

ICS 31.260
CCS L51



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

GB/T 13739-2011

Replacing GB/T 13741-1992

**Test methods for laser beam widths,divergence angle and
transverse mode**

激光光束宽度、发散角的测试方法以及横模的鉴别方法

Issued on: December 30, 2011

Implemented on: May 1, 2012

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China;
Standardization Administration of China**

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. This standard replaces GB/T 13739-1992 "transverse mode laser radiation authentication method", GB/T 13740-1992 "laser radiation divergence angle measurement Test methods "and GB/T 13741-1992" laser radiation beam diameter test methods "and GB/T 13739-1992, GB/T 13740- 1992 and GB/T 13741-1992 compared to the main technical change is relatively large, informative details, see Appendix A. Please note that some of the content of this document may involve patents. Release mechanism of the present document does not assume responsibility for the identification of these patents. The standard proposed by China Machinery Industry Federation. This standard by the National Optical radiation safety and laser equipment Standardization Technical Committee (SAC/TC284) centralized. This standard was drafted. Beijing Optoelectronics Technology Institute, The 11th Institute of China Electronics Technology Group Corporation. The main drafters of this standard. Wu Aiping, Duan Guang, Lu Yonghong, Li Jialun, Luo Zhijun, Zhao Hong. This standard replaces the standards previously issued as follows:

--- GB/T 13739-1992;

--- GB/T 13740-1992;

--- GB/T 13741-1992. Laser beam width, divergence angle of the test method And identification methods transverse mode

1 Scope

GB/T 13739-2011 is the Chinese national standard on test methods for laser beam widths, divergence angle and transverse mode, in the field of electronics. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 30 December 2011 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 May 2012. Classification: ICS 31.260, CCS L51. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the identification methods for laser beam widths, divergence angle and test methods transverse mode. This standard applies to the free flow of homogeneous medium, and in the dissemination of the same power density distribution or orientation perpendicular to the laser beam Beam width, divergence angle test. This standard applies to discrimination laser radiation Gaussian beam transverse mode. This standard does not apply to array-based semiconductor laser.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB 7247.1 Safety of laser products - Part 1. Equipment Classification, Requirements and User's Guide GB/T 15313 Laser term

GB/T 19022 Measurement management systems for measurement processes and measuring equipment ISO 11146-

1 Test methods for laser and laser-related equipment for laser beam widths, divergence angle and beam propagation ratios - Part 1. None Astigmatism and simple astigmatic beams (Lasers and laser-related equipment-Test methods for laser beam widths, divergence angles and beam propagation ratios-Part 1. Stigmatic and simple astigmatic beams) Part 3 ISO /T Test methods R11146-3 laser and laser-related equipment laser beam widths, divergence angles and beam propagation ratios Score. intrinsic and geometrical laser beam classification, diffusion and test methods for details (Lasers and laser-related equipment-Test methods for laser beam widths, divergence angles and beam propagation ratios-Part 3. Intrinsic and geometrical laser beam classification, propagation and detail of test methods)

3 Terms and Definitions

GB/T 15313 and GB 7247.1 defined and the following terms and definitions apply to this document.

3.1 LCS laboratory coordinates system Defined laboratory coordinate system X, Y, Z axis predetermined space in three orthogonal directions, the Z-axis and customary beam axis coincides, X and Y axes Consistent with the horizontal and vertical directions, or the length of the side direction of the rectangular array detector agreement, click the original starting point Z coordinate to the measurement reference.

3.2 Measuring plane measurement plane Measuring the density distribution in the axial position (ZM) light beam power (or energy) is called an XY plane the measurement plane.

Note. The term "power density distribution $E(x, y, z)$ " belongs to the continuous wave light source, pulse light source in the case of using "energy density distribution $H(x, y, z)$ " instead.

3.3 Spindle coordinates principal axes coordinates system Within the definition of the plane measuring beam power density distribution spindle coordinate system X', Y', Z axis directions of three orthogonal spatial predetermined its axis X'