STANDARDS AND INFORMATION DOCUMENTS

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STANDARDS

AES Information Document for audio-file transfer and exchange - Screen-less navigation for high-resolution audio on Blu-ray Disc

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Abstract

High-resolution audio, presented as uncompressed LPCM, has been waiting for a suitable transport format for some time. The Blu-ray Disc (BD) format offers such a transport and supports the necessary linear and lossless codecs as part of its basic specification. While many BD players can be found in home theatre and games environments, there are some issues that need to be addressed before they can be introduced into a hi-fi environment that does not have a screen to present visual menus for audio stream setup and track selection. This recommended method specifies a structure for authoring a BD ROM to enable playback in screen-less consumer systems, and to provide simple track selection from the remote control.

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Foreword

This foreword is not part of AES-21id-2011 *AES Information document for audio-file transfer and exchange - Screen-less navigation for high-resolution audio on Blu-ray Disc™*.

This document was instigated by AES President Jim Anderson in the spring of 2009 with the intent to harmonise a simple technique for distributing high-resolution audio in a way that did not require changes to existing consumer electronics and that could be used with a wide range of existing hardware in the field. A proposal from Stefan Bock was accepted by the AESSC as project AES-X188, *Screen-less navigation for high-resolution audio on Blu-ray Discs* and was assigned to working group SC-02-08 on Audio-File Transfer and Exchange who contributed to the development of the draft.

Mark Yonge
Chair, working group SC-02-08 on Audio-File Transfer and Exchange

NOTE This document was published as a Call for Comment identified as AES-17id-xxxx. Following a comment pointing out the risk of confusion between its assigned number and an established document (AES17, Measurement of digital audio equipment), this document was re-numbered AES-21id.

Note on normative language

In AES standards documents, sentences containing the word “shall” are requirements for compliance with the document. Sentences containing the verb “should” are strong suggestions (recommendations). Sentences giving permission use the verb “may”. Sentences expressing a possibility use the verb “can”.

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0 Introduction

0.1 Background

From the time of its general introduction in 1983, Compact Discs and CD players have become a familiar part of consumer hi-fi systems. The method of operation has been consistent during that period: put a disc in the tray; accept track 1 by default or select another; press Play. No other setup was expected or available.

The DVD was introduced in the late 1990s primarily to carry movies as a replacement for consumer videotape formats. All user interaction was intended to be directed by a remote control, with visual feedback from the screen that was automatically available in a home-video system. High-resolution audio was not a primary factor in the initial design of DVD, in part because the data capacity of a DVD, although considered large at the time, was insufficient to carry multi-channel uncompressed LPCM (for example).

The introduction of the Blu-ray disc (BD) format in 2006 offered sufficient data capacity for high-resolution audio to be considered practically and without compromise. More importantly, the basic specification of the BD included a wider range of lossless audio coding options, including up to 8 channels of high-resolution LPCM, as shown in table 1.

Table 1 - Supported audio formats

Codec	Sampling frequency (kHz)	Max. channels
Linear pulse code modulation (LPCM)	48, 96, [192]	8 [6]
Dolby True HD	48, 96, [192]	8 [6]
DTS-HD	48, 96, [192]	8 [6]

0.2 Obstacle to progress

Like their DVD precursors, BD players are designed to be used in conjunction with a video screen, and so screen-based visual feedback was again assumed for operational control. While this will be satisfactory for some users, many audio users will still prefer the simplicity of CD operations. Additionally, in many consumer hi-fi systems, there will be no existing screen and the extra cost of providing a screen just to see the menu could make the high-resolution audio proposition impractical.

0.3 Proposed solution

It is possible, without making any changes to the BD player, to provide the necessary functionality for screen-less playback of high-resolution audio. The necessary functionality can be provided using programming that is included at the authoring stage of the disc.