ANSI V98.2-1982
Revision and Redesignation of ANSI C98.2-1963

American National Standard specifications of monochrome video magnetic tape leader

Approved April 12, 1982 | Secretariat: Society of Motion Picture and Television Engineers

1. Scope

This standard specifies the audio and video information that precedes and follows the recorded program material (for purposes of ensuring uniformity of reproduction), and provides the necessary identification cue-up and run-out information. The standard also specifies the minimum lengths of tape required to ensure proper threading and wrap around for monochrome video tape recordings.

2. Alignment Signal

2.1 At the head end of the tape, at least 35 seconds of test pattern shall be recorded at the same level and under the same conditions of equipment adjustment used for recording the video program material. (It is desirable that test pattern or test signal include reference black and reference white information. The signal should be of such a nature as to facilitate vacuum guide adjustment, e.g., stairstep signal.)

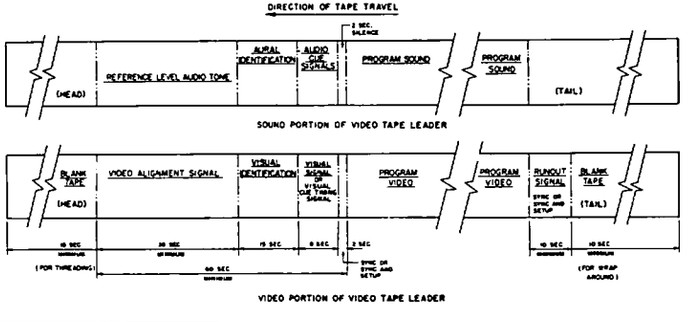
2.2 Simultaneously, a reference level audio tone of 400 Hz ± 5 percent shall be recorded at the same level and under the same conditions of equipment adjustment used for recording the audio portion of the program material.

2.3 The alignment signal shall be preceded by at least 10 seconds of blank tape for threading purposes.

3. Identification Information

3.1 Visual identification information shall be recorded for at least 15 seconds following the video alignment signal specified in Section 2. In a typical case, the identification might contain:

(1) title
(2) subject
(3) production number
(4) take number
(5) recording studio name
(6) date of recording



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3.2 Simultaneously, an aural identification of the information specified in 3.1 should be recorded under the same conditions as defined in 2.2.

4. Cue Timing Signals

4.1 Audio cue signals, as described below, shall be recorded on the audio program track following the aural identification signals specified in Section 3.

4.1.1 The audio cue tone signals shall consist of a series of 400 Hz ± 5 percent bursts, each of ⅕-second duration, occuring at one-second intervals over the range from ten or more seconds ahead of the program material to two seconds ahead. The recording level shall be as defined in 2.2.

4.1.2 In addition, a steady component of the audio cue tone shall be recorded approximately 20 dB below the level used in 4.1.1 above, starting with the first tone burst and ending with the last one, to leave a two-second silent interval before the start of program material.

4.2 A visual signal shall be recorded during the entire period of the steady component of the above-described audio tone signals. Sync (or sync and setup) only shall be recorded during the two-second interval from the end of the tone bursts to the start of program. The recording level shall be as described in 2.1.

If a visual cue timing signal is used, it shall be coincident with and identify the tone burst in 4.1.1.

5. Continuity of Recorded Signals

Continuity of recorded signals, beginning with the video alignment signal, shall not be interrupted. This continuity shall be achieved by continuous recording or by equivalent splicing, provided that the requirements of 2.1 are fulfilled.

6. Run-Out Signal

6.1 There shall be at least 10 seconds of sync (or sync and setup) recorded immediately following the conclusion of program material.

6.2 The run-out signal shall be followed by at least 10 seconds of blank tape for wrap around purposes.

NOTE: The figures of picture and sound sequences are shown related on a time basis. There is separation of the picture and sound records on the recorded tape as defined in American National Standard Frequency Response and Operating Level of Recorders and Reproducers for Audio 1 Record for 2-in Quadruplex Video Magnetic Tape Operating at 15 and 7.5 in/s, ANSI V98.3-1980.

ANSI PH22.96-1982
Revision of ANSI PH22.96-1963

American National Standard dimensions for television image area on 16-mm motion-picture film

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1. Scope

This standard specifies the size and location of the image area recorded on 16-mm film from the picture tube of television recording equipment, and the size and location of that portion of a 16-mm motion-picture film to be reproduced by a television film chain.

2. Video Recording

2.1 The picture aperture of a 16-mm television recording camera shall be in accordance with American National Standard Dimensions of 16-mm Motion-Picture Camera Aperture Image, ANSI PH22.7-1976.

2.2 The television picture appearing on the picture tube of the video recording equipment shall produce an image on the recording film having a height of 0.285 ± 0.002 in (7.24 ± 0.05 mm) and a width of 0.380 ± 0.002 in (9.65 ± 0.05 mm).

2.3 The center point of the image shall coincide with the center point of the picture aperture of a 16-mm motion-picture projector, as specified by American National Standard Dimensions of Projectable Image Area on 16-mm Motion-Picture Film, ANSI PH22.8-1981, which serves to locate the image relative to the film.

