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**Optical amplifiers – Test methods –
Part 4-3: Power transient parameters – Single channel optical amplifiers in
output power control**

**Amplificateurs optiques – Méthodes d'essai –
Partie 4-3: Paramètres de puissance transitoire – Amplificateurs optiques
monocanaux commandés par la puissance de sortie**



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OPTICAL AMPLIFIERS – TEST METHODS –**Part 4-3: Power transient parameters –
Single channel optical amplifiers in output power control**

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International Standard IEC 61290-4-3 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition published in 2015. This edition constitutes a technical revision.

This edition includes the following significant technical change with respect to the previous edition: alignment of the measure of amplified spontaneous emission (ASE) relative to signal power with the definition in IEC 61290-3-3.

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

FDIS	Report on voting
86C/1505/FDIS	86C/1512/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

This International Standard is to be used in conjunction with IEC 61291-1:2012.

A list of all parts of 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 "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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OPTICAL AMPLIFIERS – TEST METHODS –

Part 4-3: Power transient parameters – Single channel optical amplifiers in output power control

1 Scope

This part of IEC 61290 applies to output power controlled optically amplified, elementary sub-systems. It applies to optical fibre amplifiers (OFAs) using active fibres containing rare-earth dopants, presently commercially available, as indicated in IEC 61291-1, as well as alternative optical amplifiers that can be used for single channel output power controlled operation, such as semiconductor optical amplifiers (SOAs).

The object of this document is to provide the general background for optical amplifiers (OAs) power transients and their measurements and to indicate those IEC standard test methods for accurate and reliable measurements of the following transient parameters:

- a) transient power response;
- b) transient power overcompensation response;
- c) steady-state power offset;
- d) transient power response time.

The stimulus and responses behaviours under consideration include the following:

- 1) channel power increase (step transient);
- 2) channel power reduction (inverse step transient);
- 3) channel power increase/reduction (pulse transient);
- 4) channel power reduction/increase (inverse pulse transient);
- 5) channel power increase/reduction/increase (lightning bolt transient);
- 6) channel power reduction/increase/reduction (inverse lightning bolt transient).

These parameters have been included to provide a complete description of the transient behaviour of an output power transient controlled OA. The test definitions defined here are applicable if the amplifier is an OFA or an alternative OA. However, the description in Annex A concentrates on the physical performance of an OFA and provides a detailed description of the behaviour of an OFA; it does not give a similar description of other OA types. Annex B provides a detailed description background of the dynamic phenomenon in output power controlled amplifiers under transient conditions and Annex C details the impact of speed of transient inputs.

2 Normative references

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