

Optical amplifiers - Part 5-2: Qualification specifications
- Reliability qualification for optical fibre amplifiers

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 61291-5-2:2017 sisaldab Euroopa standardi EN 61291-5-2:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 61291-5-2:2017 consists of the English text of the European standard EN 61291-5-2:2017.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 02.06.2017.	Date of Availability of the European standard is 02.06.2017.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 33.180.30

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

**Optical amplifiers - Part 5-2: Qualification specifications -
Reliability qualification for optical fibre amplifiers
(IEC 61291-5-2:2017)**

Amplificateurs optiques - Partie 5-2: Spécifications de
qualification - Qualification de fiabilité pour amplificateurs
à fibres optiques
(IEC 61291-5-2:2017)

Lichtwellenleiter-Verstärker - Teil 5-2:
Anerkennungsspezifikation - Zuverlässigkeitsanerkennung
für Lichtwellenleiter-Verstärker
(IEC 61291-5-2:2017)

This European Standard was approved by CENELEC on 2017-03-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard 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 CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

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

European foreword

The text of document 86C/1376/CDV, future edition 2 of IEC 61291-5-2, 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 61291-5-2:2017.

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) 2017-12-02
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-06-02

This document supersedes EN 61291-5-2:2002.

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 61291-5-2:2017 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 60068-2-1	NOTE	Harmonized as EN 60068-2-1.
IEC 60068-2-6	NOTE	Harmonized as EN 60068-2-6.
IEC 61300-2-1	NOTE	Harmonized as EN 61300-2-1.
IEC 61300-2-2	NOTE	Harmonized as EN 61300-2-2.
IEC 61300-2-5	NOTE	Harmonized as EN 61300-2-5.
IEC 61300-2-9	NOTE	Harmonized as EN 61300-2-9.
IEC 61300-2-18	NOTE	Harmonized as EN 61300-2-18.
IEC 61300-2-19	NOTE	Harmonized as EN 61300-2-19.
IEC 61300-2-22	NOTE	Harmonized as EN 61300-2-22.
IEC 61300-2-42	NOTE	Harmonized as EN 61300-2-42.
IEC 61300-2-44	NOTE	Harmonized as EN 61300-2-44.

IEC 62005-2	NOTE	Harmonized as EN 62005-2.
IEC 62343-2	NOTE	Harmonized as EN 62343-2.
IEC 62572-3	NOTE	Harmonized as EN 62572-3.

This document is a preview generated by EVS

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 60050-731	-	International Electrotechnical Vocabulary - Chapter 731: Optical fibre communication	-	-
IEC 60068-2-2	2007	Environmental testing - Part 2-2: Tests - Test B: Dry heat	EN 60068-2-2	2007
IEC 60068-2-14	-	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	-
IEC 60068-2-21	-	Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	-
IEC 60068-2-27	-	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock	EN 60068-2-27	-
IEC 60068-2-31	-	Environmental testing - Part 2-31: Tests - Test Ec: Rough handling shocks, primarily for equipment-type specimens	EN 60068-2-31	-
IEC 60068-2-78	-	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 61291-1	-	Optical amplifiers - Part 1: Generic specification	EN 61291-1	-
IEC 61300-2-4	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-4: Tests - Fibre/cable retention	EN 61300-2-4	-
IEC 62005-9-1	-	Fibre optic interconnecting devices and passive components - Reliability - Part 9-1: Qualification of passive optical components	EN 62005-9-1	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62005-9-2	-	Reliability of fibre optic interconnecting devices and passive optical components - Part 9-2: Reliability qualification for single fibre optic connector sets - Single mode	-	-
TIA 455-11	-	FOTP-11 Vibration Test Procedure for Fiber Optic Components and Cables	-	-

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references	5
3 Terms, definitions and abbreviated terms	6
3.1 Terms and definitions.....	6
3.2 Abbreviated terms.....	6
4 Reliability requirements	7
4.1 Tests	7
4.1.1 General	7
4.1.2 Reliability qualification of components	7
4.1.3 Reliability qualification of the OFA assembly process	8
4.1.4 Reliability qualification of the OFA device or sub-system	8
4.1.5 Structural similarity	10
Annex A (normative) Procedures for reliability testing of OFA components	11
A.1 General.....	11
A.2 Tests required for passive optical components.....	11
A.3 Tests required for the doped fibre	11
Annex B (informative) Reliability calculations.....	12
B.1 Reliability calculation	12
B.2 Guidance on failure rate calculations	13
Bibliography.....	14
Table 1 – Minimum test list for passive optical components, pump laser modules, monitor diode modules and optical connectors.....	7
Table 2 – Minimum test list for doped fibre.....	8
Table 3 – Tests required for splices	8
Table 4 – Minimum list for tests required on OFA devices and sub-systems.....	9
Table A.1 – Tests required for the doped fibre	11
Table B.1 – Failure rate of components.....	13