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

GB/T 46374-2025

**Space environment - Spacecraft solar panels charging induced
electrostatic discharge test methods**

空间环境 航天器太阳电池阵充电诱发静电放电试验方法

(English Translation)

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Appendix A (Informative) A list of structural designations in this document compared to ISO 11221:2011 (Table 14)

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Appendix D (Informative) Theoretical Derivation of Surface Flash Current

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References

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 is modified to adopt ISO 11221:2011 "Space Systems - Space Solar Arrays - Charged-Induced Electrostatic Discharge Tests on Spacecraft".

method".

This document has undergone significant structural adjustments compared to ISO 11221:2011. A table comparing the structural numbering changes between the two documents is provided.

See Appendix A.

This document differs significantly from ISO 11221:2011. The relevant clauses are indicated in vertical margins.

Single lines (-) are indicated. A summary of these technical differences and their causes can be found in Appendix B.

The following editorial changes have been made to this document.

---To align with existing standards, this document has been renamed "Tests for Charge-Induced Electrostatic Discharge of Solar Cell Arrays in Spacecraft under Space Environment" method";

---Explanatory statements in sections 3.9, 3.11, 9.1.1, and Chapter 6 of ISO 11221:2011 have been removed.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the Chinese Academy of Sciences.

This document is under the jurisdiction of the National Technical Committee on Standardization of Aerospace Technology and Its Applications (SAC/TC425).

1 Scope

This document describes the qualification and characterization tests of electrostatic discharge induced by the interaction between a simulated space solar array and plasma method.

This document applies to surface electrostatic discharge tests of space solar cell arrays.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential clauses of this document. Among these, dated references...

For this document, only the version corresponding to the specified date applies; for undated references, the latest version (including all amendments) applies.

Used in this document.

GB/T 32452 Space Terminology - Space Environment

3 Terms and Definitions

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

effective gap (activegap) There are gaps with potential differences between the different parts of a solar cell.

Collisionless plasma Plasma in which the mean free path of particles is greater than the length of interest, making the collision probability of particles negligible.

Note: For example, the length of the vacuum cavity is the length of interest.

Differential charging the phenomenon that any two points in a spacecraft are charged to different potentials during the charging process.

The capacitance between any two points in a spacecraft.

Note: This specifically refers to the capacitance between the surface of an insulator and the spacecraft structure.

Electrical breakdown of dielectric, gas, or vacuum gaps caused by differential charging of dielectric material components and their interfaces, as well as electrical breakdown of different material surfaces.

Electrical breakdown at the interface.

gap distance

The distance between biased solar cells or conductors.