

STN	Prístroje na ochranu pred žiarením Portálové monitory založené na spektroskopii (SRPMs) používané na detekciu a identifikáciu nedovoleného obchodu s rádioaktívnym materiálom	STN EN IEC 62484 35 6607
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Radiation protection instrumentation - Spectrometric radiation portal monitors (SRPMs) used for the detection and identification of illicit trafficking of radioactive material

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 01/22

Obsahuje: EN IEC 62484:2021, IEC 62484:2020

Oznámením tejto normy sa od 02.12.2024 ruší
STN EN 62484 (35 6607) z októbra 2016

134388

EUROPEAN STANDARD

EN IEC 62484

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2021

ICS 13.280

Supersedes EN 62484:2015 and all of its amendments
and corrigenda (if any)

English Version

**Radiation protection instrumentation - Spectrometric radiation
portal monitors (SRPMs) used for the detection and identification
of illicit trafficking of radioactive material
(IEC 62484:2020)**

Instrumentation pour la radioprotection - Portiques
spectrométriques de détection des rayonnements (SRPM)
utilisés pour la détection et l'identification du trafic illicite
des matières radioactives
(IEC 62484:2020)

Strahlenschutz-Messgeräte - Auf Spektroskopie basierende
Portalmonitore für den Nachweis und die Identifikation des
unerlaubten Handels mit radioaktiven Stoffen
(IEC 62484:2020)

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Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 62484:2021 (E)**European foreword**

This document (EN IEC 62484:2021) consists of the text of IEC 62484:2020 prepared by IEC/SC 45B "Radiation protection instrumentation" of IEC/TC 45 "Nuclear instrumentation".

- latest date by which this document has to be (dop) 2022-12-02 implemented at national level by publication of an identical national standard or by endorsement
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IEC 60038	NOTE	Harmonized as EN 60038
IEC 60068-2-11	NOTE	Harmonized as EN IEC 60068-2-11
IEC 60068-2-75	NOTE	Harmonized as EN 60068-2-75
IEC 60846 (series)	NOTE	Harmonized as EN 60846 (series)
IEC 62244	NOTE	Harmonized as EN IEC 62244
IEC 62327	NOTE	Harmonized as EN IEC 62327
IEC 62401	NOTE	Harmonized as EN IEC 62401
IEC 62484	NOTE	Harmonized as EN 62484
IEC 62533	NOTE	Harmonized as EN 62533
IEC 62534	NOTE	Harmonized as EN 62534
IEC 62618	NOTE	Harmonized as EN 62618
IEC 62694	NOTE	Harmonized as EN 62694
IEC 63121	NOTE	Harmonized as EN IEC 63121
ISO 4037-1	NOTE	Harmonized as EN ISO 4037-1
ISO 4037-2	NOTE	Harmonized as EN ISO 4037-2
ISO 4037-3	NOTE	Harmonized as EN ISO 4037-3

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-395	-	International Electrotechnical Vocabulary - Part 395: Nuclear instrumentation: Physical phenomena, basic concepts, instruments, systems, equipment and detectors	-	-
IEC 60068-2-5	-	Environmental testing - Part 2-5: Tests - Test S: Simulated solar radiation at ground level and guidance for solar radiation testing and weathering	EN IEC 60068-2-5	-
IEC 62706	-	Radiation protection instrumentation - Environmental, electromagnetic and mechanical performance requirements	-	-
IEC 62755	-	Radiation protection instrumentation - Data format for radiation instruments used in the detection of illicit trafficking of radioactive materials	-	-
IAEA-TECDOC-1311:	2002	Prevention of the inadvertent movement and illicit trafficking of radioactive materials	-	-



IEC 62484

Edition 2.0 2020-10

INTERNATIONAL STANDARD

Radiation protection instrumentation – Spectrometric radiation portal monitors (SRPMs) used for the detection and identification of illicit trafficking of radioactive material





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IEC 62484

Edition 2.0 2020-10

INTERNATIONAL STANDARD

Radiation protection instrumentation – Spectrometric radiation portal monitors (SRPMs) used for the detection and identification of illicit trafficking of radioactive material

