

Standard method of assessing the spectral quality of daylight simulators for visual appraisal and measurement of colour

ICS 17.180.20

National foreword

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The UK participation in its preparation was entrusted to Technical Committee CPL/34, Lamps and related equipment, which has the responsibility to:

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Cross-references

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Summary of pages

This document comprises a front cover, an inside front cover, the ISO title page, pages ii to viii, pages 1 to 19 and a back cover.

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INTERNATIONAL STANDARD

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CIE S 012/E

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Standard method of assessing the spectral quality of daylight simulators for visual appraisal and measurement of colour

*Méthode normalisée d'évaluation de la qualité spectrale des
simulateurs de lumière du jour pour le jugement visuel et la mesure des
couleurs*



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Foreword

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ISO 23603 was prepared as Standard CIE S 012/E by the International Commission on Illumination, which has been recognized by the ISO Council as an international standardizing body. It was adopted by ISO under a special procedure which requires approval by at least 75 % of the member bodies casting a vote, and is published as a joint ISO/CIE edition.

The International Commission on Illumination (abbreviated as CIE from its French title) is an organization devoted to international cooperation and exchange of information among its member countries on all matters relating to the science and art of lighting.

ISO 23603 was prepared by CIE Technical Committee 1-53 *A standard method for assessing the quality of daylight simulators*.



COMMISSION INTERNATIONALE DE L'ECLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Standard

CIE S 012/E:2004

Standard Method of Assessing the Spectral Quality of Daylight Simulators for Visual Appraisal and Measurement of Colour

Méthode normalisée d'évaluation de la qualité spectrale des simulateurs de lumière du jour pour le jugement visuel et la mesure des couleurs

Standardmethoden zur Bewertung der spektralen Qualität von Tageslichtsimulatoren für visuelle Beurteilung und Farbmessung

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FOREWORD

Standards produced by the Commission Internationale de l'Eclairage (CIE) are a concise documentation of data defining aspects of light and lighting, for which international harmony requires such unique definition. CIE Standards are therefore a primary source of internationally accepted and agreed data, which can be taken, essentially unaltered, into universal standard systems.

This International Standard has been prepared by CIE Technical Committee 1-53*, "A standard method for assessing the quality of daylight simulators", and was approved by the National Committees of the CIE.

Observed colours of objects depend on the illumination of the objects and the results of colour measurements may depend on the illumination used in the measurement. The CIE has standardized the spectral power distributions of several phases of daylight for use in observing and measuring colour. For practical applications in colour technology, illuminators are designed to illuminate specimens with light simulating one or more of these CIE illuminants. The accuracy of simulation has an important bearing on the accuracy of visual matches and colour measurements. CIE Technical Committee TC1.3 studied methods of assessing the spectral quality of daylight simulators and issued recommendations in the publication: CIE 51-1981 *A method for assessing the quality of daylight simulators for colorimetry*. That publication established the limits of the deviation from the ideal colour that initially qualified a simulator for consideration and established a test method to assign quality grades to simulators. The limits and test method expressed in that publication have been used throughout the world, since 1981. The historical development of the methodology is described in that publication.

This standard is based on the principles and methods described in CIE 51-1981. There are several new features, based on recent research and standardization (JIS, 2000; McCamy, 1996 and 1999). CIE 51-1981 treated CIE Illuminants D55, and D75 as well as CIE standard illuminant D65. CIE illuminant D50, which is widely used in photographic and colour printing technologies, was included in a later supplement to CIE 51-1981 (CIE 135/3-1999 Visual metamers for assessing the quality of CIE illuminant D50) and is also included in this standard. CIE 51.2-1999 includes both the original publication and the supplement. CIE 51.2-1999 specified limits on colour deviation graphically; this standard specifies the same limits numerically. CIE 51.2-1999 listed wavelength-dependent constants for visible-range assessment over the wavelength range from 400 nm to 700 nm; this standard lists those constants over the range from 380 nm to 780 nm. The constants and wavelength range for ultraviolet-range assessment in CIE 51.2-1999 are retained in this standard. For the special purpose of ultraviolet-range assessment, the wavelength range from 400 nm to 700 nm adequately represents the visible spectrum, because all of the fluorescence emission considered is within that range.

* Chairman of this TC was C. S. McCamy (US), members were: D. H. Alman (US), R. Hirschler (BR), T. Ichijo (JP), J. T. C. van Kemenade (NL), M. R. Luo (UK), M. Pointer (UK), J. Schanda (HU), and J. C. Zwinkels (CA).