



Standard Terminology for Three-Dimensional (3D) Imaging Systems¹

This standard is issued under the fixed designation E2544; 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.

1. Scope

1.1 This terminology contains common terms, definitions of terms, descriptions of terms, nomenclature, and acronyms associated with three-dimensional (3D) imaging systems in an effort to standardize terminology used for 3D imaging systems.

1.2 The definitions of the terms presented in 3.1 are obtained from various standard documents developed by various standards development organizations. The intent is not to change these universally accepted definitions but to gather, in a single document, terms and their definitions that may be used in current or future standards for 3D imaging systems.

1.2.1 In some cases, definitions of the same term from two standards have been presented to provide additional reference. The text in parentheses to the right of each defined term is the name (and, in some cases, the specific section) of the source of the definition associated with that term.

1.3 The definitions in 3.2 are specific terms developed by this committee for 3D imaging systems. Some terms may have generally accepted definitions in a particular community or are defined in existing standards. If there are conflicting definitions, our preference is to adapt (modify) the ISO standard (if available) for this standard.

1.4 A definition in this terminology is a statement of the meaning of a word or word group expressed in a single sentence with additional information included in notes or discussions.

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.*

NOTE 1—The subcommittee responsible for this standard will review definitions on a five-year basis to determine if the definition is still appropriate as stated. Revisions will be made when determined necessary.

¹ This terminology is under the jurisdiction of Committee E57 on 3D Imaging Systems and is the direct responsibility of Subcommittee E57.01 on Terminology.

Current edition approved May 15, 2011. Published June 2011. Originally approved in 2007. Last previous edition approved in 2011 as E2544 – 11. DOI: 10.1520/E2544-11A.

2. Referenced Documents

2.1 *ASTM Standards*:²

E456 Terminology Relating to Quality and Statistics

2.2 *ASME Standard*:³

B89.4.19 Performance Evaluation of Laser Based Spherical Coordinate Measurement Systems

2.3 *ISO Standard*:⁴

VIM International vocabulary of metrology -- Basic and general concepts and associated terms

ISO 11146-1 Lasers and laser-related equipment — Test methods for laser beam widths, divergence angles and beam propagation ratios — Part 1: Stigmatic and simple astigmatic beams

2.4 *NIST/SEMATECH Standard*:⁵

NIST/SEMATECH e-Handbook of Statistical Methods

3. Terminology

3.1 *Definitions*:

accuracy of measurement, *n*—closeness of the agreement between the result of a measurement and a true value of the measurand. (VIM 3.5)

DISCUSSION—

(1) Accuracy is a qualitative concept.

(2) The term “precision” should not be used for “accuracy.”

bias (of a measuring instrument), *n*—systematic error of the indication of a measuring instrument. (VIM 3.25)

DISCUSSION—

(1) The bias of a measuring instrument is normally estimated by averaging the error of indication over an appropriate number of repeated measurements.

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 American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New York, NY 10016-5990, <http://www.asme.org>.

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

⁵ Available from National Institute of Standards and Technology (NIST), 100 Bureau Dr., Stop 1070, Gaithersburg, MD 20899-1070, <http://www.nist.gov>. e-Handbook available at <http://www.itl.nist.gov/div898/handbook/>.