standards and recommended practices

Draft USA Standards

Four draft USA Standards are published here for a trial period and public review. Comments should be addressed to Alex E. Alden, Staff Engineer, at Society Headquarters before May 20, 1968. The proposals have also been submitted to USASI Standards Committee C98. Consequently, all comments received through *Journal* publication will be reviewed prior to the conclusion of action by the C98 Committee.

These Draft USA Standards reflect the long felt need for standardization of sound records associated with video magnetic tape recordings in terms of audio frequency response and recording level. The Video Tape Recording Committee discussed these problems for over three years, and the resulting proposals are felt to reflect the best consensus of current practice in the television broadcasting industry. The choice of recording level, in particular, represents the result of data acquired through a survey of recorder users both in the U.S.A. and Canada, operating a total of 139 machines.

C98.7, Draft USA Standard Specifications for a Primary Audio Reference Level Recording for Quadruplex Video Magnetic Tape Recorders Operating at 15 IPS, and C98.10, Draft USA Standard Specifications for a Primary Audio Reference Level Recording for Quadruplex Video Magnetic Tape Recorders Operating at 7.5 IPS specify a primary reference level recording for laboratory use in calibrating a secondary reference recording for standardization of operating audio level.

The Primary Audio Reference Level Recording is designed solely to be used in the calibration of audio level and multifrequency test tapes for use with quadruplex video magnetic tape recorders. Since neither the selected tape sample specified, nor the measurement conditions for the specified distortion can be readily duplicated in the field, no attempt should be made to generate a Primary Audio Reference Level Recording for field use.

C98.8, Draft USA Standard Specifications for an Audio Level and Multifrequency Test Tape for Quadruplex Video Magnetic Tape Recorders Operating at 15 IPS, and C98.11, Draft USA Standard Specifications for Audio Level and Multifrequency Test Tape for Quadruplex Video Magnetic Tape Recorders Operating at 7.5 IPS specify the audio multifrequency test tape for operational use.

Proposed Recommended Practices

Three Proposed Recommended Practices are published here for a trial period and public review: RP29, Video Test Tape for Quadruplex Video Frequency Magnetic Tape Recorders Operating at 15 in./s and Practice LPM of SMPTE Recommended Practice RP 6; RP30, Video Test Tape for Quadruplex Video Frequency Magnetic Tape Recorders Operating at 7.5 in./s and Practice LBM of SMPTE Recommended Practice RP 6; and RP31, Video Test Tape for Quadruplex Video Frequency Magnetic Tape Recorders Operating at 15 in./s and Practice LBC of SMPTE Recommended Practice RP 6.

These Proposed Recommended Practices specify three Video Frequency Test Tapes made in accordance with SMPTE Recommended Practice RP 6-1967, Reference Carrier Frequencies and De-Emphasis Characteristics of 2-in. Quadruplex Video Magnetic Tape Recording. RP 6 was published in the July 1967 SMPTE *Journal* and is available through the Society Headquarters.

Comments should be addressed to Alex E. Alden, Staff Engineer, at Society Headquarters prior to May 20, 1968. If no adverse criticism is received by this date, the Proposed Recommended Practices will be submitted to the SMPTE Board of Governors for final approval.—*A. E. A.*

Draft USA Standard Specifications for a

Primary Audio Reference Level Recording for Quadruplex Video Magnetic Tape Recorders Operating at 15 In./s

C98.7

1. Scope

This standard specifies a primary audio reference level recording for laboratory use in calibrating secondary reference level recordings for standardization of the operating audio level of quadruplex video magnetic tape recorders operating at a tape speed of 15 in./s.

2. General Specifications

2.1 Dimensions of Records. The dimensions of pertinent records constituting this recording shall conform to USA Standard Dimensions of Video, Audio and Control Track Records on 2-In. Video Magnetic Tape, C98.6-1965.

2.2 Tape Speed. The nominal linear speed of this recording shall be 15 in./s in accordance with USA Standard Speed of 2-In. Video Magnetic Tape, C98.4-1963.

2.3 Stock. This recording shall be made on transversely-oriented television magnetic recording tape, the dimensions of which are specified in USA Standard Dimensions of 2-In. Video Magnetic Tape, C98.1-1963. The magnetic properties of this tape shall be carefully evaluated to approximate average values of output, sensitivity, and distortion.

2.4 Video Signal. No video signal of any kind shall be recorded.

2.5 Tracking Control Signal. A tracking control signal, conforming to that specified in SMPTE Recommended Practice for Specifications of Tracking Control Record for 2-In. Video Magnetic Tape Recordings, RP16-1964, as applicable, shall be recorded throughout the tape.

