Designation: E1336 – 11

Standard Test Method for Obtaining Colorimetric Data From a Visual Display Unit by Spectroradiometry[1]

This standard is issued under the fixed designation E1336; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

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 Practice E308. The procedures for obtaining spectroradiometric data are contained in Test Method E1341. This test method includes some modifications to the procedures given in Practice E308 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 standard. No other units of measurement are included in this 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:*[2]

E284 Terminology of Appearance

E308 Practice for Computing the Colors of Objects by Using the CIE System

E1341 Practice for Obtaining Spectroradiometric Data from Radiant Sources for Colorimetry

2.2 *CIE Publications:*

Publication CIE No. 18 Principles of Light Measurements[3]

Publication CIE No. 15.2 Colorimetry, 2nd ed., 1986[3]

Publication CIE No. 63 Spectroradiometric Measurement of Light Sources, 1984[3]

2.3 *IEC Publications:*

Publication No. 441 Photometric and Colorimetric Methods of Measurement of the Light Emitted by a Cathode-Ray Tube Screen, 1974[4]

3. Terminology

3.1 The definitions of appearance terms in Terminology E284 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 E308

[1] This test method is under the jurisdiction of ASTM Committee E12 on Color and Appearance and is the direct responsibility of Subcommittee E12.06 on Display, Imaging and Imaging Colorimetry.

Current edition approved Nov. 1, 2011. Published November 2011. Originally approved in 1991. Last previous edition approved in 2003 as E1336 – 96 (2003). DOI: 10.1520/E1336-11.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from U.S. National Committee of the CIE (International Commission on Illumination), C/o Thomas M. Lemons, TLA-Lighting Consultants, Inc., 7 Pond St., Salem, MA 01970, http://www.cie-usnc.org.

[4] Available from International Electrotechnical Commission (IEC), 3 rue de Varembé, Case postale 131, CH-1211, Geneva 20, Switzerland, http://www.iec.ch.

are described.