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SMPTE STANDARD

SMPTE 3-1998Revision of
ANSI/SMPTE 3-1992

for 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



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1 Scope

This standard specifies the frequency response and operating level for recorders and reproducers for audio 1 record for 2-in quadruplex video magnetic tape recording at 15 in/s and 7.5 in/s (381 mm/s and 190.5 mm/s), as defined in ANSI/SMPTE 6. It also specifies the field method of calibration of recorders and reproducers, utilizing the test tapes as defined in ANSI/SMPTE 8 and ANSI/SMPTE 11.

2 Normative references

The following standards contain 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 indicate below.

ANSI/IEEE 152-1992, Audio Program Level Measurement

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

ANSI/SMPTE 8-1995, Video Recording — Quadruplex Recorders Operating at 15 in/s — Audio Level and Multifrequency Test Tape

ANSI/SMPTE 11-1995, Video Recording — Quadruplex Recorders Operating at 7.5 in/s — Audio Level and Multifrequency Test Tape

3 Operating level

3.1 Recording and reproducing level indicator

The audio recording and reproducing levels of a video magnetic tape recorder shall be monitored and adjusted with a standard volume indicator (vu meter), as specified in ANSI/IEEE 152.

3.2 Recorder operating level

When a tape record is recorded from a sinusoidal voltage having a frequency of 1000 Hz, such that the rms short circuit tape flux per unit track width on the record is 110 nanowebers per meter ± 3 nWb/m of track width, the recording volume indicator shall be adjusted to deflect to its reference level (0 dB) scale mark.

3.3 Reproducer operating level

When a tape record having an rms sinusoidal flux per width of 110 nWb/m and a frequency of 1000 Hz is reproduced, the reproducing volume indicator shall deflect to its reference level (0 dB) scale mark.

4 Frequency response

4.1 Recorder flux/frequency response

When a tape record is recorded from a constant voltage level applied to the input terminals of the recording system, the short circuit tape flux level on the record versus frequency, $L_{\phi}(f)$, shall be as given by the following equation:

$$L_{\phi}(f) \text{ re } 110 \text{ nWb/m} = 0.2 + 10 \log_{10} \{ [1 + (F_1/f)^2] / [1 + (f/F_H)^2] \} \text{ [dB]}$$