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**GY/T 200.1-2004**

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**Specification for HFC data transmission system Part 1: General  
specification  
(English Translation)**

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### Foreword

GY/T 200 "Technical Specifications for HFC Network Data Transmission System" is divided into two parts.

-Part 1. General requirements;

-Part 2. RF interface and protocol.

This part is the first part of GY/T 200.

This section is under the jurisdiction of the National Radio and Television Standardization Technical Committee.

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### Introduction

This part of the standard describes the basic composition of the HFC network data transmission system, and specifies the basic requirements of the HFC network data

transmission system and overall requirements for system management, user management, compatibility and scalability. On the basis of meeting the requirements of this section, a variety of Technical method To realize HFC network data transmission system, detailed technical specifications of system interface and protocol and system security are separately stipulated.

Technical specifications of HFC network data transmission system Part 1. General requirements

## 1 Scope

This section describes the basic composition of the HFC network data transmission system, and specifies the basic requirements for the system as well as the system management and compatibility.

And scalability requirements.

This section applies to HFC network data two-way transmission system.

## 2 Normative references

The clauses in the following documents are incorporated into this clause by reference in this section. For dated references, all subsequent Neither amendments (excluding errata) or revisions are applicable to this section; however, parties who have reached an agreement under this section are encouraged to study is the latest version of these files available? For undated references, the latest edition applies to this section.

GY/T 106-1999 Technical Specification for Cable Television Broadcasting System GY/T 180-2001 Technical Specifications of Physical Transmission Channels for HFC Networks YD/T 1076-2000 access network technology requirements-a cable modem (CM) IEEE 802.3 Information technology Telecommunications and information exchange between systems - Local and metropolitan area networks - Part 3. Carrier sense multiple access with collision detection (CSMA/CD) access method and physical sublayer specifications RFC 0791 Internet Protocol

## 3 Acronyms

The following abbreviations apply to this section.

CM Cable Modem

CMTS Cable Modem Termination System DHCP Dynamic Host Configuration Protocol NSI Network Side Interface RFI Radio Frequency Interface SNMP Simple Network Management Protocol TFTP Trivial File-Transfer Protocol ToD Time of Date (server) UNI User Network Interface

## 4.1 HFC Network

The HFC network in this standard refers to the cable television access network of mixed optical fiber/coaxial cable (including all coaxial cable).

Meet the basic requirements of GY/T 106-1999 and GY/T 180-2001.

## 4.2 HFC Network Data Transmission System Description and Basic Structure

HFC network data transmission system refers to a system that uses the HFC network for two-way data transmission. Usually its front-end equipment is called CMTS the device is called CM. Its structure is shown in Figure 1. A CMTS in the figure can connect multiple CMs at the same time.

Data access

Ingress node CMTS CM User number According to the terminal NSI UNI

Figure 1 HFC cable TV data transmission system structure

RFIRFI

HFC Network

### 5.1.1 Network Side Interface (NSI)

The physical layer of this interface should have at least 100BASE-T (compatible with 10BASE-T) or IEEE 802.3u Gigabit Ethernet interface specified by 802.3z.

### 5.1.2 Interface of CMTS or CM to HFC network (RFI)

Two-way communication is established between the CMTS and the CM through a radio frequency interface protocol. The physical connection uses an F-type connector to connect to the HFC transmission network.

### 5.1.3 User-side interface (UNI)

The interface (UNI) between the CM and the user data terminal can be 10BASE-T in accordance with IEEE 802.3 and IEEE 802.3u the fixed 100BASE-T or the USB and PCI interfaces used by the computer can also be embedded into the user data terminal by the CM. Equipment the manufacturer shall provide corresponding interfaces according to the situation of the user data terminal.

The network/transport layer protocol of the UNI between the CM and the user data terminal shall comply with the provisions of the TCP/IP protocol (RFC 0791).

## 5.2 Frequency range and allocation

In HFC networks, the frequency range and allocation of channels should comply with the provisions of GY/T 106-1999.

## 5.3 Transmission level

The difference between the power level of the downlink digital signal RMS and the analog signal (peak value), using 64QAM modulation is recommended to be -10dB to -6dB and 256 QAM modulation is recommended between -6dB and -4dB. The normal power level of the uplink is higher than the noise and interference requirements and as long as a certain margin is met, it should be as low as possible.

## 6 System management

HFC network data transmission system management should include CM startup configuration management, CM device management, and CMTS device management. System Management for server-client mode.

The CM startup configuration management server is responsible for configuring the initialization parameters of the CM. The CM startup configuration management server is configured by the DHCP server and the ToD server.

Server, TFTP server.

The CM device management server is responsible for performing SNMP-based network management on the CM, completing parameter configuration, status query, performance statistics, and faults Management functions.

The CMTS device management server is responsible for performing SNMP-based network management on the CMTS, completing parameter configuration, status query, performance statistics, Fault management functions.

## 7 Compatibility under multi-service conditions

CMTS and CM should be compatible with other business systems on the HFC network. Especially when its spectrum is occupied by any combination of TV and other signals at the same time, CMTS and CM should work well together in the spectrum allocated for them.

CMTS and CM shall not cause harmful interference to any other services in the HFC network.

Since the HFC network data transmission system is a media-sharing, point-to-multipoint system, consideration should be given to the potential impact of failure and fault isolation on a large number of users of data and other services.