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

GB 15208.3-2018

**Micro-dose X-ray security inspection systems - Part 3:
Transmission cargo security inspection systems**

微剂量X射线安全检查设备 第3部分：透射式货物安全检查设备

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Foreword

All technical content in this section is mandatory. GB 15208 "Micro Dose X-ray Safety Inspection Equipment" is divided into the following five parts.

- Part 1. General technical requirements;
- Part 2. Transmissive bag security inspection equipment;
- Part 3. Transmissive cargo safety inspection equipment;

--- Part 4. Human body safety inspection equipment;

--- Part 5. Backscattering items safety inspection equipment. This part is the third part of GB 15208. This part is drafted in accordance with the rules given in GB/T 1.1-2009. This part is proposed and managed by the Ministry of Public Security of the People's Republic of China. This section drafted by: the First Institute of the Ministry of Public Security, Beijing Zhongduan Anmin Analysis Technology Co., Ltd., China Civil Aviation Science and Technology Research Institute, National Security and Alarm System Product Quality Supervision and Inspection Center (Shanghai), National Security and Alarm System Product Quality Supervision and Inspection Center (Beijing), Tongfang Weishi Technology Co., Ltd., Shanghai Gaojing Imaging Technology Co., Ltd. The main drafters of this section. Wang Ben, Liao Jianxin, Meng Zhiqiang, Dong Mingwen, Niu Yujie, Liu Caixia, Tao Lei, Yang Zhongrong, Peng Ningxuan, Zhao Yue, Han Jingyu, Lin Weizhi, Chen Yu. Micro-dose X-ray safety inspection equipment Part 3. Transmissive cargo safety inspection equipment

1 Scope

Part 3 of China's mandatory series on micro-dose X-ray security inspection equipment, covering the transmission cargo scanner - the large machines through which pallets, air cargo and freight consignments pass at ports, airports and logistics depots. The whole technical content of this part is mandatory. It specifies the general technical requirements, the test methods and the inspection rules for transmission cargo security inspection systems, applied together with the general requirements of Part 1. The difference from the baggage machine of Part 2 is not one of degree. A cargo scanner has to see through far more material, which demands a higher energy and therefore raises every radiation question the series exists to answer; the object is heavy and moved by machinery rather than by hand; and the throughput required at a freight terminal means the machine runs at a rate that leaves the operator little time on each image. The requirements follow from that: the penetration through steel and the wire resolution set at the levels a cargo load demands, the spatial resolution and contrast sensitivity, the material discrimination, and the imaging of a dense load; the radiation safety and shielding, with the leakage limits and the controlled area around a machine of this power, the interlocks, the warnings and the safeguards against a person being inside the enclosure; the conveyor or transport system and the handling of the load; and the software, image storage, retrieval and access control. The environmental, electrical and electromagnetic requirements complete the part. Issued on 19 November 2018 and in force since 1 December 2019.

This part of GB 15208 specifies the equipment classification, general technical requirements, test methods and inspection rules for transmissive cargo safety inspection equipment. Then, packaging, marking, storage and transportation, and random technical documentation. This section applies to the design, manufacture, assembly, acceptance and use of various transmissive cargo safety inspection equipment.

Note. The maximum single-sided length of the height and width dimensions of any one of these equipment inspection channel inlet sections is greater than or equal to 0.91m and less than or equal to 2.41m. This section does not apply to computed tomography (CT), electron accelerators, X-rays with X-ray generators greater than 500 keV. Line safety inspection equipment and vehicle safety inspection equipment.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article. Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB 15208.1-2018 Micro-dose X-ray safety inspection equipment - Part 1. General technical requirements

GB 15208.2-2018 Micro-dose X-ray safety inspection equipment - Part 2

3 Terms and definitions

The following terms and definitions defined in GB 15208.1-2018 and GB 15208.2-2018 apply to this document.

3.1 Conveyor load capacity maximumloadcapacity The maximum weight of the object to be inspected can be dragged by the device transport device.

3.2 Transmissive cargo safety inspection equipment
transmissioncargosecurityinspectionssystem Used to inspect freight items, and the maximum one-sided length of the height and width dimensions of any one of the inspection passage entrance sections is greater than or equal to Transmission micro-dose X-ray safety inspection equipment of

0.91 m, less than or equal to

4 Equipment classification

Transmissive cargo safety inspection equipment (hereinafter referred to as equipment) is classified according to the size of the entrance section of the inspection passage, see Table 1. Table

1 Equipment classification unit is mm Device type maximum single side size L Type I 910
 $\leq L \leq 1210$ Type II $1210 \leq L \leq 1510$ Table 1 (continued) Unit is mm Device type
 maximum single side size L Type III $1510 \leq L \leq 1810$ Type IV $1810 \leq L \leq 2110$ V
 type $2110 \leq L \leq 2410$

5.1 Performance Specifications

5.1.1 Overview For equipment with multiple transmission viewing angles, the performance index of any one of the viewing angles should meet the requirements of 5.1, and each test with each perspective The worst value of the result is used as the performance indicator of the device; for the device with multiple inspection channels, the performance index of any one of the inspection channels is It should meet the requirements of

5.1 and use the worst value of each test result of each inspection channel as the performance index of the equipment. Carry out 5.1.2~

5.1.8 During the test, the parameters of the tube voltage, tube current, and total filtration of the X-ray generator should be kept constant.

5.1.2 Line resolution Should be able to distinguish the minimum single solid copper wire diameter requirements, see Table 2. Table

2 Line resolution indicators are required to be in millimeters Type I Type II Type III Type IV Type V Type Line resolution 0.203 0.203 0.203 0.203 0.511

5.1.3 Penetration resolution Should be able to resolve the minimum single solid copper wire diameter under the 9.5mm, 15.9mm, 22.2mm and 27.1mm alloy aluminum steps Requirements, see Table 3. Table

3 Penetration resolution indicators are required to be in millimeters Type I Type II Type III Type IV Type V Type Penetration resolution 0.511 0.511 0.511 0.511 0.813

5.1.4 Spatial resolution Should be able to distinguish the minimum line diameter requirements, see Table 4. Table

4 Spatial resolution indicators are required to be in millimeters Type I Type II Type III Type IV Type V Type Spatial resolution 2 2 2.4 2.4 2.4

5.1.5 Penetration Should be able to distinguish the requirements of the thickness of the thinnest steel plate, see Table 5. Table 5 penetration force requirements in millimeters Type I Type II Type III Type IV Type V Type Penetration force 30 40 45 50 55

5.1.6 Organic matter discrimination It should be able to distinguish polymethyl methacrylate steps with thicknesses ranging from 40mm to 160mm and impart orange color with different saturations.

5.1.7 Mixture resolution It should be able to distinguish the aluminum step of the alloy with a thickness ranging from 1mm to 80mm and give green to different saturations.

5.1.8 Inorganic resolution It should be able to distinguish steel steps with thicknesses ranging from 0.2mm to 24mm and impart blue with different saturations.

5.1.9 Conveying device Meet the following requirements.

5.2 Radiation and environmental safety indicators