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

**GB/T 43957-2024**

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**Forestry and grassland internet of things - Medium access  
control and physical layer protocols for video based on  
wireless sensor network**

林草物联网 面向视频的无线传感器网络媒体访问控制和物理层协议

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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 for standardization documents"

Drafting: 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 by the State Forestry and Grassland Administration: This document is under the jurisdiction of the National Forestry and Grassland Information Standardization Technical Committee (SAC/TC386): This document was drafted by: China Electronics Technology Standardization Institute, Information Center of the State Forestry and Grassland Administration, China Electronics Technology Standardization East China Branch of the Institute, Shenzhen CESI Information Technology Co., Ltd., Shenzhen HiSilicon Semiconductor Co., Ltd., Beijing CESI Technology Development Co., Ltd: Company, Chongqing University of Posts and Telecommunications, and Southeast University: The main drafters of this document are: Zhuo Lan, Gu Hongbo, Li Dejian, Zhang Chi, Lei Gen, Liu Pei, Bai Ying, Yang Hong, Han Li, Wang Xiaochun, Li Mengliang, Guo Xiong, Yan Jianqing, Liang Jinjie, Lang Junqi, Ling Zhen, and Yang Ming: Forestry and Grassland IoT Video-Oriented Wireless Sensors Network media access control and physical layer protocols

## 1 Scope

GB/T 43957-2024 specifies the physical and medium access control layers of a video-oriented wireless sensor network for the forestry and grassland internet of things. Carrying video over a sensor network is a hard case: the nodes are unattended in forest or grassland, powered by nothing or by a small battery, and video is the one payload that a low-power sensor radio was never designed to move, so the air interface has to be designed for it specifically. The document sets the general description, the architecture, the

devices supported, the network topology, the logical service interfaces, the service types and messages, the protocol reference model and the function categories; then the physical layer, its functions, operating frequency range, services, PPDU format, service interface, layer detail, PLME and MCS parameters; then the MAC layer, its services, frame formats, functions, distributed coordination function, the scheduling and transmission of traffic streams and the allocation and management of service periods, with the message sequence charts of the MAC and PHY interaction; then the layer management model with the MLME and PLME service access points, and the MAC layer management entity covering synchronisation, association and reassociation. An informative annex gives the radio frequency provisions for the 779 MHz to 787 MHz band. It applies to fixed or portable devices operating within about a kilometre.

This document specifies the requirements for video-oriented wireless sensor network protocols in forest and grassland Internet of Things: Suitable for fixed or portable devices that do not use batteries or use batteries with limited capacity as power sources and mainly work in limited space: Within the range (0m~1000m): This document applies to the development and use of equipment for video-oriented wireless sensor networks in forest and grassland Internet of Things:

## 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 15629:2-2008 Information technology systems - Particular requirements for local area networks and metropolitan area networks for telecommunications and information exchange between systems Part 2: Logical Link Control

GB/T 15629:15-2010 Information technology systems - Specific requirements for local area networks and metropolitan area networks for telecommunications and information exchange between systems Part 15: Low-speed Wireless Personal Area Network (WPAN) Medium Access Control and Physical Layer Specifications

GB/T 37020-2018 Information technology systems - Telecommunications and information exchange between local area networks and metropolitan area networks - Specific requirements Video-oriented Wireless Personal Area Network (VPAN) Media Access Control and Physical Layer Specifications

## 3 Terms and definitions

The terms and definitions defined in GB/T 37020-2018 and the following apply to this

document: 3:

1 In forests, grasslands, wetlands, desertification and sandification environments, objects communicate with each other through sensing devices according to the agreed protocols: A system that can exchange and communicate information to realize intelligent identification, positioning, tracking, monitoring and management: [Source: LY/T 2413:2-2015, 3:1:1, modified] 3:

2 The time period directly following the beacon frame during which devices that wish to transmit compete for the channel using the CSMA-CA mechanism Access:

#### **4 Abbreviations**

The following abbreviations apply to this document: AP: Access Point