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

GB/T 43941.2-2024

**Technical requirements and test methods for intermediate and
high-speed modulators and demodulators in satellite
communications - Part 2**

星地数据传输中高速调制解调器技术要求和测试方法 第2部分:解调器

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Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Abbreviations	1
2 Onboard demodulator	2
8 Data Output	6
4 Data transmission interface	7
17 Appendix C (Informative) CCM Common Demodulation and Decoding Theoretical Values	19

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 for standardization documents" Drafting: This document is part 2 of GB/T 43941 "Technical requirements and test methods for high-speed modems in satellite-to-earth data transmission": GB/T 43941 has published the following parts:

--- Part 1: Modulator;

--- Part 2: Demodulator: Please note that some of the contents of this document may involve patents: The issuing organization of this document does not assume the responsibility for identifying patents: This document was proposed and coordinated by the National Technical Committee for Standardization of Aerospace Technology and Its Applications (SAC/TC425): This document was drafted by: China Electronics Technology Group Corporation's 10th Research Institute, China Aerospace Standardization Institute, Chinese Academy of Sciences Aerospace Information Technology Information Innovation Research Institute, Beijing Tracking and Communication Technology Research Institute, Beijing Space Information Relay Transmission Technology Research Center, Shanghai Aerospace Measurement and Control Communication Research Institute, Nanjing Kongwei Communication Technology Co., Ltd., Chengdu Guoheng Space Technology Engineering Co., Ltd., Kairui Xingtong Information Technology (Nanjing) Limited by Share Ltd: The main drafters of this document are: Fang Ke, Zhang Bo, Chen Ying, Tang Ting, Zhang Guoting, Wang Lei, Ye Xi, Liu Yang, Zhang Yumeng, Lan Xia, Xu Dongyan, Du Yu, Liu Jingyuan, Luo Qiang, Xie Ling, Zhong Yu, Lai Haiguang, Moran, Li Jianghua, Shi Yan:

High-speed modulators and demodulators in satellite-to-ground data transmission are used

to realize wireless data transmission between satellites, space stations, probes and other spacecraft and the ground: It is a key equipment widely used in satellite-to-ground data transmission systems such as earth observation, manned space flight, relay satellites, and commercial space flight: The controller can generate different types of medium and high speed digital transmission signals in real time, and the medium and high speed demodulator can receive different types of medium and high speed digital transmission signals in real time: GB/T 43941 "Technical requirements and test methods for high-speed modems in satellite-to-earth data transmission" is intended to consist of two parts:

--- Part 1: Modulator: The purpose is to specify the functional composition, performance requirements, interface requirements of high-speed modulators in satellite-to-earth data transmission: Sum test method:

--- Part 2: Demodulator: The purpose is to specify the functional composition, performance requirements, interface requirements, and other requirements of high-speed demodulators in satellite-to-earth data transmission: Sum test method: The above two parts together constitute the standard system of technical requirements and test methods for high-speed modems in satellite-to-earth data transmission: High-speed modem for satellite-to-ground data transmission Technical requirements and test methods Part 2: Demodulator

1 Scope

Part 2 of China's national technical requirements and test methods for the intermediate and high speed modems used in satellite communications. Where the first part establishes the general requirements, this part addresses the further categories and conditions - the higher rate classes, the additional interfaces and the test cases that the first does not cover. The division is the usual one for a communications equipment standard: the physical layer performance is common and specified once, and the parts that follow deal with the variants that different services need. Satellite communications in particular has fragmented into services with quite different requirements - broadcast, broadband access, mobile and backhaul each impose their own combination of rate, latency, availability and terminal cost - and equipment specified for one is often unsuitable for another despite using the same underlying modulation.

This document specifies the functional composition, performance requirements, interface requirements and test methods of high-speed demodulators in satellite-to-earth data transmission: This document is applicable to data transmission rates between satellites, space stations, probes and other spacecraft and the ground at a rate between 5Mb/s and 4800Mb/s: Design and test of medium and high speed demodulator (hereinafter referred to as "demodulator"):

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document: For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document:

GB/T 39348-2020 Telemetry synchronization and channel coding for space data and information transmission systems

GB/T 42041 Aerospace terminology Space data and information transmission

GB/T 43941:1-2024 Technical requirements and test methods for high-speed modems in satellite-to-earth data transmission Part 1: Modulator GY/T 338-2020 Digital TV satellite transmission channel coding and modulation specifications

3 Terms and definitions

The terms and definitions defined in GB/T 42041 and GB/T 43941:1-2024 and the following apply to this document: 3:1 bitmerging When data is output, I-channel data and Q-channel data are combined in bits: 3:

2 Frame merging When data is output, I-channel data and Q-channel data are combined in frames:

4 Abbreviations

The following abbreviations apply to this document: BER: Bit Error Rate (BitErrorRate)