

SMPTE RECOMMENDED PRACTICE

*Specifications for Azimuth Test Film
for 8-mm Type S Audio Reproducers, Magnetic Type*

RP 61-1983



1. Scope

This practice specifies two test films for use in aligning the azimuth of magnetic head gaps in 8-mm Type S motion-picture audio reproducers, one operating at 20 ft (6.1 m) and another at 15 ft (4.6 m) per minute.

2. Test Film Signal

2.1 Recorded Frequency

2.1.1 Type 24 Film. The audio record on the Type 24 film shall be an original recording which will reproduce at a frequency of 6800 ± 100 Hz when the linear velocity of the film is 24 frames per second or approximately 29 ft (6.1 m) per minute (4 in or 10.2 cm per second).

2.1.2 Type 18 Film. The audio record on Type 18 film shall be an original recording which will reproduce at a frequency of 5000 ± 100 Hz when the linear velocity of the film is 18 frames per second or approximately 15 ft (4.6 m) per minute (3 in or 7.6 cm per second).

2.2 Distortion. The total harmonic distortion of the recorded signal shall not exceed 1 percent.

2.3 Audio Record. The location and dimensions of the audio record shall be in accordance with American National Standard Position, Dimensions and Reproducing Speed of Magnetic Sound Record on 8-mm Type S Motion-Picture Film, ANSI PH22.164-1982.

2.4 Recorded Level. The azimuth test tone shall be no less than 10 dB down from the equivalent reference level of 315 Hz at 185 nanowatts per meter after correct equalization of 90 μs. The signal level shall not fluctuate more than ± 0.5 dB within the test film length.

2.5 Flutter. The weighted peak flutter of the audio record shall not exceed 0.10 percent when measured in accordance with American National Standard Method for Measurement of Weighted Peak Flutter of Sound Recording and Reproducing Equipment, ANSI/IEEE Std 193-1982.

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2.6 Azimuth. The azimuth of the audio record shall be 90° ± 5° to the reference edge of the film.

3. Film Stock

The film stock shall be magnetic fullcoat, splice-free, of the low-shrinkage safety type in compliance with American National Standard Specifications for Motion-Picture Safety Film, ANSI PH22.31M-1980; and cut and perforated in accordance with American National Standard Dimensions for 8-mm Motion-Picture Film Perforated 8-mm Type S, IR, ANSI PH22.16-1981.

3.1 Identification

Each test film shall be identified by a suitable identification marking.

3.2 Calibration

3.2.1 Flux. The short circuit flux on the test film shall be determined by means of the calibrated short-circuit ferromagnetic core reproducer technique. This technique is described in American National Standard Method of Measuring Recorded Flux of Magnetic Sound Records at Medium Wavelengths, ANSI/IEEE Std 317-1982.

3.2.2 Level. The signal level measurements specified in 2.4 shall be measured with a standard volume indicator conforming to American National Standard Volume Measurements of Electrical Speech and Program Waves, ANSI/IEEE Std 132-1958 (R1976).

NOTE: Test films made in accordance with this practice are available from the Society of Motion Picture and Television Engineers.

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Revision of RP 61-1975
Approved in January 1983

Proposed American National Standard

**Motion-Picture Film (16-mm) — Recorded
Characteristic — Magnetic Audio Records**

PH22.213

1. Scope

In hertz for which L_{ϕ} is computed, τ is a time constant of 70 μs, and 0.132 is a constant calculated to make $L_{\phi} = 0$ at the reference frequency of 400 Hz. Approximate numerical values are given in the table.

Frequency, Hz	Relative Level, dB
1000	— 0.64
31.5	+ 0.13
40	+ 0.13
50	+ 0.13
80	+ 0.13
100	+ 0.12
160	+ 0.11
400	0
1000	— 0.64
2500	— 3.31
4000	— 5.99
6300	— 9.25
8000	— 11.13
10 000	— 12.95
12 500	— 14.81
16 000	— 16.90

2. Recorded Characteristic

With constant-amplitude sine-wave signal applied to the input of the recording system, the relative characteristic in effective values of the short circuit magnetic flux versus frequency shall decrease with increasing frequency proportionately to the impedance and a resistance having a constant of $\tau = 70 \mu s$. (A time constant, such as identified by a frequency response curve, is a shorthand notation having the shape defined by a time constant of one or more microseconds. This is a convenient way of defining a response curve and is never intended as a recommended electrical circuit.)

The characteristic defined above is obtained by the following calculation:

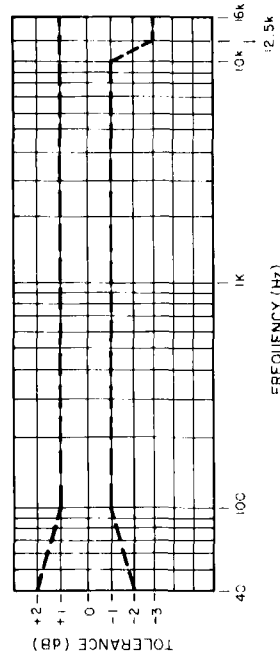
$$L_{\phi} = 0.132 - 10 \log_{10} [1 + (2\pi\tau f)^2] \text{ dB}$$

where L_{ϕ} is the recorded relative short circuit magnetic flux level in decibels, f is the frequency

The corresponding reproducing characteristic is that which gives a flat response.

3. Tolerances

Audio records on 16-mm magnetic motion-picture film shall be recorded to the characteristic specified within the tolerances given in the figure.



Tolerances on Recorded Levels

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