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

GY/T 198-2003

**Specifications and methods of measurement on QAM
modulator used in digital cable broadcasting system
(English Translation)**

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Foreword

This standard specifies compliance with GY/T 170-2001 "Code for Cable Digital Television Broadcasting Channel Coding and Modulation" and GY/T 106-1999 " Technical Specifications and Measurement Methods for Cable Digital TV Broadcasting QAM Modulators of Technical Specifications for Cable TV Broadcasting Systems. Technical requirements of this standard Referenced the technical parameters of the cable digital TV broadcast QAM modulator at home and abroad, and fully considered the cable digital TV broadcast QAM modulator Practical application requirements in cable digital television systems.

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

This standard was drafted. State Administration of Radio, Film and Television Radio and Television Measurement and Testing Center, Zhejiang Radio and Television Technology Co.,

Ltd., Shenzhen Feitong Broadband Technology Co., Ltd., Shenzhen Dirui Computer Technology Co., Ltd.

1 Scope

This standard specifies the technical requirements and testing of QAM modulators for cable digital television broadcasting in compliance with GY/T 170-2001 and GY/T 106-1999.

This standard applies to the research and development, production, use, operation and maintenance of cable digital television broadcast QAM modulators.

2 Normative references

The clauses in the following documents have become the clauses of this standard after being referenced. For dated references, all subsequent Neither amendments (excluding errata) or revised versions are applicable to this standard, however, parties who have reached an agreement under this standard are encouraged to study is the latest version of these files available? For undated references, the latest version applies to this standard.

GY/T 106-1999 Technical Specification for Cable Television Broadcasting System GY/T 170-2001 Cable Digital TV Broadcasting Channel Coding and Modulation Specification

3.1 Terms and definitions

The following terms and definitions apply to this standard.

Modulation error ratio the ratio of the sum of the squares of the nominal vector magnitude to the sum of the squares of the error vector magnitude, expressed in dB.

3.2 Acronyms

The following abbreviations apply to this standard.

ASI Asynchronous Serial Interface PCR Program Clock Reference QAM Quadrature Amplitude Modulation SPI Synchronous Parallel Interface TS Transport Stream

4 Technical requirements

The technical requirements of the cable digital TV broadcast QAM modulator are shown in Table 1.

Table 1 Technical requirements of cable digital TV broadcast QAM modulator

Remarks on technical indicators of project unit Input signal frame structure, channel coding Code and modulation should comply with GY/T 170-2001 Regulations

2 Required modulation methods-64-QAM and 256-QAM

3 Output symbol rate range Mbaud 3.6 ~ 6.952 adjustable

4 Input signal interface characteristics-should comply with GY/T 170-2001 Appendix A Provisions

5 Working frequency MHz

Should be in the range of 110MHz ~ 862MHz Conform to GY/T 106-1999 about frequency Rate division

6 Carrier frequency deviation kHz ≤ 25

For agile frequency modulators, the highest channel in the operating band should be Take measurements.

7 Tuning frequency step kHz ≤ 250 Fixed channel modulator is not specified.

8 Maximum output level dBm ≥ -8

For agile frequency modulators, the highest and most the low and middle channels are measured separately and the minimum value is taken.

9 Output impedance ohm 75

10 Output end reflection loss dB ≥ 12

The output level is -8dBm. For agile modulators, the highest channel of the operating band is measured.

(64-QAM)

11 Modulation error rate dB

(256-QAM)

Output level is -8dBm, symbol rate is 6.875Mbaud, both Weighing is off. For agile frequency modulators, the the highest, lowest, and middle channels are measured separately, and the minimum value is taken.

12 Carrier-to-noise ratio dB ≥ 40

The output level is -8dBm and the symbol rate is 6.875Mbaud. Correct for agile frequency modulator, it should be at the highest and lowest working frequency band.

And the middle channel are measured separately, and the minimum value is taken.

13 Parasitic output suppression ratio dB $\geq$ 50

The output level is -8dBm and the symbol rate is 6.875 Mbaud.

For agile frequency modulators, the highest and most the low and middle channels are measured separately and the minimum value is taken.

14 Phase noise dBc/Hz

≤ -65 @ 1kHz

≤ -80 @ 10kHz

≤ -100 @ 100kHz

The output is an unmodulated carrier with an output level of -8dBm. for Agile modulator, should be performed on the highest channel of the operating frequency band measuring.

15 PCR jitter ns $\pm$ 500

The output level is -8dBm, and the modulation method is 256-QAM.

The number rate is 6.875Mbaud. For agile modulators, the Measure at the highest channel of the operating frequency band.

16 Stream input port-ASI. BNC type, 75ohm (required)

SPI. 25 cores, negative (optional)

17 RF Output-BNC or F, 75ohm

5 Measurement method

5.1 Main measuring instruments

5.1.1 Digital TV Test Signal Generator Bit rate accuracy. 3×10^{-6} ;

ASI signal jitter.