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

GY/T 323-2019

**Technical requirements and measurement methods of AVS2
encoder for 4K UHD TV
(English Translation)**

Issued on: January 1, 1970

Implemented on: September 5, 2019

Issued by: State Administration of Radio and Television

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References

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., Shenzhen Longgang Intelligent Audiovisual Research Institute, Guangzhou Keweixin Digital Technology Co., Ltd., Shanghai Guomao Digital Technology Co., Ltd., Beijing Digital Video Technology Co., Ltd., Hangzhou Dang Hong Technology Co., Ltd., Beijing Jiawei Communication Electronic Technology Co., Ltd., Beijing Liujin Years Culture Communication Co., Ltd., Shenzhen Hisilicon Semiconductor Co., Ltd. and Shanghai Zhaoxin Integrated Circuit Co., Ltd.

1 Scope

This standard specifies the main technical requirements and measurement of 4K UHD encoders for video encoding using GY/T 299.1-2016 (referred to as AVS2).

This standard is applicable to the development, production, application, testing and operation of AVS2 4K ultra-high-definition real-time encoder accessed by SDI for broadcast and television professionals.

Line maintenance.

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 17975.1-2010 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 134 Digital TV image quality subjective evaluation method 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 T/AVS 106-2018 Efficient Audio and Video Coding Part 1. Video ETSI TR 101 290 Measurement guidelines for DVB systems ETSI TS 101 154 v1.9.1 Technical Requirements for MPEG-2 Video and Audio Coding in Broadcast and Television Applications use of video and audio coding in broadcasting applications based on the MPEG-2 transport stream) 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.

AC-3 Surround Coding Digital Audio Coding (Audio Coding generation 3) ASI Asynchronous Serial Interface CBR Constant Bitrate CRC Cyclic Redundancy Check DVB Digital Video Broadcasting ETSI European Telecommunications Standards Institute MPEG Moving Picture Experts Group PAT Program Association Table PCR Program Clock Reference PMT Program Map Table PTS Presentation Time Stamps SDI Serial Digital Interface SQD Square Division TS Transport Stream UDP User Datagram Protocol 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

4.1.1 General requirements

The syntax and semantics of the transport stream and transport stream packet layer shall comply with the provisions of 2.4.3 in GB/T 17975.1-2010.

The grammatical structure of PAT should comply with the provisions of 2.4.5.3 in GB/T 17975.1-2010.

The syntax structure of the PMT shall comply with the provisions of 2.4.5.8 in GB/T 17975.1-2010.

The setting of table_id should meet the requirements of Table 34 in GB/T 17975.1-2010.

If the transport stream contains the stream type in Table 1, the assignment of stream_id in PES shall comply with the corresponding provisions in Table 1.

Table 1 stream_id assignment

Assignment of ordinal stream type stream_id

1 GY/T 299.1-2016 video (AVS2 video) 1110 xxxx

2 GB/T 17191.3 audio (MPEG-1 layer II audio) 110x xxxx

3 GB/T 33475.3 audio 1101 xxxx

4 GB/T 22726 audio 1011 1101

5 Dolby AC-3 audio 1011 1101

Note: The symbol x indicates that either '0' or '1' is allowed and can produce the same stream type. The stream number is determined by the value of x.

4.1.2 Requirements for the fields in the transport stream packet layer the assignment of each field in the transport stream packet layer shall conform to the requirements in Table 2.

Table 2 Assignment of each field in the transport stream packet layer

Assignment of ordinal field name bit value 1 sync_byte 8 0x47 2 transport_error_indicator 1 3 payload_unit_start_indicator 1 4 transport_priority 1 user-defined

5 PID 13 meets the requirements of Table 6 in GB/T 17975.1-2010 6 transport_scrambling_control 2 00

8 Continuity_counter 4

4.1.3 Assignment of fields in PAT the assignment of each field in the PAT shall comply with the requirements in Table 3.

Table 3 Assignment of each field in PAT

Assignment of ordinal field name bit value 1 table_id 8 0x00 2 section_syntax_indicator 1 1 3 '0' 1 0

4 Reserved 2