Optics and photonics - Lasers and laser-related equipment - Test methods for the spectral characteristics of lasers

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EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN ISO 13695:2004 sisaldab Euroopa standardi EN ISO 13695:2004 ingliskeelset teksti. Käesolev dokument on jõustatud 23.09.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN ISO 13695:2004 consists of the English text of the European standard EN ISO 13695:2004. This document is endorsed on 23.09.2004 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This International Standard specifies methods by which the spectral characteristics such as wavelength, bandwidth, spectral distribution and wavelength stability of a laser beam can be measured. This International Standard is applicable to both continuous wave (cw) and pulsed laser beams. The dependence of the spectral characteristics of a laser on its operating conditions may also be important.	**Scope:** This International Standard specifies methods by which the spectral characteristics such as wavelength, bandwidth, spectral distribution and wavelength stability of a laser beam can be measured. This International Standard is applicable to both continuous wave (cw) and pulsed laser beams. The dependence of the spectral characteristics of a laser on its operating conditions may also be important.

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Võtmesõnad:

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EN ISO 13695

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English version

Optics and photonics – Lasers and laser-related equipment

Test methods for spectral characteristics of lasers

(ISO 13695 : 2004)

Optique et photonique – Lasers et équipement associé aux lasers – Méthodes d'essai des caractéristiques spectrales des lasers
(ISO 13695 : 2004)

Optik und Photonik – Laser und Laseranlagen – Prüfverfahren für die spektralen Kenngrößen von Lasern
(ISO 13695 : 2004)

This European Standard was approved by CEN on 2004-04-23.

CEN 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom.

CEN

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

Management Centre: rue de Stassart 36, B-1050 Brussels

Ref. No. EN ISO 13695 : 2004 E

Foreword

International Standard

ISO 13695 : 2004 Optics and photonics – Lasers and laser-related equipment – Test methods for spectral characteristics of lasers,

which was prepared by ISO/TC 172 'Optics and optical instruments' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 123 'Lasers and laser-related equipment', the Secretariat of which is held by DIN, as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by December 2004 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard:

Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 13695 : 2004 was approved by CEN as a European Standard without any modification.

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Introduction

The spectral characteristics of a laser, such as its peak wavelength or spectral linewidth, are important for potential applications. Examples are the specific application requirements of interferometry and lithography. This International Standard gives definitions of key parameters describing the spectral characteristics of a laser, and provides guidance on performing measurements to determine these parameters for common laser types.

The acceptable level of uncertainty in the measurement of wavelength will vary according to the intended application. Therefore, equipment selection and measurement and evaluation procedures are outlined for three accuracy classes. To standardize reporting of spectral characteristics measurement results, a report example is also included.

1 Scope

This International Standard specifies methods by which the spectral characteristics such as wavelength, bandwidth, spectral distribution and wavelength stability of a laser beam can be measured. This International Standard is applicable to both continuous wave (cw) and pulsed laser beams. The dependence of the spectral characteristics of a laser on its operating conditions may also be important.

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.

ISO 11145, *Optics and optical instruments — Lasers and laser-related equipment — Vocabulary and symbols*

ISO 12005, *Lasers and laser-related equipment — Test methods for laser beam parameters — Polarization*

IEC 60747-5-1, *Discrete semiconductor devices and integrated circuits — Part 5-1: Optoelectronic devices — General*

Guide to the expression of uncertainty in measurement (GUM), BIPM [1], IEC, IFCC [2], ISO, IUPAC [3], IUPAP [4], OIML [5], 1993, corrected and reprinted in 1995

International vocabulary of basic and general terms in metrology (VIM). BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, OIML, Geneva, ISO

3 Terms and definitions

For the purposes of this document, the terms and definitions given in the VIM, ISO 11145 and IEC 60747-5-1, and the following apply.

3.1
wavelength in vacuum
λ_0
wavelength of an infinite, plane electromagnetic wave propagating in vacuum

NOTE For a wave of frequency f, the wavelength in vacuum is then given by $\lambda_0 = c/f$, where c = 299 792 458 m/s.

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1) International Bureau of Weights and Measures (Bureau International des Poids et Measures).

2) International Federation of Clinical Chemistry and Laboratory Medicine.

3) International Union of Pure and Applied Chemistry.

4) International Union of Pure and Applied Physics.

5) International Organization of Legal Metrology (Organization International de Metrologie Legale).