2.6 Audio Records. The recording shall be made on Audio Record No. 1.

2.7 Voice announcement at the beginning of this recording shall provide identification information as follows: (1) USA Standard, (2) tape issue, (3) serial number, and (4) date of recording.

3. Test Section

3.1 Signal. The input shall be a sine wave having a frequency of 1,000 Hz ± 1 percent and containing less than 0.1 percent total harmonic distortion.

3.2 Primary Reference Level. The level used for recording shall be that level which is 8 ± ¼ dB below the recording level which produces 3 percent third harmonic distortion on a recorder with its bias adjusted for maximum 1,000 Hz tape output.

3.3 Recorded Level Fluctuation. The recorded level fluctuation during this test section shall not exceed ± ¼ dB.

3.4 Wow and Flutter. Total wow and flutter of this test section shall not exceed 0.2 percent RMS in the bandwidth of 0.5 to 200 Hz.

3.5 Duration. The duration of this test section shall be a minimum of 1 minute.

3.6 Azimuth. The recorded azimuth accuracy of the test segment shall be within ± 3 minutes of arc from the perpendicular to the reference edge of the tape.

NOT APPROVED

4. Calibration

4.1 Level Measurements. All level measurements shall be made by means of a vu meter, as specified in USA Standard Volume Measurements of Electrical Speech and Program Waves, C16.5-1954 (Reaffirmed 1961).

4.2 Wow and Flutter Measurement. Wow and flutter shall be measured in accordance with USA Standard Method for Determining Flutter Content of Sound Recorders and Reproducers, Z57.1-1954.

4.3 Reproducing Characteristics. The reproducer used to evaluate the primary reference tape must have reproducing characteristics conforming to USA Standard Specifications of the Audio Records for 2-In. Video Magnetic Tape Recordings, C98.3-1963.

Appendix

(This Appendix is not a part of Draft USA Standard C98.7, but is included to facilitate its use.)

The Primary Audio Reference Level Recording is designed solely to be used in the calibration of audio level and multifrequency test tapes for use with quadruplex video magnetic tape recorders. Since neither the selected tape sample specified in 2.3 above nor the measurement conditions for the specified distortion can be readily duplicated in the field, no attempt should be made to generate a Primary Audio Reference Level Recording for field use. Rather, use should be made of a suitable secondary reference level recording, as specified in Draft USA Standard Specifications for an Audio Level and Multifrequency Test Tape for Quadruplex Video Magnetic Tape Recorders Operating at 15 In./s, C98.8.

C98.7—NOT APPROVED

Draft USA Standard Specifications for an

Audio Level and Multifrequency Test Tape for Quadruplex Video Magnetic Tape Recorders Operating at 15 In./s

C98.8

1. Scope

This standard specifies an audio frequency test tape to be used for standardization of the operating level and frequency response characteristics of the audio reproducing system of quadruplex television video tape recorders operating at a tape speed of 15 in./s.

2. General Specifications

2.1 Dimensions of Records. The dimensions of pertinent records making up this test tape shall conform to USA Standard Dimensions of Video, Audio and Control Track Records on 2-In. Video Magnetic Tape, C98.6-1965.

2.2 Tape Speed. The nominal linear speed of this test tape shall be 15 in./s in accordance with USA Standard Speed of 2-In. Video Magnetic Tape, C98.4-1963.

2.3 Stock. The test sections shall be recorded on transversely-oriented television magnetic recording tape, the dimensions of which are specified in USA Standard Dimensions of 2-In. Video Magnetic Tape, C98.1-1963.

2.4 Video Signal. No video signal of any kind shall be recorded.

2.5 Tracking Control Signal. A tracking control signal, conforming to that specified in SMPTE Recommended Practice for Specifications of Tracking Control Record for 2-In. Video Magnetic Tape Recordings, RP16-1964, as applicable, shall be recorded throughout the tape.

2.6 Test sections shall be recorded on Audio Record No. 1.

2.7 Voice announcement at the beginning of this tape shall provide identification as to the applicable USA Standard and manufacturer. Each test section and segment shall be preceded by voice announcements identifying the content. Voice announcements shall be recorded at a level approximately 5 dB below reference level. (See 3.1 below.)

2.8 Wow and Flutter. Total wow and flutter of this test tape shall not exceed 0.2 percent RMS in the bandwidth of 0.5 to 200 Hz.

3. Test Sections

3.1 Reference Level Test. This section is to be used to calibrate the operating level of the audio reproducing system of a video magnetic tape recorder.

3.1.1 Frequency. A frequency of 1,000 Hz ± 2 percent shall be used.

3.1.2 Reference Level. Recorded level shall be that 1,000 Hz level which reproduces at the same level as the Primary Audio Reference Level Recording, ± ¼ dB. (See 4.1 below.)