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 13.280

ISBN 978-2-8322-8873-3

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CONTENTS

FOREWORD	5
INTRODUCTION	7
1 Scope	8
2 Normative references	8
3 Terms and definitions, abbreviated terms and symbols, quantities and units	9
3.1 Terms and definitions	9
3.2 Abbreviated terms and symbols	10
3.3 Quantities and units	11
4 Design requirements	11
4.1 General	11
4.1.1 Overview	11
4.1.2 Pedestrian monitor	14
4.1.3 Road vehicle monitor	14
4.1.4 Rail vehicle monitor (includes rail transported containers)	14
4.1.5 Package (or conveyor) monitor	14
4.2 Physical configuration	14
4.3 Spectral identification and count rate information	15
4.4 Indication features	15
4.5 Occupancy and speed sensors	16
4.6 Markings	16
4.7 Protection of switches	16
4.8 Energy and count rate range	16
4.9 Data transfer	16
4.10 User interface	16
4.10.1 Audible (sound) alarm	16
4.10.2 Visual indicators	16
4.10.3 Warning indicators	17
4.10.4 Basic controls and functions	17
4.10.5 Advanced indications and functions	17
5 General test procedures	18
5.1 General test conditions	18
5.1.1 Nature of tests	18
5.1.2 Standard test conditions	18
5.1.3 Statistical fluctuations	18
5.2 Reference neutron radiation for alarm testing	19
5.3 Alarm categorization	19
5.4 General requirements for testing radionuclide identification ability	19
5.5 Functionality test	20
5.5.1 General	20
5.5.2 Pre-test measurements	21
5.5.3 Intermediate (during test) measurements	21
5.5.4 Post-test measurements	21
6 Radiation detection requirements	21
6.1 Stability test	21
6.1.1 Requirements	21
6.1.2 Method of test	21

6.2	Neutron radiation detection, if provided	22
6.2.1	Requirements	22
6.2.2	Method of test.....	22
6.3	Gamma over-range indication	22
6.3.1	Requirements	22
6.3.2	Method of test.....	22
6.4	Detection of neutron radiation in a high gamma field	23
6.4.1	Requirements	23
6.4.2	Method of test – large road vehicle and multiple-sided rail vehicle monitors	23
6.4.3	Method of test – all other types of monitors	23
6.5	Background effects	23
6.5.1	Requirements	23
6.5.2	Method of test.....	24
6.6	Radionuclide identification	24
6.6.1	Radionuclide library and identification categorization	24
6.6.2	Radionuclide identification qualification	25
6.6.3	Single radionuclide identification	25
6.6.4	Simultaneous radionuclide identification	26
6.6.5	Alarm without identification	27
7	Climatic requirements	27
7.1	General.....	27
7.2	Ambient temperature.....	27
7.2.1	Requirements	27
7.2.2	Method of test.....	27
7.3	Relative humidity	28
7.3.1	Requirements	28
7.3.2	Method of test.....	28
7.4	Dust and moisture protection	28
7.4.1	Requirements	28
7.4.2	Method of test – Dust	28
7.4.3	Test method – Moisture	28
7.5	Climatic exposure type test.....	29
7.5.1	Requirements	29
7.5.2	Method of test.....	29
8	Mechanical requirements.....	29
8.1	Vibration	29
8.1.1	Requirements	29
8.1.2	Method of test.....	29
8.2	Microphonics/Impact	30
8.2.1	Requirements	30
8.2.2	Method of test.....	30
9	Electric and electromagnetic requirements	30
9.1	Electrostatic discharge (ESD)	30
9.1.1	Requirements	30
9.1.2	Method of test.....	30
9.2	Radio frequency (RF).....	30
9.2.1	Requirements	30
9.2.2	Method of test.....	30

9.3	Radiated RF emissions	31
9.3.1	Requirements	31
9.3.2	Method of test.....	31
9.4	Conducted disturbances.....	31
9.4.1	Requirements	31
9.4.2	Method of test.....	31
9.5	Surges and oscillatory waves.....	31
9.5.1	Requirements	31
9.5.2	Method of test.....	31
9.6	Line voltage and frequency fluctuations	32
9.6.1	Requirements	32
9.6.2	Method of test.....	32
10	Documentation	32
10.1	Operation and maintenance manual.....	32
10.2	Test certificate	33
10.3	Declaration of conformity	33
Annex A (informative)	Identification of uranium and plutonium	36
Bibliography	37
Figure 1	– Example of a two-sided system	12
Table 1	– Standards for instrumentation used to detect illicit trafficking of radioactive and nuclear materials	7
Table 2	– Speed of moving sources	13
Table 3	– Evaluation distances for different applications	13
Table 4	– Standard test conditions	18
Table 5	– Test radionuclides	20
Table 6	– Test materials ¹	20
Table 7	– Test result analysis	21
Table 8	– Radionuclide library.....	24
Table 9	– Radionuclide categorisation	24
Table 10	– Identification acceptance criteria ^{1,2}	25
Table 11	– Summary of performance requirements – Informative.....	33
Table 12	– Environmental requirements – Informative ¹	35
Table A.1	– Uranium and plutonium detection and identification guidance.....	36

INTERNATIONAL ELECTROTECHNICAL COMMISSION

RADIATION PROTECTION INSTRUMENTATION – SPECTROMETRIC RADIATION PORTAL MONITORS (SRPMS) USED FOR THE DETECTION AND IDENTIFICATION OF ILLICIT TRAFFICKING OF RADIOACTIVE MATERIAL

FOREWORD

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International Standard IEC 62484 has been prepared by subcommittee 45B: Radiation protection instrumentation, of IEC technical committee 45: Nuclear instrumentation.

