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JJG

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

JJG 393-2018

Replacing JJG 393-2003

**Portable Ambient Dose Equivalent (Rate) Meters and Monitors
for X and gamma Radiations
(English Translation)**

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Table of Contents

Introduction (II)	
1 Scope (1)	
2 References (1)	
3 Terms and units of measurement (1)	
3.1 Terminology (1)	
3.2 Unit of measurement (2)	
4 Overview (2)	
5 Metrological performance requirements (2)	
6 General technical requirements (3)	
6.1 Appearance (3)	
6.2 Identification (3)	
6.3 Functional characteristics (3)	
7 Measuring instrument control (3)	
7.1 Verification conditions (3)	
7.2 Verification project (5)	
7.3 Verification method (5)	
7.4 Processing of verification results (7)	
7.5 Verification cycle (7)	
Appendix A Recommended Recording Format (8)	
Appendix B Recommended Format for Certification Certificate (9)	
Appendix C Recommended Format of the Test Result Notice (10)	
Appendix D Reference Radiation Characteristics and Related Conversion Coefficients (11)	
Appendix E Statistical Fluctuations (12)	
Appendix F Measurement and Expression of Energy/Impact Angle Response (15)	

7.5 Verification cycle (7)

Appendix A Recommended Recording Format (8)	
Appendix B Recommended Format for Certification Certificate (9)	
Appendix C Recommended Format of the Test Result Notice (10)	
Appendix D Reference Radiation Characteristics and Related Conversion Coefficients (11)	

Appendix E Statistical Fluctuations (12)

Appendix F Measurement and Expression of Energy/Impact Angle Response (15)

Introduction

JJF1002-2010 "Rules for the preparation of national metrological verification procedures", JJF1001-2011 "General measurement terminology and Definitions, JJF1059.1-2012 "Measurement Uncertainty Evaluation and Representation" together constitute the basis for the development of this regulation Basic norms.

This procedure is for JJG 393-2003 "X, gamma radiation dose equivalent (rate) instrument and monitor for radiation protection" Amendment to GB/T 4835.1-2012 "radiation protection equipment beta, X and gamma radiation around and/or directed dose when Measurements and/or monitors Part 1. Portable workplaces and environmental measuring instruments and monitors, GB/T 12162.1 "X and gamma reference radiation for calibrating dosimeters and dose rate meters and determining their energy response Part 1. Radiation characteristics and production methods, GB/T 12162.2 "for calibration of dosimeters and dose rate meters and indeed X and gamma reference radiation for its energy response Part 2. 8keV~1.3MeV and 4MeV~9MeV Dose determination of radiation, GB/T 12162.3 "for calibrating dosimeters and dose rate meters and determining their energy response X and gamma reference radiation Part 3. Calibration of site dosimeters and surrounding dosimeters and their energy response and angular response the determination should be the main technical reference.

The main technical changes in this revision are as follows.

1. Refer to GB/T 4835.1-2012, the name is "radiation protection X, gamma radiation dose equivalent (rate) meter and the monitor was revised to "portable X, gamma radiation surrounding dose equivalent (rate) instrument and monitor".
2. In the verification project, cancel the "overload characteristic" "alarm threshold error" and change the "energy/incident angle response" to "can" Volume response".
3. Refer to the measurement performance requirements and verification methods for the "relative inherent error, repeatability, energy response" project.

The technical requirements and test methods of GB/T 4835.1-2012 are modified accordingly.

4. Add "Energy/incident angle response measurement method and calibration factor" in the appendix.

The previous release of this procedure.

---JJG 393-2003;

---JJG 393-1985 and JJG 483-1986.

Portable X, gamma radiation surrounding dose Equivalent (rate) instrument and monitor verification procedures

1 Scope

This procedure is applicable to the first verification and follow-up of the dose equivalent (rate) meter and monitor around portable X and gamma radiation.

Verification and in-use inspection. Peripheral dose equivalent $H^*(10)$ and dose equivalent rate $H^*(10)$ X, gamma radiation from external illumination the X, gamma radiant energy ranges from 80 keV to 1.5 MeV.

This procedure does not apply to passive measuring devices such as film dosimeters, thermoluminescent dosimeters or quartz wire electrometers.

Verification.

2 reference files

This procedure refers to the following documents.

JJF1001 General Measurement Terms and Definitions JJF1035 Terms and definitions of ionizing radiation measurement GB/T 4835.1-2012 Radiation protection equipment beta, X and gamma radiation around and/or directed dose equivalent (rate) Instruments and/or monitors - Part 1. Portable workplaces and environmental measuring devices and monitors GB/T 4960.1 Technical terminology of nuclear science - Part 1. Nuclear physics and chemistry GB/T 4960.6 Nuclear science and technical terms - Part 6. Nuclear instrumentation GB/T 12162.1 X and gamma reference for calibrating dosimeters and dose rate meters and determining their energy response Radiation Part 1. Radiation characteristics and methods of production GB/T 12162.2 X and gamma reference for calibrating dosimeters and dose rate meters and determining their energy response Radiation Part 2. Dosimetry of reference radiation from 8 keV to 1.3 MeV and 4 MeV to 9 MeV GB/T 12162.3 X and gamma reference for calibrating dosimeters and dose rate meters and determining their energy response Radiation Part 3. Calibration of site dosimeters and surrounding dosimeters and determination of their energy and angular response ICRUReport47.1992 Measurement of externally illuminated photons and electron radiation dose equivalents (Measurement of Dose equivalent from external photon and electron radiations) for dated references, only dated versions apply to this Code; any undated references the latest version of the document (including all amendments) applies to this procedure.

3 terms and units of measure

3.1 Terms

JJF1001, JJF1035, GB/T 4960.1, GB/T 4960.6 define the following terms and definitions apply in this procedure.

3.1.1 surrounding dose equivalent ambientdoseequivalentH *(10)