3.1.3 Recorded Level Fluctuation. The level fluctuation during reproduction of this section shall not exceed ± ½ dB.

3.1.4 Distortion. Total harmonic distortion of this section, when reproduced, shall not exceed 2 percent.

3.1.5 Duration. The duration of this section shall be a minimum of 1 minute.

NOT APPROVED

3.2 Frequency Response Test. This section is to be used to calibrate the frequency response of the audio reproducing system of a video magnetic tape recorder.

3.2.1 Frequencies. The following test segment frequencies (in Hertz) shall be recorded in the order given:

1,000 (reference)	250	2,000	10,000
50	500	4,000	12,000
125	1,000	8,000	15,000
			1,000 (reference)

The frequency tolerance on these test segments shall be ± 2 percent of the prescribed frequency.

3.2.2 Recorded Level. The reference recorded level for the frequency response test shall be that 1,000 Hz level which reproduces at the same level as the Reference Level Test Section, ± 1 dB. Other frequencies are to be recorded so that when this test section is reproduced on a standard reproducing system, as defined in 4.2, the test segments will be reproduced at uniform level, as measured at the output of the reproducing system, with a tolerance for relative recorded levels of segments of ± ½ dB referred to the 1,000-Hz segment. The tolerance of ± ½ dB may be extended to ± 2 dB provided that a calibration chart is supplied with the test tape by the manufacturer.

3.2.3 Duration. The duration of frequency response test segments shall be approximately 10 seconds.

3.3 Azimuth. The recorded azimuth accuracy of the test segments shall be within ± 3 minutes of arc from the perpendicular to the reference edge of the tape.

4. Calibration

4.1 Calibration of level on all test tapes for field use shall be accomplished by comparison on a calibrated reproducer to a Primary Audio Reference Level Recording made in accordance with Draft USA Standard Specifications for a Primary Audio Reference Level Recording for Quadruplex Video Magnetic Tape Recorders Operating at 15 In./s, C98.7.

4.2 Calibration of the Frequency Response Test Section (3.2) shall be by means of the reproducing system defined in USA Standard Specifications of the Audio Records for 2-In. Video Magnetic Tape Recordings, C98.3-1963.

4.3 Level Measurements. All level measurements shall be made by means of a vu meter, as specified in USA Standard Volume Measurements of Electrical Speech and Program Waves, C16.5-1954 (Reaffirmed 1961).

4.4 Wow and Flutter Measurement. Wow and flutter shall be measured in accordance with USA Standard Method for Determining Flutter Content of Sound Recorders and Reproducers, Z57.1-1954.

Appendix

(This Appendix is not a part of Draft USA Standard C98.8, but is included to facilitate its use.)

A1. Primary Audio Reference Level has been chosen to be the recording level 8 decibels below the level producing 3 percent third harmonic distortion. In practice, this level is approximately 10 dB below the point of subjective overload for a typical recording system.

A2. A guide to proper usage and a fuller explanation of the calibration techniques shall be supplied with each test tape.

C98.8—NOT APPROVED

Draft USA Standard Specifications for a

Primary Audio Reference Level Recording for Quadruplex Video Magnetic Tape Recorders Operating at 7.5 In./s

C98.10

1. Scope

This standard specifies a primary audio reference level recording for laboratory use in calibrating secondary reference level recordings for standardization of the operating audio level of quadruplex video magnetic tape recorders operating at a tape speed of 7.5 in./s.

2. General Specifications

2.1 Dimensions of Records. The dimensions of pertinent records constituting this recording shall conform to USA Standard Dimensions of Video, Audio and Control Track Records on 2-In. Video Magnetic Tape, C98.6-1965.

2.2 Tape Speed. The nominal linear speed of this recording shall be 7.5 in./s in accordance with USA Standard Speed of 2-In. Video Magnetic Tape, C98.4-1963.

2.3 Stock. This recording shall be made on transversely-oriented television magnetic recording tape, the dimensions of which are specified in USA Standard Dimensions of 2-In. Video Magnetic Tape, C98.1-1963. The magnetic properties of this tape shall be carefully evaluated to approximate average values of output, sensitivity, and distortion.

2.4 Video Signal. No video signal of any kind shall be recorded.

2.5 Tracking Control Signal. A tracking control signal, conforming to that specified in SMPTE Recommended Practice for Specifications of Tracking Control Record for 2-In. Video Magnetic Tape Recordings, RP16-1964, as applicable, shall be recorded throughout the tape.

2.6 Audio Records. The recording shall be made on Audio Record No. 1.

2.7 Voice announcement at the beginning of this recording shall provide identification information as follows: (1) USA Standard, (2) tape issue, (3) serial number, and (4) date of recording.

3. Test Section

3.1 Signal. The input shall be a sine wave having a frequency of 1,000 Hz ± 1 percent and containing less than 0.1 percent total harmonic distortion.

