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

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**Space environment - Method of ground simulation for space
radiation effect on non-metallic materials**

空间环境 非金属材料空间辐射效应地面模拟方法

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting.

This document was drafted with reference to ISO 15856:2010 "Guidelines for ground simulation of radiation exposure of non-metallic materials in space environments for space systems".

The degree of consistency is not equivalent.

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

1 Scope

This document describes the test method for ground simulation of space radiation effects on non-metallic materials, including space radiation during the simulation test.

Characteristics of radiation environments, properties of aerospace materials, requirements for space radiation simulations, simulated radiation sources, and optional simulation methods.

This document is applicable to ground simulation tests of space radiation effects of non-metallic materials. Non-metallic materials include paint, glass, ceramics, polymers, Polymer-metal composites such as metal matrix composites and laminates.

2 Normative reference documents

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

GB/T 32452 Spacecraft space environment terminology GB/T 34517 Evaluation method for vacuum outgassing of non-metallic materials for spacecraft GB/T 37834 Galactic cosmic ray model GB/T 41459 Space environment Total solar irradiance in space GB/T 42047-2022 Method for determination of outgassing products from materials and components in sealed cabins of manned spacecraft

3.1 Terms and definitions

The terms and definitions defined in GB/T 32452, GB/T 37834, GB/T 41459 and the following apply to this document.

3.1.1

absorbeddoseabsorbeddose the amount of ionizing radiation energy absorbed by a unit mass of material.

3.1.2

acceleration factoraccelerationfactor Dose rate ratio between simulated tests and space applications for the same type of radiation.

3.1.3

bremsstrahlung

Optical radiation emitted by the deceleration of incident particles in a material.

3.1.4

depthdoseprofile

Distribution of absorbed dose with material depth.