RP 86-1991
Revision of RP 86-1985

SMPTE RECOMMENDED PRACTICE

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

1 Scope

This practice specifies parameters of the recorded information essential to the interchange of 1-in type C helical-scan television tape recordings of the 525/60 monochrome or NTSC color systems. The parameters include video preemphasis 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 preemphasis 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 dB ± 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°.

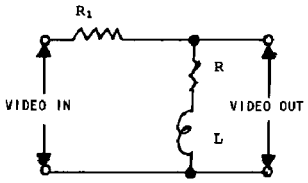
4 Preemphasis

4.1 Preemphasis is defined by the frequency and phase characteristics of a network such as are shown in figure 1. Accuracy of the preemphasis 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 preemphasis networks are:

Time constant t_1 = 240 ns

Time constant t_2 = 600 ns



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

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

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

Figure 1 – Frequency and phase characteristics

5 Recorded carrier frequencies

Carrier frequencies corresponding to reference video levels shall be:

Peak-white	10.00 MHz ± 0.05 MHz
Blanking	7.90 MHz ± 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

Approved June 5, 1990

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.

Annex A (informative)
Bibliography

ANSI/SMPTE 18M-1991, Television Analog Recording — 1-in Type C — Basic System and Transport Geometry Parameters