3.2 Primary Reference Level. The level used for recording shall be that level which is 8 ± ¼ dB below the recording level which produces 3 percent third harmonic distortion on a recorder with its bias adjusted for maximum 1,000 Hz tape output.

3.3 Recorded Level Fluctuation. The recorded level fluctuation during this test section shall not exceed ± ¼ dB.

3.4 Wow and Flutter. Total wow and flutter of this test section shall not exceed 0.2 percent RMS in the bandwidth of 0.5 to 200 Hz.

3.5 Duration. The duration of this test section shall be a minimum of 1 minute.

3.6 Azimuth. The recorded azimuth accuracy of the test segment shall be within ± 3 minutes of arc from the perpendicular to the reference edge of the tape.

NOT APPROVED

4. Calibration

4.1 Level Measurements. All level measurements shall be made by means of a vu meter, as specified in USA Standard Volume Measurements of Electrical Speech and Program Waves, C16.5-1954 (Reaffirmed 1961).

4.2 Wow and Flutter Measurement. Wow and flutter shall be measured in accordance with USA Standard Method for Determining Flutter Content of Sound Recorders and Reproducers, Z57.1-1954.

4.3 Reproducing Characteristics. The reproducer used to evaluate the primary reference tape must have reproducing characteristics conforming to USA Standard Specifications of the Audio Records for 2-In. Video Magnetic Tape Recordings, C98.3-1963.

Appendix

(This Appendix is not a part of Draft USA Standard C98.10, but is included to facilitate its use.)

The Primary Audio Reference Level Recording is designed solely to be used in the calibration of audio level and multifrequency test tapes for use with quadruplex video magnetic tape recorders. Since neither the selected tape sample specified in 2.3 above nor the measurement conditions for the specified distortion can be readily duplicated in the field, no attempt should be made to generate a Primary Audio Reference Level Recording for field use. Rather, use should be made of a suitable secondary reference level recording, as specified in Draft USA Standard Specifications for an Audio Level and Multifrequency Test Tape for Quadruplex Video Magnetic Tape Recorders Operating at 7.5 In./s, C98.11.

C98.10—NOT APPROVED

Draft USA Standard Specifications for an

Audio Level and Multifrequency Test Tape for Quadruplex Video Magnetic Tape Recorders Operating at 7.5 In./s

C98.11

1. Scope

This standard specifies an audio frequency test tape to be used for standardization of the operating level and frequency response characteristics of the audio reproducing system of quadruplex television video tape recorders operating at a tape speed of 7.5 in./s.

2. General Specifications

2.1 Dimensions of Records. The dimensions of pertinent records making up this test tape shall conform to USA Standard Dimensions of Video, Audio and Control Track Records on 2-In. Video Magnetic Tape, C98.6-1965.

2.2 Tape Speed. The nominal linear speed of this test tape shall be 7.5 in./s in accordance with USA Standard Speed of 2-In. Video Magnetic Tape, C98.4-1963.

2.3 Stock. The test sections shall be recorded on transversely-oriented television magnetic recording tape, the dimensions of which are specified in USA Standard Dimensions of 2-In. Video Magnetic Tape, C98.1-1963.

2.4 Video Signal. No video signal of any kind shall be recorded.

2.5 Tracking Control Signal. A tracking control signal, conforming to that specified in SMPTE Recommended Practice for Specifications of Tracking Control Record for 2-In. Video Magnetic Tape Recordings, RP16-1964, as applicable, shall be recorded throughout the tape.

2.6 Test sections shall be recorded on Audio Record No. 1.

2.7 Voice announcement at the beginning of this tape shall provide identification as to the applicable USA Standard and manufacturer. Each test section and segment shall be preceded by voice announcements identifying the content. Voice announcements shall be recorded at a level approximately 5 dB below reference level. (See 3.1 below.)

2.8 Wow and Flutter. Total wow and flutter of this test tape shall not exceed 0.2 percent RMS in the bandwidth of 0.5 to 200 Hz.

3. Test Sections

3.1 Reference Level Test. This section is to be used to calibrate the operating level of the audio reproducing system of a video magnetic tape recorder.

3.1.1 Frequency. A frequency of 1,000 Hz ± 2 percent shall be used.

3.1.2 Reference Level. Recorded level shall be that 1,000 Hz level which reproduces at the same level as the Primary Audio Reference Level Recording, ± ¼ dB. (See 4.1 below.)

3.1.3 Recorded Level Fluctuation. The level fluctuation during reproduction of this section shall not exceed ± ½ dB.

3.1.4 Distortion. Total harmonic distortion of this section, when reproduced, shall not exceed 2 percent.

3.1.5 Duration. The duration of this section shall be a minimum of 1 minute.

NOT APPROVED

3.2 Frequency Response Test. This section is to be used to calibrate the frequency response of the audio reproducing system of a video magnetic tape recorder.

