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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 47035-2026

General test methods for spacecraft communication radio frequency links

航天器通信射频链路通用测试方法

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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. 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 and is under the jurisdiction of the National Technical Committee on Standardization of Aerospace Technology and Its Applications (SAC/TC425). This document was drafted by: Xi'an Space Radio Technology Research Institute, Shanghai Aerospace Measurement and Control Communication Research Institute, and China Aerospace Standardization Institute. Beijing Institute of Remote Sensing Technology and Beijing Institute of Satellite Environmental Engineering. The main drafters of this document are. He Yifeng, Nie Shikang, Yang Erlei, Dong Gang, Pan Lin, Lu Xiaojun, Chen Lingling, Li Jiming, Cao Jiadong, and Wang Hai. Liu Lingge, Li Hongjuan, Zhang Quanyuan, Xu Dongyan, Zhao Ming, Sun Wei, Liu Wei. General Test Methods for Spacecraft Communication Radio Frequency Links

1 Scope

GB/T 47035-2026 is the Chinese national standard covering testing a spacecraft's RF link before launch - the transmitter power and spectrum, the receiver sensitivity and threshold, the antenna patterns, the link budget verification and the end-to-end test through the ground station. First edition, 21,000 words, in force since 1 May 2026. It was issued on 28 January 2026 and has been in force since 1 May 2026, as a first edition. The document is under the responsibility of the Standardization Administration of China. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document describes the test objectives, test objects, test environment, test requirements, and test items for ground testing of spacecraft communication radio

frequency links. The study also includes wired testing methods under normal temperature and pressure, thermal vacuum, and low pressure environments, as well as wireless testing methods under normal temperature and pressure environments. method. This document applies to ground testing of spacecraft communication radio frequency links.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 12639-2021 On-orbit Test Methods for Payloads of Geosynchronous Orbit Communication Satellites

GB/T 14733.10 Telecommunications Terminology - Antenna

GB/T 29084 Spacecraft Grounding Requirements

GB/T 32452 Terminology for Spacecraft Space Environment

GB/T 34522 Methods for thermal vacuum testing of spacecraft

GB/T 37833 General requirements for spacecraft safety protection

GB/T 40134 Electromagnetic compatibility requirements for aerospace systems

GB/T 40602.1 Radio interference with antennas and receiving systems - Part

1.Basic measurements - Indoor far-field measurement of antenna patterns Quantification method

3 Terms and Definitions

The terms and definitions defined in GB/T 14733.10, GB/T 32452, GB/T 40134 and GB/T 40602.1 apply to this document.

4.Test Objective Based on the characteristics of spacecraft communication radio frequency links, test data of various technical indicators of spacecraft communication radio frequency links are accurately obtained on the ground.

5.Test Subjects Spacecraft communication radio frequency links refer to spacecraft communication links that use radio frequency microwave signals as the transmission medium. Their functions include single-receive, single-transmit, and single-receive. There are three scenarios. sending and receiving. Single receive function corresponds to test object A, single send function corresponds to test object B, and both send and receive functions correspond to test object C, as shown below. As shown in Figures 1, 2, and 3.

Considering that any type of spacecraft communication radio frequency link includes an antenna, the spacecraft communication radio frequency link will be tested using a layered testing method. The testing is divided into wired testing and wireless testing. Wired testing is for test object A, test object B, and test object without antennas. C, in this paper, are defined as test object A0, test object B0, and test object C0, respectively. Wireless testing is oriented towards test object A and test object C0.