This second edition cancels and replaces the first edition of IEC 62484 issued in 2010. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) title modified;
- b) making the standard consistent with the new standards for detection of illicit trafficking of radioactive material (see the Introduction);
- c) creating unformed functionality test for all environmental, electromagnetic and mechanical tests and a requirement for the coefficient of variation of each nominal mean reading;

- d) reference to IEC 62706 for the environmental, electromagnetic and mechanical test conditions;
- e) adding information regarding climatic exposures.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
45B/969/FDIS	45B/971/RVD

Full information on the voting for the approval of this International Standard 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.

The committee has decided that the contents of this publication will remain unchanged until the stability 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.

INTRODUCTION

Illicit and inadvertent movement of radioactive materials has become a problem of increasing importance. Radioactive sources out of regulatory control, so-called "orphan sources", have frequently caused serious radiation exposures and widespread contamination. Although illicit trafficking of nuclear and other radioactive materials is not a new phenomenon, concern about a nuclear "black market" has increased in the last few years particularly in view of its terrorist potential.

In response to the technical policy of the International Atomic Energy Agency (IAEA), the World Customs Organization (WCO) and the International Criminal Police Organization (Interpol) related to the detection and identification of special nuclear materials and security trends, nuclear instrumentation companies are developing and manufacturing radiation instrumentation to assist in the detection of illicit movement of radioactive and special nuclear materials. This type of instrumentation is widely used for security purposes at nuclear facilities, border control checkpoints, and international seaports and airports.

However, to ensure that measurement results made at different locations are consistent, it is imperative that radiation instrumentation be designed to rigorous specifications based upon agreed performance requirements stated in international standards. Several IEC standards have been developed to address body-worn, hand-held and portal instruments, see Table 1.

Table 1 – Standards for instrumentation used to detect illicit trafficking of radioactive and nuclear materials

Type of instrumentation	IEC number	Title of the standard
Body-worn	62401	Radiation protection instrumentation – Alarming Personal Radiation Devices (PRD) for detection of illicit trafficking of radioactive material
	62618	Radiation protection instrumentation – Spectroscopy-Based Alarming Personal Radiation Devices (SPRD) for detection of illicit trafficking of radioactive material
	62694	Radiation protection instrumentation – Backpack-type radiation detector (BRD) for detection of illicit trafficking of radioactive material
Portable or hand-held	62327	Radiation protection instrumentation – Hand-held instruments for the detection and identification of radionuclides and for the estimation of ambient dose equivalent rate from photon radiation
	62533	Radiation protection instrumentation – Highly sensitive hand-held instruments for photon detection of radioactive material
	62534	Radiation protection instrumentation – Highly sensitive hand-held instruments for neutron detection of radioactive material
Portal	62244	Radiation protection instrumentation – Installed radiation portal monitors (RPMs) for the detection of illicit trafficking of radioactive and nuclear materials
	62484	Radiation protection instrumentation – Spectrometric radiation portal monitors (SRPMs) used for the detection and identification of illicit trafficking of radioactive material
Mobile	63121	Radiation protection instrumentation – Vehicle-mounted mobile systems for the detection of illicit trafficking of radioactive materials
Data format	62755	Radiation protection instrumentation – Data format for radiation instruments used in the detection of illicit trafficking of radioactive materials

RADIATION PROTECTION INSTRUMENTATION – SPECTROMETRIC RADIATION PORTAL MONITORS (SRPMS) USED FOR THE DETECTION AND IDENTIFICATION OF ILLICIT TRAFFICKING OF RADIOACTIVE MATERIAL

1 Scope

This document defines the performance requirements of installed monitors used for the detection and identification of gamma emitters and the detection of neutron radiation emitters. These monitors are commonly known as spectrometric radiation portal monitors or SRPMS. They are used to monitor vehicles, cargo containers, people, or packages and are typically used at national and international border crossings and ports of entry. SRPMS may be used at any location where there is a need for this type of monitoring.

This document establishes the general, radiological, climatic, mechanical, electric and electromagnetic and documentation requirements and associated test methods. A summary of the performance requirements is provided in Table 11. An informative listing of environmental requirements from IEC 62706 is provided in Table 12.

This document does not apply to the performance of non-spectroscopic portal monitors covered in IEC 62244.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60050-395, *International Electrotechnical Vocabulary (IEV) – Part 395: Nuclear instrumentation: Physical phenomena, basic concepts, instruments, systems, equipment and detectors*

IEC 60068-2-5, *Environmental testing – Part 2-5: Tests – Test S: Simulated solar radiation at ground level and guidance for solar radiation testing and weathering*

IEC 62706, *Radiation protection instrumentation – Recommended climatic, electromagnetic and mechanical performance requirements and methods of tests*

IEC 62755, *Radiation protection instrumentation – Data format for radiation instruments used in the detection of illicit trafficking of radioactive materials*

IAEA-TECDOC-1311: September 2002, *Prevention of the inadvertent movement and illicit trafficking of radioactive materials*

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