

ICS 17.240
CCS A 58

JJF

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

JJF 1621-2017

**Calibration Specification for Diagnostic Dosimeters
(English Translation)**

Issued on: February 28, 2017

Implemented on: May 28, 2017

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine**

Table of Contents

Introduction (II)	
1 Scope (1)	
2 References (1)	
3 Terms and units of measurement (1)	
3.1 Terms (1)	
3.2 Units of measurement (2)	
4 Overview (2)	
5 Metrological characteristics (2)	
6 Calibration conditions (2)	
6.1 Environmental conditions (2)	
6.2 Measurement standards and other measuring equipment (3)	
6.3 Radiation field (3)	
7 Calibration items and calibration methods (3)	
7.1 Calibration items (3)	
7.2 Repetitive (3)	
7.3 Calibration factors (4)	
7.4 Energy response (6)	
7.5 Long-term stability (6)	
8 Calibration results (6)	
9 Re-school time interval (6)	
Appendix A RQR, RQA and RQT Series Radiation (7)	
Appendix B Diagnostic Level Dosimeter Calibration Record Recommended Format (8)	
Appendix C Diagnostic Level Dosimeter Calibration Certificate Inside Page Format (9)	
Appendix D Diagnostic Level Dosimeter Calibration Factor Uncertainty Evaluation Example (10)	

9 Re-school time interval (6)

Appendix A RQR, RQA and RQT Series Radiation (7)	
Appendix B Diagnostic Level Dosimeter Calibration Record Recommended Format (8)	
Appendix C Diagnostic Level Dosimeter Calibration Certificate Inside Page Format (9)	
Appendix D Diagnostic Level Dosimeter Calibration Factor Uncertainty Evaluation Example	

(10)

Introduction

This specification is prepared in accordance with the requirements of JJF 1071-2010 "Rules for the Preparation of National Metrological Calibration Standards" According to IEC 61674-2012 "Medical Electrical Equipment X-ray diagnostic images used in ionization chambers and/or semiconductors Sensorless dosimeter "(Medical electrical equipment-Dosimeters with ionization chambers) and/or semiconductor detectors as used in X-ray diagnostic imaging), GB/T 19629-2005 "Medical electrical equipment X-ray diagnostic images used in the ionization chamber and/or semiconductor detector dosimeter" and IAEA TRS457 "Radiation Diagnostic Dosage. Implementation Guide" (Dosimetry in Diagnostic Radiology.

An International Code of Practice).

This specification is the first release.

Diagnostic level dosimeter calibration specification

1 Scope

This specification applies to measuring (40 to 150) kV X-ray diagnostic level dosimeters or detectors, CT dosimeters or Detector calibration.

2 reference file

This specification refers to the following documents.

GB/T 19629-2005 Medical electrical equipment X-ray diagnostic images used in the ionization chamber and/or half Conductor Detector Dosimeter IAEA TRS457 Radiation Diagnostic Dosage. Implementation Guidelines (Dosimetry in Diagnostic Radiology.

An International Code of Practice) IEC 61267-2005 Medical diagnostic X-ray equipment Measurement characteristics Radiation conditions used (Medical diagnostic X-ray equipment-Radiation conditions for use in the determination of characteristics IEC 61674-2012 Medical devices and/or semiconductors for use in X-ray diagnostic imaging Device dosimeter (Dosimeters with ionization chambers and/or semiconductor detectors as used in X-ray diagnostic imaging) for dated references, only the dated edition applies to this specification; references that are not dated , The latest version (including all modifications) applies to this specification.

3 terms and units of measurement 3.1 terminology 3.1.1 diagnostic level dosimeter diagnostic dosimeter Measuring the air kerma energy of the X-ray machine beam diagnosed with medical radiation by an ionization chamber or a semiconductor detector, Air ratio kinetic energy length product or air kerma rate of the device.

3.1.2 Air ratio kinetic energy length product $\text{airkerma length product (PKL)}$ for any straight line passing through the CT X-ray scanning cross section, the air kerma length is above the straight line Integration of gas kinetic energy and length product.

3.1.3 calibration factor the reference value is divided by the quotient.

3.1.4 energy response the response of the detector varies with the radiant energy.

3.1.5 non-diminished beam unattenuated beam an X-ray beam that strikes the subject or the mold body.

3.1.6 non-reduced beam unattenuated beam quality (RQR)