SLOVENSKI STANDARD
SIST EN 61300-3-6:1997/A1:1999

01-maj-1999

Amendment on low coherence reflectometry for measuring reflection from optical devices (IEC 61300-3-6:1997/A1:1998)

Fibre optic interconnecting devices and passive components - Basic test and measurement procedures -- Part 3-6: Examinations and measurements - Return loss

Lichtwellenleiter - Verbindungselemente und passive Bauteile - Grundlegende Prüf- und Meßverfahren -- Teil 3-6: Untersuchungen und Messungen - Rückflußdämpfung

Dispositifs d'interconnexion et composants passifs à fibres optiques - Méthodes fondamentales d'essais et de mesures -- Partie 3-6: Examens et mesures - Puissance réfléchie

Ta slovenski standard je istoveten z: **EN 61300-3-6:1997/A1:1998**

ICS:

33.180.20	Povezovalne naprave za optiļ na vlakna	Fibre optic interconnecting devices

SIST EN 61300-3-6:1997/A1:1999 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61300-3-6/A1

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Descriptors: Interconnecting devices, optical fibres, return loss

English version

Fibre optic interconnecting devices and passive components Basic test and measurement procedures Part 3-6: Examinations and measurements - Return loss (IEC 61300-3-6:1997/A1:1998)

Dispositifs d'interconnexion et composants passifs à fibres optiques Méthodes fondamentales d'essais et de mesures Partie 3-6: Examens et mesures Puissance réfléchie (CEI 61300-3-6:1997/A1:1998)

Lichtwellenleiter-Verbindungselemente und passive Bauteile - Grundlegende Prüf- und Meßverfahren Teil 3-6: Untersuchungen und Messungen - Rückflußdämpfung (IEC 61300-3-6:1997/A1:1998)

This amendment A1 modifies the European Standard EN 61300-3-6:1997; it was approved by CENELEC on 1998-04-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 86B/1044/FDIS, future amendment 1 to IEC 61300-3-6:1997, prepared by SC 86B, Fibre optic interconnecting devices and passive components, of IEC TC 86, Fibre optics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 61300-3-6:1997 on 1998-04-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1999-01-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2001-01-01

Endorsement notice

The text of amendment 1:1998 to the International Standard IEC 61300-3-6:1997 was approved by CENELEC as an amendment to the European Standard without any modification.

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
61300-3-6

1997

AMENDEMENT 1
AMENDMENT 1

1998-02

Amendement 1

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

Partie 3-6: Examens et mesures – Puissance réfléchie

Amendment 1

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

Part 3-6: Examinations and measurements – Return loss

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FOREWORD

This amendment 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/1044/FDIS	86B/1077/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.

Page 3

CONTENTS

Add, under clause 3, the title of the following subclause:

3.4 Measurements with optical low coherence reflectometry (OLCR)

Add, under clause 4, the title of the following subclause:

4.3 Measurements of return loss with OLCR

Add, under clause 5, the title of the following subclause:

5.3 Return loss measurement with OLCR

Page 7

1 General

1.1 Scope and object

Add the following new paragraph:

The purpose of this procedure is to measure reflection profiles of single-mode optical devices with a micrometer spatial resolution and a high dynamic range by using optical low coherence interference.

2 General description

Add the following new paragraph:

This additional procedure describes the measurement of reflection profiles of single-mode optical devices with a spatial resolution of less than 1 mm and a dynamic range greater than 90 dB. The reflection profile is defined as a distribution of reflections at individual endfaces and/or connected points in single-mode optical devices. When the reflection at a particular point is $-R$ (dB), the return loss at this point is given by R (dB). This procedure measures the reflection at a point by detecting the power of a beat signal produced by optical interference between the reflected light and the reference light. When a component with dispersed reflections is analyzed, each reflection can be identified and located, provided their separation is greater than the spatial resolution of the measurement system. This method is called optical low coherence reflectometry (OLCR).

3 Apparatus and symbols

Add, on page 11, the following new text:

3.4 Measurements with optical low coherence reflectometry (OLCR)

The apparatus consists of:

3.4.1 Light source S

The source is a broadband CW light source with a fibre output port.

3.4.2 Branching device BD

The BD splits light power from the input port to the signal and reference ports and couples light power from those ports into output port.

3.4.3 Optical delay line ODL

The ODL changes the time delay of the reference light linearly.

A conventional ODL is composed of a collimator "L" to make the light beam parallel and a reflector "R" mounted on a translation stage.

