

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Calibration of tuneable laser sources

Étalonnage des sources laser accordables





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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms, definitions, and abbreviated terms	7
3.1 Terms and definitions.....	7
3.2 Abbreviated terms.....	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	12
5.2.1 Set-up	12
5.2.2 Calibration equipment.....	12
5.2.3 Procedure for wavelength calibration	12
5.2.4 Dependence on conditions.....	13
5.2.5 Uncertainty at reference conditions.....	15
5.3 Wavelength calibration at operating conditions	16
5.3.1 General	16
5.3.2 Optical power dependence	16
5.3.3 Uncertainty at operating conditions.....	17
6 Optical power calibration	18
6.1 Overview.....	18
6.2 Optical power calibration at reference conditions	18
6.2.1 Set-up	18
6.2.2 Calibration equipment.....	19
6.2.3 Procedure for power calibration at reference conditions.....	19
6.2.4 Dependence on conditions.....	20
6.2.5 Uncertainty at reference conditions.....	23
6.3 Optical power calibration at operating conditions	23
6.3.1 General	23
6.3.2 Wavelength dependence	24
6.3.3 Uncertainty at operating conditions.....	25
7 Documentation	25
7.1 Calibration data and uncertainty.....	25
7.2 Calibration conditions	26
Annex A (normative) Mathematical basis for measurement uncertainty calculations.....	27
A.1 General.....	27
A.2 Type A evaluation of uncertainty	27
A.3 Type B evaluation of uncertainty	28
A.4 Determining the combined standard uncertainty.....	29
A.5 Reporting.....	29
Annex B (informative) Other testing	30

B.1	General.....	30
B.2	Wavelength tuning resolution	30
B.2.1	Set-up	30
B.2.2	Testing equipment	30
B.2.3	Testing procedure for determining wavelength resolution.....	30
B.3	Optical power tuning resolution	31
B.3.1	Set-up	31
B.3.2	Testing equipment	31
B.3.3	Testing procedure for optical power resolution.....	31
B.4	Signal-to-source spontaneous emission ratio	32
B.4.1	General	32
B.4.2	Set-up	32
B.4.3	Testing equipment	32
B.4.4	Testing procedure for determining signal-to-source spontaneous emission ratio	32
B.5	Side-mode suppression ratio.....	33
B.5.1	General	33
B.5.2	Set-up	33
B.5.3	Testing equipment	34
B.5.4	Testing procedure for determining the side-mode suppression ratio.....	34
Annex C (informative)	Linear to dB scale conversion of uncertainties.....	37
C.1	Definition of decibel	37
C.2	Conversion of relative uncertainties	37
Bibliography	39
Figure 1	– Measurement set-up for wavelength calibration.....	12
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.....	16
Figure 5	– Measurement set-up for intrinsic optical power calibration.....	18
Figure 6	– Measurement set-up for temperature dependence.....	20
Figure 7	– Measurement set-up for optical power stability.....	21
Figure 8	– Measurement set-up for connection repeatability/reproducibility.....	22
Figure 9	– Measurement set-up for wavelength dependence.....	24
Figure B.1	– Measurement set-up for wavelength resolution	30
Figure B.2	– Measurement set-up for optical power resolution setting test.....	31
Figure B.3	– Measurement set-up for signal to total source spontaneous emission ratio	32
Figure B.4	– Measurement of the signal to spontaneous emission ratio.....	33
Figure B.5	– Measurement set-up for the side-mode suppression ratio test.....	33
Figure B.6	– Optical spectrum of tuneable laser source	35
Figure B.7	– Measurement set-up for SMSR	35
Table 1	– Source of uncertainty for wavelength calibration.....	11
Table 2	– Source of uncertainty for optical power calibration.....	18

INTERNATIONAL ELECTROTECHNICAL COMMISSION

CALIBRATION OF TUNEABLE LASER SOURCES

FOREWORD

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

This second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision.

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

- a) addition of references to IEC 61315;
- b) addition of Table 1 and Table 2 on uncertainties;
- c) clarification of the reference power meter settings in 6.2.3 and 6.3.2.3.

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

Draft	Report on voting
86/639/FDIS	86/643/RVD

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. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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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 ITU-T Recommendation 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 full-width at half-maximum (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.).