



Standard Practice for Qualification of Radioscopic Systems¹

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1. Scope

1.1 This practice provides test and measurement details for measuring the performance of X-ray and Gamma ray radiosopic systems. Radioscopic examination applications are diverse. Therefore, system configurations are also diverse and constantly changing as the technology advances.

1.2 This practice is intended as a means of initially qualifying and re-qualifying a radioscopic system for a specified application by determining its performance level when operated in a static mode. System architecture including the means of radioscopic examination record archiving and the method for making the accept/reject decision are also unique system features and their effect upon system performance must be evaluated.

1.3 The general principles, as stated in this practice, apply broadly to transmitted-beam penetrating radiation radioscopic systems. Other radioscopic systems, such as those employing neutrons and Compton back-scattered X-ray imaging techniques, are not covered as they may involve equipment and application details unique to such systems.

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.* For information on safety requirements, refer to the applicable documents listed in Section 2.

2. Referenced Documents

2.1 ASTM Standards:

E 747 Practice for Design, Manufacture and Material Grouping Classification of Wire Image Quality Indicators (IQI) Used for Radiology²

E 1025 Practice for Design, Manufacture, and Material Grouping Classification of Hole-Type Image Quality Indicators (IQI) Used for Radiology²

E 1255 Practice for Radioscopy²

E 1316 Terminology for Nondestructive Examinations²

E 1647 Practice for Determining Contrast Sensitivity in Radioscopy²

E 2002 Practice for Determining Total Image Unsharpness in Radiology²

2.2 Other Standard:

EN 462–5 Duplex Wire IQI

3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice, see Terminology E 1316.

4. Summary of Practice

4.1 This practice provides a standardized procedure for the initial qualification and requalification of a radioscopic system to establish radioscopic examination capabilities for a specified range of applications.

4.2 This practice is intended for use in association with a standard practice governing the use of radioscopic examination, such as Practice E 1255.

4.3 This practice specifies the procedures to be used in determining the performance level of the radioscopic system. Unique system features, including component selection, system architecture, programmability and image archiving capabilities are important factors and are taken into account in this practice. The overall system performance level, as well as key system features, are to be recorded in a qualification document which shall qualify the performance level of the total radioscopic system. An example of the Radioscopic System Qualification document form is included in the Appendix. This document may be tailored to suit the specific application.

5. Significance and Use

5.1 As with conventional radiography, radioscopic examination is broadly applicable to the many materials and object configurations which may be penetrated with X-rays or gamma rays. The high degree of variation in architecture and performance among radioscopic systems due to component selection, physical arrangement and object variables, makes it necessary to establish the level of performance which the selected radioscopic system is capable of achieving in specific applications. The manufacturer of the radioscopic system, as well as

¹ This practice is under the jurisdiction of ASTM Committee E07 on Nondestructive Testing and is the direct responsibility of Subcommittee E07.01 on Radiology (X and Gamma) Method.

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² *Annual Book of ASTM Standards*, Vol 03.03.

