



IEEE Standard for Second Generation Audio Coding

IEEE Computer Society

Developed by the
Standards Activities Board

IEEE Std 1857.8-2020

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of the
IEEE Computer Society

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IEEE SA Standards Board

Abstract: This standard is the second generation of IEEE Std 1857.2™-2013, which provides more flexible and high efficiency coding tool sets for compression, decompression, and packaging of the audio data, which should double the coding efficiency of IEEE Std 1857.2-2013. The target applications and services include, but are not limited to, the audio accompanying video and other audio services and applications, such as the audio accompanying Internet video, TV audio system, digital audio storage, audio broadcasting and communication, virtual reality and panoramic audio, etc.

Keywords: AVSA, channel coding, IEEE 1857.8™, panoramic audio scene signal coding, sound object coding, spatial coding

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Introduction

This introduction is not part of IEEE Std 1857.8-2020, IEEE Standard for Second Generation Audio Coding.

This standard specifies the compression, decompression, and packaging tools and mechanism that support the efficient transmission and storage of the multimedia data over Internet. Flexible configuration of compression parameters for providing better Quality of Experience (QoE) in relation to bit rate and subjective assessment of playback quality is also discussed, while aiming at satisfying the requirements of network user, which includes self-made multi-tracks and multi-component audio production, or audio scene coding. The requirements of the network user include the bit rate from 16 kb/s/ch to 192 kb/s/ch and multiple channels up to 128-channel for audio signals with sampling frequency from 8 kHz to 192 kHz and quantization resolution of 8 bit, 16 bit, and 24 bit. It describes the general audio coding, object metadata coding, and scene signal coding for panoramic audio signals, as well as general audio decoding, object metadata decoding, and scene signal decoding techniques.

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IEEE Standard for Second Generation Audio Coding

1. Overview

1.1 Scope

This standard specifies the compression, decompression and packaging tools and mechanism which support the efficient transmission and storage of the multimedia data over internet and flexible configuration of compression parameters for providing better Quality of Experience (QoE) about bit rate and subjective assessment of playback quality, aiming at satisfying the requirement of network user, such as self-made multi-tracks and multi-components audio production, or audio scene coding. These include the bit rate from 16 kb/s/ch to 192 kb/s/ch and multiple channels up to 128 for audio signals with sampling frequency 8 kHz to 192 kHz and quantization resolution 8 bit, 16 bit, and 24 bit.

1.2 Purpose

This standard is the second generation of IEEE Std 1857.2™-2013, which provides more flexible and high efficiency coding tool sets for compression, decompression, and packaging of the audio data, which should double the coding efficiency of IEEE Std 1857.2-2013. The target applications and services include, but are not limited to, the audio accompanying video and other audio services and applications, such as the audio accompanying Internet video, TV audio system, digital audio storage, audio broadcasting, and communication.

1.3 Audio coding tools

In this standard, a set of audio coding tools are defined for transmitting and decoding of recorded music and other audio signals. In this subclause, a short introduction for each coding tool is given. Detailed top-level payload definitions, bitstream syntax, semantics, and the decoding process for each coding tools are specified in their corresponding subclauses.

1.4 Word usage

The word *shall* indicates mandatory requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted (*shall* equals *is required to*).^{1,2}

¹ The use of the word *must* is deprecated and cannot be used when stating mandatory requirements; *must* is used only to describe unavoidable situations.

² The use of *will* is deprecated and cannot be used when stating mandatory requirements; *will* is only used in statements of fact.