



Standard Test Method for Obtaining Colorimetric Data From a Visual Display Unit by Spectroradiometry¹

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INTRODUCTION

The fundamental procedure for characterizing the color and luminance of a visual display unit (VDU) is to obtain the spectroradiometric data under specified measurement conditions, and from these data to compute CIE chromaticity coordinates and absolute luminance values based on the 1931 CIE Standard Observer. The considerations involved and the procedures to be used to obtain precision colorimetric data for this purpose are contained in this test method. The values and procedures for computing CIE chromaticity coordinates are contained in Method E 308. The procedures for obtaining spectroradiometric data are contained in Test Method E 1341. This test method includes some modifications to the procedures given in Method E 308 that are necessary for computing the absolute luminance values of VDUs. This procedure is intended to be generally applicable to any VDU device, including but not limited to cathode ray tubes (CRT), liquid crystal displays (LCD), and electroluminescent displays (ELD).

1. Scope

1.1 This test method prescribes the instrumental measurements required for characterizing the color and brightness of VDUs.

1.2 This test method is specific in scope rather than general as to type of instrument and object.

1.3 The values stated in SI units are to be regarded as the standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

E 284 Terminology Relating to Appearance²

E 308 Practice for Computing the Colors of Objects by Using the CIE System²

E 1341 Practice for Obtaining Spectroradiometric Data from Radiant Objects²

2.2 CIE Publications:

Publication CIE No. 18 Principles of Light Measurements³

Publication CIE No. 15.2 Colorimetry, 2nd ed., 1986³

Publication CIE No. 63 Spectroradiometric Measurement of Light Sources, 1984³

2.3 IEC Publications:

Publication No. 441 Photometric and Colorimetric Methods of Measurement of the Light Emitted by a Cathode-Ray Tube Screen, 1974⁴

3. Terminology

3.1 The definitions of appearance terms in Terminology E 284 are applicable to this test method.

4. Summary of Test Method

4.1 Procedures are given for obtaining spectroradiometric data and for the calculation of CIE tristimulus values and other color coordinates to describe the colors of VDUs. Modifications to the standard calculation procedures of Practice E 308 are described.

5. Significance and Use

5.1 The most fundamental method for obtaining CIE tristimulus values or other color coordinates for describing the colors of visual display units (VDUs) is by the use of spectroradiometric data. (See CIE No. 18 and 63.) These data

¹ This test method is under the jurisdiction of ASTM Committee E-12 on Appearance and is the direct responsibility of Subcommittee E12.06 on Appearance of Displays.

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² Annual Book of ASTM Standards, Vol 06.01.

³ Currently available through the U.S. National Committee of the CIE, c/o Mr. Thomas M. Lemons, TLA-Lighting Consultants, Inc., 7 Pond Street, Salem, MA 01970-4819.

⁴ Available from International Electrotechnical Commission (IEC), P.O. Box 131, 1211 Geneva, 20 Switzerland. Electronic mail: dn@iec.ch.