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# INTERNATIONAL STANDARD

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**Optical amplifiers - Test methods -  
Part 1-2: Power and gain parameters - Electrical spectrum analyzer method**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Part 1-2: power and gain parameters -  
Electrical spectrum analyzer method**

**FOREWORD**

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IEC 61290-1-2 has been prepared by subcommittee 86C: Fibre optic systems, sensing 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 2005. This edition constitutes a technical revision.

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

- a) addition of information on the applicability of this document to the scope;
- b) harmonization of the scope with the IEC 61290-1 series;
- c) addition of safety recommendations to Clause 4 and Clause 5;
- d) correction of an error in Clause 7, item e);

e) replacement of the term "wavelength measurement accuracy" with "wavelength accuracy".

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

Draft	Report on voting
86C/1973/CDV	86C/1991/RVC

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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

A list of all parts in the IEC 61290 series, published under the general title *Optical amplifiers - Test methods*, 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](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

## 1 Scope

This part of IEC 61290 applies to all commercially available optical amplifiers (OAs) and optically amplified sub-systems. It applies to OAs using optically pumped fibres (OFAs based on either rare-earth doped fibres or on the Raman effect), semiconductors (SOAs), and planar optical waveguides (POWAs). This document does not apply to polarization-maintaining optical amplifiers.

This document defines uniform requirements for accurate and reliable measurements, by means of the electrical spectrum analyzer test method, of the following OA parameters, as defined in IEC 61291-1, Clause 3:

- a) nominal output signal power;
- b) gain;
- c) reverse gain;
- d) maximum gain;
- e) polarization-dependent gain.

In addition, this test method provides a means for measuring the following parameters:

- maximum gain wavelength;
- gain wavelength band.

This document specifically covers single-channel amplifiers. For multichannel amplifiers, the IEC 61290-10 series applies.

NOTE 1 The applicability of the test methods described in this document to distributed Raman amplifiers is for further study.

NOTE 2 A test method for polarization-maintaining optical amplifiers is for further study.

## 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 60793-1-40, *Optical fibres - Part 1-40: Measurement methods and test procedures - Attenuation*

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

## Bibliography

IEC 60825-1, *Safety of laser products - Part 1: Equipment classification and requirements*

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

IEC 61290 (all parts), *Optical amplifiers - Test methods*

IEC 61290-10 (all parts), *Optical amplifiers - Test methods - Part 10: Multichannel parameters*

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