

# **SLOVENSKI STANDARD**

## **SIST EN 61280-4-4:2017**

**01-oktober-2017**

**Nadomešča:**

**SIST EN 61280-4-4:2006**

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**Postopki preskušanja optičnega komunikacijskega podsistema - 4-4. del: Kabelske oblike in povezave - Meritve polarizacijske razpršitve v vgrajenih povezavah (IEC 61280-4-4:2017)**

Fibre optic communication subsystem test procedures - Part 4-4: Cable plants and links - Polarization mode dispersion measurement for installed links (IEC 61280-4-4:2017)

**iTeh STANDARD PREVIEW**

Prüfverfahren für Lichtwellenleiter-Kommunikationsuntersysteme - Teil 4-4: Kabelnetze und Übertragungsstrecken - Messung der Polarisationsmodendispersion von installierten Übertragungsstrecken (IEC 61280-4-4:2017)

[SIST EN 61280-4-4:2017](https://standards.iteh.ai/catalog/standards/sist/4712b3f5-bf8e-4dca-a97b-210115e99c07/sist-en-61280-4-4-2017)

[https://standards.iteh.ai/catalog/standards/sist/4712b3f5-bf8e-4dca-a97b-](https://standards.iteh.ai/catalog/standards/sist/4712b3f5-bf8e-4dca-a97b-210115e99c07/sist-en-61280-4-4-2017)

Procédures d'essai des sous-systèmes de télécommunication à fibres optiques - Partie 4-4: Installation de câbles et liens - Mesure de la dispersion de mode polarisation pour les liaisons installées (IEC 61280-4-4:2017)

**Ta slovenski standard je istoveten z: EN 61280-4-4:2017**

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**ICS:**

|           |                                       |                                |
|-----------|---------------------------------------|--------------------------------|
| 33.180.01 | Sistemi z optičnimi vlakni na splošno | Fibre optic systems in general |
|-----------|---------------------------------------|--------------------------------|

**SIST EN 61280-4-4:2017**

**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

# EN 61280-4-4

August 2017

ICS 33.180.01

Supersedes EN 61280-4-4:2006

English Version

## Fibre optic communication subsystem test procedures - Part 4-4: Cable plants and links - Polarization mode dispersion measurement for installed links (IEC 61280-4-4:2017)

Procédures d'essai des sous-systèmes de  
télécommunication à fibres optiques - Partie 4-4: Installation  
de câbles et liens - Mesure de la dispersion de mode  
polarisation pour les liaisons installées  
(IEC 61280-4-4:2017)

Prüfverfahren für Lichtwellenleiter-  
Kommunikationsuntersysteme - Teil 4-4: Kabelnetze und  
Übertragungsstrecken - Messung der  
Polarisationsmodendispersion von installierten  
Übertragungsstrecken  
(IEC 61280-4-4:2017)

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

**EN 61280-4-4:2017****European foreword**

The text of document 86C/1378/CDV, future edition 2 of IEC 61280-4-4, prepared by SC 86C "Fibre optic systems and active devices" of IEC/TC 86 "Fibre optics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61280-4-4:2017.

The following dates are fixed:

- latest date by which the document has to be (dop) 2018-02-18  
implemented at national level by  
publication of an identical national  
standard or by endorsement
- latest date by which the national (dow) 2020-08-18  
standards conflicting with the  
document have to be withdrawn

This document supersedes EN 61280-4-4:2006.

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

EN 61280-4-4:2017 includes the following significant technical changes with respect to EN 61280-4-4:2006:

- a) theory is removed and replaced with a reference to IEC/TR 61282-9;
- b) a new method, wavelength scanning OTDR and SOP analysis (WSOSA), is added as Annex G;
- c) a brief description of each method is added to Clause 5;
- d) Methods E and F are converted to informative Annexes E and F;
- e) a new Clause (6) on measurement configurations is added;
- f) a new Clause (7) on measurement considerations is added;
- g) Clause 10 on procedure is expanded;
- h) several of the apparatus diagrams are improved;
- i) several clarifications about what is measured and what is calculated have been made in Annex H.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

**Endorsement notice**

The text of the International Standard IEC 61280-4-4:2017 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

|                     |      |  |
|---------------------|------|--|
| IEC 60793-1-48:2003 | NOTE | Harmonized as EN 60793-1-48:2003 <sup>1)</sup> (not modified). |
| IEC 60793-1-48:2007 | NOTE | Harmonized as EN 60793-1-48:2007 (not modified).               |
| IEC 60793-2-50      | NOTE | Harmonized as EN 60793-2-50.                                   |
| IEC 61280-4-4:2006  | NOTE | Harmonized as EN 61280-4-4:2006 (not modified).                |
| IEC 61290-11-1      | NOTE | Harmonized as EN 61290-11-1.                                   |
| IEC 61290-11-2      | NOTE | Harmonized as EN 61290-11-2.                                   |
| IEC 61300-3-32      | NOTE | Harmonized as EN 61300-3-32.                                   |

<sup>1)</sup> Superseded by EN 60793-1-48:2007 (IEC 60793-1-48:2007).

