



Standard Practice for Measurement of Emission Characteristics and Requirements for LED UV-A Lamps Used in Fluorescent Penetrant and Magnetic Particle Testing¹

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1. Scope

1.1 This practice covers the procedures for testing the performance of ultraviolet A (UV-A), light emitting diode (LED) lamps used in fluorescent penetrant and fluorescent magnetic particle testing (see Guides E709 and E2297, and Practices E165/E165M, E1208, E1209, E1210, E1219, E1417/E1417M and E1444).² This specification also includes reporting and performance requirements for UV-A LED lamps.

1.2 These tests are intended to be performed only by the manufacturer to certify performance of specific lamp models (housing, filter, diodes, electronic circuit design, optical elements, cooling system, and power supply combination) and also includes limited acceptance tests for individual lamps delivered to the user. This test procedure is not intended to be utilized by the end user.

1.3 This practice is only applicable for UV-A LED lamps used in the examination process. This practice is not applicable to mercury vapor, gas-discharge, arc or luminescent (fluorescent) lamps or light guides (for example, borescope light sources).

1.4 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.5 *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:³

E165/E165M Practice for Liquid Penetrant Examination for General Industry

E709 Guide for Magnetic Particle Testing

E1208 Practice for Fluorescent Liquid Penetrant Testing Using the Lipophilic Post-Emulsification Process

E1209 Practice for Fluorescent Liquid Penetrant Testing Using the Water-Washable Process

E1210 Practice for Fluorescent Liquid Penetrant Testing Using the Hydrophilic Post-Emulsification Process

E1219 Practice for Fluorescent Liquid Penetrant Testing Using the Solvent-Removable Process

E1316 Terminology for Nondestructive Examinations

E1348 Test Method for Transmittance and Color by Spectrophotometry Using Hemispherical Geometry

E1417/E1417M Practice for Liquid Penetrant Testing

E1444 Practice for Magnetic Particle Testing

E2297 Guide for Use of UV-A and Visible Light Sources and Meters used in the Liquid Penetrant and Magnetic Particle Methods

2.2 Other Standards:⁴

ANSI/ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories

ANSI/NCSL Z540.3 Requirements for the Calibration of Measuring and Test Equipment

3. Terminology

3.1 *Definitions*—General terms pertaining to ultraviolet A (UV-A) radiation and visible light used in liquid penetrant and

¹ This test method is under the jurisdiction of ASTM Committee E07 on Nondestructive Testing and is the direct responsibility of Subcommittee E07.03 on Liquid Penetrant and Magnetic Particle Methods.

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² The use of LED lamps for penetrant examination may be covered by a patent. Interested parties are invited to submit information regarding the identification of alternative(s) to this patented item to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend.

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⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.