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Standard Practice for Evaluation of Metallic Weapons Detectors for Controlled Access Search and Screening[1]

This standard is issued under the fixed designation F1468; 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 practice covers methods for the evaluation of walk-through metal weapons detectors and criteria for testing metal detection performance.

1.2 This practice specifies certain health, safety, and human factors criteria pertaining to the usage of the detection equipment.

1.3 This practice requires the use of non-standardized (user-supplied) test objects and test equipment. Evaluations made using the procedures outlined in this practice can be used for comparative evaluations only if the tests are made with the same equipment and test objects.

1.4 This practice is intended for use by manufacturers and evaluators of electromagnetic field devices used for screening persons entering into controlled access areas. It is not intended to set performance nor limit or constrain operating technologies, nor is it a document for use by individual operators or users of such equipment at specific access control points.

1.5 The values stated in SI units are to be regarded as the standard. Other units given in parentheses are for information only.

1.6 *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.* For a specific hazards statement, see warning note in 12.2.5.

2. Referenced Documents

2.1 *ANSI/IEEE Standard:*

C62.41 IEEE Guide for Surge Voltages in Low Voltage AC Power Circuits[2]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *clean tester*—person who does not carry any objects which would significantly alter the signal produced when the person carries a test object; smaller test objects require more complete elimination of metallic objects. By example but not limitation, such significant objects may include: metallic belt buckles, metal buttons, cardiac pacemakers, coins, metal-frame eye glasses, hearing aids, jewelry, keys, mechanical pens and pencils, shoes with metal shanks or arch supports, metallic surgical implants, undergarment support metal, and metal zippers. A clean tester passing through a metal detector shall not cause a disturbance signal greater than 10 % of that produced when carrying the critical test object through the detector. The tester shall have a mass between 50 and 100 kg (110 and 220 lb) and a height between 1.50 and 1.90 m (59 and 75 in.). If the detector is designed to be sensitive to body size because of design or desired sensitivity, the physical size of testers should be smaller and within a narrower range.

3.1.2 *critical orientation*—orientation of a test object which produces the smallest detection signal or weakest detection.

3.1.3 *critical sensitivity setting*—sensitivity setting of a detector at which the critical test object in its critical orientation is detected at a 90 % or greater rate at the weakest or critical test point for the detector.

3.1.4 *critical test object*—test object out of a given group of objects which, in its worst-case or critical orientation, produces the worst-case or critical sensitivity setting for a specific detector. The group shall comprise one or more objects which are to be detected under the same detector settings.

3.1.5 *critical test point*—location within the passage opening of a detector portal which produces the weakest signal response (the critical sensitivity) for the critical test object at its critical orientation.

3.1.6 *detector*—synonym (used in this practice for brevity) for a walk-through device for detecting weapons such as defined in 3.1.14.

3.1.7 *discrimination ratio*—expression of a detector's ability to discriminate between a weapon and innocent personal possessions; it is the ratio of the signal generated by a critical

[1] This practice is under the jurisdiction of ASTM Committee F12 on Security Systems and Equipmentand is the direct responsibility of Subcommittee F12.60 on Controlled Access Security, Search, and Screening Equipment.

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[2] Available from Institute of Electrical and Electronics Engineers, Inc. (IEEE), 445 Hoes Ln., P.O. Box 1331, Piscataway, NJ 08854-1331, http://www.ieee.org.

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