

ICS 17.180.20
CCS A 26



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

GB/T 8415-2026

Replacing GB/T 8415-2001

Method for assessing the quality of daylight simulators

昼光模拟器的评价方法

(English Translation)

Issued on: January 28, 2026

Implemented on: August 1, 2026

Issued by: State Administration for Market Regulation

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document replaces GB/T 8415-2001 "Evaluation Method for Daylight Simulators". Compared with GB/T 8415-2001, the only changes are structural adjustments.

Aside from editorial changes, the main technical changes are as follows.

a) A D50 light source was added, and "D55", "D65", and "D75" were changed to "D55", "D65", and "D75" respectively (see Chapter 1, 2001 edition).

Chapter 1);

b) The notation and definition of the spectral reflectance radiance factor and fluorescence spectral radiance factor have been changed, and "total radiative excitation" has been added.

The definitions of fluorescence radiative efficiency, surface spectral radiative efficiency of fluorescent materials, and relative spectral distribution of fluorescence radiation have been updated.

(See 3.1, 3.2, 3.4, 3.5, 3.6, 3.7; and 3.1, 3.2, 3.4, 3.5, and 3.6 in the 2001 edition);

c) Change "CIE 1964 Supplementary Standard Colorimetric System Colorimetric Function" to "CIE 1964 Standard Colorimetric Observer Color Matching Function" the terms "number" and "three-color coordinates" have been changed to "chromatic coordinates" (see 4.3, 4.4, 5.1.2, and 4.3, 4.4, and 5.1.2 in the 2001 edition).

d) Figure 1 has been deleted, and it is stipulated that the CIE 1976 u^*10v^*10 chromaticity difference between the daylight simulator and the illuminator it simulates should not exceed [a certain value].

0.015, Add Table 1 (see 4.4, 2001 edition 4.4);

e) Extend the spectral range of the daylight simulator in the visible region from 400nm~700nm to 380nm~780nm (see Chapter 5 and...).

Tables 2-6 (Table 1 in Chapter 5 and 6.4 of the 2001 edition).

f) The formula for calculating the tristimulus values of metamerism samples has been modified (see 5.1.2, 2001 version 5.1.2);

g) In the calculation of the metamerism index, the CIELAB color difference formula is retained, while the CIELUV color difference formula is deleted. Correspondingly, daylight simulation...

The evaluation of daylight simulators based on CIELUV color difference limits has been removed (see section 5.1.3 of the 2001 edition).

5.2.4 and 6.1);

h) Spectral data for comparative samples used to evaluate the D50 light source have been added (see Tables 3 and 8);

i) Appendix A has been deleted (see Appendix A of the 2001 edition).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Color Standardization (SAC/TC120).

1 Scope

This document specifies the measurement of daylight simulators, the calculation of metamerism index, and the evaluation of daylight simulators.

This document applies to visual evaluation or color measurement of daylight simulators simulating CIE illuminators D50, D55, D65, and D75.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 3977 Methods of Representing Colors GB/T 7921 Uniform color space and color difference formula GB/T 26179 Measurement of Spectroradiance of Light Sources

3 Terms and Definitions

The following terms and definitions apply to this document.

$\beta_R(\lambda)$

Under the same illumination and observation conditions, the spectral reflectance radiance at a point on the surface of a non-spontaneous radiating medium in a given direction is the same as that of the theoretical...

The ratio of the spectral reflectance radiance of a diffuse reflector.

Note: Under normal circumstances, the spectral reflectance radiance factor does not depend on the relative spectral distribution of the irradiated light. However, for photoluminescent media surfaces, it is necessary to determine the irradiation...

The relative spectral distribution of light. The unit of the spectral reflectance radiance factor is 1.

$\beta_F(\lambda)$

Under the same illumination and observation conditions, the light produced by the fluorescence of the sample at a certain point on the surface of a non-spontaneous emission medium in a given direction.

The ratio of spectral radiance to the spectral radiance of an ideal diffuse reflector.

Note: The unit of fluorescence spectral radiance factor is 1.

$\beta_T(\lambda)$

Spectral radiance factor of fluorescent materials.

Note: This includes the reflectance spectral radiance factor $\beta_R(\lambda)$ and the fluorescence spectral radiance factor $\beta_F(\lambda)$, i.e.. $\beta_T(\lambda) = \beta_R(\lambda) \beta_F(\lambda)$.

The total radiant power that irradiates the sample and excites fluorescence.