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Standards

Irish Standard
I.S. EN 61280-4-2:2014

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

I.S. EN 61280-4-2:2014

Incorporating amendments/corrigenda/National Annexes issued since publication:

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NORME EUROPÉENNE

EUROPÄISCHE NORM

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**Fibre-optic communication subsystem test procedures - Part 4-2:
Installed cable plant - Single-mode attenuation and optical return
loss measurement
(IEC 61280-4-2:2014)**

Procédures d'essai des sous-systèmes de
télécommunication à fibres optiques - Partie 4-2:
Installations câblées - Mesure de l'affaiblissement de
réflexion optique et de l'affaiblissement des fibres
unimodales
(CEI 61280-4-2:2014)

Prüfverfahren für Lichtwellenleiter-
Kommunikationsuntersysteme - Teil 4-2: Installierte
Kabelanlagen - Einmoden-Dämpfungs- und optische
Rückflussdämpfungsmessung
(IEC 61280-4-2:2014)

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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

Foreword

The text of document 86C/1238/FDIS, future edition 2 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 61280-4-2:2014.

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) 2015-05-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-08-01

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

IEC 60793-1-40	NOTE	Harmonized as EN 60793-1-40.
IEC 60793-2	NOTE	Harmonized as EN 60793-2.
IEC 61280-1-3	NOTE	Harmonized as EN 61280-1-3.
IEC 61753-1	NOTE	Harmonized as EN 61753-1.
IEC 61755-2-1	NOTE	Harmonized as EN 61755-2-1.
IEC 61755-2-2	NOTE	Harmonized as EN 61755-2-2.
IEC 61755-2-4	NOTE	Harmonized as EN 61755-2-4 ¹⁾ .
IEC 61755-2-5	NOTE	Harmonized as EN 61755-2-5 ¹⁾ .

¹⁾ To be published.

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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60793-2-50	-	Optical fibres -- Part 2-50: Product specifications - Sectional specification for class B single-mode fibres	EN 60793-2-50	-
IEC 60825-2	-	Safety of laser products -- Part 2: Safety of optical fibre communication systems (OFCS)	EN 60825-2	-
IEC 60874-14-2	-	Connectors for optical fibres and cables - Part 14-2: Detail specification for fibre optic connector type SC-PC tuned terminated to single-mode fibre type B1	-	-
IEC 61300-3-6	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures -- Part 3-6: Examinations and measurements - Return loss	EN 61300-3-6	-
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 61300-3-35	-
IEC 61315	-	Calibration of fibre-optic power meters	EN 61315	-
IEC 61746-1	2009	Calibration of Optical Time-Domain Reflectometers (OTDR) -- Part 1: OTDR for single-mode fibres	EN 61746-1	2011
IEC/TR 62627-01	-	Fibre optic interconnecting devices and passive components - Part 01: Fibre optic connector cleaning methods	-	-

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NORME INTERNATIONALE



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

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





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CONTENTS

FOREWORD.....	7
INTRODUCTION.....	9
1 Scope.....	10
2 Normative references	10
3 Terms, definitions, graphical symbols and abbreviations.....	11
3.1 Terms and definitions.....	11
3.2 Graphical symbols	13
3.3 Abbreviations	14
4 Measurement methods	15
4.1 General.....	15
4.2 Cabling configurations and applicable test methods	16
4.2.1 Cabling configurations and applicable test methods for attenuation measurements.....	16
4.2.2 Cabling configurations and applicable test methods for optical return loss measurements.....	18
4.3 Overview of uncertainties	18
4.3.1 General	18
4.3.2 Test cords	18
4.3.3 Reflections from other interfaces	18
4.3.4 Optical source	18
4.3.5 Output power reference	19
4.3.6 Received power reference	19
4.3.7 Mode field diameter variation.....	19
4.3.8 Bi-directional measurements.....	19
5 Apparatus.....	19
5.1 General.....	19
5.2 Light source	19
5.2.1 Stability	19
5.2.2 Spectral characteristics	20
5.2.3 Launch cord.....	20
5.3 Receive or tail cord.....	20
5.4 Substitution cord.....	21
5.5 Power meter – LSPM methods only.....	21
5.6 OTDR apparatus.....	21
5.7 Return loss test set.....	22
5.8 Connector end-face cleaning and inspection equipment.....	22
5.9 Adapters	22
6 Procedures.....	22
6.1 General.....	22
6.2 Common procedures.....	23
6.2.1 Care of the test cords	23
6.2.2 Make reference measurements (LSPM and OCWR methods only)	23
6.2.3 Inspect and clean the ends of the fibres in the cabling	23
6.2.4 Make the measurements.....	23
6.2.5 Make the calculations	23
6.3 Calibration	23

