SMPTE RECOMMENDED PRACTICE — RP 86–1979

Video Record Parameters for 1-in Type C Helical-Scan Video Tape Recording

1. *Scope*

This practice specifies parameters of the recorded information essential to the interchange of 1-in Type C helical-scan video tape recordings of the 525/60 monochrome or NTSC color systems. The parameters include video pre-emphasis characteristics, recorded carrier frequencies and record-current frequency response.

2. *Signal Processing*

2.1 A signal processing system consisting of elements specified by this practice will contain, in order of signal flow, the following elements:

2.1.1 A means to modify the burst amplitude

2.1.2 A video pre-emphasis network

2.1.3 A linear frequency-modulator having constant deviation with respect to modulating frequencies

2.1.4 An amplifier of the frequency-modulated carrier to provide alternating current drive to the video and sync record heads

3. *Burst Amplitude*

A means shall be used to increase the burst amplitude of the signal to be recorded by 6.0 ± 0.1 dB with respect to the video and sync portion of the composite video waveform. Phase of the burst shall be maintained to within ± 1°.

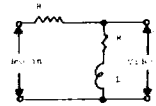
4. *Pre-emphasis*

4.1 Pre-emphasis is defined by the frequency and phase characteristics of a network such as shown in the figure. Accuracy of the pre-emphasis time constants shall be maintained by including source and load impedances (not shown) in calculation of circuit values.

4.2 Time-constant values specifying the pre-emphasis network are:

Time constant $t_1 = 240$ ns

Time constant $t_2 = 600$ ns



$$t_1 = \frac{L}{R_1 + R}$$

$$t_2 = \frac{L}{R}$$

$$\frac{V_{out}}{V_{in}} = \frac{j\omega t_2 + 1}{j\omega t_1 + 1} \cdot \frac{t_1}{t_2}$$

5. *Recorded Carrier Frequencies*

Carrier frequencies corresponding to reference video levels shall be:

Peak-white	10.00 ± 0.05 MHz
Blanking	7.90 ± 0.05 MHz
Sync-tip	7.06 MHz nom

6. *Record Head Current*

6.1 Amplitude of the record current shall be such that a maximum tape-flux level is produced when recording a signal with 50% average picture level.

6.2 The amplitude versus frequency characteristic of the current applied to the record head windings shall decrease with increasing frequency. The recorded tape-flux frequency characteristic shall be equivalent to recording a constant current versus frequency sine wave modified by one time-constant low-pass filter with a 6-MHz, 3-dB bandwidth driving a head with pole tips made of ferrite material.

NOTE: In addition to this practice, there is available American National Standard Basic System and Transport Geometry Parameters for 1-in Type C Helical-Scan Video Tape Recording, ANSI C98.18M-1979.

Approved 1 February 1979

PROPOSED SMPTE RECOMMENDED PRACTICE — RP 98

Measurement of Screen Luminance in Theaters

1. *Scope*

This practice specifies the procedure for measuring screen luminance in theaters in order to produce good pictorial quality for the maximum number of patrons. Screen luminance and viewing conditions for projection of motion-picture prints are specified in American National Standard Screen Luminance and Viewing Conditions for Indoor Theater Projection of Motion-Picture Prints, ANSI PH22.196-1978.

2. *Measurement Conditions*

Projector operating conditions, photometer type, luminance level, spectral distribution, color temperature, stray light, and flicker shall be as specified in ANSI PH22.196-1978.

3. *Photometer Locations in the Theater*

3.1 Screen luminance shall be measured from a position in the center of the seating area, as specified in ANSI PH22.196-1978.

3.2 For typical matte white screens, one reading taken from the center of the audience area shall be adequate.

3.3 For gain screens (lenticular, retroflective, or semi-specular), more readings are necessary to ensure that the screen is properly installed. The photometer readings shall be taken at eye level (one meter above the floor) from the center and each end of the middle row of seats. (See SMPTE Recommended Practices on Gain Determination of Front Projection Screens, RP 94; and Installation of Gain Screens, RP 95.)

Appendix

(The Appendix is not a part of this SMPTE Recommended Practice, but is included for information purposes only.)

A1. The use of gain screens can raise luminance levels for most of the audience and, at the same time, save energy. It should be pointed out, however, that with gain screens, the luminance as seen from front and side seats may not meet the level and distribution specified in ANSI PH22.196-1978. This lower luminance may be advantageous for the front seats because flicker can be objectionable in peripheral vision which is a factor for patrons seated very close to the screen.

A2. The rear seats in theaters without balconies normally will be within the luminance values obtained in the three readings in the center row, but more readings can be taken, if necessary, to properly curve and tilt a gain screen to obtain good pictorial quality for the maximum number of theater patrons.

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