

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

GY/T 324-2019

**Technical requirements and measurement methods of AVS2
professional satellite integrated receiver decoder for 4K UHD TV
(English Translation)**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

Please note that some elements of this standard may involve patents. The issuer of this standard is not responsible for identifying these patents.

This standard is under the jurisdiction of the National Radio, Film and Television Standardization Technical Committee (SAC/TC 239).

This standard was drafted. Radio and Television Planning Institute of the State Administration of Radio and Television, Central Radio and Television Station, and the State Administration of Radio and Television Institute of Television Science, Supervision Center of State Administration of Radio and Television, Central Digital Television Media Co., Ltd., Zhongguancun Audiovisual Industry Technology Innovation Alliance, Guangdong Radio and Television Station, Shanghai Jiaotong University, Beijing Mudan Shiyuan Electronics Co., Ltd., Guangzhou Keweixin Digital Technology Co., Ltd.

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1 Scope

This standard specifies the video decoding using the 4K ultra-high-definition professional satellite integrated receiver decoder of GY/T 299.1-2016 (referred to as AVS2) Technical requirements and measurement methods.

This standard is applicable to the development, testing, production, use, and maintenance of AVS2 4K UHD professional satellite integrated receiver decoder.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this document.

For undated references, the latest version (including all amendments) applies to this document.

GB/T 17191.3 Information technology. Encoding of moving images and accompanying sounds on digital storage media with a data transfer rate of 1.5 Mbit/s Part 3. Audio GB/T 17975.1 Information technology. Universal coding of moving pictures and associated audio information. Part 1. System GB/T 22726 Multi-channel Digital Audio Codec Technical Specification GB/T 32631 High Definition TV 3Gbps Serial Data Interface and Source Image Format Mapping GB/T 33475.3 Information technology efficient multimedia coding. Part 3. Audio GY/T 148-2000 satellite digital television receiver technical requirements GY/T 150-2000 Satellite digital TV receiving station measurement method-indoor unit measurement GY/T 170-2001 Cable Digital TV Broadcasting Channel Coding and Modulation Specification GY/T 299.1-2016 High-efficiency audio and video coding Part 1. Video GY/T 307-2017 Ultra high definition television system program production and exchange parameter values GY/T 315-2018 High dynamic range TV program production and exchange of image parameter values SJ/T 11336 Conditional Access Interface

Specification for Digital TV Receiver Equipment-Part 1-1. DTV-CI Technical Specification
 T/AVS 102 AVS Interoperability Test Specification T/AVS 107 Efficient Multimedia Encoded
 Video Compliance Test ETSI TR 101 290 Measurement guidelines for DVB systems ETSI
 TS 102 366 v1.4.1 Digital Audio Compression Standard (AC-3 and Enhanced AC-3) (AC-3,
 enhanced AC-3) standard) SMPTE ST 425-1..2017 3Gb/s serial interface source image
 format and auxiliary data mapping (Source Image Format and Ancillary Data Mapping for
 the 3 Gb/s Serial Interface) SMPTE ST 425-5..2015 4-link 3Gb/s serial interface source
 image format and auxiliary data mapping (Image Format and Ancillary Data Mapping for
 the Quad Link 3 Gb/s Serial Interface) SMPTE ST 2081-1..2015 6 Gb/s signal/data serial
 interface SMPTE ST 2082-1..2015 12 Gb/s signal/data serial interface

3 Acronyms

The following abbreviations apply to this document.

ASI Asynchronous Serial Interface CI Common Interface ETSI European
 Telecommunications Standards Institute SQD Square Division TS Transport Stream
 UHDTV Ultra High Definition Television 2SI 2 Sample Interleave 3G-SDI 3Gb/s Serial
 Digital Interface 6G-SDI 6Gb/s Serial Digital Interface 12G-SDI 12Gb/s Serial Digital
 Interface

4.1 Functional and physical interface requirements

The function and physical interface requirements of the decoder are shown in Table 1.

Table 1 Functional and physical interface requirements

Technical requirements of the project

- 1 Satellite channel radio frequency input interface has satellite channel radio frequency input interface, technical indicators meet 4.2 requirements
- 2 Conditional receiving interface with CI interface complying with SJ/T 11336
- 3 ASI input interface Meet the requirements of GY/T 170-2001 table A5, the interface type is BNC, 75, the maximum input code the rate is at least 75Mbps (excluding empty packets) Must
- 4 IP input interface Support TS over IP input interface with interface type RJ45, the maximum input bit rate is at least 75Mbps (excluding empty packets), support unicast and multicast input Must
- 5 4 x 3G-SDI output interface 4-link 3G-SDI (GB/T 32631 and SMPTE ST 425-5..2015) output interface, Type is BNC, 75, and supports 2SI and SQD image mapping methods Must
- 6 Transport stream packet length Transport stream input format supports 188-byte packet length and 204-byte packet length

7 Input Transport Stream Type Supports AVS2 video encoding and conforms to GB/T 17975.1 Transport Stream Type Mandatory

8 Multi-program transport stream decoding

9 Audio and video relative delay adjustment Audio and video relative delay should be adjustable within ± 2 ms Single vision Stream decoding stand by Class and level Benchmark 10-bit class (Profile_id has a value of 0x22) 8.0.60 (maximum code rate. 40Mbps) 8.2.60 (max. Code rate 160Mbps) optional 8.0.120 (maximum code rate 60Mbps) optional 8.2.120 (Maximum code rate 240Mbps) Optional 11 frame rate 50Hz (progressive) required 12 aspect ratio 16. 9 essential

15 Image resolution 3840x2160 essential

Table 1 (continued)

Technical requirements of the project

16 Single View

Stream

decoding

stand by

The color gamut supports the color gamuts required by GY/T 315-2018 and GY/T 307-2017.

17 Dynamic range

Support GY/T 315-2018 and GY/T 307-2017 non-linear transfer function, solution the dynamic range identification in the 3G-SDI signal of the code output should comply with SMPTE ST 425-1..2017 the requirements in Table 5 are consistent with the content of the code stream.

Must

18 Audio support

Supports MPEG-1 layer II audio conforming to GB/T 17191.3 for two-channel and 2.0 stereo Decode and output Must Supports decoding of 5.1 surround sound AVS2 audio stream in accordance with GB/T 33475.3 and 5.1 Surround sound 6-channel output, support audio stream through output Optional Supports ETSI TS 102 366 v1.4.1-compliant AC-3 audio streaming for 5.1 surround sound Decoding and 5.1 surround sound 6-channel output, support for audio stream through output Optional Supports decoding of 5.1