INTERNATIONAL STANDARD

NORME INTERNATIONALE

IEC
CEI
61300-2-50

First edition
Première édition
2007-06

Fibre optic interconnecting devices and passive components – Basic test and measurement procedures –

Part 2-50: Tests – Fibre optic connector proof test with static load – Singlemode and multimode

Dispositifs d'interconnexion et composants passifs à fibres optiques – Méthodes fondamentales d'essais et de mesures –

Partie 2-50: Essais – Essai de résistance des connecteurs à fibres optiques sous charge statique – Unimodal et multimodal

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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International Standard IEC 61300-2-50 has been prepared by subcommittee 86b Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

The text of this standard is based on the following documents:

FDIS	Report on voting
86B/2509/FDIS	86B/2543/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the 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 publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

The contents of the corrigendum of January 2015 have been included in this copy.

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NOTICE

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

Part 2-50: Tests – Fibre optic connector proof test with static load – Singlemode and multimode

1 Scope

This part of IEC 61300 describes a test to quantitatively assess the capability of connector terminated patchcord cable assemblies to withstand static loads without uncoupling of the connector, physical damage to the assembly or permanent degradation of optical performance. This test is intended to apply to terminated reinforced jacketed cable of any diameter, both singlemode and multimode.

2 Normative references

The following referenced documents are indispensable for the application 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, *Fiber optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-1: Examinations and measurements – Visual examination*

IEC 61300-3-4, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-4: Examinations and measurements – Attenuation*

IEC 61300-3-6, *Fiber optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-6: Examinations and measurements – Return Loss*

3 General description

Static loads are applied to the cable of a patchcord assembly at 0° (straight pull) and at 90° (side pull) to the connector axis and held for a fixed time, while the mated connector assembly is held fixed by the adapter. The sample is examined and measured for attenuation and return loss before and after each load is applied.

4 Apparatus

The apparatus for this test is shown in Figure 1.

The patchcord tension is applied with weights through a capstan. The patchcord is flexed at the point of entrance to the connector plug by rotating the test arm. The position of the connector assembly along the test arm should be adjusted so that, when the arm is at 90°, the centerline along which the cable hangs passes through the test point. The fixture is to be designed to allow the capstan to be rotated about the axis of the section of cable under tension.

The bracket on which the adapter is mounted is to have provision for mounting the adapter at angles of 0° and 90° to the axis of the connector.

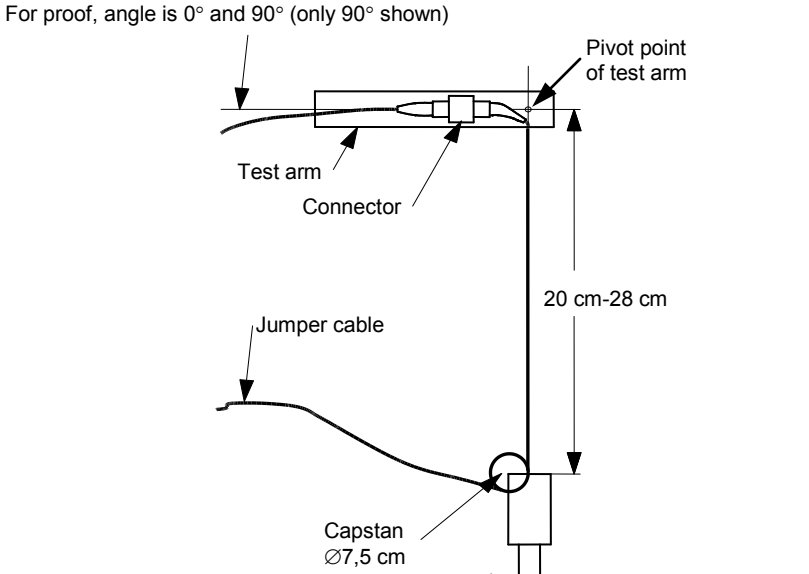

Figure 1 – Proof test apparatus

In the case of duplex cordage, the loads shall not be doubled and the cordage shall be bent in the minor axis direction as shown in Figure 2.

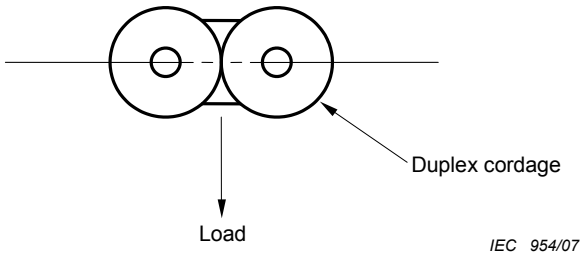

Figure 2 – Application of the load in the case of duplex cordage

5 Procedure

5.1 General

The following procedure shall be used in this test. The loads to be applied are those designated in the relevant specification at a rate of 5 N/s for reinforced cables. If these are not specified the following preferred loads may be used: For small form factor connectors the preferred load at 90° is 2/3 of the specified values.

Straight pull, 0°: 44,5 N

Side pull, 90°: 22,6 N

All optical measurements shall be made for singlemode at 1 310 nm and 1 550 nm wavelengths and multimode at 850 nm and 1 300 nm wavelengths. Optional: singlemode at 1 625 nm, or as specified for the appropriate technology (for example, multimode at 650 nm).

5.2 Preparation of specimen

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

5.3 Preconditioning

Pre-condition the specimen for 2 h at the standard test conditions as defined in IEC 61300-1, unless otherwise specified in the relevant specification.

5.4 Initial measurements

Complete initial examinations and measurements on the specimen as required by the relevant specification.

5.5 Test method

5.5.1 Mount the specimen in the apparatus shown in Figure 1.

5.5.2 Measure attenuation and return loss as described in IEC 61300-3-4 and IEC 61300-3-6 respectively.

5.5.3 Straight pull, 0°

5.5.3.1 Apply the load specified in the relevant specification for a minimum of 5 s. Record whether or not the connector uncouples. Record whether or not the cable assembly sustains damage and, if so, record a description of the damage.

5.5.3.2 Remove the load and wait a minimum of 10 s.

5.5.3.3 Measure attenuation and return loss.

5.5.4 Side pull, 90°

5.5.4.1 Apply the load specified in the relevant specification for a minimum of 5 s. Record whether or not the connector uncouples. Record whether or not the cable assembly sustains damage and, if so, record a description of the damage in accordance with 61300-3-1.

5.5.4.2 Remove the load and wait a minimum of 20 s.

5.5.4.3 Measure attenuation and return loss as described in IEC 61300-3-4 and IEC 61300-3-6 respectively.

5.6 Recovery

Allow the specimen to remain under standard test conditions for 2 h, as defined in IEC 61300-1, unless otherwise specified in the relevant specification. Clean the specimen in accordance with the manufacturer's instructions.

5.7 Final measurements

On completion of the test, remove all fixtures and make final measurements, as defined by the relevant specification, to ensure that there is no permanent damage to the specimen.

6 Details to be specified

The following details, as applicable, shall be specified in the relevant specification:

– initial examinations, measurements and performance requirements;
– final examinations, measurements and performance requirements;
– if the connector uncoupled under load;
– load applied at 0° and 90°;
– singlemode wavelengths 1 310 nm and 1 550 nm, optional 1 625 nm or as specified;
– multimode wavelength 850 nm and 1 300 nm, or as specified;
– deviation from test procedures.