6.4	Safety	24
7	Calculations.....	24
8	Documentation	24
8.1	Information for each test	24
8.2	Information to be made available	24
Annex A	(normative) One-cord reference method.....	25
A.1	Applicability of test method	25
A.2	Apparatus	25
A.3	Procedure	25
A.4	Calculation.....	26
A.5	Components of reported attenuation	26
Annex B	(normative) Three-cord reference method	27
B.1	Applicability of test method	27
B.2	Apparatus	27
B.3	Procedure	27
B.4	Calculations	28
B.5	Components of reported attenuation	28
Annex C	(normative) Two-cord reference method	29
C.1	Applicability of test method	29
C.2	Apparatus	29
C.3	Procedure	29
C.4	Calculations	31
C.5	Components of reported attenuation	31
Annex D	(normative) Optical time domain reflectometer.....	32
D.1	Applicability of test method	32
D.2	Apparatus	32
D.2.1	General	32
D.2.2	OTDR	32
D.2.3	Test cords	32
D.3	Procedure (test method)	33
D.4	Calculation of attenuation	34
D.4.1	General	34
D.4.2	Connection location	34
D.4.3	Definition of the power levels F_1 and F_2	35
D.4.4	Alternative calculation.....	36
D.5	Calculation of optical return loss	37
D.6	Calculation of reflectance for discrete components	39
D.7	OTDR uncertainties	40
Annex E	(normative) Continuous wave optical return loss measurement – Method A	41
E.1	Applicability of test method	41
E.2	Apparatus	41
E.2.1	General	41
E.2.2	Light source.....	41
E.2.3	Branching device or coupler	41
E.2.4	Power meters	42
E.2.5	Connector interface	42
E.2.6	Low reflection termination.....	42
E.3	Procedure	42

E.3.1	Test set characterization.....	42
E.3.2	Measurement procedure	44
E.3.3	Calculations.....	44
E.3.4	Measurement uncertainty.....	45
Annex F (normative) Continuous wave optical return loss measurement – Method B.....		46
F.1	Applicability of test method	46
F.2	Apparatus	46
F.2.1	General requirements	46
F.2.2	Known reflectance termination.....	46
F.3	Procedure	46
F.3.1	Set-up characterization.....	46
F.3.2	Measurement procedure	47
F.3.3	Calculation	48
F.3.4	Measurement uncertainty.....	48
Annex G (informative) Measurement uncertainty examples		49
G.1	Reduction of uncertainty by using reference grade terminations and related issues	49
G.1.1	Motivations for using reference grade terminations on test cords	49
G.1.2	Adjusting acceptance limits to allow for different expected losses when using reference grade and standard grade connectors.....	49
G.2	Estimation of the measurement uncertainties	51
G.2.1	Measurement uncertainty.....	51
G.2.2	Uncertainty due to the instrument	51
G.2.3	Uncertainty due to the source	51
G.2.4	Uncertainty due to the device under test.....	52
G.2.5	Example of uncertainty accumulation using a single power meter	53
G.2.6	Example of uncertainty accumulation using two power meters	54
Annex H (informative) OTDR configuration information		55
H.1	Introductory remarks	55
H.2	Fundamental parameters that define the operational capability of an OTDR.....	56
H.2.1	Dynamic range	56
H.2.2	Pulse width.....	56
H.2.3	Averaging time	56
H.2.4	Dead zone	56
H.3	Other parameters.....	56
H.3.1	Index of refraction.....	56
H.3.2	Measurement range.....	57
H.3.3	Distance sampling	57
H.4	Other measurement configurations	57
H.4.1	General	57
H.4.2	Macro bend attenuation measurement	57
H.4.3	Splice attenuation measurement.....	58
H.4.4	Measurement with high reflection connectors or short length cabling.....	58
H.4.5	Ghost	60
H.5	More on the measurement method.....	61
H.6	Bidirectional measurement.....	62
H.7	OTDR bi-directional trace analysis	63
H.8	Non recommended practices.....	64
H.8.1	Measurement without tail cord	64

H.8.2	Cursor measurement	64
Annex I (informative)	Test cord attenuation verification	65
I.1	Introductory remarks	65
I.2	Apparatus	65
I.3	Procedure	65
I.3.1	General	65
I.3.2	Test cord verification for the one-cord and two-cord reference test methods when using non-pinned/unpinned and non-plug/socket style connectors	66
I.3.3	Test cord verification for the one-cord and two-cord reference test methods using pinned/unpinned or plug/socket style connectors	67
I.3.4	Test cord verification for the three-cord reference test method using non-pinned/unpinned and non-plug/socket style connectors	68
I.3.5	Test cord verification for the three-cord reference test method using pinned/unpinned or plug/socket style connectors	70
Annex J (informative)	Spectral attenuation measurement	72
J.1	Applicability of test method	72
J.2	Apparatus	72
J.2.1	Broadband light source	72
J.2.2	Optical spectrum analyser	72
J.3	Procedure	72
J.3.1	Reference scan	72
J.3.2	Measurement scan	73
J.4	Calculations	73
Bibliography	74
Figure 1	– Connector symbols	13
Figure 2	– Symbol for cabling under test	14
Figure 3	– Configuration A – Start and end of measured losses in reference test method	16
Figure 4	– Configuration B – Start and end of measured losses in reference test method	17
Figure 5	– Configuration C – Start and end of measured losses in reference test method	17
Figure 6	– Typical OTDR schematic	21
Figure 7	– Return loss test set illustration	22
Figure A.1	– One-cord reference measurement	26
Figure A.2	– One-cord test measurement	26
Figure B.1	– Three-cord reference measurement	27
Figure B.2	– Three-cord test measurement	28
Figure C.1	– Two-cord reference measurement	30
Figure C.2	– Two-cord test measurement	30
Figure C.3	– Two-cord test measurement for plug-socket style connectors	30
Figure D.1	– Test measurement for method D	34
Figure D.2	– Location of the cabling under test ports	35
Figure D.3	– Graphic construction of F_1 and F_2	36
Figure D.4	– Graphic construction of F_1 , F_{11} , F_{21} and F_2	37

