

Specifications of Tracking Control Record for 1-in Type B Helical-Scan Video Tape Recording

Video Reference Carrier Frequencies and Pre-Emphasis Characteristics for 1-in Type B Helical-Scan Video Tape Recording

1. Scope

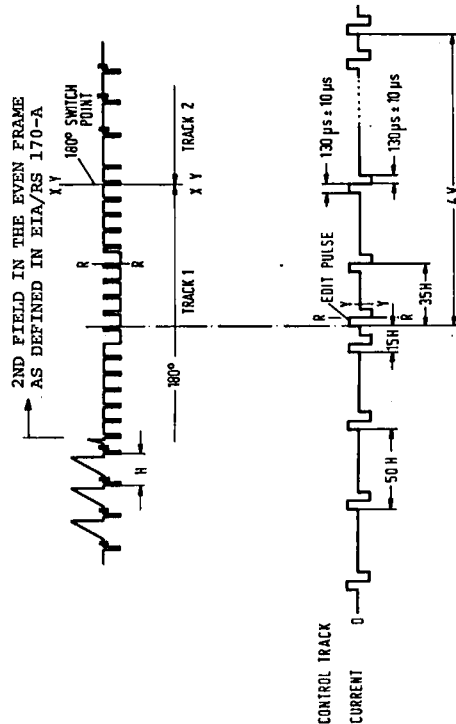
This practice specifies the recorded relationships among the tracking control signal, the edit pulse signal and the video signal for 1-in Type B helical scan video tape recordings.

2. Dimensions

- 2.1 The recorded relationship among the tracking control signal, the edit pulse signal and the video signal shall be as specified in the figure.
- 2.2 The position of the field synchronizing signal on the video tracks shall be as specified in Sec. 3.5 of Draft American National Standard Dimensions and Location of Records for 1-in Type B Helical-Scan Video Tape Recording, C98.16.
- 2.3 The signal recorded on the control track shall consist of a series of tracking pulses and additional editing pulses as indicated in the figure.
- 2.4 The polarity of the tracking pulses shall be as follows: If the tracking pulses on the tape are

- regarded as discrete magnets, the leading part of the pulses constitute a magnet whose south-seeking pole points in the direction of tape motion.
- 2.5 The amplitude of the control signal current flowing through the recording head shall be such that the tape is driven to the verge of saturation.
- 2.6 The edit pulse shall be coincident with the second field of the even frame, as defined in EIA Standard RS-170-A, Electrical Performance Standards—Monochrome Television Studio Facilities.
- 2.7 The edit and control pulses shall be $130 \pm 10 \mu s$ in width.
- 2.8 The rise time of the signal shall be no longer than $10 \mu s$.

NOTE: In addition to this practice, there is available Draft American National Standard Basic System Parameters for 1-in Type B Helical-Scan Video Tape Recording, C98.15.



Position and Waveform of Control Track and Edit Pulse
525 Line—60 Field System (NTSC)

2.3 Pre- and De-Emphasis. The time constants of the video emphasis networks shall be as defined in Table 2.

Video Levels	MHz
Synchronization tip	7.06 nom
Blanking	7.90 ± 0.05
Peak white	10.00 ± 0.05

Table 2

Time Constants	ns
t_1	240
t_2	600

NOTE: In addition to this practice, there is available Draft American National Standard Basic System Parameters for 1-in Type B Helical-Scan Video Tape Recording, C98.15.

Appendix

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

Transmission Characteristics of the Signal Chain

The transmission characteristics of the signal chain of a television tape recorder may be defined by one of two methods which are in agreement:

1. Definition of the Recording Chain

For reference purposes, an ideal recording chain is defined as consisting of (a) a modulator having a flat frequency response with respect to the modulating video frequencies, (b) an rf section having a transfer characteristic that produces constant amplitude alternating magnetic flux in the video head pole tips when driven by an alternating signal from the modulator having constant amplitude and (c) a video pre-emphasis network inserted before the modulation stage.

The pre-emphasis is then defined by the frequency and phase characteristic of a network, such as that shown in Fig. 1, fed from a low-impedance source and feeding a high-impedance load.

The ideal recording chain described above is intended to be taken as a basis for producing reference tapes to be used for the alignment of television tape recorders.

When using present-day recording chains, the following points should be considered:

An approximately linear relationship exists between the magnetic flux emanating from the video head pole tips and the rf current flowing through the video head windings.