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

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**Spectro radiometry of pulsed optical radiation sources**

脉冲光辐射源光谱辐射测量方法

**(English Translation)**

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### Foreword

This standard is based on the rules of GB/T 1.1-2009 and GB/T 20000.2-2009.

This standard uses the re-drafting method to modify the use of CIE105-1993 "pulsed light radiation source spectral radiation measurement method".

This standard has more structural adjustment compared with CIE105-1993, Appendix A lists the standard and CIE105-1993 Chapter control list.

There are technical differences between this standard and CIE105-1993, and the terms involved in these differences have passed through the blank space ( ), and a list of the corresponding technical differences and their causes is given in Appendix B.

This standard is proposed by the China Light Industry Federation.

This standard by the National Lighting Standardization Technical Committee of light radiation measurement sub-technical committee (SAC/TC224/SC3) centralized.

The drafting of this standard unit. Hangzhou Remote Optoelectronic Information Co., Ltd., China Institute of Metrology, Beijing Semiconductor lighting technology to promote Into the center, Guangzhou Wei Kai Detection Technology Research Institute, Harbin Lighting Testing Center, Yangzhou City Product Quality Supervision and Inspection Institute.

### Introduction

Pulse light source is widely used in a variety of fields and a variety of equipment, such as LED, the camera's electronic flash unit, aircraft and emergency Through the signal lights, photocopiers, colorimeter and pulse light display. And pulse LED light source has begun large-scale application to the camera Electronic flash unit, signal lights and other fields, it is also the future development trend. Thus, the transient spectral characteristics of the pulsed

light source are measured the growing demand for the industry, the industry urgently need the relevant standards to regulate the measurement of pulsed light sources.

This standard is intended to standardize the measurement of the transient spectral characteristics of pulsed light radiation sources. As the field of measurement changes and innovation is very rapid, Especially in the detector and instrumentation technology, so this standard emphasizes the measurement method rather than the specific instrument technology. This standard is in the Appendix F enumerates an operable method of measuring the pulse LED light source, but does not mean that the method is the only way to achieve satisfactory results.

This standard applies to a variety of types of pulsed optical radiation measurements, such as.

--- steady-state light radiation with shutter;

--- steady-state light radiation with switching circuit [such as flash incandescent or light-emitting diode (LED)];

- directional steady-state light radiation about a shaft that is perpendicular to the optical axis;

A single or repetitive pulsed light radiation produced by the discharge of xenon or other gas mixtures.

Since pulsed laser radiation has coherent and narrowband characteristics, special measurement techniques are required, so this standard does not involve pulsed laser radiation Measurement.

Measurement method of pulsed light radiation source spectral radiation

## 1 Scope

This standard specifies the spectral radiation characteristics of pulsed light sources and the measurement of transient spectral characteristics.

This standard applies to LED, camera electronic flash unit, aircraft and emergency vehicle lights, photocopiers, colorimeter and pulse Pulsed light display and other pulsed light source.

This standard does not apply to the measurement of pulsed laser radiation.

## 2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document.

CIE17.4-1987 International Lighting Glossary (International Lighting Vocabulary)  
CIE59-1986 Polarization. Definitions and Terminology, Instrument Polarization (Polarization. Definition and nomenclature, instrument polarization CIE63-1984 Spectral Radiation Measurement of Light Sources (The spectroradiometric of light sources)

### 3 Terms and definitions

CIE17.4-1987 and the following terms and definitions apply to this document.

**Multi - color instrument polychromator** an optical device capable of dispersing complex light into a plurality of monochromatic spectral radiations and focusing on a multi-channel detector.

**Array detector** A physical arrangement of the detector elements that can receive and detect the output of the multicolor. In some cases, other optical elements may be available such as a portion of an array, such as an optical fiber panel that couples optical radiation to an array detector.

**Pixel** pixel

The smallest unit in the array detector or display element is a separate sensor or display element.

**Note:** In this standard, pixels are the smallest of the array detectors.

**Effective flash duration ( $t_{0.5}$ )** the flash intensity rises from half its peak intensity to a time interval between half the peak intensity of its peak intensity.

**Total flash duration ( $t_{0.1}$ )** the flash intensity rises from 10% of its peak intensity to a time interval between attenuation and 10% of its peak intensity.

**Dynamic range** the ratio of the given maximum signal capacity level of the system or component to its noise level. The dynamic range is available  $1.10^x$  ( $x$  is a positive