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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 26599.1-2011

**Lasers and laser-related equipment -- Test methods for laser
beam widths, divergence angles and beam propagation ratios --
Part 1: Stigmatic and simple astigmatic beam**

激光和激光相关设备 激光光束宽度、发散角和光束传输比的试验方法 第1部分：
无像散和简单像散光束

(English Translation)

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Table of Contents

Preface
1 Scope
2 Normative reference document
3 Terms and definitions
4 Coordinate system
5 Test principle
5.1 Applicability
5.2 Beam width and beam diameter
5.3 Beam divergence angle
5.4 Beam transmission ratio
5.5 Comprehensive measurement of waist position, beam width, beam divergence angle and beam transmission ratio
6 Measuring and testing equipment
6.1 Overview
6.2 Preparation
6.3 Environmental control
6.4 Detector system
6.5 Beam shaping optical components and optical attenuator
6.6 Focusing system
7 Beam width and beam diameter measurement
7.1 Test procedure
7.2 Assessment

Foreword

"Laser and laser-related equipment laser beam width, divergence angle and beam transmission ratio test method" is divided into three parts.

- Part 1. No astigmatism and simple astigmatism;
- Part 2. Generalized astigmatic beam;

Part 3. Intrinsic and geometric classification, transmission and detailed test methods for laser beams.

This part is part 1 of GB/T 26599.

This part uses the translation method equivalent to the international standard ISO 11146-1.:2005 "laser and laser related equipment laser beam width, hair Test methods for angular and beam transmission ratios - Part 1. Non - astigmatism and simple astigmatic beams "(English version). This section does the following editorial Modification. In the normative reference document, use the international standard of our standard instead of the corresponding international standards.

This part is made by the China Machinery Industry Federation.

This part is headed by the National Committee for the Standardization of Optics and Photonics (SAC/TC103).

This part of the drafting unit. the State Food and Drug Administration Hangzhou Medical Device Quality Supervision and Inspection Center.

1 Scope

This part of GB/T 26599 specifies the beam width (diameter) of the laser beam, the measurement method of the divergence angle and the beam transmission ratio.

This part of GB/T 26599 applies only to astigmatic and simple astigmatic beams. If the beam type is unknown, or the beam is a generalized astigmatism Beam, this part does not apply.

2 Normative reference documents

The terms of this document are the terms of this part of this document, which are referenced in this part of GB/T 26599. Any reference to the date of the text , All subsequent amendments (excluding corrigenda) or revisions do not apply to this section. But encouraged to be reached in accordance with this part the parties to the agreement study whether the latest version of these documents can be used. For undated references, the latest edition of this document applies section.

GB/T 15313-2008 Laser terminology (ISO 11145.:2006, MOD) JB/T 6860-1993 Detectors, instruments and equipment for measuring laser radiant energy (IEC 61040.:1990, IDT) ISO 11146-2.:2005 Laser and laser-related equipment - Test methods for laser beam width, divergence angle and beam transmission ratio - Part 2 Part. generalized astigmatic beam ISO 13694 optical and optical instruments - Laser and laser related equipment - Test method for laser beam power (energy) density distribution

3 Terms and definitions

GB/T 15313-2008, ISO 13694, JB/T 6860-1993 and the following terms and definitions apply to this section.

Note: In these definitions, the x-axis, y-axis, and z-axis are for the lab system described in Chapter

4. In this context and in this standard, the term "power density distribution";

$E(x, y, z)$ "refers to a continuous wave light source. For a pulsed light source, it can be replaced by an "energy density distribution $H(x, y, z)$ ".

First order moment of power density distribution

first order moments of power density distribution the centroid coordinates of the power density distribution of the beam cross section are expressed by equations (1) and (2)

$$\bar{x} = \frac{\int x E(x, y, z) dx dy}{\int E(x, y, z) dx dy} \quad (1)$$

$$\bar{y} = \frac{\int y E(x, y, z) dx dy}{\int E(x, y, z) dx dy} \quad (2)$$

Note. In practical applications, infinite integrals are reduced to finite integrals in the specific case given in Chapter 7.