Optical amplifiers – Test methods –
Part 4-3: Power transient parameters – Single channel optical amplifiers in output power control
Title
IEC 61290-4-3/Ed1: Optical amplifiers – Test methods - Part 4-3: Power transient parameters – Single channel optical amplifiers in output power control

ATTENTION
IEC – CENELEC
PARALLEL VOTING

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this final draft International Standard (DIS) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.
CONTENTS

FOREWORD ........................................................................................................................... 3

1 Scope .................................................................................................................................. 5

2 Normative references ........................................................................................................ 5

3 Terms, definitions and abbreviations .................................................................................. 6

3.1 Terms and definitions ..................................................................................................... 6

3.2 Abbreviations ................................................................................................................. 7

4 Apparatus .......................................................................................................................... 7

4.1 Test set-up ...................................................................................................................... 7

4.2 Characteristics of test equipment ................................................................................... 8

5 Test sample ........................................................................................................................ 9

6 Procedure ........................................................................................................................... 9

6.1 Test preparation .............................................................................................................. 9

6.2 Test conditions ............................................................................................................... 9

7 Calculations ...................................................................................................................... 10

8 Test results ....................................................................................................................... 11

8.1 Test settings .................................................................................................................. 11

8.2 Test data ....................................................................................................................... 12

Annex A (informative) Overview of power transient events in single channel EDFA .............. 13

A.1 Background................................................................................................................... 13

A.2 Characteristic input power behaviour .......................................................................... 13

A.3 Parameters for characterizing transient behaviour ...................................................... 15

Annex B (informative) Background on power transient phenomena in a single channel EDFA .................................................................................................................................... 17

B.1 Amplifier chains in optical networks .......................................................................... 17

B.2 Typical optical amplifier design .................................................................................. 17

B.3 Approaches to address detection errors ...................................................................... 19

Annex C (informative) Slew rate effect on transient gain response ....................................... 23

Bibliography .......................................................................................................................... 24

Figure 1 – Power transient test set-up ..................................................................................... 8

Figure 2 – OA output power transient response of a) input power increase ........................... 11

Figure A.1 – Example OA input power transient cases for a receiver application .................. 14

Figure A.2 – Input power measurement parameters for a) input power increase and b) input power decrease ............................................................................................................ 15

Figure A.3 – OA output power transient response of a) input power increase and b) input power decrease ............................................................................................................ 16

Figure B.1 – Transient response to a) input power drop (inverse step transient) with transient control, b) deactivated (constant pump power), and c) activated (power control) ........................................................................................................... 21

Figure B.2 – Transient response to a) input power rise (step transient) with transient control, b) deactivated (constant pump power), and c) activated (power control) ........................................................................................................... 22

Table 1 – Examples of transient control measurement test conditions ................................ 10
INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL AMPLIFIERS – TEST METHODS

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

FOREWORD

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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 International Standard is to be used in conjunction with IEC 61291-1:2012, on the basis of which it was established.

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

<table>
<thead>
<tr>
<th>FDIS</th>
<th>Report on voting</th>
</tr>
</thead>
<tbody>
<tr>
<td>86C/XX/FDIS</td>
<td>86C/XX/RVD</td>
</tr>
</tbody>
</table>

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.
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 publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

A bilingual version of this publication may be issued at a later date.

The National Committees are requested to note that for this publication the stability date is 2019.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

\[1\] The first editions of some of these parts were published under the general title *Optical fibre amplifiers – Basic specification* or *Optical amplifier test methods.*
1 Scope

This part of IEC 61290 applies to output power controlled optically amplified, elementary sub-systems. It applies to optical fibre amplifiers (OFA) 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 (SOA).

The object of this standard is to provide the general background for optical amplifier (OA) power transients and its measurements and to indicate those IEC standard test methods for accurate and reliable measurements of the following transient parameters.

a) Channel addition/removal transient power overshoot
b) Channel addition/removal transient power undershoot
c) Channel addition/removal overcompensation response offset
d) Channel addition/removal transient steady-state power offset
e) Channel addition/removal transient power response time (settling time)

The stimulus and responses behaviours under consideration include

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 definition defined here are applicable if the amplifier is an OFA or an alternative OA. However, the description in Annex A of this document concentrates on the physical performance of an OFA and provides a detailed description of the behaviour of OFA; it does not give a similar description of other OA types.

2 Normative references

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.

IEC 61291-1:2012, Optical amplifiers – Part 1: Generic specification