

|            |                                                                                                                                                             |                                            |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| <b>STN</b> | <b>Prístroje na ochranu pred žiarením<br/>Vložené mobilné systémy do vozidla na odhalenie<br/>nedovoleného obchodovania s rádioaktívnymi<br/>materiálmi</b> | <b>STN<br/>EN IEC 63121</b><br><br>35 6607 |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|

Radiation protection instrumentation - Vehicle-mounted mobile systems for the detection of illicit trafficking of radioactive materials

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 63121:2021, IEC 63121:2020

EUROPEAN STANDARD

**EN IEC 63121**

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EUROPÄISCHE NORM

December 2021

ICS 13.280

English Version

**Radiation protection instrumentation - Vehicle-mounted mobile  
systems for the detection of illicit trafficking of radioactive  
materials  
(IEC 63121:2020)**

Instrumentation pour la radioprotection - Systèmes mobiles  
montés sur véhicules pour la détection du trafic illicite des  
matières radioactives  
(IEC 63121:2020)

Strahlenschutz-Messgeräte - Fahrzeuggestützte mobile  
Systeme zum Aufspüren von unerlaubt transportiertem  
radioaktivem Material  
(IEC 63121:2020)

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**EN IEC 63121:2021 (E)****European foreword**

This document (EN IEC 63121:2021) consists of the text of IEC 63121:2020 prepared by IEC/SC 45B "Radiation protection instrumentation" of IEC/TC 45 "Nuclear instrumentation".

The following dates are fixed:

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

IEC 60068-2-11 NOTE Harmonized as EN IEC 60068-2-11

IEC 60086-1 NOTE Harmonized as EN IEC 60086-1

## 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](http://www.cenelec.eu).

| <u>Publication</u> | <u>Year</u> | <u>Title</u>                                                                                                                                                     | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------|
| IEC 60050-395      | 2014        | International Electrotechnical Vocabulary - Part 395: Nuclear instrumentation: Physical phenomena, basic concepts, instruments, systems, equipment and detectors | -            | -           |
| IEC 61187          | -           | Electrical and electronic measuring equipment - Documentation                                                                                                    | EN 61187     | -           |
| 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               | -            | -           |



IEC 63121

Edition 1.0 2020-01

# INTERNATIONAL STANDARD



**Radiation protection instrumentation –  
Vehicle-mounted mobile systems for the detection of illicit trafficking of  
radioactive materials**



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IEC 63121

Edition 1.0 2020-01

# INTERNATIONAL STANDARD



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**Radiation protection instrumentation –  
Vehicle-mounted mobile systems for the detection of illicit trafficking of  
radioactive materials**

INTERNATIONAL  
ELECTROTECHNICAL  
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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**RADIATION PROTECTION INSTRUMENTATION –  
VEHICLE-MOUNTED MOBILE SYSTEMS FOR THE DETECTION  
OF ILLICIT TRAFFICKING OF RADIOACTIVE MATERIALS**

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|              |                  |
|--------------|------------------|
| FDIS         | Report on voting |
| 45B/946/FDIS | 45B/955/RVD      |

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

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## INTRODUCTION

Illicit and inadvertent movement of radioactive materials in the form of radiation sources and contaminated metallurgical scrap 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 problem, concern about a nuclear “black market” has increased, 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, radiation instrumentation companies have developed and manufactured instruments 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.

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 this document. IEC standards have also been developed to address personal radiation detectors, radiation portal monitors, highly sensitive gamma and neutron detection systems, spectrometric personal radiation detectors, and backpack-based radiation detection and identification systems. Those standards are listed below.

| Type of instrumentation | IEC number | Title of the standard                                                                                                                                                                           |
|-------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Body-worn               | 62401      | Radiation protection instrumentation – Alarming Personal Radiation Devices (PRDs) for the detection of illicit trafficking of radioactive material                                              |
|                         | 62618      | Radiation protection instrumentation – Spectroscopy-Based Alarming Personal Radiation Devices (SPRD) for the detection of illicit trafficking of radioactive material                           |
|                         | 62694      | Radiation protection instrumentation – Backpack-type radiation detector (BRD) for the 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 – Spectroscopy-based portal monitors used for the detection and identification of illicit trafficking of radioactive material                              |
| Mobile system           | 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 – VEHICLE-MOUNTED MOBILE SYSTEMS FOR THE DETECTION OF ILLICIT TRAFFICKING OF RADIOACTIVE MATERIALS**

## **1 Scope**

This document applies to vehicle-mounted mobile systems (also known as mobile systems or mobile monitors) that are used for the detection of illicit trafficking of radioactive materials; these instruments may also be used for protection of major public events and for rapid screening of large areas. These vehicle-mounted mobile systems consist of one or more radiation detectors mounted in a vehicle, e.g., car or van, which travels predominantly on public roads. This document does not apply to detection systems mounted in other types of vehicles, e.g., planes, helicopters, trains, or boats. Vehicle-mounted detection systems covered by this document are designed to detect radioactive sources while the vehicle is in motion. They may also be used as stationary monitors that scan stationary or moving objects. Vehicle-mounted mobile systems detect gamma radiation and may include neutron detection and/or identification of gamma-ray emitting radionuclides.

The purpose of this document is to set minimum requirements for vehicle-mounted mobile systems for the detection of radioactive material. This document establishes general, radiological, climatic, mechanical, electric and electromagnetic, and documentation requirements, and the associated test methods.

## **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 60050-395:2014, *International Electrotechnical Vocabulary (IEV): Part 395: Nuclear instrumentation: physical phenomena, basic concepts, instruments, systems, equipment and detectors*

IEC 61187, *Electrical and electronic measuring equipment – Documentation*

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