

SMPTE RECOMMENDED PRACTICE

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

3. Tracking Control and Video Timing

- 3.1 Recording current transitions representing video fields shall occur 8.34 ± 0.80 milliseconds after the negative-going transition of the third broad pulse, as shown in Fig. 1. The south-to-north transition shall occur in Fields I and III, identified as the fields which end with a half line of video information.
- 3.2 Alternate frames shall be identified by an extra pair of transitions of recorded flux occurring at the south-to-north transition of every other frame, as shown in Fig. 1.
- 3.3 It is possible to use the alternate-frame identification to specify odd and even frames, as designated

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

by EIA Standard RS-170-A, Electrical Performance Standards—Monochrome Television Studio Facilities. When not limited by other system requirements, the alternate-frame identification shall represent Frame A (even). Since not all video signals meet RS-170-A and certain types of edits may prohibit compliance with the specified frame identification, the reproduce system must be able to use or ignore the alternate-frame information as directed by the operator.

1. Scope

This practice specifies the characteristics of the tracking-control record and the relationship between the recorded video and tracking-control signal for 1-in Type C helical-scan video tape recorders operating on 525/60 monochrome or NTSC color systems.

2. Tracking-Control Record

- 2.1 The tracking-control record consists of a series of constant flux levels alternating in polarity at a field rate as shown in Fig. 1. An extra pair of transitions is added to alternate frames.
- 2.2 The polarity of the tracking-control record flux shall be such that the south poles of magnetic domains point in the direction of tape travel during the vertical interval identifying Fields I and III, and the north poles of the magnetic domains point
- 2.3 The amplitude of the tracking control recorded flux shall be at least 30 dB above the residual flux of any previous recording.
- 2.4 The 10-to-90 percent rise time of record current required to produce the specified flux level changes shall be 0.015 ± 0.010 milliseconds.
- 2.5 The width of the record-current pulses for the extra pair of transitions on alternate frames shall be 0.20 ± 0.03 milliseconds or 0.40 ± 0.06 milliseconds for the N-S-N transitions. Signal timing shall be measured at the zero-crossing points of record head current.

in the direction of tape travel during the vertical identifying Fields II and IV. Therefore, the north-to-south transition which occurs during Fields II and IV will be adjacent south magnetic poles, that is, the transition area will attract the south-seeking pole of a bar magnet.

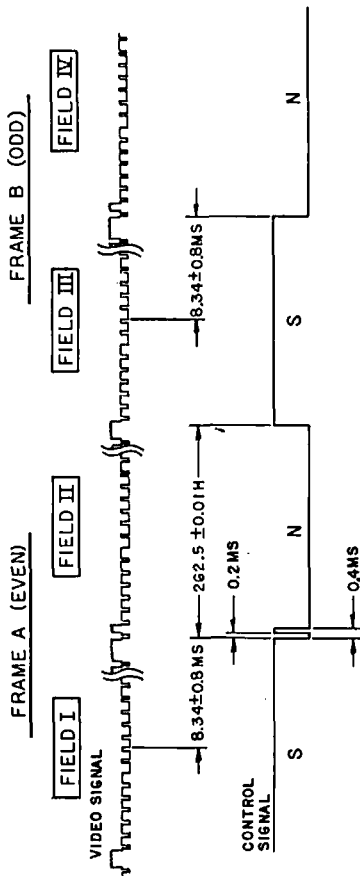


Fig. 1
Tracking Control Waveform and Timing

NOT TO SCALE

PROPOSED SMPTE RECOMMENDED PRACTICE
Video Record Parameters for 1-in Type C Helical-Scan Video Tape Recording

RP 86

PROPOSED ENGINEERING COMMITTEE SMPTE RECOMMENDATION

Edge Identification of Motion-Picture Raw Stock Containers

ECR 2

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*

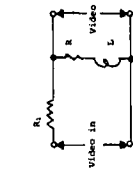
A means shall be used to increase the burst amplitude of the signal to be recorded by 6.0 ± 0.1 dB with respect to the video and sync portion of the composite video waveform. Phase of the burst shall be maintained to within $\pm 1^\circ$.

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



$$t_1 = \frac{L}{R_1 + R_2}$$

$$t_2 = \frac{L}{R_2}$$

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

5. *Recorded Carrier Frequencies*

Carrier frequencies corresponding to reference video levels shall be:

Peak-white	10.00 \pm 0.05 MHz
Blanking	7.90 \pm 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 Draft American National Standard Basic System and Transport Geometry Parameters for 1-in Type C Helical-Scan Video Tape Recording, C98.18.

Purpose

The purpose of this practice is to

- (a) minimize the handling of raw stock containers during storage
- (b) facilitate identification of raw stock containers when only the edges of containers are visible
- (c) recommend a uniform practice in any future additions to container edge identification information when such a system is used by raw stock manufacturers
- (d) ensure that container edge identification information conforms to labeling on the face of the container.

code specified in American National Standard Motion-Picture Raw Stock Identification and Labeling, PH22.181-1973.

2.2 Items of Identification. In addition to the manufacturer's product code identification, a concise physical specification of the raw stock should appear. The amount of information given shall be at the option of the manufacturer and related to the practical considerations of space available. Advertising and/or all other nondescriptive items shall be excluded from the edge identification area but may be shown on the face of the container.

2.3 Manufacturer's Code. The manufacturer's product code identification shall precede the physical specification code. It shall include the film code number, emulsion number, roll number and cut identification.

1. *Scope*

This practice specifies the system and items of raw stock identification to be used by the manufacturer when the edge of raw stock containers carries such identification. Recommendations for the physical size and location of identifying information are also specified.

2. *Identification*

2.1 System of Identification. The physical specification of the raw stock shall be given in terms of the

motion-picture raw stock identification and labeling

3.1.2 The characters shall have a color which is visible under the most commonly used spectrum colors of darkroom safelight illumination.

3.1.3 The characters shall be printed on a background which affords maximum contrast.

3. *Characteristics and Location*

3.1 Characteristics of Container Edge Identification Information

3.1.1 The characters shall be of a suitable size so that they are legible to an average viewer at a distance of five feet with tungsten illumination (illuminance) at a level of 54 lux (50 foot-candles). Bold-face, lower-case characters 3.18 mm (0.125 in) in height and occupying an average linear spacing (including spaces) of 3.18 mm (0.125 in) shall be regarded as minimal, for example:

3.2 Location of Information. Identifying information may be printed on the adhesive tape commonly used to seal the edge of raw stock containers. Alternately, it may be shown on a separate label inserted into or attached to the edge of the container, or on the edge of the container itself.