

SMPTE RECOMMENDED PRACTICE

Specifications for Type U Audio Level and Multifrequency Test Film for 35-mm Studio Audio Reproducers, Magnetic Full-Coat Type



Page 1 of 4 pages

1 Scope

This practice specifies a type U (see 6.1) audio frequency test film to be used for adjusting the sensitivity and frequency response of 35-mm motion-picture magnetic studio audio reproducers operating at 96 perforations per second or approximately 90 ft (27 m) per minute for use with one-, three-, four-, and six-track audio systems.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this practice. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this practice are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below.

ANSI S4.3-1982 (R1992), Method for Measurement of Weighted Peak Follower of Sound Recording and Reproducing Equipment

ANSI S4.6-1982 (R1992), Method of Measuring Recorded Flux of Magnetic Sound Records at Medium Wavelengths

ANSI/SMPTE 86-1996, Motion-Picture Film — Magnetic Audio Records — Two, Three, Four and Six Records on 35-mm and One Record on 17.5-mm Magnetic Film

SMPTE 139-2003, Motion-Picture Film (35-mm) — Perforated KS

SMPTE 223M-2001, Motion-Picture Film — Safety Film

3 Test film signal

3.1 Frequencies

The audio record shall be a recording which will reproduce at the frequencies specified in 6.4 when the linear speed of the film is 96 perforations per second or approximately 90 ft (27 m) per minute (18 in or 45.7 cm per second).

3.2 Distortion

The total harmonic distortion of the recorded reference signal (see 6.1) shall not exceed 0.2%.

3.3 Audio record

The audio record shall be recorded so that it extends from one edge of the film to the other.

3.4 Signal fluctuations

The signal levels shall not fluctuate more than ± 0.5 dB within each test section length.

3.5 Flutter

The weighted peak flutter of the audio record shall not exceed $\pm 0.04\%$ when measured in accordance with ANSI S4.3.

3.6 Azimuth

The azimuth of the audio records shall be $90^\circ \pm 3'$ to the reference edge of the film.

3.7 Signal identification

Each test section and segment shall be preceded by voice announcements identifying the content at a level whose peak value does not exceed peak level of the frequency series.

4 Film stock

4.1 The film stock shall be full-coat, splice-free, and of the low-shrinkage, safety type in compliance with SMPTE 223M.

4.1.1 Test films shall be cut and perforated in accordance with dimensions specified in SMPTE 139.

4.2 The film stock shall be conditioned for 10 days at $20^\circ\text{C} \pm 3^\circ\text{C}$ ($68^\circ\text{F} \pm 5.4^\circ\text{F}$) at a relative humidity of $(50 \pm 10)\%$ prior to recording.

4.3 The film shall be recorded and packaged within the temperature and humidity limits specified in 4.2. The recorded film shall be packaged in a metal can and sealed either with a low-moisture permeability plastic tape or a fabric tape having a moisture barrier.

5 Identification

Each test film shall be suitably identified to include the date of manufacture.

6 Test sections

6.1 Reference level

A sine wave with a frequency of $1000 \text{ Hz} \pm 2\%$ shall be recorded ahead of the azimuth section, having an absolute short circuit record level of $185 \text{ nWb/m} \pm 10 \text{ nWb/m}$, for a duration of approximately 30 seconds. (This film is classified as a type U by the ISO because of the 185 nWb reference level, as compared with the type E which specifies a 320 nWb reference level.)

6.2 Azimuth

A frequency of $16 \text{ kHz} \pm 2\%$ shall be recorded ahead of the pink noise section having an absolute short circuit recorded level of 25.89 nWb/m for a duration of approximately 30 seconds.

6.3 Pink noise

The pink noise test signal used for this section shall have equal energy in equal logarithmic frequency intervals within the audio band width. The lower limit shall correspond to the lower bandwidth of a 31.5-Hz octave band filter of the ANSI class II type, and the upper limit to the upper bandwidth of a 16-kHz octave