

ICS 13.280

CCS F 84



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 29787-2013

**Radiation protection instrumentation -- Mobile instrumentation
for the measurement of photon and neutron radiation in the
environment**

辐射防护仪器 测量环境中光子和中子辐射的移动式仪器

(English Translation)

Issued on: October 10, 2013

Implemented on: February 1, 2014

Issued by: Standardization Administration of China

Table of Contents

Introduction

1 Scope

2 Normative references

3 Terms and definitions

The overall structure of the system 2

5 4 General requirements

5.1 Power

5.2 Battery-powered

Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules.

This standard uses the translation method identical with IEC 62438. Mobile 2010 "Radiation protection instruments to measure the photon and neutron radiation environment of Instruments. " Consistency correspondence with international standards in this standard references of the following documents.

--- GB 4208-2008 housing protection (IP Code) (IEC 60529:2001, IDT);

--- GB/T 8897 (all parts) primary cells [IEC 60086 (all parts)];

--- GB/T 7167-2008 germanium gamma-ray detector test methods (IEC 60973. 1989, NEQ);

--- GB/T 12162 (all parts) for calibrating dosimeters and dose rate meters and for determining X and gamma reference radiations for its response [ISO 4037 (all parts)];

--- GB/T 14055 (all parts) Reference neutron radiation [ISO 8529 (all parts)].

The standard IEC 62438:2010 made the following editorial changes.

--- Will be in "2 Normative references" existing national standards corresponding to international standards our standards;

--- "2 Normative references" in, ISO 6980 (beta reference radiation) clearly erroneous, this standard does not involve beta radiation, neutron reference to Radiation test standard ISO 8529 (all parts) for ISO 6980 (all parts);

--- Delete "3.1 Definition" and "Experimental 3.2 The term" "3 Terms and definitions", all terms and definitions according to the order arrangement;

- 5.4 and other terms of acceleration unit "ms⁻²" changed to "m · s⁻²";
- "10 high-purity germanium (HPGE) detector requirements" to "10 high-purity germanium (HPGe) detector requirements", and germanium element Prime symbol Ge consistent;
- 8.11.2 and Table 4 in the traffic unit "lmin⁻¹" changed to "L · min⁻¹";
- Table 3 "nominal voltage $\pm 2\%$ " was changed to "nominal voltage ($1 \pm 2\%$)", "nominal frequency $\pm 3\%$ " was changed to "nominal frequency ($1 \pm 3\%$)";
- In the body, Annexes B and C to "s⁻¹" instead of "cps";
- In Appendix A and Appendix B to "10⁻⁶" instead of "ppm".

The standard proposed by the Defense Science and Technology Industrial Development Bureau.

This standard by the National Nuclear Instrument Standardization Technical Committee (SAC/TC30) centralized.

This standard was drafted. Aerial Remote Sensing Center of Nuclear Industry, Institute of Nuclear Industry Standardization.

1 Scope

This standard applies to mobile radiation detection system, which is used to detect, identify and quantify environmental photons and (or) neutron emission Body, including the location and distribution of the radiation source.

The purpose of this standard are.

- establishing a definition;
- minimum requirements specified instruments;
- predetermined configuration and operation requirements;
- given test and calibration methods;
- provide guidance for the procurement of suitable equipment.

Typically, the mobile instrument systems for nuclear radiation environment measured by the detector, the detector signal processor, position sensors, with Data recorded on the vehicle, the operator monitoring and real-time display/alarm capability. In addition, the advanced systems through remote sensing technology can be several According to the streaming operations center.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 2421.1-2008 Environmental testing for electric and electronic products overview and guidance (IEC 60068-1. 1988, IDT) GB/T 2423.4-2008 Environmental testing for electric and electronic products Part 2. Test methods - Test Db. Damp heat (12h 12h cycle) (IEC 60068-2-30:2005, IDT) GB/T 2900.81-2008 Electrotechnical terminology Nuclear Instruments Physical phenomena and basic concepts (IEC 60050-393:2003, IDT) GB/T 2900.82-2008 Electrotechnical terminology nuclear instrumentation equipment, systems, equipment and detectors (IEC 60050-394:2007, IDT) GB 4793.1-2007 measurement, control and laboratory safety requirements for electrical equipment Part 1. General requirements (IEC 61010-1:2001, IDT) IEC 60068-2-6:2007 Environmental testing - Part 2-6. Tests - Test Fc. Vibration (sinusoidal) [Environmental testing-Part 2-6. Tests-TestFc. Vibration (sinusoidal)] IEC 60068-2-14:2009 Environmental testing - Part 2-14. Tests - Test N. Temperature change (Environmental testing-Part 2-14. Tests-TestN. Change of temperature) IEC 60086 (all parts) primary cells (Primary batteries) IEC 60529. 1989 housing protection (IP Code) [Degrees of protection provided by enclosures (IP Code)] IEC 60973. 1989 germanium gamma-ray detector test methods (Test procedures for germanium gamma-ray detectors) IEC 62534 Radiation protection instrumentation for neutron detection of radioactive materials with high sensitivity handheld instrument (Radiation protection instrumentation-Highly sensitive hand-held instruments for neutron detection of radioactive material) ISO 4037 (all parts) for calibrating dosimeters and dose rate meters and for determining X and gamma reference radiations for its response (X and gamma reference radiation for calibrating dosimeters and dose rate meters and for determining the irre-