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GB/T 41543-2022

Space environment - General principles and criteria of space environmental effect simulation test for space materials

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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"

Drafting.

This document is drafted with reference to ISO 17851.2016 "General principles and standards for space environment simulation for material testing of space systems", consistent with

The degree of sexuality is not equivalent.

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

1 Scope

This document gives the typical orbital space environment factors involved in the process of carrying out the ground simulation test of space environment effect of aerospace materials.

Selection of elements, general principles for simulation of space environmental effects of aerospace materials, physical and chemical mechanisms of aerospace material performance degradation, aerospace materials

The physical and mathematical models for the degradation of environmental effects in the

In order to meet the requirements, a suggestion was put forward to carry out the ground simulation test of space environment effect of aerospace materials.

This document is applicable to spacecraft design, spacecraft life prediction, ground simulation test of space environment effects of aerospace materials, and the use of aerospace materials in

Analysis of performance evolution during orbit.

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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/T 29079 spacecraft orbit classification and common parameter symbols

GB/T 30114.2 Terminology of Space Science and Its Applications Part 2.Space Physics

GB/T 32452 Spacecraft Space Environment Terminology

3 Terms and Definitions

The terms and definitions defined in GB/T 32452, GB/T 30114.2 and GB/T 29079 and the following terms and definitions apply to this document.

3.1

near-Earthspace

The space range is the space area within the distance from the moon to the earth, usually within 380,000 km.

3.2

Earth'sionosphere

The free electrons, ions and

A region of quasi-neutral plasma with very low energy composed of neutral particles. It is at an altitude of 50km to several thousand kilometers. According to electron density

With the change of height, it is divided into D, E, F1 and F2 layers.

[Source. GB/T 32452-2015, 3.6.1.1]

3.3

Earth'smagnetosphere

An area above Earth's ionosphere surrounded by the solar wind and controlled by the geomagnetic field.

[Source. GB/T 30114.2-2014, 4.1]

3.4

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interplanetary space

The region of space between the sun and the planets in the solar system.

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