



**SLOVENSKI STANDARD
SIST EN 61290-3-2:2004**

01-september-2004

Optical amplifiers -- Part 3-2: Test methods for noise figure parameters - Electrical spectrum analyzer method

Lichtwellenleiter-Verstärker -- Teil 3-2: Prüfverfahren für Rauschzahlparameter - Verfahren mit elektrischem Spektralanalysator

Amplificateurs à fibres optiques -- Partie 3-2: Méthodes d'essai pour les paramètres du facteur de bruit - Méthode de l'analyseur spectral électrique

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Ta slovenski standard je istoveten z: EN 61290-3-2:2003

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EUROPEAN STANDARD

EN 61290-3-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2003

ICS 33.180.30

English version

Optical amplifiers
Part 3-2: Test methods for noise figure parameters –
Electrical spectrum analyzer method
(IEC 61290-3-2:2003)

Amplificateurs à fibres optiques
Partie 3-2: Méthodes d'essai
pour les paramètres du facteur de bruit -
Méthode de l'analyseur spectral électrique
(CEI 61290-3-2:2003)

Lichtwellenleiter-Verstärker
Teil 3-2: Prüfverfahren für
Rauschzahlparameter –
Verfahren mit elektrischem
Spektralanalysator
(IEC 61290-3-2:2003)

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This European Standard was approved by CENELEC on 2003-02-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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

Foreword

The text of document 86C/458/FDIS, future edition 1 of IEC 61290-3-2, 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 was approved by CENELEC as EN 61290-3-2 on 2003-02-01.

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) 2003-11-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2006-02-01

This standard shall be read in conjunction with EN 61290-3 and EN 61291-1.

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annex ZA is normative and annex A is informative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61290-3-2:2003 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:

<u>SIST EN 61290-3-2:2004</u>		
IEC 60793-1	NOTE	Harmonized as 60793-1-x series (not modified).
IEC 60825-1	NOTE	Harmonized as EN 60825-1:1994 (not modified).
IEC 60825-2	NOTE	Harmonized as EN 60825-2:2000 (not modified).
IEC 60874-1	NOTE	Harmonized as EN 60874-1:1999 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60728-6	2001	Cabled distribution systems for television and sound signals Part 6: Optical equipment	-	-
IEC 61290-3	- 1)	Optical fibre amplifiers - Basic specification Part 3: Test methods for noise figure parameters	EN 61290-3	2000 2)
IEC 61291-1	1998	Optical fibre amplifiers Part 1: Generic specification	EN 61291-1	1998
IEC/TR 61292-2		Optical amplifier technical reports Part 2: Theoretical background for noise figure evaluation using the electrical spectrum analyzer	-	-

1) Undated reference.

2) Valid edition at date of issue.

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61290-3-2

Première édition
First edition
2003-01

Amplificateurs à fibres optiques –

Partie 3-2:

Méthodes d'essai pour les paramètres
du facteur de bruit –

Méthode de l'analyseur spectral électrique
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Optical amplifiers –

<https://standards.iteh.ai/catalog/standards/sist/9434afd5-7e83-4613-823b-79b5c72/sist-en-61290-3-2-2004>

Part 3-2:
Test methods for noise figure parameters –
Electrical spectrum analyzer method

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International Electrotechnical Commission
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL AMPLIFIERS –

Part 3-2: Test methods for noise figure parameters –
Electrical spectrum analyzer method

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61290-3-2 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics.

This standard shall be read in conjunction with IEC 61290-3 and IEC 61291-1.

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

FDIS	Report on voting
86C/458/FDIS	86C/482/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.

Annex A is for information only.

The committee has decided that the contents of this publication will remain unchanged until 2007. At this date, the publication will be

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

INTRODUCTION

This part of IEC 61290 is devoted to the subject of optical amplifiers. The technology of optical amplifiers is still rapidly evolving, hence amendments and new additions to this standard can be expected.

Each symbol and abbreviation introduced in this standard is generally explained in the text the first time it appears. However, for an easier understanding of the whole text, a list of all symbols and abbreviations used is given in annex A.

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OPTICAL AMPLIFIERS –

Part 3-2: Test methods for noise figure parameters –
Electrical spectrum analyzer method**1 Scope and object**

This part of IEC 61290 applies to optical fibre amplifiers (OFA) using active fibres, containing rare-earth dopants, presently commercially available.

The object of this International Standard is to establish uniform requirements for accurate and reliable measurements, of the noise figure, as defined in 3.1.17 of IEC 61291-1, by means of the electrical spectrum analyzer (ESA) method.

The present test method is based on direct electrical noise measurement and it is directly related to its definition including all relevant noise contributions. A different test method based on the optical spectrum analyzer can be used, particularly for different noise parameters (such as the signal-spontaneous noise factor) but it is not included in the object of this standard.

NOTE 1 All numerical values followed by (‡) are suggested values for which the measurement is assured. Other values may be acceptable but should be verified.

NOTE 2 A measurement accuracy for the average noise factor of ± 20 % (‡), respectively ± 1 dB, should be attainable with this method (see clause 6).

NOTE 3 General aspects of noise figure test methods are reported in IEC 61290-3.

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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 60728-6:2001, *Cabled distribution systems for television and sound signals – Part 6: Optical equipment*

IEC 61290-3, *Optical fibre amplifier test methods – Basic specification – Part 3: Noise figure parameters*

IEC 61291-1:1998, *Optical fibre amplifiers – Part 1: Generic specification*

IEC/TR 61292-2, *Optical amplifier technical reports – Part 2: Theoretical background for noise figure evaluation using the electrical spectrum analyzer*¹⁾

NOTE A list of informative references is given in the bibliography.

¹⁾ To be published.