
STANDARDS AND RECOMMENDED PRACTICES

Approved American National Standards

Two American National Standards were approved by the American National Standards Institute on November 28, 1984: ANSI/SMPTE 214M-1984, Motion-Picture Film (35-mm) — Photographic Audio Reproduction Characteristic; and ANSI/SMPTE 215-1984, Motion-Picture Film (65-mm) — Camera Aperture Image. Copies of the standards are available for a nominal fee from the American National Standards Institute, 1430 Broadway, New York, NY 10018.

Approved SMPTE Recommended Practices

The Society's Board of Governors approved two SMPTE Recommended Practices: RP 125-1984, Bit-Parallel Digital Interface for Component Video Signals; and RP 126-1984, Dimensions of Photographic Control and Data Records on 35-mm Motion-Picture Film Perforated 8-mm Type S (1-3-5-7-0) and on 16-mm Motion-Picture Film Perforated 8-mm Type S (1-3) and (1-4). These and other SMPTE Recommended Practices are available for \$3.00 each from Society Headquarters.

Proposed SMPTE Recommended Practices

Two Proposed SMPTE Recommended Practices are published here for a trial period and public review: RP 133, Specifications

for Medical Diagnostic Imaging Test Pattern for Television Monitors and Hard-Copy Recording Cameras; and RP 134, Polarity for Analog Audio Magnetic Recording and Reproduction. Comments should be addressed to Alex E. Alden, Manager of Engineering, at Society Headquarters. The proposals will be submitted to the Executive Committee for Standards Approval if no adverse comments are received by June 1, 1985.

Approved International Standard

The International Organization for Standardization (ISO) approved an International Standard, the technical content of which is published here for your information. ISO 3645-1984, Cinematography — Image Area Produced by 8-mm Type S Motion-Picture Camera Aperture and Maximum Projectable Image Area — Positions and Dimensions, is in agreement with American National Standards ANSI PH22.154-1982, Dimensions of Projectable Image Area on 8-mm Type S Motion-Picture Film, and ANSI PH22.157-1971 (R1984), Dimensions of Camera Aperture Image on Super 8 Motion-Picture Film. This material is reproduced with permission from the ISO and is copyrighted by the American National Standards Institute, 1430 Broadway, New York, NY 10018, from which copies are available.

—Alex E. Alden, Manager of Engineering

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For further information, write to: Standards Subscription Service, Engineering Department, Society of Motion Picture and Television Engineers, 862 Scarsdale Avenue, Scarsdale, N.Y. 10583.

ANSI/SMPTE 214M-1984 American National Standard for motion-picture film (35-mm) — photographic audio reproduction characteristic

Approved November 28, 1984

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1. Scope

This standard specifies the electrical frequency response characteristics for photographic audio reproduction in motion-picture control rooms and indoor theaters. It is intended to assist in standardization of recording monitor and reproduction characteristics of motion-picture audio in studio dubbing theaters, review rooms, and indoor theaters. The standard covers that part of the motion-picture audio system from the transducer to the input terminals of the main fader.

2. Reference Standard

The following American National Standard is intended to be used in conjunction with this standard:

ANSI PH22.202M-1984, Motion Pictures—B Chain Electro-Acoustic Response—Control Rooms and Indoor Theaters

3. Definitions

3.1 Complete Audio Reproduction System. Represented diagrammatically in Fig. 3 and used in studio dubbing theaters, review rooms, and indoor theaters; by convention consists of an A-Chain and a B-Chain.

3.2 Pre-emphasized Audio Track. A conventional photographic audio track, also known as Academy sound track, which is intended for playback over normally de-emphasized theater playback systems.

3.3 Wide-Range Audio Track. A photographic audio track which has not been pre-emphasized and is intended for playback over a theater sys-

tem whose B-Chain has been aligned to Curve X of ANSI PH22.202M-1984.

3.4 A-Chain (Transducer System). The A part of a motion-picture audio system, as shown in Fig. 3, which extends from the transducer to the input terminals of the main fader. It is customary for the playback of pre-emphasized audio tracks. In some theaters, part of the de-emphasis characteristic may result from aperture loss. Wide-range audio tracks do not require use of this de-emphasis network and aperture loss will normally require correction. In addition, wide-range audio tracks may require the use of noise reduction decoding circuitry.

3.5 B-Chain (Final Chain). The B part of a motion-picture reproduction system, as shown in Fig. 3, which extends from the input terminals of the main fader to the listening area of the room or auditorium. Two B-Chain characteristics are described in ANSI PH22.202M-1984; a normal curve, N, typical of current practice, and a wide-range curve referred to as Curve X.

3.6 Type O Theater. A theater in which only conventionally pre-emphasized motion pictures will be played.

3.7 Type N Theater. A theater in which both conventionally pre-emphasized motion pictures and wide-range pictures will be played.

4. Method of Measurement

The electrical response shall be measured at the fader input terminals, or at an equivalent position, using a high-impedance voltmeter accurate from 20 Hz to 20 kHz ± 1 dB.

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5. Characteristics

5.1 When a multifrequency photographic test film is played on the reproducer, the measured frequency response characteristic shall be within the tolerance of the curves given in Fig. 1 and Table 1.

5.1.1 Column 2 of Table 1 represents current practice for playback of pre-emphasized audio tracks over a normal B-Chain, described as Curve N in ANSI PH22.202M-1984.

