SMPTE STABLE DOCUMENT

The attached SMPTE Engineering Document has been declared "Stable" by the controlling Technology Committee.

The SMPTE Operations Manual for Standards states:

> *A document should be stabilized if it is believed to be substantially correct, does not contain harmful or misleading recommendations, may still be relevant to equipment or practices in use, is stable, but does not represent current technology, and need not be subject to future reviews.*
>
> *A Stable document shall still be made available and offered for sale by the Society, but it shall be prefaced by a cover page explaining its current status.*
>
> *At any time, a Technology Committee may revise, amend, or otherwise initiate a new Project on a Stable document.*

A Stable document is "In Force", and not deprecated or withdrawn.

* * * * * * * * * * *

Note:

SMPTE "Stable" documents were previously described as "Archived" and the attached document may be marked as "Archived". The status of a SMPTE document described as "Archived" is exactly as described above for a "Stable" document.

Stable documents may not adhere to the latest style and format of SMPTE documents, or to current usage of normative language. Suitable care should be taken in interpretation.

RP 76-2002
Revision of RP 76-1997

SMPTE RECOMMENDED PRACTICE

Specifications for Flutter Test Film for 16-mm Audio Reproducers, Magnetic Type

1 Scope

This practice specifies a test film for determining the presence of flutter in 16-mm motion-picture magnetic audio reproducers operating at approximately 36 ft (11 m) per minute.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions in 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 standard are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below.

AES 6-1982, Method for Measurement of Weighted Peak Flutter of Sound Recording and Reproducing Equipment

AES 7-1982 (R1992), Method of Measuring Recorded Flux of Magnetic Sound Records at Medium Wavelengths

ANSI/SMPTE 109-1998, Motion-Picture Film (16-mm) — Perforated 1R

SMPTE 97-1999, Motion-Picture Film (16-mm) — 200-Mil Edge-Position Magnetic Audio Record

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

3 Test film signal

3.1 Frequency

The audio record shall be an original recording which will reproduce at a frequency of 3150 Hz ± 25 Hz when the linear speed of the film is 24 perforations per second or approximately 36 ft per minute (7.2 in or 183 mm per second).

3.2 Distortion

The total harmonic distortion of the recorded signals shall not exceed 0.5%.

3.3 Audio record

The audio record shall be recorded so that it extends from the perforations on one side of the film to the opposite edge, or from one edge of the film to the other.

Approved July 26, 2002

3.4 Record level

The flutter test tone shall not be more than 10 dB down from the equivalent reference level of 400 Hz at 185 nanowebers per meter after correct equalization of 70 μs.

3.5 Flutter

The weighted peak flutter of the audio record shall not exceed ± 0.1% when measured in accordance with AES 6.

3.6 Azimuth

The azimuth of the audio record shall be 90° ± 3′ to the reference edge of the film.

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.

4.2 Test films shall be made on a base cut and perforated in accordance with ANSI/SMPTE 109.

4.3 The film stock shall be conditioned for 10 days at 20°C ± 3°C (68°F ± 5.4°F) at a relative humidity of (50 ± 10)% prior to recording.

4.4 The film shall be recorded and packaged within the temperature and humidity limits specified in 4.3. 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 identified by a suitable identification marking.

6 Calibration

6.1 Flux

The short circuit flux shall be determined by means of the calibrated short-gap ferromagnetic core reproducer technique. This technique is described in AES 7.

6.2 Level

The signal level specified in 3.4 shall be measured with an rms voltmeter calibrated in decibels with an accuracy of ± 0.1 dB over the bandwidth 31.5 Hz to 16 kHz.

6.3 Calibration

The test film shall be calibrated on a reproducing head made in accordance with SMPTE 97.