

Optical amplifiers —

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

The European Standard EN 61290-3-2:2003 has the status of a British Standard

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National foreword

This British Standard is the official English language version of EN 61290-3-2:2003. It is identical with IEC 61290-3-2:2003.

The UK participation in its preparation was entrusted by Technical Committee GEL/86, Fibre optics, to Subcommittee GEL/86/3, Fibre optic systems and active devices, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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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
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(IEC 61290-3-2:2003)

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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with the EN have to be withdrawn (dow) 2006-02-01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:

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).

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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.

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 ($\pm$) 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 $\pm 20\%$ ($\pm$), 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.

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.