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| STN | Kalibrácia laditeľných laserových zdrojov. | STN EN 62522 35 9209 |
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Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 11/14

Obsahuje: EN 62522:2014, IEC 62522:2014

119738

Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, odbor SÚTN, 2014
Podľa zákona č. 264/1999 Z. z. v znení neskorších predpisov sa môžu slovenské technické normy
rozmnožovať a rozširovať iba so súhlasom Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

EUROPEAN STANDARD

EN 62522

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2014

ICS 31.260; 33.180.01

English Version

**Calibration of tuneable laser sources
(IEC 62522:2014)**Étalonnage des sources laser accordables
(CEI 62522:2014)Kalibrierung von abstimmbaren Laserquellen
(IEC 62522:2014)

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

The text of document 86/443/CDV, future edition 1 of IEC 62522, prepared by IEC TC 86 "Fibre optics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62522:2014.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2014-10-18
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-03-21

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| | | |
|----------------------|------|-----------------------------------|
| IEC 60027-3 | NOTE | Harmonised as EN 60027-3. |
| IEC 60359 | NOTE | Harmonised as EN 60359. |
| IEC 60793-1 (Series) | NOTE | Harmonised in EN 60793-1 (Series) |
| IEC 60793-2 (Series) | NOTE | Harmonised in EN 60793-2 (Series) |
| IEC 61280-1-3:2010 | NOTE | Harmonised as EN 61280-1-3:2010. |
| IEC 61300-3-2 | NOTE | Harmonised as EN 61300-3-2 |
| IEC 61315 | NOTE | Harmonised as EN 61315 |

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here:

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| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|-------------------------|-------------|--|------------------|-------------|
| IEC 60793-2-50 | - | Optical fibres -- Part 2-50: Product specifications - Sectional specification for class B single-mode fibres | EN 60793-2-50 | - |
| IEC 60825-1 | - | Safety of laser products -- Part 1: Equipment classification and requirements | EN 60825-1 | - |
| IEC 60825-2 | - | Safety of laser products -- Part 2: Safety of optical fibre communication systems (OFCS) | EN 60825-2 | - |
| IEC 62129-2 | - | Calibration of wavelength/optical frequency measurement instruments -- Part 2: Michelson interferometer single wavelength meters | EN 62129-2 | - |
| ISO/IEC 17025 | - | General requirements for the competence of testing and calibration laboratories | EN ISO/IEC 17025 | - |
| ISO/IEC Guide 98-3 2008 | - | Uncertainty of measurement -- Part 3: Guide to the expression of uncertainty in measurement (GUM:1995) | - | - |
| ISO/IEC Guide 99 | 2007 | International vocabulary of metrology -- Basic and general concepts and associated terms (VIM) | - | - |



IEC 62522

Edition 1.0 2014-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Calibration of tuneable laser sources

Étalonnage des sources laser accordables





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IEC 62522

Edition 1.0 2014-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Calibration of tuneable laser sources

Étalonnage des sources laser accordables

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

W

ICS 31.260; 33.180.01

ISBN 978-2-8322-1411-4

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CONTENTS

| | |
|--|----|
| FOREWORD..... | 4 |
| INTRODUCTION..... | 6 |
| 1 Scope..... | 7 |
| 2 Normative references..... | 7 |
| 3 Terms, definitions and abbreviations..... | 7 |
| 3.1 Terms and definitions..... | 7 |
| 3.2 Abbreviations..... | 10 |
| 4 Preparation for calibration..... | 10 |
| 4.1 Organization..... | 10 |
| 4.2 Traceability..... | 10 |
| 4.3 Preparation..... | 10 |
| 4.4 Reference calibration conditions..... | 11 |
| 5 Wavelength calibration..... | 11 |
| 5.1 Overview..... | 11 |
| 5.2 Wavelength calibration at reference conditions..... | 11 |
| 5.2.1 Set-up..... | 11 |
| 5.2.2 Calibration equipment..... | 11 |
| 5.2.3 Procedure for wavelength calibration..... | 12 |
| 5.2.4 Dependence on conditions..... | 12 |
| 5.2.5 Uncertainty at reference conditions..... | 14 |
| 5.3 Wavelength calibration at operating conditions..... | 15 |
| 5.3.1 General..... | 15 |
| 5.3.2 Optical power dependence..... | 15 |
| 5.3.3 Uncertainty at operating conditions..... | 16 |
| 6 Optical power calibration..... | 16 |
| 6.1 Overview..... | 16 |
| 6.2 Optical power calibration at reference conditions..... | 17 |
| 6.2.1 Set-up..... | 17 |
| 6.2.2 Calibration equipment..... | 17 |
| 6.2.3 Procedure for power calibration at reference conditions..... | 17 |
| 6.2.4 Dependence on conditions..... | 18 |
| 6.2.5 Uncertainty at reference conditions..... | 21 |
| 6.3 Optical power calibration at operating conditions..... | 22 |
| 6.3.1 General..... | 22 |
| 6.3.2 Wavelength dependence..... | 22 |
| 6.3.3 Uncertainty at operating conditions..... | 23 |
| 7 Documentation..... | 23 |
| 7.1 Calibration data and uncertainty..... | 23 |
| 7.2 Calibration conditions..... | 23 |
| Annex A (normative) Mathematical basis..... | 25 |
| A.1 General..... | 25 |
| A.2 Type A evaluation of uncertainty..... | 25 |
| A.3 Type B evaluation of uncertainty..... | 26 |
| A.4 Determining the combined standard uncertainty..... | 26 |
| A.5 Reporting..... | 27 |
| Annex B (informative) Averaged wavelength (or power) deviation over a certain range..... | 28 |

