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

YY/T 0063-2024

Replacing YY/T 0063-2007

**Medical electrical equipment - X-ray tube assemblies for
medical diagnosis - Focal spot dimensions and related
characteristics**

医用电气设备 医用诊断X射线管组件 焦点尺寸及相关特性

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Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Determination of focal characteristics evaluation	3
4.1 Key Features Statement	3
4.2 X-ray tube assembly longitudinal axis	3
4.3 X-ray tube assembly reference axis	3
4.4 Evaluation direction of focal length	3
4.5 Evaluation direction of focal width	3
4.6 Evaluation direction of deformation focus	3
5 Focus Camera Settings	4
5.1 Overview	4
5.2 Slit Camera Aperture	4
5.3 Pinhole Camera Aperture	5
5.4 Receiver	5
5.5 Test layout	5
5.6 Total uncertainty of the camera setup 8 6 X-ray photography	9
6.1 General	9
6.2 Operating conditions	9
6.3 Determination of focal slit radiographs, focal pinhole radiographs and focal line spread function	10
6.4 Conformity statement for focal pinhole radiographs	10
6.5 Line spread function conformity statement	11
7 Determination of focal spot size and focal spot nominal value	11
7.1 Overview	11
7.2 Determination of focal spot size	11
7.3 Specifying the nominal value of focal point	12
7.4 Statement of Conformity	13
7.5 Conformity marking	13
8 Determination of Modulation Transfer Function	14
8.1 Overview	14
8.2 Calculation and Representation of Modulation Transfer Function	14

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. This document replaces YY/T 0063-2007 "Focal Characteristics of Medical Electrical Equipment Medical Diagnostic X-ray Tube Assemblies" and is consistent with Compared with YY/T 0063-2007, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) The scope has been changed (see Chapter 1, Chapter 1 of the.2007 edition);
- b) The terms and definitions have been changed (see Chapter 3, Chapter 3 of the.2007 edition);
- c) Added the evaluation direction of deformation focus (see 4.6);

1 Scope

YY/T 0063 governs how the focal spot of a diagnostic X-ray tube is defined and measured. The focal spot is the area on the anode where the electron beam lands, and its size sets the geometric sharpness of every image the tube produces: a nominally small focal spot that is actually larger blurs fine detail in a way no reconstruction recovers. The standard fixes the dimensions and related characteristics and the methods for determining them, which is what makes a manufacturer's declared focal spot value comparable between tubes and verifiable by a purchaser. It is the Chinese adoption of the international method used across the industry. For a manufacturer of X-ray tube assemblies, a system integrator specifying them, or a test laboratory serving either, this is the reference behind the focal spot declaration.

This document applies to the focal point of medical diagnostic X-ray tube assemblies operating at X-ray tube voltages of 150 kV and below. This document describes a test method for the determination of the following using a digital detector.

- a) The focal point size expressed as the focal point nominal value, ranging from 0.1 to 3.0;
- b) Line spread function;
- c) one-dimensional modulation transfer function;
- d) Focal pinhole radiograph. This document also describes the means of demonstrating

compliance. In the informative appendices, star card imaging (see Appendix A) and defocus values (see Appendix B) are described.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this text. The version corresponding to that date applies to this document; for undated referenced documents, their latest versions (including all amendments) apply to this document.

GB 9706.1-2020 Medical electrical equipment Part

1.General requirements for basic safety and essential performance (IEC 60601-1. 2012,MOD)

GB 9706.103-2020 Medical electrical equipment Part 1-

3.General requirements for basic safety and essential performance Collateral standard. Diagnostic Radiation protection for X-ray equipment (IEC 60601-1-3.2013, MOD)

YY/T 0064-2016 Electrical and load characteristics of medical diagnostic X-ray tube assemblies (IEC 60613.2010, IDT)

GB/T 5465.2-2008 Graphical symbols for electrical equipment Part

3 Terms and definitions

IEC TR60788.2004, YY/T 0064-2016, GB 9706.1-2020 and GB 9706.103-2020 and the following The following terms and definitions apply to this document.

3.1 actual focal spot The area on the target surface that stops the accelerated particle beam. NOTE. Regarding the accelerated particles, only the expected primary beam is included.

3.2 Defocus value blooming value The ratio of two limiting resolutions obtained under specific loading conditions. NOTE. The defocus value is a characteristic of the effective focal spot of the X-ray tube.

5.2 Test equipment" (see

5.2 of the.2007 edition);

e) Added "Slit camera aperture" (see 5.2);

f) Added "pinhole camera aperture" (see 5.3);

g) Added "receiver" (see 5.4);

h) The "Test Layout" has been changed (see 5.5,

5.3 of the.2007 edition);

i) Changed "Total uncertainty of camera settings" (see 5.6,

5.4 of the.2007 edition);

j) Changed "Overview" (see 6.1,

6.1 of the.2007 edition);

k) Changed "Operating conditions" (see 6.2,

6.2 of the.2007 edition);

l) Changed "Determination of focal slit radiographs, focal pinhole radiographs and focal line spread function" (see 6.3,.2007 edition) 6.3);

m) Added "Line spread function conformity statement" (see 6.5);