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Radionuclide imaging devices – Characteristics and test conditions

Part 2: Single photon emission computed tomographs

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**RADIONUCLIDE IMAGING DEVICES –
CHARACTERISTICS AND TEST CONDITIONS –****Part 2: Single photon emission computed tomographs**

FOREWORD

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International Standard IEC 61675-2 has been prepared by subcommittee 62C: Equipment for radiotherapy, nuclear medicine and radiation dosimetry, of IEC technical committee 62: Electrical equipment in medical practice.

This consolidated version of IEC 61675-2 consists of the first edition (1998) [documents 62C/206/FDIS and 62C/215/RVD] and its amendment 1 (2004) [documents 62C/378/FDIS and 62C/379/RVD].

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 1.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

In this standard, the following print types are used:

- TERMS DEFINED IN CLAUSE 2 OF THIS STANDARD OR LISTED IN ANNEX A: SMALL CAPITALS.

The requirements are followed by specifications for the relevant tests.

Annex A is for information only.

A bilingual version of this standard may be issued at a later date.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

RADIONUCLIDE IMAGING DEVICES – CHARACTERISTICS AND TEST CONDITIONS –

Part 2: Single photon emission computed tomographs

1 General

1.1 Scope and object

This part of IEC 61675 specifies terminology and test methods for describing the characteristics of Anger type rotational GAMMA CAMERA SINGLE PHOTON EMISSION COMPUTED TOMOGRAPHS (SPECT), equipped with parallel hole collimators. As these systems are based on Anger type GAMMA CAMERAS this part of IEC 61675 shall be used in conjunction with IEC 60780. These systems consist of a gantry system, single or multiple DETECTOR HEADS and a computer system together with acquisition, recording, and display devices.

This part of IEC 61675-2 also specifies test conditions for declaring the characteristics of single photon computer tomographs operated in coincidence mode as well as in single photon mode.

The test methods specified for coincidence mode are based on the test methods for dedicated PET tomographs as described in IEC 61675-1 to reflect as well as possible the clinical use of coincidence detection. Tests have been modified to reflect the limited sensitivity and COUNT RATE CHARACTERISTICS of the single photon computer tomographs operated in coincidence detection mode only when needed.

The test methods specified in this part of IEC 61675 have been selected to reflect as much as possible the clinical use of Anger type rotational GAMMA CAMERA SINGLE PHOTON EMISSION COMPUTED TOMOGRAPHS (SPECT). It is intended that the test methods be carried out by manufacturers thereby enabling them to describe the characteristics of SPECT systems on a common basis.

No test has been specified to characterize the uniformity of reconstructed images because all methods known so far will mostly reflect the noise of the image.

1.2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60780:1984, *Medical radiology – Terminology*

IEC 60789:1992, *Characteristics and test conditions of radionuclide imaging devices – Anger type gamma cameras*

IEC 61675-1, — *Radionuclide imaging devices – Characteristics and test conditions – Part 1: Positron emission tomographs*