

ICS 35.040
CCS L 71



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

GB/T 33475.5-2024

**Information technology - High efficiency multimedia coding -
Part 5: Reference software**

信息技术 高效多媒体编码 第5部分：参考软件

Issued on: May 28, 2024

Implemented on: December 1, 2024

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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Foreword Foreword

The document is drafted in accordance with the rules given in GB/T 1.1-2020, Directives for standardization-Part 1: Rules for the structure and drafting of standardizing documents.

It is Part 5 of GB/T 33475, Information technology-High efficiency multimedia coding. The following parts of GB/T 33475 have been published: Part 1: Systems; Part 2: Video; Part 3: Audio; Part 4: Conformance testing; Part 5: Reference software; Part 6: Intelligent media transport; Part 7: Image file format. In this list the entries for Part 5 and Part 7 are printed with a semicolon in place of the colon that separates the part number from the part title.

The document was proposed by and is under the jurisdiction of the National Information Technology Standardization Technical Committee (SAC/TC 28).

Introduction Introduction

GB/T 33475 is intended to establish methods for the efficient compression of digital audio and video media and is planned in seven parts. Part 1: Systems establishes the coding method at the systems layer of digital audio and video media. Part 2: Video establishes the method of efficient video compression. Part 3: Audio establishes the method of efficient audio compression. Part 4: Conformance testing establishes how coded bitstreams and decoders are to be tested and verified. Part 5: Reference software defines the reference software that meets the requirements of GB/T 33475.2-2024 and GB/T 33475.3-2018. Part 6: Intelligent media transport lays down the intelligent media transport technology used for the transmission of multimedia data over heterogeneous packet-switched networks. Part 7: Image file format lays down the syntax description, the semantic description and the

packaging definition of the high efficiency multimedia coding image file format.

The document contains the simulation software of the tool sets defined by GB/T 33475.2-2024 and GB/T 33475.3-2018. That software grew out of a succession of verification models built while the standard was being drawn up. Because a delay arises between the acceptance of a tool and its addition to the reference software, tools defined in other parts of GB/T 33475 may not be present in this reference software.

Where encoding software is present, it is to be noted that these encoders support only the bitstreams produced by the normative syntax elements, that their performance is not a measure of the degree to which quality and computational complexity have been optimized, and that the tools on the encoding side are not defined in the document. The document defines reference software meeting the requirements of GB/T 33475.2-2024 and GB/T 33475.3-2018 only.

The reference software of the document falls into six categories. The video elementary stream decoding software is defined in Clause 6: the video reference software receives a coded elementary stream conforming to GB/T 33475.2-2024 and decodes it to produce the media format associated with that stream, namely video. Although the video reference software is a normative part of GB/T 33475, the implementation techniques used in it are not regarded as normative, since other implementations may produce the same result; the reference software as a whole is regarded as normative because it correctly implements the decoding process described in GB/T 33475.2-2024. The elementary stream encoding software is defined in Annex A: it produces an elementary stream, namely a video elementary stream, from the corresponding media format, and the encoder offers a way of obtaining an elementary stream that conforms to the syntax laid down; the document does not lay down encoding techniques, and the quality and complexity of the encoding software provided are not optimized. Detailed instructions for using the reference software are given in Annex B, and the software can produce bitstreams meeting different coding conditions according to the configuration set out in that annex. The audio elementary stream decoding software is defined in Clause 7 and stands in the same relation to GB/T 33475.3-2018; the audio elementary stream encoding software is defined in Annex A; and detailed instructions for using the audio reference software are given in Annex C. In the passages describing the encoding software the referenced parts are printed as GB/T 34753.2-2024 and GB/T 34753.3-2018.

1 Scope

The document defines the reference software that meets the requirements laid down in GB/T 33475.2-2024 and GB/T 33475.3-2018.

It applies to the development, debugging and acceptance of application systems such as digital television broadcasting, interactive storage media, direct broadcast satellite video services, multimedia mail, multimedia services over packet networks, real-time

communication services and remote video surveillance.

2 Normative references

The following documents are cited normatively in the text and their content constitutes indispensable provisions of the document. For dated references only the edition cited applies; for undated references the latest edition, including all amendments, applies.

GB/T 33475.2-2024 Information technology-High efficiency multimedia coding-Part 2: Video.

GB/T 33475.3-2018 Information technology-High efficiency multimedia coding-Part 3: Audio.

3 Terms and definitions

The terms and definitions given in GB/T 33475.2-2024 and GB/T 33475.3-2018 apply to the document.

4 Abbreviated terms

Two abbreviated terms apply: AASF, the AVS2 audio storage format; and AATF, the AVS2 audio transport format.

5 Overview

An implementation conforming to GB/T 33475.2-2024 and GB/T 33475.3-2018 need not follow the algorithms or the programming techniques of the reference software strictly. The decoding software is not to go beyond the technical description text of GB/T 33475.2-2024 and GB/T 33475.3-2018.

The location of the encoding software and the notes on it are given in Annex A, the detailed instructions for using the video reference software in Annex B, and those for using the audio reference software in Annex C.

6 Video reference software

The video reference software given in the document is written to the requirements of GB/T 33475.2-2024. The file locations given are relative to the root directory of the reference software. The locations of the video reference software and the notes on it are given in Table 1.

Table 1, Notes on the video reference software, has two columns, location and note, and three entries: source\common, source\ldecod and source\lencod, the note against each being that the software is written in the C language.

7 Audio reference software

The audio reference software given in the document is written to the requirements of GB/T 33475.3-2018. The file locations given are relative to the root directory of the reference software. The locations of the audio reference software and the notes on it are given in Table 2.

Table 2, Notes on the audio reference software, has two columns, location and note, and two entries: refavs2p3dec\source and refavs2p3dec\general, the note against each being that the software is written in the C language.

Annex A Annex A (informative) Encoding software

A.1 Video encoder. The location of the video encoder and the note on it are given in Table A.1, which has a single entry, source\lencod, with the note that the software is written in the C language.

A.2 Audio encoder. The locations of the audio encoder and the notes on them are given in Table A.2, which has two entries, refavs2p3enc\src and refavs2p3enc\general, with the note against each that the software is written in the C language.

Annex B Annex B (informative) Detailed instructions for using the video reference software

B.1.1 Compiling under Windows with Visual Studio. The software package provides a VS2008 workspace file and a build script for the cmake tool chain. With the cmake tool chain, the make-solutions.bat script in the build directory can generate the corresponding version of the VS project, or the build-all.bat script can be run directly to compile the latest binaries. The VS2008 workspace file is RD_vc9.sln in the source directory and contains three projects: lcommon, the shared codec method library of the reference software; lencod, the encoder of the reference software; and ldecod, its decoder. The project wanted can be compiled in Debug or Release mode and the binaries produced are placed in the bin directory. For an integrated solution under a higher version of the integrated development environment, the open source CMake tool of version 2.8.8 or above is to be installed; the build directory under the project root holds 32-bit and 64-bit compilation directories supporting five mainstream environments, listed in the document as Visual Studio 2008, Visual Studio 2010, Visual Studio 2012, Visual Studio 2012 and Visual Studio 2015. Choosing the directory required and running build-all.bat generates the solution. Double-clicking the RFD.sln file opens the Visual Studio project, and the RFD project is compiled within Visual Studio; the executable files and static libraries produced are placed in the bin and lib directories under the project root. Running clean.bat in the vc12-x86_64 directory clears the Visual Studio project files of vc12-x86_64 and the binaries in the bin