| | |
|--|----|
| Annex C (informative) Other testing | 30 |
| C.1 General | 30 |
| C.2 Wavelength resolution | 30 |
| C.2.1 Set-up | 30 |
| C.2.2 Testing equipment | 30 |
| C.2.3 Testing procedure for determining wavelength resolution | 30 |
| C.3 Optical power resolution | 31 |
| C.3.1 Set-up | 31 |
| C.3.2 Testing equipment | 31 |
| C.3.3 Testing procedure for optical power resolution | 31 |
| C.4 Signal to source spontaneous emission ratio | 32 |
| C.4.1 Set-up | 32 |
| C.4.2 Testing equipment | 32 |
| C.4.3 Testing procedure for determining signal to source spontaneous emission ratio | 32 |
| C.5 Side mode suppression ratio | 33 |
| C.5.1 General | 33 |
| C.5.2 Set-up | 33 |
| C.5.3 Testing equipment | 34 |
| C.5.4 Testing procedure | 34 |
| Bibliography | 37 |
| | |
| Figure 1 – Measurement set-up for wavelength calibration | 11 |
| Figure 2 – Measurement set-up for temperature dependence | 13 |
| Figure 3 – Measurement set-up for wavelength stability | 14 |
| Figure 4 – Measurement set-up for optical power dependence | 15 |
| Figure 5 – Measurement set-up for intrinsic optical power calibration | 17 |
| Figure 6 – Measurement set-up for temperature dependence | 18 |
| Figure 7 – Measurement set-up for optical power stability | 20 |
| Figure 8 – Measurement set-up for connection repeatability/reproducibility | 21 |
| Figure 9 – Measurement set-up for wavelength dependence | 22 |
| Figure C.1 – Measurement set-up for wavelength resolution | 30 |
| Figure C.2 – Measurement set-up for optical power resolution setting test | 31 |
| Figure C.3 – Measurement set-up for signal to total source spontaneous emission ratio | 32 |
| Figure C.4 – Measurement of the signal to spontaneous emission ratio | 33 |
| Figure C.5 – Measurement set-up for the side mode suppression ratio test | 33 |
| Figure C.6 – Optical spectrum of tuneable laser source | 35 |
| Figure C.7 – Measurement set-up for SMSR | 35 |

INTERNATIONAL ELECTROTECHNICAL COMMISSION

CALIBRATION OF TUNEABLE LASER SOURCES

FOREWORD

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International Standard IEC 62522 has been prepared by IEC technical committee 86: Fibre optics.

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

| | |
|------------|------------------|
| CDV | Report on voting |
| 86/443/CDV | 86/459/RVC |

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.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site 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.

INTRODUCTION

Wavelength-division multiplexing (WDM) transmission systems have been deployed in optical trunk lines. ITU-T Recommendations in the G.694 series describe the frequency and wavelength grids for WDM applications. For example, the frequency grid of G.694.1 supports a variety of channel spacing ranging from 12,5 GHz to 100 GHz and wider. WDM devices, such as arrayed waveguide grating (AWG), thin film filter or grating based multiplexers (MUX) and demultiplexers (DMUX) with narrow channel spacing are incorporated in the WDM transmission systems. When measuring the characteristics of such devices, wavelength tuneable laser sources are commonly used and are required to have well-calibrated performances; wavelength uncertainty, wavelength tuning repeatability, wavelength stability and output optical power stability are important parameters.

The tuneable laser source (TLS) is generally equipped with the following features:

- a) the output wavelength is continuously tuneable in a wavelength range starting at 1 260 nm or higher and ending at less than 1 675 nm (the output should excite only the fundamental LP01 fibre mode);
- b) an output port for optical fibre connectors.

The envelope of the spectrum is a single longitudinal mode with a FWHM of at most 0,1 nm. Any adjacent modes are at least 20 dB lower than the main spectral mode (for example, a distributed feedback laser diode (DFB-LD), external cavity laser, etc.)

CALIBRATION OF TUNEABLE LASER SOURCES

1 Scope

This International Standard provides a stable and reproducible procedure to calibrate the wavelength and power output of a tuneable laser against reference instrumentation such as optical power meters and optical wavelength meters (including optical frequency meters) that have been previously traceably calibrated.

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 60793-2-50, *Optical fibres – Part 2-50: Product specifications – Sectional specification for class B single-mode fibres*

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 62129-2, *Calibration of wavelength/optical frequency measurement instruments – Part 2: Michelson interferometer single wavelength meters*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

ISO/IEC Guide 98-3:2008, *Uncertainty of measurement – Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

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