

Optical amplifier test methods -- Part 10-1: Multichannel parameters - Pulse method using an optical switch and optical spectrum analyzer

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 61290-10-1:2009 sisaldab Euroopa standardi EN 61290-10-1:2009 ingliskeelset teksti.

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English version

**Optical amplifiers -
Test methods -
Part 10-1: Multichannel parameters -
Pulse method using an optical switch
and optical spectrum analyzer
(IEC 61290-10-1:2009)**

Amplificateurs optiques -
Méthodes d'essai -
Partie 10-1: Paramètres
à canaux multiples -
Méthode d'impulsion utilisant
un interrupteur optique
et un analyseur de spectre optique
(CEI 61290-10-1:2009)

Prüfverfahren
für Lichtwellenleiter-Verstärker -
Teil 10-1: Mehrkanalparameter -
Pulsmethode bei Verwendung
eines optischen Schalters
und optischen Spektralanalysators
(IEC 61290-10-1:2009)

This European Standard was approved by CENELEC on 2009-04-01. 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.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 86C/778/CDV, future edition 2 of IEC 61290-10-1, 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 61290-10-1 on 2009-04-01.

This European Standard supersedes EN 61290-10-1:2003.

It contains updated references and cautions on proper use of the procedure.

This European Standard is to be read in conjunction with EN 61291-1.

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) 2010-01-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2012-04-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61290-10-1:2009 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 in EN 60793-1 series (partially modified).
IEC 60825-1	NOTE Harmonized as EN 60825-1:2007 (not modified).
IEC 60825-2	NOTE Harmonized as EN 60825-2:2004 (not modified).
IEC 60874-1	NOTE Harmonized as EN 60874-1:2007 (not modified).
IEC 61290-1-1	NOTE Harmonized as EN 61290-1-1:2006 (not modified).
IEC 61290-3	NOTE Harmonized as EN 61290-3:2008 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

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 61291-1	- ¹⁾	Optical amplifiers - Part 1: Generic specification	EN 61291-1	2006 ²⁾

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope and object.....	7
2 Normative references	7
3 Abbreviated terms	7
4 Apparatus.....	8
5 Test sample.....	10
6 Procedure	10
6.1 Calibration.....	11
6.1.1 Calibration of OSA power measurement	11
6.1.2 Calibration of the pulse duty ratio	11
6.1.3 Calibration of the sampling module.....	12
6.1.4 Calibration of dynamic isolation	13
6.2 OA measurement	15
6.2.1 Timing adjustment for ASE and amplified signal power measurement.....	15
6.2.2 ASE measurement.....	16
6.2.3 Amplified signal power measurement.....	16
7 Calculation	17
7.1 General.....	17
7.2 Noise factor calculation	18
7.3 ASE power	18
7.4 Gain calculation	19
7.5 Average output signal power	19
7.6 Noise figure calculation	19
8 Test results	19
Annex A (informative) Output waveforms for various EDFAs at 25 kHz and 500 kHz pulse rates.....	20
Annex B (informative) Measurement accuracy versus pulse rate.....	22
Annex C (informative) Pulse repetition frequency measurements.....	23
Bibliography.....	24
Figure 1 – Typical arrangement of the optical pulse test method.....	8
Figure 2 – Two arrangements of the optical pulse source.....	9
Figure 3 – Static isolation of an optical switch.....	9
Figure 4 – Definitions of rise time and fall time, t_r and t_f of optical pulses	10
Figure 5 – Measurement flow chart	11
Figure 6 – Arrangement for the sampling switch calibration.....	12
Figure 7 – Arrangement for timing adjustment.....	13
Figure 8 – Timing adjustment of the sampling switch	14
Figure 9 – Timing chart for dynamic isolation calibration	15
Figure 10 – Arrangement for OA measurement	16
Figure 11 – Timing chart for ASE measurement	17
Figure 12 – Timing chart for amplified signal power measurement	17

Figure A.1 – EDFA output waveforms for various EDFAs	21
Figure B.1 – NF measurement accuracy versus pulse rate.....	22
Figure C.1 – Set-up to evaluate gain recovery error versus modulation rate.....	23
Figure C.2 – Gain recovery error versus modulation frequency with pump current as a parameter	23

INTRODUCTION

This International Standard is devoted to the subject of optical fibre amplifiers. The technology of optical fibre amplifiers is still rapidly evolving, hence amendments and new editions to this standard can be expected.

OPTICAL AMPLIFIERS – TEST METHODS –

Part 10-1: Multichannel parameters – Pulse method using an optical switch and optical spectrum analyzer

1 Scope and object

This part of IEC 61290 applies to optical amplifiers (OAs) using active fibres and waveguides, containing rare-earth dopants, currently commercially available.

The object of this standard is to establish uniform requirements for accurate and reliable measurements of the signal-spontaneous noise figure as defined in IEC 61291-1.

The test method independently detects amplified signal power and amplified spontaneous emission (ASE) power by launching optical pulses into the OA under test and synchronously detecting "on" and "off" levels of the output pulses by using an optical sampling switch and an optical spectrum analyzer (OSA).

Such measurement is possible because the gain response of the rare-earth doped OA is relatively slow, particularly in Er-doped OAs. However, since the OA gain dynamics vary with amplifier types, operating conditions and control schemes, the gain dynamics should be carefully considered when applying the present test method to various OA. The manufacturer of the OA should present data validating the required modulation frequency to limit the error to <1 dB. The measurements for obtaining this information are described in Annex C.

The test method is described basically for multichannel applications, which includes single channel applications as a special case of multichannel (wavelength-division multiplexed) applications.

NOTE All numerical values followed by (‡) are currently under study.

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