SMPTE ENGINEERING GUIDELINE

Digital Source Processing — D-Cinema Low Frequency Effects (LFE) Channel Audio Characteristics

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Foreword

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SMPTE Engineering Documents are drafted in accordance with the rules given in Part XIII of its Administrative Practices.

SMPTE Engineering Guideline EG 432-2 was prepared by Technology Committee DC28.

Introduction

For interoperability of digital cinema equipment used to deliver LFE channel audio to the playback equipment in D-Cinema environments, standardized electrical frequency response for the playback LFE channel is needed. The necessary characteristics are turnover frequency, slope and deviation.

Approved December 29, 2006

1 Scope

This guideline addresses interoperability of equipment from the standpoint of the frequency response of filters used in the playback or monitor path in the theater LFE channel for digital cinema. This response curve will create standardization of these filters without specifying their design.

2 Parameters

2.1 Turnover Frequency

The turnover frequency is defined as the point at which the response of the filter is at –3 dB from the passband reference. The LFE channel shall have a turnover frequency of 125 Hz.

2.2 Filter Slope

The filter slope of the LFE Channel shall be as per the Reference Filter Response Table (section 2.4) from the turnover frequency of 125 Hz.

2.3 Deviation

Deviation within the passband shall be ± 1 dB and the deviation of the turnover frequency (– 3 dB point) shall be ± 5 Hz.

2.4 Reference Filter Frequency Response Table

Frequency Hz	Attenuation dB
25Hz	0dB
31.5Hz	0dB
40Hz	0dB
50Hz	0dB
63Hz	0dB
80Hz	0dB
100Hz	0dB
125Hz	-3dB
160Hz	-45dB
200Hz	-102dB

Annex A (Informative)
Bibliography

SMPTE 202M-1998, Motion-Pictures — Dubbing Theaters, Review Rooms and Indoor Theaters — B-Chain Electroacoustic Response

SMPTE RP 200-2002, Relative and Absolute Sound Pressure Levels for Motion-Picture Multichannel Sound Systems — Applicable for Analog Photographic Film Audio, Digital Photographic Film Audio and D-Cinema