3.2.1 Frequencies. The following test segment frequencies (in Hertz) shall be recorded in the order given:

1,000 (reference)	250	2,000	10,000
50	500	4,000	1,000 (reference)
125	1,000	8,000	

The frequency tolerance on these test segments shall be ± 2 percent of the prescribed frequency.

3.2.2 Recorded Level. The reference recorded level for the frequency response test shall be that 1,000 Hz level which reproduces at the same level as the Reference Level Test Section, ± 1 dB. Other frequencies are to be recorded so that when this test section is reproduced on a standard reproducing system, as defined in 4.2, the test segments will be reproduced at uniform level, as measured at the output of the reproducing system, with a tolerance for relative recorded levels of segments of ± ½ dB referred to the 1,000-Hz segment. The tolerance of ± ½ dB may be extended to ± 2 dB provided that a calibration chart is supplied with the test tape by the manufacturer.

3.2.3 Duration. The duration of frequency response test segments shall be approximately 10 seconds.

3.3 Azimuth. The recorded azimuth accuracy of the test segments shall be within ± 3 minutes of arc from the perpendicular to the reference edge of the tape.

4. Calibration

4.1 Calibration of level on all test tapes for field use shall be accomplished by comparison on a calibrated reproducer to a Primary Audio Reference Level Recording made in accordance with Draft USA Standard Specifications for a Primary Audio Reference Level Recording for Quadruplex Video Magnetic Tape Recorders Operating at 7.5 in./s, C98.10.

4.2 Calibration of the Frequency Response Test Section (3.2) shall be by means of the reproducing system defined in USA Standard Specifications of the Audio Records for 2-In. Video Magnetic Tape Recordings, C98.3-1963.

4.3 Level Measurements. All level measurements shall be made by means of a vu meter, as specified in USA Standard Volume Measurements of Electrical Speech and Program Waves, C16.5-1954 (Reaffirmed 1961).

4.4 Wow and Flutter Measurement. Wow and flutter shall be measured in accordance with USA Standard Method for Determining Flutter Content of Sound Recorders and Reproducers, Z57.1-1954.

Appendix

(This Appendix is not a part of Draft USA Standard C98.11, but is included to facilitate its use.)

A1. Primary Audio Reference Level has been chosen to be the recording level 8 decibels below the level producing 3 percent third harmonic distortion. In practice, this level is approximately 1 dB below the point of subjective overload for a typical recording system.

A2. A guide to proper usage and a fuller explanation of the calibration techniques shall be supplied with each test tape.

C98.11—NOT APPROVED

PROPOSED

SMPTE RECOMMENDED PRACTICE — RP 29

Video Test Tape for Quadruplex Video Frequency Magnetic Tape Recorders Operating at 15 In./s and Practice LBM of SMPTE Recommended Practice RP 6

1. *Scope*

This recommended practice specifies a video frequency test tape to be used with quadruplex television video tape recorders operating at 15 in./s and in accordance with practice LBM of SMPTE Recommended Practice for Reference Carrier Frequencies and De-Emphasis Characteristics for 2-In. Quadruplex Video Magnetic Tape Recording, RP 6-1967. The tape is to be used for:

(a) Positioning of the vacuum guide.

(b) Indication of video frequency response characteristics of the reproducing system.

(c) Adjustment of gain of the video reproducing system.

(d) Comparison of carrier frequencies of the video recording system.

(e) Verification of level and phase of the control track recording system.

(f) Adjustment of the gain of the program audio reproducing system.

2. *General Specifications*

2.1 Dimensions of Records. The dimensions of pertinent records constituting this test tape shall conform to USA Standard Dimensions of Video, Audio, and Control Track Records on 2-In. Video Magnetic Tape, C98.6-1965

2.2 Tape Speed. The nominal linear speed of this test tape shall be 15 in./s in accordance with USA Standard Speed of 2-In. Video Magnetic Tape, C98.4-1963.

2.3 Tape Stock. The test sections shall be recorded on transversely-oriented television magnetic recording tape optimized for use with Practice LBM of SMPTE Recommended Practice RP 6. The dimensions of the tape stock shall be as specified in USA Standard Dimensions of 2-In. Video Magnetic Tape, C98.1-1963.

2.4 Tracking Control Signal. A tracking control signal, conforming to that in SMPTE Recommended Practice for Specifications of Tracking Control Record for 2-In. Video Magnetic Tape Recordings, RP 16-1964, shall be recorded throughout the tape.

