TECHNICAL REPORT

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2005-07

Nuclear medicine instrumentation – Routine tests –

Part 3: Positron emission tomographs

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

NUCLEAR MEDICINE INSTRUMENTATION – ROUTINE TESTS –

Part 3: Positron emission tomographs

FOREWORD

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IEC 61948-3, which is a technical report, has been prepared by subcommittee 62C: Equipment for radiotherapy, nuclear medicine and radiation dosimetry, of IEC technical committee 62: Electrical equipment in medical practice.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
62C/376/DTR	62C/383/RVC

Full information on the voting for the approval of this technical report can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

In this technical report the following print types are used:

- requirements, compliance with which can be tested, and definitions: in roman type;
- explanation, advice, introductions, general statements, exceptions and reference: in smaller roman type;
- *test specifications: in italic type*;
- TERMS DEFINED IN CLAUSE 3 OF THIS TECHNICAL REPORT OR LISTED IN THE INDEX OF DEFINED TERMS: SMALL CAPITALS.

IEC 61948 consists of the following parts, under the general title *Nuclear medicine instrumentation – Routine tests:*

Part 1: Radiation counting systems

Part 2: Scintillation cameras and single photon emission computed tomography imaging

Part 3: Positron emission tomographs

The committee has decided that the contents of this publication 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- withdrawn;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 publication may be issued at a later date.

INTRODUCTION

This technical report is based on the German Standard DIN 6855-4 "Qualitätsprüfung nuklearmedizinischer Messsysteme – Teil 4: Konstanzprüfung von Positronen-Emissions-Tomographen (PET)".

NUCLEAR MEDICINE INSTRUMENTATION – ROUTINE TESTS –

Part 3: Positron emission tomographs

1 Scope and object

This technical report is valid for POSITRON EMISSION TOMOGRAPHS utilizing stationary or moving detectors in a circular arrangement. It is not valid for SPECT-systems operated in coincidence mode. In the framework of QUALITY CONTROL, this technical report describes test methods suitable for the purpose of routine testing. Methods used for acceptance testing are described in IEC 61675-1:1998.

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 61675-1:1998, *Radionuclide imaging devices – Characteristics and test conditions – Part 1: Positron emission tomographs*

IEC 61948-2:2001, *Nuclear medicine instrumentation – Routine tests – Part 2: Scintillation cameras and single photon emission computed tomography imaging*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE A certain number of terms used in this document have been drawn from IEC 60788, IEC 61675-1 and IEC 61948-1 (see Index of defined terms).

3.1
quality control
part of the quality assurance in nuclear medicine including tests of instruments with appropriate test methods

NOTE Includes both acceptance test and routine test.

[IEC 61948-1:2001, definition 3.1]

3.2
acceptance test
test carried out at the request and with the participation of the user or his representative to ascertain by determination of proper performance parameters that the instrument meets the specifications claimed by the vendor

[IEC TR 61948-1:2001, definition 3.2.1]

NOTE An ACCEPTANCE TEST should be carried out at the time of installation and when appropriate after major service. During or immediately after ACCEPTANCE TEST, REFERENCE DATA are collected to be used as a standard for comparison with future ROUTINE TESTS.