SVENSK STANDARD SS-EN 61280-4-4

Fastställd	Utgåva	Sida	Ansvarig kommitté
2007-11-19	1	1 (1+67)	SEK TK 86

Delsystem för fiberoptisk kommunikation – Grundläggande provningsmetoder – Del 4-4: Installationer med optokablar – Mätning av polarisationsmoddispersion i installerade länkar

Fibre optic communication subsystem basic test procedures – Part 4-4: Fibre optic cable plant and links – Polarization mode dispersion measurement for installed links

Som svensk standard gäller europastandarden EN 61280-4-4:2006. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61280-4-4:2006.

Nationellt förord

Europastandarden EN 61280-4-4:2006[*)]

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC

– **IEC 61280-4-4, First edition, 2006 - Fibre optic communication subsystem basic test procedures - Part 4-4: Fibre optic cable plant and links - Polarization mode dispersion measurement for installed links**

utarbetad inom International Electrotechnical Commission, IEC.

[*)] EN 61280-4-4:2006 ikraftsattes 2007-11-19 som SS-EN 61280-4-4 genom offentliggörande, d v s utan utgivning av något svenskt dokument.

ICS 33.180.01

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61280-4-4

April 2006

ICS 33.180.01

English version

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

(IEC 61280-4-4:2006)

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 (CEI 61280-4-4:2006)

Prüfverfahren für Lichtwellenleiter-Kommunikationsuntersysteme Teil 4-4: Kabelnetze und Übertragungsstrecken - Messung der Polarisationsmodendispersion von installierten Übertragungsstrecken (IEC 61280-4-4:2006)

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

Ref. No. EN 61280-4-4:2006 E

SEK Svensk Elstandard

Foreword

The text of document 86C/683/FDIS, future edition 1 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 was approved by CENELEC as EN 61280-4-4 on 2006-02-01.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2006-12-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2009-02-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61280-4-4:2006 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	NOTE	Harmonized as EN 60793-1-48:2003 (not modified).
IEC 61290-11-1	NOTE	Harmonized as EN 61290-11-1:2003 (not modified).
IEC 61290-11-2	NOTE	Harmonized as EN 61290-11-2:2005 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60793-1-44	- [1)]	Optical fibres Part 1-44: Measurement methods and test procedures - Cut-off wavelength	EN 60793-1-44	2002 [2)]

[1)] Undated reference.
[2)] Valid edition at date of issue.

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FIBRE OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –

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

1 Scope

This part of IEC 61280 provides uniform methods of measuring polarization mode dispersion (PMD) of single-mode installed links. An installed link is the optical path between transmitter and receiver, or a portion of that optical path. These measurements may be used to assess the suitability of a given link for high bit rate applications or to provide insight on the relationships of various related transmission attributes. The principles of this document are aligned with those of the optical fibre and optical fibre cable test method, IEC 60793-1-48 (see Bibliography), which focuses on aspects related to the measurement of factory lengths. Instead, this document focuses on the measurement methods and requirements for measuring long lengths that might be installed – and that might also include other optical elements, such as amplifiers, DWDM components, multiplexers, etc.

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. Gisin [3][5)] derived a theoretical limit to this reproducibility, by assuming an infinite range of measured wavelengths and ideal measurement conditions.

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 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 61282-3.

With the exception of Method D, all methods in this document may be used to measure the PMD in the gain band of links that include pumped optical amplifiers. For these links, amplified spontaneous emission (ASE) noise can generate depolarized spectral energy in the neighbourhood of the measurement wavelength. This will, in general, reduce the accuracy of the measurement. For Methods A, B, C, E and F, this effect can be moderated by implementing an optical or electrical filter at the receive end. However, optical filtering will not remove the ASE right under the signal spectrum. The accuracy will then be limited by a lower degree of polarization (DOP), if the spectral width of the filter cannot be sufficiently reduced as with a broadband source. Lower DOP may require the signal to be integrated longer to be meaningful or the result will become too noisy and interpretation will be erroneous.

None of the methods is suitable for measuring the PMD of links with polarization dependent loss (PDL) in excess of 10 dB. Links with PDL values less than 1 dB can be measured with reasonable accuracy. Measurement accuracy may be compromised by the presence of PDL in excess of 1 dB.

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5) Figures in square brackets refer to the bibliography.

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 60793-1-44: *Optical fibres – Part 1-44: Measurement methods and test procedures – Cut-off wavelength*