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

GB/Z 41476.1-2022

**Non-destructive testing instruments - Radiation protection
rules for the technical application of X-ray equipment up to 1
MV - Part 1: General safety technical requirements**

无损检测仪器 1MV以下X射线设备的辐射防护规则 第1部分：通用安全技术要求

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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 of Standardization Documents" drafted. This document is part 1 of GB /Z 41476 "Rules for Radiation Protection of X-ray Equipment Below 1MV for Nondestructive Testing Instruments". GB /Z 41476 has published the following parts.

- 1. General safety technical requirements;
- 2. Technical requirements for protection;
- 3. Calculation formulas and charts for radiation protection of X-ray equipment below 450kV;
- 4. Calculation of the control area. Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents. This document is proposed by China Machinery Industry Federation. This document is under the jurisdiction of the National Standardization Technical Committee of Testing Machines (SAC/TC122). This document is drafted by: Liaoning Instrument Research Institute Co., Ltd., Shenzhen China Test Testing Co., Ltd., Edson (Xiamen) Electronics Co., Ltd. Co., Ltd., General Electric Detection and Control Technology (Shanghai) Co., Ltd., Guangdong Zhengye Technology Co., Ltd., Zhongshan Vocational and Technical College. The main drafters of this document. Xu Bo, Liu Panchao, Lin Junming, Kong Fanqin, Sheng Zhoulin, Fuyang, Wang Lin.

X-rays are electromagnetic waves with extremely short wavelengths and high energy, and their wavelengths are shorter than those of visible light. As five routine detection methods One, X-ray detection has been widely used in industrial non-destructive testing. Because of its strong penetration, it will cause certain damage to the body of the inspector. The safety protection problem in this X-ray inspection has received extensive attention. GB /Z 41476 aims to establish protection requirements for X-ray equipment below 1MV And personnel safety protection rules, it is proposed to be composed of 4 parts.

- 1. General safety technical requirements. The purpose is to give the dose limit for personnel

in the operation of X-ray equipment below 1MV, Equipment usage requirements, etc.

2. Technical requirements for protection. The purpose is to provide effective, Reliable radiation protection measures.

3. Calculation formulas and charts for radiation protection of X-ray equipment below 450kV. The purpose is to give below 405kV The calculation formulas and related charts of the main technical indicators of X-ray equipment protection are convenient for the calculation of relevant data in the process of X-ray protection.

4. Calculation of the control area. The purpose is to provide a calculation method for the control area of X-ray equipment below 1MV, and for the third Some content is further supplemented. Non-destructive testing equipment X-ray below 1MV Radiation Protection Regulations for Equipment Part 1. General safety technical requirements

1 Scope

GB/Z 41476.1-2022 is the Chinese national standard on non-destructive testing instruments - radiation protection rules for the technical application of x-ray equipment up to 1 mv - part 1: general safety technical requirements, in the field of testing. The /Z suffix marks it as a guiding technical document: it does not prescribe requirements that can be certified against, but sets out the technique, the method or the state of the art that the standards bodies recommend following. It was issued on 15 April 2022 by the State Administration for Market Regulation; Standardization Administration of China. As a guiding technical document it carries no separate date of entry into force: it applies from publication. Classification: ICS 19.100, CCS N78. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the dose limits for the protection of X-ray nondestructive testing equipment below 1MV, the control area and supervision area, the use of X-ray equipment Use requirements and logos. This document applies to the safety protection of X-ray non-destructive testing equipment below 1MV.

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, dated citations documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to this document.

GB 18871-2002 Basic standard for ionizing radiation protection and radiation source safety

GB /Z 41476.3 Non-destructive testing instruments radiation protection rules for X-ray

equipment below 1MV Part 3.below 450kV Calculation formulas and charts for radiation protection of X-ray equipment GB /Z 41476.4 Radiation protection rules for X-ray equipment below 1MV of non-destructive testing instruments Part

3 Terms and Definitions

There are no terms and definitions that need to be defined in this document.

4 General safety technical requirements

4.1 Dose Limits Radiation precautions are used to avoid all unnecessary X-ray exposure. Personal dose limits should be in accordance with Table 1. Other ionizing radiation in the occupation of radiation workers should also be included in the measurement of radiation precautions, the body dose value should not exceed Limits in the corresponding ionizing radiation protection regulations. Table

1 Dose limits in X-ray exposure crowd dose limit mSv occupational exposure personnel
Annual effective dose Annual equivalent dose of eye lens Limbs (hands and feet) or skin
annual equivalent dose 20a