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Radionuclide imaging devices – Characteristics and test conditions – Part 1: Positron emission tomographs

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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International Standard IEC 61675-1 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 61675-1 consists of the first edition (1998) [documents 62C/205/FDIS and 62C/214/RVD] and its amendment 1 (2008) [documents 62C/419/CDV and 62C/432/RVC].

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.

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- withdrawn,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.

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

INTRODUCTION
(to amendment 1)

Further developments of POSITRON EMISSION TOMOGRAPHS allow most of the tomographs to be operated in fully 3D acquisition mode. To comply with this trend, this amendment describes test conditions in accordance with the acquisition characteristic. It is the intention to simulate 3D imaging without introducing new phantoms or new acquisition or processing protocols. The test does simulate more realistically count rate characteristics for whole body imaging. Measurement of SCATTER FRACTION is not intended with this test. Certain parts of the standard are amended as stated below.

RADIONUCLIDE IMAGING DEVICES – CHARACTERISTICS AND TEST CONDITIONS –

Part 1: Positron emission tomographs

1 General

1.1 Scope and object

This part of IEC 61675 specifies terminology and test methods for declaring the characteristics of POSITRON EMISSION TOMOGRAPHS. POSITRON EMISSION TOMOGRAPHS detect the ANNIHILATION RADIATION of positron emitting RADIONUCLIDES by COINCIDENCE DETECTION.

The test methods specified in this part of IEC 61675 have been selected to reflect as much as possible the clinical use of POSITRON EMISSION TOMOGRAPHS. It is intended that the test methods be carried out by manufacturers, thereby enabling them to declare the characteristics of POSITRON EMISSION TOMOGRAPHS. So, the specifications given in the ACCOMPANYING DOCUMENTS shall be in accordance with this standard. This standard does not imply which tests will be performed by the manufacturer on an individual tomograph.

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

1.2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of IEC 61675. At the time of publication, the edition indicated was valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 61675 are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60788:1984, *Medical radiology – Terminology*