3. Television Reproduction

3.1 Film prepared by conventional photographic techniques for television reproduction shall be prepared in accordance with the provisions of ANSI PH22.7-1976, which specifies the location and size of the camera aperture. A marking in the camera viewfinder may be used to indicate the scanned area, which is smaller than that defined in ANSI PH22.8-1981. Since the great majority of home receivers display less than the scanned area, it may be desirable to indicate an even smaller area in the camera viewfinder within which essential information should be photographed. (See SMPTE Recommended Practice on Specifications for Safe Action and Safe Title Areas Test Pattern for Television Systems, RP 27.3-1972.)

3.2 The image to be projected and the relative position of the aperture producing this image shall be in accordance with ANSI PH22.8-1981. The height shall be 0.284 ± 0.002 in (7.21 ± 0.05 mm) and the width 0.380 ± 0.002 in (9.65 ± 0.05 mm).

3.3 The portion of a 16-mm motion-picture film reproduced by a television film chain shall be an area having a height of 0.276 ± 0.002 in (7.01 ± 0.05 mm) and a width of 0.368 ± 0.002 in (9.35 ± 0.05 mm).

3.4 The center point of the reproduced portion of the film shall coincide with the center point of the picture aperture of a 16-mm motion-picture projector, as specified by ANSI PH22.8-1981, which actually serves to locate the reproduced area relative to the film.

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SMPTE RECOMMENDED PRACTICE — RP 14-1982

*Plotting Data from Sensitometric Strips Exposed on Type Ib2 (Intensity Scale) Sensitometers**

1. *Scope*

1.1 The purpose of this recommended practice is to specify the relationship of the spacings of the exposure scale (horizontal co-ordinate) of graph paper on which sensitometric data are plotted and the corresponding increments of the logarithm of exposure in the sensitometer when the exposure modulator is a step tablet.

2. *Exposure Method*

2.1 In a Type I b (intensity scale) sensitometer, the most common method of modulating the illumination falling upon the sample employs a step tablet. The exposure is made with the emulsion of the sample in contact with the modulator except for a thin, transparent acetate cover which protects the modulator against abrasion and foreign matter. The opening and closing of a shutter admits light for the required period of time. Step tablets may be cast with gelatin containing dyes or colloidal carbon or, alternatively, may be produced photographically by suitable exposure and development of film or plates.

2.2 With a step tablet as the exposure modulator, the illumination reaching the sample is dependent upon the transmittance of the various steps of the modulator. This assumes uniformity of illumination. Density, being the common logarithm of the reciprocal of the transmittance, is a more convenient method for specifying the light-stopping power of the segments of the modulator. Density may be measured with a densitometer calibrated in reference to American National Standard Conditions for Diffuse and Doubly Diffuse Transmission Measurements (Transmission Density), ANSI PH2.19-1976.

2.3 The I b (intensity scale) sensitometer exposure modulator shall have step-to-step increments of 0.15 diffuse transmission density, Type V(λ). As modulators vary somewhat from this 0.15 increment, it may be necessary to adjust the step reference points on the exposure axis (horizontal co-ordinate) of the sensitometric graph paper to represent the actual densities of each step in the tablet. (Single step departures of the order of 0.015, or less, from the ideal 0.15 density increment, when known, would not be considered significant. However, cumulative errors, especially those which occur in the same direction, are significant and can lead to erroneous results. See Appendix.)

3. *Method of Correction*

3.1 The steps of the exposure modulator shall be measured with a densitometer reading in diffuse transmission density, Type V(λ), specified in ANSI PH2.19-1976. Such densities are normally shown on the calibration chart accompanying each new step tablet.

3.2 If such a calibration chart is not available, the step tablet should be removed carefully from the sensitometer and from its removable protective cover, if any, and each step read on a densitometer. (See 3.1 above.)

3.3 Unless the step tablet modulator conforms to the following specifications, the sensitometric density data shall be plotted against the actual rather than the nominal densities of the step tablet:

(1) The density increment between any two adjacent steps shall be 0.150 ± 0.015 density.

(2) The departure of any step from its nominal density value shall not exceed 0.02 density or 2 percent of its density value, whichever is greater. The nominal value is defined as the density of the lowest density step plus 0.15 times the number of steps above the lowest density step.

(3) Linearity. No individual step shall depart from the best linear fit through all the steps by more than a density of 0.02.

4. *Method for Plotting Actual Densities of the Step Tablet Modulator*

4.1 For laboratories using graph paper where the scale of the horizontal co-ordinate is as long or longer than the scale of the vertical co-ordinate: most laboratories carry a supply of printed graph sheets for the plotting of sensitometric data. These sheets normally carry a density scale on the vertical co-ordinate and a numbered "step" scale or log exposure reference on the horizontal co-ordinate. It is suggested that the density scale be cut off a graph sheet and placed along the horizontal co-ordinate of a second sheet. The scale of the first sheet should be oriented as shown in the Appendix.

* Loyd A. Jones, "Photographic sensitometry," Part I, *Jour. SMPE, 17:* 491-535, Oct. 1931; Part II, *Jour. SMPE, 17:* 695-742, Nov. 1931; Part III, *Jour. SMPE, 18:* 54-89, Jan. 1932; Part IV, *Jour. SMPE, 18:* 524-555, Mar. 1932.

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