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

GB/T 46457.1-2025

**Internet of things - 470 MHz/2.4 GHz frequency band sensor
network communication and information exchange - Part 1:
Physical layer requirements and link layer protocols**

物联网 470MHz/2.4GHz频段传感网通信与信息交换 第1部分：物理层要求及链路
层协议

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Foreword

This document is in accordance with GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting is scheduled. This document is Part 1 of GB/T 46457 "Internet of Things 470MHz/2.4GHz Band Sensor Network Communication and Information Exchange". GB/T 46457 has published the following parts.

1. Physical Layer Requirements and Link Layer Protocols 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 Information Technology Standardization Technical Committee (SAC/TC28). This document was drafted by: State Grid Jiangsu Electric Power Research Institute, and Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences. Research Institute, China Electronics Technology Standardization Institute, CESI (Shenzhen) Electronic Information Product Standardization Engineering Center Co., Ltd., China Electric Power Research Institute Research Institute Co., Ltd., Beijing Zhixin Semiconductor Technology Co., Ltd., Shanghai Jiao Tong University, Shenzhen ZTE Microelectronics Technology Co., Ltd., State Grid Shandong Electric Power Research Institute, China Transportation Information Technology Group Co., Ltd., Shanghai Leyan Electric Co., Ltd., Guangdong Electric Power Communication Technology Co., Ltd., Shanghai Aoyou Information Technology Co., Ltd., State Grid Shanghai Electric Power Research Institute, State Grid Fujian Electric Power Information and Communication Branch of Power Co., Ltd., Shenzhen Guodian Technology Communication Co., Ltd., Quanzhou Power Skills Research Institute of Fujian Provincial Power Co., Ltd. Institute, Shanghai Panqi Microelectronics Co., Ltd., State Grid Xinjiang Electric Power Co., Ltd. Changji Power Supply Company, China Mobile Internet of Things Co., Ltd., Tianjin Kunpeng Information Technology Co., Ltd. Information Technology Co., Ltd., Zhuhai Taixin Semiconductor Co., Ltd., Zhejiang Lierda Internet of Things Technology Co., Ltd., Shenzhen New Seasons Information Technology Co., Ltd. Limited Liability Company, Anhui Jiaokong Engineering Group Co., Ltd., Nanjing Antongjie Technology Industry Co., Ltd., Beijing Fengqiao Technology Co., Ltd., Dongguan Fei Siling Communication Technology Co., Ltd., China Southern Power Grid Ultra-High Voltage Transmission Company, and Xi'an Aerospace Automation Co., Ltd. The main drafters of this document are. Hu Chenbo, Sun Wei, Yang Hong, Zheng Min, Su Jingru, Guo Xiong, Wang Zhen, Liu Hong, Hu Yanjie, Tang Peiyao, and Sun Bo. Yang Zhichao, He Fan, Xue Guangtao, Wang Wenting, Li Dazhuo, Li Wenzhuo, Lei Gen, Ye Lingsong, Yao Junfeng, Li Xiaolei, Yang Lanqing, Li Bo, Liu Xin, Feng

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GB/T 46457 "Communication and Information Exchange of Sensor Networks in the 470MHz/2.4GHz Band of the Internet of Things" specifies the requirements for low-power wireless sensor networks. Physical layer requirements, link layer protocols, and sensor terminal data specifications for non-frequency hopping communication devices in wireless sensor networks for communication and information exchange. These aim to standardize the protocol system for wireless networking of low-power wireless non-frequency hopping communication equipment in sensor networks and wireless access of sensor terminals. GB/T 46457 is proposed to consist of two parts.

1. Physical Layer Requirements and Link Layer Protocols. The purpose is to guide low-power wireless non-frequency hopping communication devices in wireless sensor networks. The design, development, testing, and use of [the system] specify general requirements, physical layer requirements, synchronous media access control layer protocol specifications, and asynchronous media access control layer protocol specifications. Access control layer protocol specification and logical link control layer protocol specification.

2. Sensor Terminal Data Requirements. The purpose is to ensure standardized data specifications for wireless sensor terminals, defining the requirements for sensor terminals... Data message format. Internet of Things 470MHz/2.4GHz band Sensor Network Communication and Information Exchange Part 1. Physical layer requirements and link layer protocols

1 Scope

GB/T 46457.1-2025 is the Chinese national standard covering the radio layers of a sensor network on the Chinese 470 MHz band and on 2.4 GHz - the modulation and channelisation, the transmit power and receiver sensitivity, the frame format, the medium access and the acknowledgement, and the coexistence between the two bands. At 26,500 words. The 470 MHz band is China's own allocation for metering and sensor networks. Part 1 of the series, first edition. In force from 1 May 2026. Issued on 5 October 2025, it has been in force since 1 May 2026.

This document specifies the requirements for low-power wireless non-frequency hopping communication protocols in the 470MHz/2.4GHz band. This document applies to the design, development, testing, and use of low-power non-frequency hopping communication devices for wireless sensor networks.

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 30269.2-2013 Information Technology - Sensor Networks - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 30269.2-2013, as well as the following terms and definitions, apply to this document.

3.1 sensor network By utilizing sensor network nodes and other network infrastructure, information is collected from the physical world and transmitted. A networked information system that processes and provides services to users. [Source: GB/T 30269.2-2013, 2.1.6]

3.2 sensor terminal The terminal devices of a sensor network monitor or control objective phenomena and physical properties in the physical world according to certain rules, and can... The device that converts the monitoring results into a processable signal can be wirelessly connected to the access node or sensor network gateway node.

3.3 Devices that connect sensor networks and other networks have functions such as network management, protocol conversion, self-organizing networks, and sensor terminal access. [Source: GB/T 30269.2-2013, 2.1.5, with modifications]

3.4 accessnode A communication relay device in a sensor network that has the functions of self-organizing network, sensor terminal access, and wireless connection to sensor network gateway nodes.

3.5 In point-to-multipoint communication, the communication device is in control.