



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A Stable document is “In Force”, and not deprecated or withdrawn.

*** * * * ***

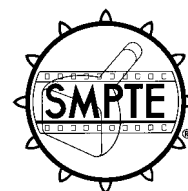
Note:

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.

SMPTE STANDARD**ANSI/SMPTE 11-1995**Revision of
ANSI/SMPTE 11-1989

for Video Recording — Quadruplex Recorders Operating at 7.5 in/s — Audio Level and Multifrequency Test Tape



Page 1 of 6 pages

1 Scope

This standard specifies an audio frequency test tape to be used for adjusting the sensitivity and frequency response of audio 1 record (program audio track) and audio 2 record (cue track) of quadruplex video magnetic tape recorders operating at a tape speed of 7.5 in/s (190.5 mm/s). The tape shall be used on recorders, operating in accordance with ANSI/SMPTE 3. The operating level and frequency response for audio 2 record are specified in SMPTE RP 102.

2 Normative references

The following standards contains provisions which, through reference in this text, constitute provisions of this standard. 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.

ANSI S4.3-1982 (R1992), Method for Measurement of Weighted Peak Flutter 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 1-1990, Video Recording — 2-in Magnetic Recording Tape

ANSI/SMPTE 3-1992, Television Analog Recording — Frequency Response and Operating Level of Recorders and Reproducers — Audio 1 Record on 2-in Tape Operating at 15 and 7.5 in/s

ANSI/SMPTE 4-1995, Television Analog Recording — 2-in Magnetic Tape for Quadruplex Recording — Speed

ANSI/SMPTE 6-1993, Video Recording — 2-in Quadruplex Tape — Video, Audio and Tracking-Control Records

ANSI/IEEE 152-1992, Audio Program Level Measurement

SMPTE RP 16-1993, Specifications of Tracking-Control Record for 2-in Quadruplex Video Magnetic Tape Recordings

SMPTE RP 102-1991, Frequency Response and Operating Level of Recorders and Reproducers for Audio 2 Record for 2-in Quadruplex Video Magnetic Tape Operating at 15 and 7.5 in/s

3 General Specifications**3.1 Dimensions of records**

The dimensions of pertinent records constituting this test tape shall conform to ANSI/SMPTE 6.

3.2 Tape speed

The nominal linear speed of this test tape shall be 7.5 in/s (190.5 mm/s) in accordance with ANSI/SMPTE 4.

3.3 Stock

The test sections shall be recorded on transversely oriented television magnetic recording tape, the dimensions of which are specified in ANSI/SMPTE 1.

3.4 Video signal

A color black video signal may be recorded.

CAUTION NOTICE: This Standard may be revised or withdrawn at any time. The procedures of the Standard Developer require that action be taken to reaffirm, revise, or withdraw this standard no later than five years from the date of publication. Purchasers of standards may receive current information on all standards by calling or writing the Standard Developer.

Printed in USA.

3.5 Tracking-control signal

A tracking control signal, conforming to that specified in SMPTE RP 16, as applicable, shall be recorded throughout the tape.

3.6 Identification

Voice announcement at the beginning of this tape shall provide identification as to the applicable American National Standard, the test tape manufacturer, and the flux (in nanowebers per meter) of the operating level test tones defined in 4.1 recorded on audio 1 record and audio 2 record. Each test section and segment shall be preceded by voice announcements at a level approximately 5 dB below operating level identifying the content of that particular recorded segment.

3.7 Flutter

The weighted peak flutter of this test tape shall not exceed 0.2%.

3.8 Azimuth

The azimuth of the signal recorded on the tape shall be $90^\circ \pm 3'$ to the reference edge of the tape.

4 Audio 1 record test sections

4.1 Audio operating level section

This section is used to calibrate the sensitivity of the audio reproducing system.

4.1.1 Frequency

The frequency of the recording shall be $1000 \text{ Hz} \pm 2\%$ when the tape is reproduced at exactly 7.5 in/s (190.5 mm/s).

4.1.2 Tape flux per unit track width

The audio operating level test recording has an rms short circuit tape flux per unit track width of $110 \text{ nWb/m} \pm 3 \text{ nWb/m}$.

4.1.3 Flux level variation

The flux level variation during the length of the tone shall fall within an envelope whose total width is 0.5 dB.

4.1.4 Distortion

The total harmonic distortion of this section when reproduced shall not exceed 2%.

4.1.5 Duration

The minimum duration of this section shall be one minute.

4.2 Frequency response section

Recorded on audio 1 record, this section is to be used to calibrate the frequency response of the audio reproducing system of a quadruplex video magnetic tape recorder.

4.2.1 Frequencies

The following test segment frequencies (in hertz) shall be recorded in the order given:

1000 (reference)	4000
63	8000
125	10 000
250	12 500
500	16 000
1000	1000 (reference)
2000	

The frequency of each recording shall be within $\pm 2\%$ of its specified value when the tape is reproduced at exactly 7.5 in/s (190.5 mm/s).

4.2.2 Tape flux level vs frequency

The relative short circuit tape flux level versus frequency expressed in decibels shall be as given by the following equation:

$$L_{\Phi}(f) \text{ re } 110 \text{ nWb/m} = -9.8 + 10 \log_{10} \left\{ \frac{[1 + (F_l/f)^2]}{[1 + (f/F_h)^2]} \right\} \text{ [dB]}$$

where L_{Φ} is the relative tape flux level; f is the frequency at which the response is being computed; F_l is the low-frequency transition frequency, 80 Hz; and F_h is the high-frequency transition frequency, 4500 Hz. A graph of this equation is shown in figure 1. The values of the tape flux and relative flux level are given in table 1.