Radiation protection instrumentation - Spectroscopy-based portal monitors used for the detection and identification of illicit trafficking of radioactive material

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NATIONAL FOREWORD

See Eesti standard EVS-EN 62484:2015 sisaldab Euroopa standardi EN 62484:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 62484:2015 consists of the English text of the European standard EN 62484:2015.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 06.11.2015.	Date of Availability of the European standard is 06.11.2015.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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EUROPEAN STANDARD

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English Version

Radiation protection instrumentation - Spectroscopy-based portal monitors used for the detection and identification of illicit trafficking of radioactive material (IEC 62484:2010)

Instrumentation pour la radioprotection - Moniteurs spectroscopiques pour portiques d'accès utilisés pour la détection et l'identification du trafic illicite des matières radioactives
(IEC 62484:2010)

Strahlenschutz-Messgeräte - Auf Spektroskopie basierende Portalmonitore für den Nachweis und die Identifikation des unerlaubten Handels mit radioaktiven Stoffen
(IEC 62484:2010)

This European Standard was approved by CENELEC on 2015-11-02. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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European foreword

This document (EN 62484:2015) consists of the text of IEC 62484:2010 prepared by SC 45B "Radiation protection instrumentation" of IEC/TC 45 "Nuclear instrumentation".

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-11-02
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-11-02

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Endorsement notice

The text of the International Standard IEC 62484:2010 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60038	NOTE	Harmonized as EN 60038.
IEC 60068-2-75	NOTE	Harmonized as EN 60068-2-75.
IEC 60846	NOTE	Harmonized in EN 60846 series.
IEC 61526:2010	NOTE	Harmonized as EN 61526:2013 (modified).
IEC 62327:2006	NOTE	Harmonized as EN 62327:2011 (modified).

CONTENTS

RADIATION PROTECTION INSTRUMENTATION – SPECTROSCOPY-BASED PORTAL MONITORS USED FOR THE DETECTION AND IDENTIFICATION OF ILLICIT TRAFFICKING OF RADIOACTIVE MATERIAL

1 Scope and object

This International Standard specifies the operational and performance requirements for spectroscopy-based portal monitors used for the detection and identification of illicit trafficking of radioactive material. Spectroscopy-based portal monitors have the ability to detect gamma and neutron radiation and identify gamma-emitting radionuclides that may be present in or on persons, vehicles, containers, or packages in a static or transient mode of operation.

Operational requirements established by this standard include radiation detection and gamma-emitting radionuclide identification, and those requirements associated with the expected electrical, mechanical, and environmental conditions when a portal monitor is deployed.

The object of this standard is to establish performance requirements and to give examples of acceptable test methods, and to specify general characteristics, general test conditions, radiation characteristics, electrical safety, and environmental characteristics to determine if a portal monitor meets the requirements of this standard.

Special applications, which may include a monitor's operation under weather conditions or for detection needs not addressed by this standard, shall require additional testing.

Obtaining operating performance that meets or exceeds the specifications as stated in this standard depends upon properly installing the monitor, establishing appropriate operating parameters, providing security for the monitor, maintaining calibration, implementing a suitable response testing and maintenance program, auditing compliance with quality requirements, and providing proper training for operating personnel.

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 60050-393:2003, *International Electrotechnical Vocabulary (IEV) – Part 393: Nuclear instrumentation – Physical phenomena and basic concepts*

IEC 60050-394:2007, *International Electrotechnical Vocabulary (IEV) – Part 394: Nuclear instrumentation – Instruments, systems, equipment and detectors*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
Amendment 1 (1999)

IEC 61000-4-2:2008, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3:2006, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

ISO 4037-1:1996, *X and gamma reference radiation for calibrating dosemeters and doserate meters and for determining their response as a function of photon energy – Part 1: Radiation characteristics and production methods*

ISO 4037-2:1997, *X and gamma reference radiation for calibrating dosemeters and doserate meters and for determining their response as a function of photon energy – Part 2: Dosimetry for radiation protection over the energy ranges from 8 keV to 1,3 MeV and 4 MeV to 9 MeV*

ISO 4037-3:1999, *X and gamma reference radiation for calibrating dosemeters and doserate meters and for determining their response as a function of photon energy – Part 3: Calibration of area and personal dosemeters and the measurement of their response as a function of energy and angle of incidence*

ISO 8529-1:2001, *Reference neutron radiations – Part 1: Characteristics and methods of production*

ISO 8529-2:2000, *Reference neutron radiations – Part 2: Calibration fundamentals of radiation protection devices related to the basic quantities characterizing the radiation field*

ISO 8529-3:1998, *Reference neutron radiations – Part 3: Calibration of area and personal dosimeters and determination of response as a function of neutron energy and angle of incidence*

International Bureau of Weights and Measures: *The International System of Units, 8th edition, 2006*

3 Terms and definitions, abbreviations, quantities and units

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions, as well as those given in IEC 60050-393 and IEC 60050-394 apply.

3.1.1
acceptable (or correct) identification
when a monitor identifies the radionuclide(s) that are present

3.1.2
alarm
an audible, visual, or other signal activated when the instrument reading exceeds a preset value, falls outside of a preset range, or when the instrument detects and/or identifies the presence of the source of radiation according to a preset condition

[IEV 393-18-03, modified]

3.1.3
alarm criteria
conditions that cause a monitor to alarm

3.1.4
confidence indication
an indication provided by the monitor on the reliability assigned to the determined identification