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

GB 15208.2-2018

Replacing GB/T 15208.2-2006

**Micro-dose X-ray security inspection systems - Part 2:
Transmission baggage security inspection systems**

微剂量X射线安全检查设备 第2部分：透射式行包安全检查设备

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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 second part of GB 15208. This part is drafted in accordance with the rules given in GB/T 1.1-2009. This part replaces GB/T 15208.2-2006 "Micro Dose X-ray Safety Inspection Equipment Part 2. Test Body". versus The main technical changes compared with GB/T 15208.2-2006 are as follows:
- Revised scope (see Chapter 1);
- Added normative references (see Chapter 2);
- Added 12 terms and definitions (see Chapter 3);
- Added general technical requirements (see Chapter 4);
- Increased test methods (see Chapter 5);
- Added inspection rules (see Chapter 6);
- Increased packaging, marking, storage and transportation (see Chapter 7);
- Added random technical documentation (see Chapter 8);

1 Scope

Part 2 of China's mandatory series on micro-dose X-ray security inspection equipment, covering the transmission baggage scanner - the machine at every airport, railway station and metro entrance in the country, through which hand luggage and parcels pass on a belt while an operator reads the image. It is the largest part of the series because it is the machine that is deployed in the greatest numbers and the one whose failure is most consequential: everything the security screening of a public place achieves passes through it. This part specifies the general technical requirements, the test methods, the inspection rules and the packaging, transport and storage of transmission baggage security inspection systems, applied together with the general requirements of Part 1. What it adds to Part 1 is everything specific to reading a bag. The imaging requirements are set as figures a machine either meets or does not: the resolution of a fine wire, the penetration through a given thickness of steel, the spatial resolution and the contrast sensitivity, the separation of organic, inorganic and mixed materials by colour, and the behaviour of the image where a dense object hides what is behind it. Around them sit the requirements on the tunnel and the conveyor, the radiation leakage measured at the positions where operator and passengers actually stand, the interlocks, the image processing and the functions the operator uses - the enhancement, the zoom, the pseudo-colour, the review of the previous bag - and the storage, retrieval and access control of the images. The environmental, electrical and electromagnetic requirements complete it, since a scanner that fails at a

station entrance stops the station. Issued on 19 November 2018 and in force since 1 December 2019, it replaces GB/T 15208.2-2006.

This part of GB 15208 specifies the general technical requirements, test methods, inspection rules, packaging, and Marking, storage and transportation as well as random technical documentation. This section applies to the design, manufacture, assembly, acceptance and use of various transmissive bag safety inspection equipment.

Note. The height and width of the inlet section of any of these equipment inspection channels are less than 1.1m. This section does not apply to computed tomography (CT), electron accelerators, and X-ray generating devices with energy greater than 500 keV. Radiation 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

3 Terms and definitions

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

3.1 Line resolution wiredisplay The ability of the device to resolve a single solid copper wire.

Note. Generally indicated by the nominal diameter (mm) of the wire.

3.2 Penetration resolution usefulpenetrationresolution The device distinguishes the ability of a single solid copper wire under the specified thickness of the alloy aluminum step.

Note. Generally indicated by the nominal diameter (mm) of the wire.

3.3 Penetration force simplepenetration The ability of the device to penetrate the object being examined.

Note. Generally, it is expressed by the thickness (mm) of the steel plate.

3.4 Wire pair linepair A group of metal wires arranged evenly, the spacing between the two wires being the same as the diameter of the wires.

Note. The nominal diameter (mm) of the general line indicates the specification of the pair.

3.5 Spatial resolution The ability of the device to resolve pairs.

Note. Generally indicated by the nominal diameter (mm) of the wire.

3.6 Grayscale resolution grayleveldifferentiation The ability of the device to distinguish the

same material and different thickness of the object to be inspected.

Note. Generally, it is expressed by the number of steps of the separable alloy aluminum step.

3.7 Organic matter distinguishing organic differentiation The ability of the device to resolve equivalent organic matter.

4.1 Performance indicators

4.1.1 Overview Transmissive bag-type security inspection equipment (hereinafter referred to as equipment) with multiple transmission angles, the performance index of any one of the viewing angles should be Meet the requirements of 4.1, and use the worst value of each test result from each perspective as the performance index of the equipment; the design with multiple inspection channels The performance index of any one of the inspection channels should meet the requirements of 4.1, and the worst value of each test result of each inspection channel is used. This performance indicator of the device. When performing the test of 4.1.2~4.1.11, the tube voltage, tube current, total filtration, etc. of the X-ray generator shall be maintained. The parameters are unchanged.

4.1.2 Line resolution Should be able to distinguish the minimum single solid copper wire diameter requirements, see Table 1. Table

1 Line resolution index is required to be in millimeters Level I Level II Line resolution 0.203 0.102

4.1.3 Penetration resolution Should be able to resolve the requirements of the minimum single solid copper wire diameter under the 9.5mm, 15.9mm and 22.2mm alloy aluminum steps, see Table 2. Table

2 Penetration resolution indicators are required to be in millimeters Level I Level II Penetration resolution 0.511 0.254

4.1.4 Spatial resolution Should be able to distinguish the minimum line diameter requirements, see Table 3. Table

3 Spatial resolution indicators are required to be in millimeters Level I Level II Spatial resolution 1.6 1.0

4.1.5 Penetration Should be able to distinguish the requirements of the thickness of the thinnest steel plate, see Table 4. Table 4 penetration force requirements are in millimeters Level I Level II Level III Penetration 15 27 38

4.1.6 Organic matter resolution (for multi-energy spectrum equipment) It should be able to distinguish organic ladders with thicknesses ranging from 1mm to 120mm and impart orange with different saturations.

4.1.7 Grayscale resolution It should be able to distinguish the aluminum step of the alloy