Figure D.5 – Graphic representation of OTDR ORL measurement.....	38
Figure D.6 – Graphic representation of reflectance measurement	39
Figure E.1 – Return loss test set illustration.....	41
Figure E.2 – Measurement of the system internal attenuation P_{ref2}	43
Figure E.3 – Measurement of the system internal attenuation P_{ref1}	43
Figure E.4 – Measurement of the system reflected power P_{rs}	43
Figure E.5 – Measurement of the input power P_{in}	44
Figure E.6 – Measurement of the reflected power	44
Figure F.1 – Return loss test set illustration	46
Figure F.2 – Measurement of P_{rs} with reflections suppressed	47
Figure F.3 – Measurement of P_{ref} with reference reflector	47
Figure F.4 – Measurement of the system reflected power P_{rs}	47
Figure F.5 – Measurement of the reflected power	48
Figure H.1 – Splice and macro bend attenuation measurement.....	58
Figure H.2 – Attenuation measurement with high reflection connectors	59
Figure H.3 – Attenuation measurement of a short length cabling.....	60
Figure H.4 – OTDR trace with ghost.....	61
Figure H.5 – Cursor positioning.....	62
Figure H.6 – Bidirectional OTDR trace display	63
Figure H.7 – Bi-directional OTDR trace loss analysis	63
Figure I.1 – Obtaining reference power level P_0	66
Figure I.2 – Obtaining power level P_1	67
Figure I.3 – Obtaining reference power level P_0	67
Figure I.4 – Obtaining power level P_1	67
Figure I.5 – Obtaining reference power level P_0	68
Figure I.6 – Obtaining power level.....	68
Figure I.7 – Obtaining reference power level P_0	69
Figure I.8 – Obtaining power level P_1	69
Figure I.9 – Obtaining power level P_6	70
Figure I.10 – Obtaining reference power level P_0	70
Figure I.11 – Obtaining power level P_1	71
Figure J.1 – Result of spectral attenuation measurement	73
Table 1 – Cabling configurations.....	16
Table 2 – Test methods and configurations.....	17
Table D.1 – Typical launch and tail cord lengths	33
Table G.1 – Expected loss for examples (see NOTE 1).....	49
Table G.2 – Example of uncertainty accumulation using a single power meter	53
Table G.3 – Example of uncertainty accumulation using two power meters	54
Table H.1 – Example of effective group index of refraction values.....	57

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIBRE-OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –

Part 4-2: Installed cable plant – Single-mode attenuation and optical return loss measurement

FOREWORD

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International Standard IEC 61280-4-2 has been prepared by subcommittee SC86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition, published in 1999, and constitutes a technical revision.

The main changes with respect to the previous edition are listed below:

- revision of optical time-domain reflectometer (OTDR) measurements;
- addition of optical return loss (ORL) measurements;
- addition of informative annexes on measurement uncertainties, OTDR configuration, test cord attenuation verification and spectral attenuation measurement.

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

FDIS	Report on voting
86C/1238/FDIS	86C/1261/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 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 publication will remain unchanged until the stability 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

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INTRODUCTION

This second edition of IEC 61280-4-2 for testing single-mode cable plant follows on from the second edition of IEC 61280-4-1, dealing with multimode cable plants.

Cabling design standards such as ISO/IEC 11801 for commercial premises, ISO/IEC 24702 for industrial premises, ISO/IEC 24764 for data centres and ISO/IEC 15018 for residential cabling contain specifications 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 these design standards, makes reference to the test methods of this standard.

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 cable plant for these is covered in ITU-T Recommendation G.650.3, which makes reference to the test methods of this standard.

FIBRE-OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –

Part 4-2: Installed cable plant – Single-mode attenuation and optical return loss measurement

1 Scope

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

This standard may be applied to all single-mode fibre types including those designated by IEC 60793-2-50 as Class B fibres.

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

This standard is not intended to apply to cable plant that includes active devices such as fibre amplifiers or dynamic channel equalizers.

2 Normative references

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.

IEC 60793-2-50, *Optical fibres – Part 2-50: Product specifications – Sectional specification for class B single-mode fibres*

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

IEC 60874-14-2, *Connectors for optical fibres and cables – Part 14-2: Detail specification for fibre optic connector type SC-PC tuned terminated to single-mode fibre type B1*

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

IEC 61300-3-35, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-35: Examinations and measurements – Fibre optic cylindrical connector endface visual inspection*

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*

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