2.5 Voice announcement at the beginning of this test tape shall provide identification of the applicable recommended practice and manufacturer. Voice announcements shall be recorded at a level approximately 5 dB below reference level as defined in Section 3.1.2 of Draft USA Standard Specifications for an Audio Level and Multifrequency Test Tape for Quadruplex Video Magnetic Tape Recorders Operating at 15 In./s, C98.8. Announcement shall be recorded on Audio Record No. 1 only. A video identification may be included during the voice announcement section. If no video identification signal is used, sync, sync and set up, or test signal shall be recorded on the video channel during the voice announcement.

2.6 Recorded carrier frequencies shall conform to those specified by Practice LBM of SMPTE Recommended Practice RP 6; recording pre-emphasis shall be the complement of the de-emphasis characteristic specified by Practice LBM of SMPTE Recommended Practice RP 6.

2.7 Tape vacuum guide radius and position shall conform to SMPTE Recommended Practice for Tape Vacuum Guide and Position for Recording Standard Video Records on 2-In. Magnetic Tape, RP 11-1962.

2.8 Audio record shall be in accordance with USA Standard Specifications of the Audio Records for 2-In. Video Magnetic Tape Recordings, C98.3-1963.

2.9 Video synchronizing waveforms and signal amplitudes shall conform to EIA Standard Monochrome Television Studio Facilities, RS 170-1957. The timing of the synchronizing waveform shall be uninterrupted during the transition from the identification signals specified in Section 2.5 to the video test signal specified in Section 3.1.

2.10 Geometric distortion on the test tape caused by lack of exact 90° angular separation (quadrature error) of the transducers on the video head wheel making the recording shall not exceed 0.03 microseconds peak to peak.

3. *Test Section*

3.1 Video Test Signal. A test signal conforming to SMPTE Recommended Practice for Signal Specifications for a Monochrome Video Alignment Tape for 2-In. Video Magnetic Tape Recording, RP 10-1962, shall be used.

3.2 Audio Test Signal. A 1,000 Hz ± 5 percent tone shall be recorded at reference level ± ½ dB throughout the test section on Audio Record No. 1 only, except as interrupted for the announcements defined in Section 3.4.

3.3 Duration. The test section duration shall be at least five minutes.

3.4 Voice Announcement. A voice announcement identifying the tape shall be recorded at one-minute intervals under the same conditions as stated in Section 2.5 except that the video test signal shall not be interrupted.

4. *Calibration*

4.1 Calibration of audio level on all test tapes for field use shall be accomplished by comparison on a calibrated reproducer with a primary audio reference level recording made in accordance with Draft USA Standard Specifications for a Primary Audio Reference Level Recording for Quadruplex Video Magnetic Tape Recorders Operating at 15 In./s, C98.7.

4.2 Audio Level Measurements. All level measurements shall be made by means of a vu meter, as specified in USA Standard Volume Measurements of Electrical Speech and Program Waves, C16.5-1954 (Reaffirmed 1961).

4.3 Video Level Measurements. All video measurements of luminance levels shall be made in accordance with USA Standard Method of Measurement of Television Luminance Signal Levels, C16.31-1959.

Note: The frequency response of a recovered video signal is a function of such variables as recording current and type of tape stock used; therefore, the optimum reproducing-equalization setting for this tape will not necessarily be the optimum reproducing-equalization setting for all other recordings.

PROPOSED

SMPTE RECOMMENDED PRACTICE — RP 30

Video Test Tape for Quadruplex Video Frequency Magnetic Tape Recorders Operating at 7.5 In./s and Practice LBM of SMPTE Recommended Practice RP 6

1. *Scope*

This recommended practice specifies a video frequency test tape to be used with quadruplex television video tape recorders operating at 7.5 in./s and in accordance with practice LBM of SMPTE Recommended Practice for Reference Carrier Frequencies and De-Emphasis Characteristics for 2-In. Quadruplex Video Magnetic Tape Recording, RP 6-1967. The tape is to be used for:

(a) Positioning of the vacuum guide.

(b) Indication of video frequency response characteristics of the reproducing system.

(c) Adjustment of gain of the video reproducing system.

(d) Comparison of carrier frequencies of the video recording system.

(e) Verification of level and phase of the control track recording system.

(f) Adjustment of the gain of the program audio reproducing system.

2. *General Specifications*

2.1 Dimensions of Records. The dimensions of pertinent records constituting this test tape shall conform to USA Standard Dimesions of Video, Audio, and Control Track Records on 2-In. Video Magnetic Tape, C98.6-1965.

2.2 Tape Speed. The nominal linear speed of this test tape shall be 7.5 in./s in accordance with USA Standard Speed of 2-In. Video Magnetic Tape, C98.4-1963.

