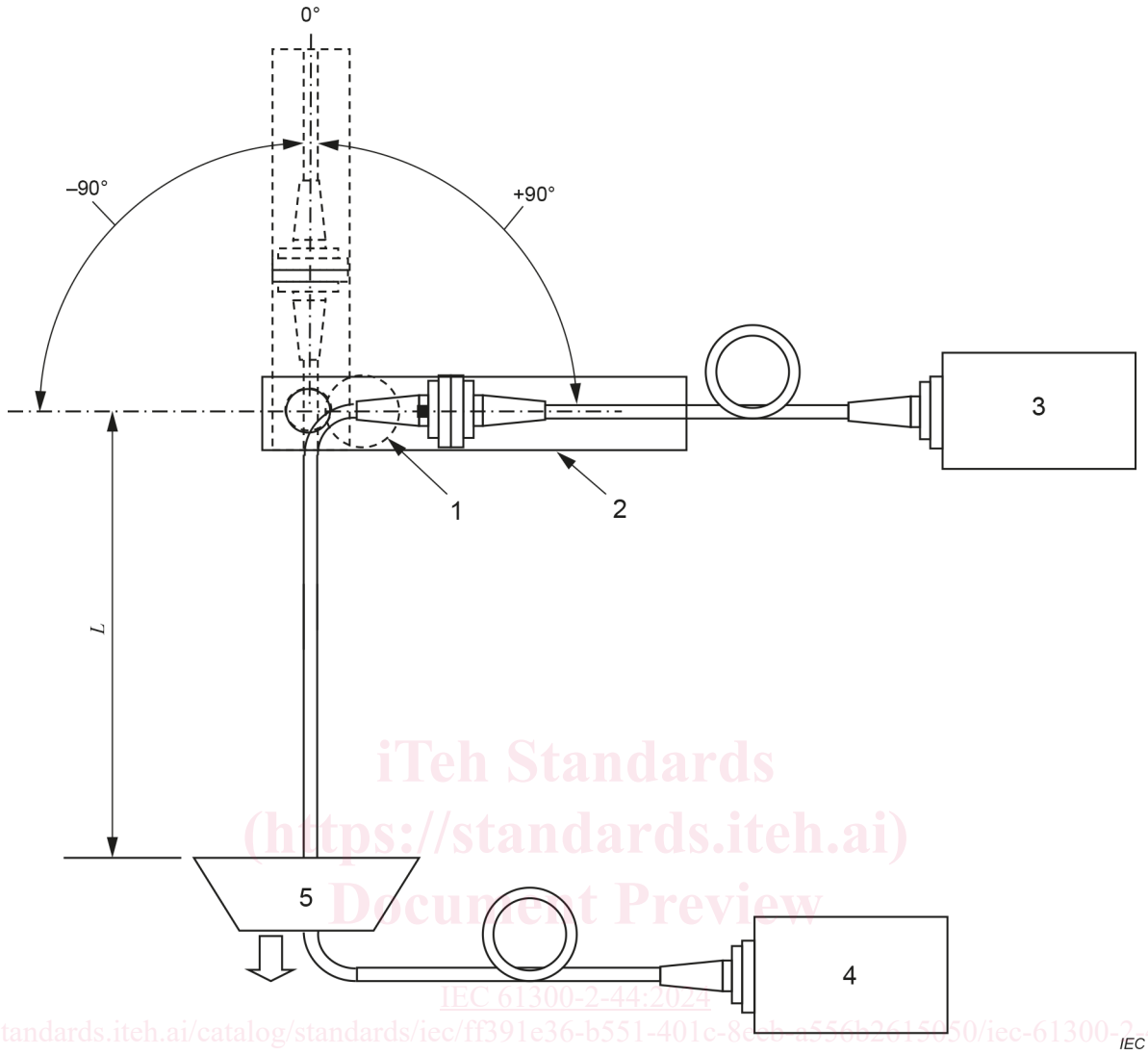
3 rotation axis of the mounting fixture in the apparatus

Figure 1 – Application of the load in the case of non-circular cable, example of duplex cordage

5 Apparatus

5.1 General

The apparatus for testing and the flexing patterns involved are presented in Figure 2.



Key

1 DUT

2 mounting fixture

3 optical source

4 detector

5 tensile load

L length from the point of flexing to the point of application of the tensile load

NOTE 1 Optical source and detector can be exchanged.

NOTE 2 The rotational orientation of the connector is shown with its key (black rectangle) toward the viewer and perpendicular to the direction of the load.

Figure 2 – Apparatus for testing

5.2 Optical source

The source shall be in accordance with IEC 61300-3-28.

5.3 Detector

The detector shall be in accordance with IEC 61300-3-28.

5.4 Mounting fixture

The mounting fixture rigidly holds the DUT in correct alignment during the test. If the device is a fibre optic connector, an adaptor or a receptacle may be used as a mounting fixture. The fixture shall not distort the DUT. The fixture shall allow the DUT to be connected to monitoring equipment. The fixture shall be capable of rotating the DUT ±90° either manually or by using a machine.

5.5 Tensile load

Tensile load to be applied on the DUT is specified in the relevant IEC 61753 series performance standard or IEC 62005 series reliability document. Required tensile load may be created by weights or another suitable mechanism. Values of recommended loads are given in Table 1.

6 Procedure

6.1 Preparation of DUT

Prepare and clean the DUT in accordance with the manufacturer's instructions.

Visually check that the attachment of the cable to the fibre optic device is not damaged in accordance with IEC 61300-3-1.

6.2 Preconditioning

Pre-condition the DUT and all equipment for at least 2 h at the standard atmospheric conditions as defined in IEC 61300-1.

6.3 Mounting the DUT

Mount the DUT on the apparatus. If the DUT is a fibre optic connector, the rotational orientation of the connector around the longitudinal axis (position of the key) in the fixture shall be reported. In the case of non-symmetrical connectors with circular cables, the DUT shall be tested in both rotational orientations.

6.4 Measuring of initial optical properties

The flexing arm shall be put in a vertical position.

Measure the optical properties specified in the relevant IEC 61753 series performance standard or IEC 62005 series reliability document.

The initial loss shall be recorded and used as a reference for the evaluation of transient loss during and after test.

6.5 Conditioning

Apply the specified tensile load and apply the specified number of flexing cycles (see Clause 7).

The cable length from the point of flexing to the point of application of the weight shall be 25 cm ± 5 cm (see "L" in Figure 2).

A flexing cycle contains a movement from position 0° to +90°, a movement from position +90° to 0°, a movement from position 0° to −90° and a movement from position −90° to 0°.

Measure the transient loss during test in accordance with IEC 61300-3-28.

Stop the flexing with the flexing arm in vertical position. Remove the tensile load.