ICS 35.110
CCS L 79

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 46803.1-2025

Information technology - Low power wireless communication network based on polar coding - Part 1: Physical layer

信息技术 基于极化码的低功耗无线通信网络 第1部分：物理层

Issued on: December 2, 2025 **Implemented on: July 1, 2026**

Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC

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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. This document is Part 1 of GB/T 46803 "Information Technology - Low-Power Wireless Communication Networks Based on Polar Codes". The following sections have been released.

1.Physical Layer;

2.Data Link Layer. This document was proposed and is under the jurisdiction of the National Information Technology Standardization Technical Committee (SAC/TC28). This document was drafted by: China Electronics Technology Standardization Institute, Huawei Technologies Co., Ltd., and CESI (Shenzhen) Electronic Information Product Standards. Chemical Engineering Center Co., Ltd., Shenzhen ZTE Microelectronics Technology Co., Ltd., Shenzhen Titanium & Baron Technology Co., Ltd., Beijing Post & Telecommunications University, Chongqing University of Posts and Telecommunications, Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, Zhejiang Lierda Internet of Things Technology Co., Ltd., Weikai Testing Technology Co., Ltd., Vivo Mobile Communication Co., Ltd., Beijing Zhongke Jingshang Technology Co., Ltd., HiSilicon Technologies Co., Ltd., Lenovo (Beijing) Co., Ltd., China Mobile (Hangzhou) Information Technology Co., Ltd., Chengdu Dingqiao Communication Technology Co., Ltd., Shanghai Jiao Tong University, Shanghai Digital National Engineering Research Center for Television Co., Ltd., MediaTek Boson Technology (Beijing) Co., Ltd., ASR Microelectronics Co., Ltd., Beijing Xinghe Liang Point Technology Co., Ltd. and Shenzhen Yunji Intelligent Technology Co., Ltd. The main drafters of this document are. Wang Ting, Yang Hong, Cai Tingxiao, Wan Lei, Wang Jian, Zhuo Lan, Wang Yong, Zhao Xiangyang, Yang Jian, Zhang Wenjun, Sun Bo, and Wang Jianfeng. Wang Xusheng, Xu Yin, Liu Ziqi, He Dazhi, Zhang Yan, Wei Min, Ye Hongji, Zou Liu, Wu Jun, Liu Hong, Zheng Min, Gao Weidong, Wan Jianchao, Yu Rongrong Li Feng, Yang Xiaojun, Qian Manli, Yin Lifan, Jiang Guangsong, Lu Yao, Ye Yangtao, You Xuecheng, Sun Xiangtao, Yang Xiaoqian, Tong Xuejian, Chen Tao, Li Weicheng Wu Yuan and Zhang Lihua.

GB/T 46803 aims to standardize the relevant technical requirements and test methods for low-power wireless communication networks based on polar codes. It is proposed to consist of two parts.

1.Physical Layer. The purpose is to specify the physical layer technical requirements for low-power wireless communication networks based on polar codes. Test method.

2.Data Link Layer. The purpose is to define the data link layer technology for low-power wireless communication networks based on polar codes. Requirements and testing methods. The issuing organization of this document draws your attention to the fact that a declaration of compliance with this document may involve "a communication method and device using unlicensed spectrum". "A communication method and information processing device", "A data transmission method and device", "A communication method and communication device", "A data processing device" "Methods, Apparatus and Systems", "A Communication Method and Apparatus", "Short-Range Wireless Communication Method and Related Equipment", "Resource Allocation Method, Apparatus and Systems" The use of patents related to "Tong" in 6.1, 6.2, 6.3, 6.4, 6.6, and 6.8. The issuing organization of this document makes no position on the authenticity, validity, or scope of the patent. The

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1 Scope

GB/T 46803.1-2025 is the Chinese national standard covering the physical layer of a low-power network built on polar codes - the coding invented by Erdal Arikan and adopted for 5G control channels, here applied to long-range low-rate links where every decibel of coding gain is battery life. At 74,500 words, Part 1 of a Chinese alternative to LoRa and NB-IoT. First edition. It was issued on 2 December 2025 and has been in force since 1 July 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 2025 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 specifies the physical layer technical requirements and test methods for low-power wireless communication networks based on polar codes. This document applies to the development of low-power wireless communication network devices based on polar codes.

2 Normative references

This document has no normative references.

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 management node grant-node G node In low-power wireless communication systems, nodes that transmit access layer resource management information.

3.2 terminal node T node In low-power wireless communication systems, the system receives access layer resource management information sent by the management node and then processes it according to the access layer resource management information. The node that sends or receives line data.

3.3 radioframe A time-structured message transmitted by a transmitting node in a channel.

Note. This includes the preamble signal section, the synchronization signal section, the physical layer control information section, and any data section that may exist.

3.4 Basic broadcast frame, extended broadcast frame, system management frame, query request frame, query response frame, access request frame, access response frame, no connection The time granularity of the start time of synchronous broadcast data and linkless asynchronous broadcast data.

3.5 The schedulable time granularity of the start time for linked asynchronous data transmission and synchronous data transmission.

3.6 event The minimum basic process of data transmission can be a single process in which two devices send and receive data sequentially, or a single process in which a broadcasting device transmits data. process.