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

GB/T 13863-2011

Replacing GB/T 13863-1992; GB/T 13864-1992

Test methods for laser radiation power and its instability

激光辐射功率和功率不稳定性测试方法

(English Translation)

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules.

This standard replaces GB/T 13863-1992 "laser radiation power testing methods" and GB/T 13864-1992 "laser radiation power stability Set of test methods. " Compared with GB/T 13863-1992, in addition to editorial changes, the major technical changes are as follows.

- Modify the terms and definitions (see Chapter 3, Section 3 of the 1992 edition);
- Modify the test conditions and requirements (see Chapter 4, 1992 edition, Chapter 4);
- Increased large divergence angle of the laser radiation continuous power test (see 5.1.1.2);
- Added optional test equipment (see 5.1.4);
- Increase in measurement uncertainty estimation (see Chapter 6);
- Increasing the content of the test report (see Chapter 7).

Compared with GB/T 13864-1992, in addition to editorial changes, the major technical changes are as follows.

- Modify the terms and definitions (see Chapter 3, Section 3 of the 1992 edition);
- Modify the test conditions and requirements (see Chapter 4, 1992 edition, Chapter 4);
- Increasing the laser output power continuous instability test (see 5.2.1);
- Added optional test equipment (see 5.2.3);
- Increase in measurement uncertainty estimation (see Chapter 6);
- Increasing the content of the test report (see Chapter 7).

2006 "Optics and photonics laser devices laser beam and laser power. This revised standard adopts ISO 11554 using the redrafted law Rate, energy and temporal characteristics of the test method. " this standard and ISO 11554:2006 compared to some adjustments in the structure, listed in Appendix A of this standard and ISO 11554:2006 Chapter numbers control list.

This standard and ISO 11554:2006 as compared to the presence of the technical differences that have passed an empty spot on the outside edge of the vertical single page Line (|) have been marked, listed in Appendix B of the 11554 standard and ISO .2006 List of technical differences and the reasons.

Please note that some content of this document may involve patents, the issuing authority of this 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. 11th Institute of China Electronics Technology Group Corporation, Beijing Institute of Optoelectronics Technology, Beijing Science and Technology have Austrian by special Limited liability company.

1 Scope

This standard specifies the continuous measurement of laser radiation power and continuous quasi-continuous laser and a continuous laser output power instability Test methods.

This standard applies to all kinds of continuous and quasi-continuous laser continuous laser radiation power and a continuous laser output power instability test.

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/T 6360-1995 laser power and energy measuring equipment GB 7247.1 Safety of laser products - Part 1. Equipment Classification, Requirements and User's Guide (GB 7247.1-2001, IEC 60825-1:1993, IDT) GB/T 15313 Laser term (GB/T 15313-2008, ISO 11145:2006, MOD)

3 Terms and Definitions

GB/T 15313 and defined by the following terms and definitions are applicable to this document.

Continuous peak laser output power instability relative power peak fluctuation of laser radiation
 ΔP_2 Within the sampling period corresponding to the laser power 1Hz or less continuous ups and downs amount to half of the peak laser power than the continuous, Peak laser output power instability see equation (1).

$\Delta P_2 = \pm \frac{P_{\max} - P_{\min}}{2P} \times 100\%$ (1) where.

$P_{\max}$ --- corresponds to the maximum sampling period of continuous laser power measurement value, in units of watts (W);

$P_{\min}$ --- corresponds to the minimum sampling period of continuous laser power measurement value, in units of watts (W);

P --- sampling within the corresponding period of continuous laser power measurement value of the average, in watts (W).

Sensitivity Detector output increment its corresponding increment ratio is incident.

Test instruments nonlinear coefficient non-linear coefficient of measurement instrument
 Expression test equipment output and input sensitivity of disproportionate or variation coefficient, nonlinear coefficient tester see formula (2).