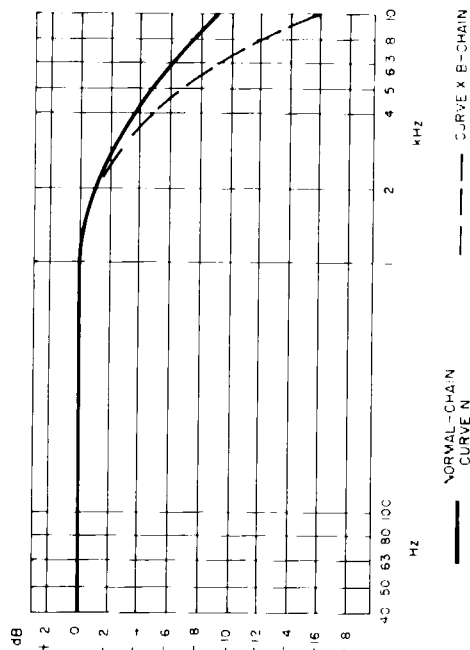


Fig. 1
A-Chain Characteristic

Table 1
A-Chain Frequency Response Characteristics (dB)

Frequencies (Hz)	Pre-emphasized Audio Track		Wide-Range Audio Track		Tolerances (dB)
	Normal B-Chain Curve N	Pre-emphasized Audio Track Curve X	B-Chain Curve X	B-Chain Curve X	
40	0	0	0	0	± 2
63	0	0	0	0	± 2
125	0	0	0	0	± 1
250	0	0	0	0	± 1
500	0	0	0	0	± 1
1000	0	0	0	0	± 1
2000	-1.0	-1.0	-1.0	0	± 1
2500	-2.0	-2.0	-2.0	0	± 1
3150	-3.0	-3.0	-3.0	0	± 1
4000	-4.0	-4.5	-4.5	0	± 1
5000	-5.0	-6.5	-6.5	0	± 1
6300	-6.0	-9.0	-9.0	0	± 1
7100	-7.0	-10.5	-10.5	0	± 1
8000	-7.5	-12.0	-12.0	0	± 1
9000	-8.0	-14.0	-14.0	0	± 1
10 000	-9.0	-16.0	-16.0	0	± 1

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5.1.2 Column 3 of Table 1 represents current practice for the playback of pre-emphasized audio tracks over a B-Chain described as Curve X in ANSI PH22.202M-1984.

5.1.3 Wide-range audio tracks should be played back with a flat A-Chain, as shown in column 4 of Table 1.

NOTE: In some theaters, it may be possible to separate the A- and B-Chain responses. For reference purposes, therefore, Fig. 2 and Table 2 in the Appendix show the total A+B responses.

Appendix

The Appendix is not a part of this American National Standard, but it is included for information purposes only.¹

A1. For reference purposes only, Fig. 2 and Table 2 show the overall A+B Chain figures for the playback of pre-emphasized (column 2) and wide-range (column 3) photographic audio tracks. The wide-range characteristic uses Curve X.

A2. The figures in Fig. 2 (solid curve) and Table 2 (column 2) represent the average of 150 theater replay curves measured in six countries between 1971 and 1975, adjusted slightly to take into account current international practice. This curve is intended to ensure satisfactory playback of typically pre-emphasized photographic audio tracks.

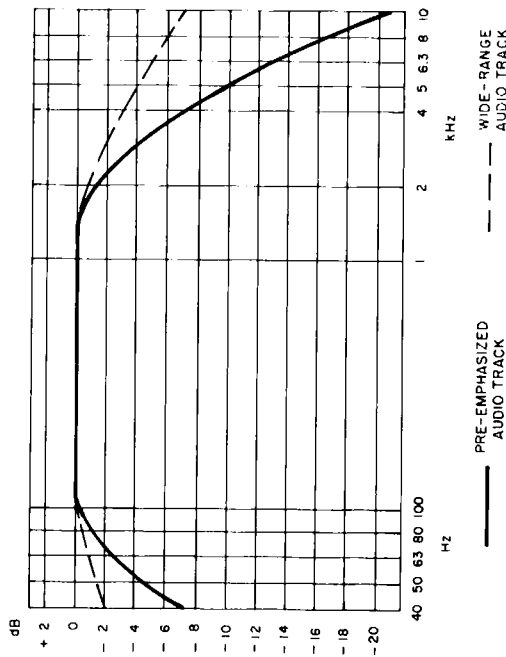


Fig. 2
A + B Chain Characteristic

Table 2
Electro-Acoustic Characteristics (dB)

Frequencies	Pre-emphasized Audio Track	Wide-Range Audio Track
40	-7.0	-2.0
63	-3.0	0
125	0	0
250	0	0
500	0	0
1000	0	0
2000	-1.0	0
2500	-3.0	-1.0
3150	-5.0	-2.0
4000	-7.5	-3.0
5000	-10.5	-4.0
6300	-14.0	-5.0
7100	-16.0	-5.5
8000	-18.0	-6.0
9000	-20.5	-6.5
10 000	-23.0	-7.0

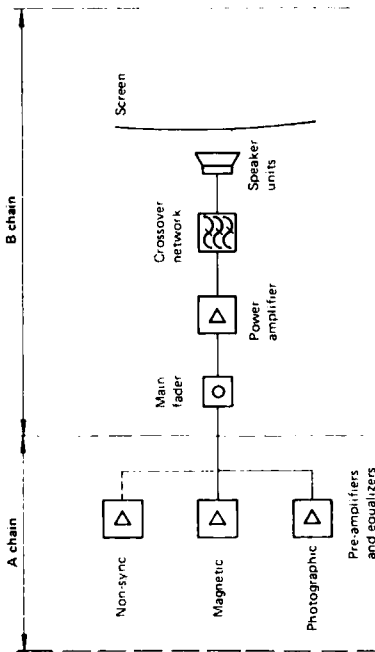


Fig. 3
Complete Theatrical Audio Reproducing System