2.3 Tape Stock. The test sections shall be recorded on transversely-oriented television magnetic recording tape optimized for use with Practice LBM of SMPTE Recommended Practice RP 6. The dimensions of the tape stock shall be as specified in USA Standard Dimensions of 2-In. Video Magnetic Tape, C98.1-1963.

2.4 Tracking Control Signal. A tracking control signal, conforming to that in SMPTE Recommended Practice for Specifications of Tracking Control Record for 2-In. Video Magnetic Tape Recordings, RP 16-1964, shall be recorded throughout the tape.

2.5 Voice announcement at the beginning of this test tape shall provide identification of the applicable recommended practice and manufacturer. Voice announcements shall be recorded at a level approximately 5 dB below reference level as defined in Section 3.1.2 of Draft USA Standard Specifications for an Audio Level and Multifrequency Test Tape for Quadruplex Video Magnetic Tape Recorders Operating at 7.5 In./s, C98.11. Announcement shall be recorded on Audio Record No. 1 only. A video identification may be included during the voice announcement section. If no video identification signal is used, sync, sync and set up, or test signal shall be recorded on the video channel during the voice announcement.

2.6 Recorded carrier frequencies shall conform to those specified by Practice LBM of SMPTE Recommended Practice RP 6; recording pre-emphasis shall be the complement of the de-emphasis characteristic specified by Practice LBM of SMPTE Recommended Practice RP 6.

2.7 Tape vacuum guide radius and position shall conform to SMPTE Recommended Practice for Tape Vacuum Guide and Position for Recording Standard Video Records on 2-In. Magnetic Tape, RP 11-1962.

2.8 Audio record shall be in accordance with USA Standard Specifications of the Audio Records for 2-In. Video Magnetic Tape Recordings, C98.3-1963.

2.9 Video synchronizing waveforms and signal amplitudes shall conform to EIA Standard Monochrome Television Studio Facilities, RS 170-1957. The timing of the synchronizing waveform shall be uninterrupted during the transition from the identification signals specified in Section 2.5 to the video test signal specified in Section 3.1.

2.10 Geometric distortion on the test tape caused by lack of exact 90° angular separation (quadrature error) of the transducers on the video head wheel making the recording shall not exceed 0.03 microseconds peak to peak.

3. *Test Section*

3.1 Video Test Signal. A test signal conforming to SMPTE Recommended Practice for Signal Specifications for a Monochrome Video Alignment Tape for 2-In. Video Magnetic Tape Recording, RP 10-1962, shall be used.

3.2 Audio Test Signal. A 1,000 Hz ± 5 percent tone shall be recorded at reference level ± ½ dB throughout the test section on Audio Record No. 1 only, except as interrupted for the announcements defined in Section 3.4.

3.3 Duration. The test section duration shall be at least five minutes.

3.4 Voice Announcement. A voice announcement identifying the tape shall be recorded at one-minute intervals under the same conditions as stated in Section 2.5 except that the video test signal shall not be interrupted.

4. *Calibration*

4.1 Calibration of audio level on all test tapes for field use shall be accomplished by comparison on a calibrated reproducer with a primary audio reference level recording made in accordance with Draft USA Standard Specifications for a Primary Audio Reference Level Recording for Quadruplex Video Magnetic Tape Recorders Operating at 7.5 In./s, C98.10.

4.2 Audio Level Measurements. All level measurements shall be made by means of a vu meter, as specified in USA Standard Volume Measurements of Electrical Speech and Program Waves, C16.5-1954 (Reaffirmed 1961).

4.3 Video Level Measurements. All video measurements of luminance levels shall be made in accordance with USA Standard Method of Measurement of Television Luminance Signal Levels, C16.31-1959.

Note: The frequency response of a recovered video signal is a function of such variables as recording current and type of tape stock used; therefore, the optimum reproducing-equalization setting for this tape will not necessarily be the optimum reproducing-equalization setting for all other recordings.

PROPOSED

SMPTE RECOMMENDED PRACTICE — RP 31

Video Test Tape for Quadruplex Video Frequency Magnetic Tape Recorders Operating at 15 In./s and Practice LBC of SMPTE Recommended Practice RP 6

1. *Scope*

This recommended practice specifies a video frequency test tape to be used with quadruplex television video tape recorders operating at 15 in./s and in accordance with practice LBC of SMPTE Recommended Practice for Refereuce Carrier Frequencies and De-Emphasis Characteristics for 2-In. Quadruplex Video Magnetic Tape Recordings, RP 6-1967. The tape is to be used for:

(a) Positioning of the vacuum guide.

(b) Indication of video frequency response characteristics of the reproducing system.

(c) Adjustment of gain of the video reproducing system.

(d) Comparison of carrier frequencies of the video recording system.

(e) Verification of level and phase of the control track recording system.

