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Fibre-optic communication subsystem test procedures - Part 4-2: Installed cabling plant - Single-mode attenuation and optical return loss measurements

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 08/24

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Procédures d'essai des sous-systèmes de télécommunication fibroniques - Partie 4-2: Installations câblées - Mesures de l'affaiblissement de réflexion optique et de l'affaiblissement des fibres unimodales (IEC 61280-4-2:2024)

Prüfverfahren für Lichtwellenleiter-Kommunikationsuntersysteme - Teil 4-2: Installierte Kabelanlagen - Einmoden-Dämpfungs- und optische Rückflussdämpfungsmessung (IEC 61280-4-2:2024)

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 86C/1912/FDIS, future edition 3 of IEC 61280-4-2, 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 IEC 61280-4-2:2024.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2025-03-10
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2027-06-10

This document supersedes EN 61280-4-2:2014 and all of its amendments and corrigenda (if any).

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Endorsement notice

The text of the International Standard IEC 61280-4-2:2024 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 standard indicated:

IEC 60793-1-40	NOTE	Approved as EN IEC 60793-1-40
IEC 60793-2	NOTE	Approved as EN IEC 60793-2
IEC 60793-2-50	NOTE	Approved as EN IEC 60793-2-50
IEC 61280-1-3	NOTE	Approved as EN IEC 61280-1-3
IEC 61280-4-3:2022	NOTE	Approved as EN IEC 61280-4-3:2022 (not modified)
IEC 61280-4-5	NOTE	Approved as EN IEC 61280-4-5
IEC 61300-3-4	NOTE	Approved as EN IEC 61300-3-4
IEC 61300-3-6	NOTE	Approved as EN 61300-3-6
IEC 61745	NOTE	Approved as EN 61745
IEC 61753-1	NOTE	Approved as EN IEC 61753-1
IEC 61754-19	NOTE	Approved as EN 61754-19
IEC 61755-1	NOTE	Approved as EN IEC 61755-1
IEC 61755-2-1	NOTE	Approved as EN IEC 61755-2-1
IEC 61755-2-2	NOTE	Approved as EN IEC 61755-2-2
IEC 61755-2-4	NOTE	Approved as EN 61755-2-4
IEC 61755-2-5	NOTE	Approved as EN 61755-2-5

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where 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.cencenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60825-2	-	Safety of laser products - Part 2: Safety of optical fibre communication systems (OFCSs)	-	-
IEC 61300-3-35	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-35: Examinations and measurements - Visual inspection of fibre optic connectors and fibre-stub transceivers	EN IEC 61300-3-35	-
IEC 61315	-	Calibration of fibre-optic power meters	EN IEC 61315	-
IEC 61746-1	2009	Calibration of optical time-domain reflectometers (OTDR) - Part 1: OTDR for single mode fibres	EN 61746-1	2011
-	-		+ AC	2014
IEC/TR 62627-01	-	Fibre optic interconnecting devices and passive components - Part 01: Fibre optic connector cleaning methods	-	-

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INTERNATIONAL STANDARD

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Fibre- optic communication subsystem test procedures – Part 4-2: Installed cabling plant – Single-mode attenuation and optical return loss measurements

Procédures d'essai des sous-systèmes de télécommunication fibroniques – Partie 4-2: Installations câblées – Mesures de l'affaiblissement de réflexion optique et de l'affaiblissement des fibres unimodales

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FIBRE-OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –

Part 4-2: Installed cabling plant – Single-mode attenuation and optical return loss measurements

FOREWORD

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IEC 61280-4-2 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics. It is an International Standard.

This third edition cancels and replaces the second edition published in 2014. This edition constitutes a technical revision.

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

a) addition of the equipment cord method;
b) addition of test limit adjustment related to test cord grades;
c) refinements on measurement uncertainties.

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

Draft	Report on voting
86C/1912/FDIS	86C/1916/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/publications.

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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This document is part of a series of IEC standards for measurements of installed fibre optic cabling plants. This document is applicable for the measurement of installed single-mode fibres.

Cabling design standards such as ISO/IEC 11801-1 provide general requirements for this type of cabling. These standards support cabling lengths of up to 2 km for commercial premises and data centres and up to 10 km for industrial premises. ISO/IEC 14763-3, which supports ISO/IEC 11801-1, normatively references IEC 61280-4-2.

Various recommendations from ITU-T have requirements for longer distance applications, including short haul (40 km), long haul (80 km), and ultra-long haul (160 km). The testing of cabling plant for these applications is covered in ITU-T Recommendation G.650.3, which refers to the test methods of this document.

FIBRE-OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –

Part 4-2: Installed cabling plant – Single-mode attenuation and optical return loss measurements

1 Scope

This part of IEC 61280 is applicable to the measurements of attenuation and optical return loss of an installed optical fibre cabling plant using single-mode fibre. This cabling plant can include single-mode optical fibres, connectors, adapters, splices, and other passive devices. The cabling can be installed in a variety of environments including residential, commercial, industrial and data centre premises, as well as outside plant environments.

This document is applicable to all single-mode fibre types including those designated by IEC 60793-2-50 as Class B fibres.

The principles of this document can be applied to cabling plants containing branching devices (splitters) and at specific wavelength ranges in situations where passive wavelength selective components are deployed, such as WDM, CWDM and DWDM devices.

This document is not intended to apply to cabling plants that include active devices such as fibre amplifiers or dynamic channel equalizers.

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 60825-2, *Safety of laser products – Part 2: Safety of optical fibre communication systems (OFCSs)*

IEC 61300-3-35, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-35: Examinations and measurements – Visual inspection of fibre optic connectors and fibre-stub transceivers*

IEC 61315, *Calibration of fibre-optic power meters*

IEC 61746-1:2009, *Calibration of optical time-domain reflectometers (OTDR) – Part 1: OTDR for single-mode fibres*

IEC TR 62627-01, *Fibre optic interconnecting devices and passive components – Part 01: Fibre optic connector cleaning methods*