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu)

| <u>Publication</u> | <u>Year</u> | <u>Title</u>  | <u>EN/HD</u>  | <u>Year</u> |
|--------------------|-------------|---|---------------|-------------|
| IEC 60793-1-44     | -           | Optical fibres -<br>Part 1-44: Measurement methods and test<br>procedures - Cut-off wavelength  | EN 60793-1-44 | -           |
| IEC 61300-3-35     | -           | Fibre optic interconnecting devices and<br>passive components - Basic test and<br>measurement procedures -<br>Part 3-35: Examinations and<br>measurements - Visual inspection of fibre<br>optic connectors and fibre-stub<br>transceivers | EN 61300-3-35 | -           |
| IEC/TR 61282-9     | -           | Fibre optic communication system design -<br>guides -<br>Part 9: Guidance on polarization mode<br>dispersion measurements and theory  | -             | -           |
| IEC/TR 62627-01    | -           | Fibre optic interconnecting devices and<br>passive components -<br>Part 01: Fibre optic connector cleaning<br>methods   | -             | -           |

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IEC 61280-4-4

Edition 2.0 2017-03

# INTERNATIONAL STANDARD



**Fibre optic communication subsystem test procedures –  
Part 4-4: Cable plants and links – Polarization mode dispersion measurement  
for installed links**

SIST EN 61280-4-4:2017

<https://standards.iteh.ai/catalog/standards/sist/4712b3f5-bf8e-4dca-a97b-2b9115e99cf2/sist-en-61280-4-4-2017>

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## FIBRE OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –

### Part 4-4: Cable plants and links – Polarization mode dispersion measurement for installed links

#### FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 61280-4-4 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition published in 2006. This second edition constitutes a technical revision.

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

- a) theory is removed and replaced with a reference to IEC TR 61282-9;
- b) a new method, wavelength scanning OTDR and SOP analysis (WSOSA), is added as Annex G;
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- g) Clause 10 on procedure is expanded;
- h) several of the apparatus diagrams are improved;
- i) several clarifications about what is measured and what is calculated have been made in Annex H.

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

| CDV          | Report on voting |
|--------------|------------------|
| 86C/1378/CDV | 86C/1419/RVC     |

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

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

A list of all parts in the IEC 61280 series, published under the general title *Fibre optic communication subsystem test 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 "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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

A bilingual version of this publication may be issued at a later date.

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## INTRODUCTION

Polarization mode dispersion (PMD) is a statistical parameter. The reproducibility of measurements depends on the particular method, but is limited also by the PMD level of the link and the accessible wavelength range. Gisin [1]<sup>1</sup> derived a theoretical limit to this reproducibility independent of the measurement method by assuming ideal measurement conditions.

Originally, the principles of IEC 61280-4-4:2006 were closely aligned with those of IEC 60793-1-48:2003 on optical fibre and optical fibre cable test method, which focuses on aspects related to the measurement of factory lengths. However, IEC 60793-1-48:2007 removed some of the test methods that are no longer of interest to fibre and cable manufacturers. These have been retained as informative Annexes D, E, and F in this document, and a new test method G has been added.

This document also updates test methods A, B and C and adds more information applicable to testing of installed cabling.

NOTE 1 Test methods for factory lengths of optical fibres and optical fibre cables are given in IEC 60793-1-48.

NOTE 2 Test methods for optical amplifiers (OAs) are given in IEC 61290-11-1 and IEC 61290-11-2.

NOTE 3 Test methods for passive optical components are given in IEC 61300-3-32.

NOTE 4 Guidelines for the calculation of PMD for links that include components such as dispersion compensators or optical amplifiers are given in IEC TR 61282-3.

NOTE 5 Further general guidance on PMD measurements and background theory is contained in IEC TR 61282-9.

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<sup>1</sup> Figures in square brackets refer to the Bibliography.