(f) Adjustment of the gain of the program audio reproducing system.

2. *General Specifications*

2.1 Dimensions of Records. The dimensions of pertinent records constituting this test tape shall conform to USA Standard Dimesions of Video, Audio, and Control Track Records on 2-In. Video Magnetic Tape, C98.6-1965.

2.2 Tape Speed. The nominal linear speed of this test tape shall be 15 in./s in accordance with USA Standard Speed of 2-In. Video Magnetic Tape, C98.4-1963.

2.3 Tape Stock. The test sections shall be recorded on transversely-oriented television magnetic recording tape optimized for use with Practice LBC of SMPTE Recommended Practice RP 6. The dimensions of the tape stock shall be as specified in USA Standard Dimensions of 2-In. Video Magnetic Tape, C98.1-1963.

2.4 Tracking Control Signal. A tracking control signal, conforming to that in SMPTE Recommended Practice for Specifications of Tracking Control Record for 2-In. Video Magnetic Tape Recordings, shall be recorded throughout the tape.

2.5 Voice announcement at the beginning of this test tape shall provide identification of the applicable recommended practice and manufacturer. Voice announcements shall be recorded at a level approximately 5 dB below reference level as defined in Section 3.1.2 of Draft USA Standard Specifications for an Audio Level and Multifrequency Test Tape for Quadruplex Video Magnetic Tape Recorders Operating at 15 In./s, C98.8. Announcement shall be recorded on Audio Record No. 1 only. A video identification may be included during the voice announcement section. If no video identification signal is used, sync, sync and set up, or test signal shall be recorded on the video channel during the voice announcement.

2.6 Recorded carrier frequencies shall conform to those specified by Practice LBC of SMPTE Recommended Practice RP 6; recording pre-emphasis shall be the complement of the de-emphasis characteristic specified by Practice LBC of SMPTE Recommended Practice RP 6.

2.7 Tape vacuum guide radius and position shall conform to SMPTE Recommended Practice for Tape Vacuum Guide and Position for Recording Standard Video Records on 2-In. Magnetic Tape, RP 11-1962.

2.8 Audio record shall be in accordance with USA Standard Specifications of the Audio Records for 2-In. Video Magnetic Tape Recordings, C98.3-1963.

2.9 Video synchronizing waveforms and signal amplitudes shall conform to the rules and regulations of the Federal Communications Commission for color transmissions. Color subcarrier synchronizing burst shall be included throughout the recording. The timing of the synchronizing waveforms shall be uninterrupted during the transition from the identification signals specified in Section 2.5 to the video test signals specified in Section 3.1, and shall be uninterrupted during the transitions between video test signals specified in Section 3.1.

2.10 Geometric distortion on the test tape caused by lack of exact 90° angular separation (quadrature error) of the transducers on the video head wheel making the recording shall not exceed 0.03 microseconds peak to peak.

3. *Test Section*

3.1 Video Test Signals. Two test signals shall be recorded in sequence.

3.1.1 The first test section signal shall conform to SMPTE Recommended Practice RP 10, Video Alignment Signal Specification for Quadruplex Video Magnetic Tape Recording, except for the synchronizing signals defined by Section 2.9.

3.1.2 The second test section signal shall be encoded color bars conforming to EIA Standard Encoded Color Bar Signals, RS-189-1957.

3.2 Audio Test Signal. A 1,000 Hz ± 5 percent tone shall be recorded at reference level ± ½ dB throughout the test section on Audio Record No. 1 only, except as interrupted for the announcements defined in Section 3.4.

3.3 Duration. The test section duration shall be at least ten minutes; five minutes minimum for each signal described in Section 3.1.

3.4 Voice Announcement. A voice announcement identifying the tape shall be recorded at one-minute intervals under the same conditions as stated in Section 2.5 except that the video test signal shall not be interrupted.

4. *Calibration*

4.1 Calibration of audio level on all test tapes for field use shall be accomplished by comparison on a calibrated reproducer with a primary audio reference level recording made in accordance with Draft USA Standard Specifications for a Primary Audio Reference Level Recording for Quadruplex Video Magnetic Tape Recorders Operating at 15 In./s, C98.7.

4.2 Audio Level Measurements. All level measurements shall be made by means of a vu meter, as specified in USA Standard Volume Measurements of Electrical Speech and Program Waves, C16.5-1954 (Reaffirmed 1961).

4.3 Video Level Measurements. All video measurements of luminance levels shall be made in accordance with USA Standard Method of Measurement of Television Luminance Signal Levels, C16.31-1959.

Note: The frequency response of a recovered video signal is a function of such variables as recording current and type of tape stock used; therefore, the optimum reproducing-equalization setting for this tape will not necessarily be the optimum reproducing-equalization setting for all other recordings.