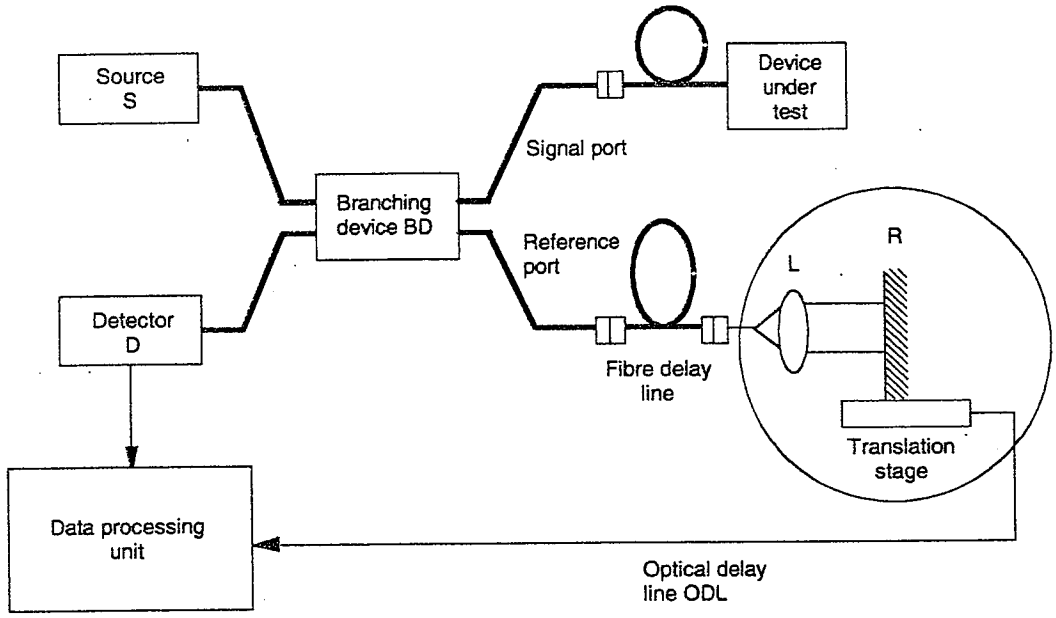

Figure 7 – Example of a low coherence reflectometer

3.4.4 Optical detector D

The detector shall be connected to an output end of the branching device.

A detector shall be used, which has sufficient dynamic range. The photocurrent of the detector is fed into the data processing unit.

3.4.5 Interface

The interface connects the measurement system to the device under test DUT.

3.4.6 Data processing unit

The data processing unit collects and processes data from D and controls the optical delay of the reference light.

The description of the apparatus shown in figure 7 indicates only the principle of the method.

NOTE – A practical measuring system needs to use various modifications, for example to make a measurement independently of the state of polarization of the returning signal.

Page 13

4 Procedure

Add, on page 23, the following new text:

4.3 Measurement of return loss with OLCR

4.3.1 A reflector whose return loss value R_0 is known is connected via a length of single-mode fibre to the signal port. A typical value of R_0 is 0 dB due to total reflection, or 15 dB at an endface of the fibre.

4.3.2 Another single-mode fibre, whose length is approximately equal to the standard single-mode fibre, is connected (fibre delay line) to a reference port.

4.3.3 Optical delay is changed linearly. In the case of a conventional ODL, the reflector is translated at a constant speed.

4.3.4 The detection frequency of the output of D is adjusted to the frequency of the beat signal produced during mirror translation.

4.3.5 The output from D is sampled and stored in the data processing unit as a function of the optical delay which is obtained from the position of the reflector in the case of conventional ODL. The peak value of the data is calculated as $-G_0$ (dB) by the processing unit.

4.3.6 The DUT is connected to the signal port in place of the known reflector. If necessary, the single-mode fibre connected to the reference port is changed to be approximately equal to the pigtail length of the DUT.

4.3.7 The same procedure from 4.3.3 to 4.3.5 is carried out again. After completing this procedure, the signal peak for a desired point in the DUT is measured to be $-G$ (dB).

4.3.8 The return loss of the DUT is calculated by using these values as follows:

$$R = R_0 + (G - G_0) \qquad (14)$$

Page 23

5 Details to be specified

Add, on page 25, the following new text:

5.3 Return loss measurement with OLCR

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

- spectral width and output power from the light source;
- excess loss and wavelength dependence of the power splitting ratio of the branching device BD;