To emphasize his talk, Richter showed and narrated a portion of a dance film he had photographed in Austria.

**"The Zany Side of Location Work and a Film Excerpt"** by *Ross Lowell, Lowell Light Engineering, 421 W. 54th St., New York, NY 10019*

This highly entertaining cameraman, director, producer, and inventor described many of the bizarre experiences that he had on locations around the world. In reminiscing about these anecdotal classics, he took the audience through a wide variety of production experiences from the *banditos* of Colombia, South America, playing roulette with his equipment to the wide variety of seasonable or unreasonable demands producers seem to impose on people who don't understand why we need Christmas trees in July and cars with two doors on one side and only one on the other.

The Fourth Annual All-Day Tutorial Seminar of the Chicago Section SMPTE was produced by the following committee members: George Halonen, Colburn Film Laboratory, Section Chairman and Chairman of this event; Assistant Chairman, Michael H. Bailey, Allied Film Lab, Section Secretary/Treasurer; Program Chairman, Jack Behrend, Behrends, Inc.; Promotion/Publicity, Edward Blasko, Eastman Kodak Co.; Production Advisor, Toni Roth, Image Transform; Arrangements, Byron L. Friend, Telecine Film Studios; Arrangements, Norman Thelen, Encyclopedia Britannica Educational Corp.; Sponsors: Past-Chairman, Chuck Zichterman, Peterson Enterprises, Inc.; Finance, Roland Johnson, Eastman Kodak Co.

Plans are already well-advanced for the 1980 Fifth Annual Tutorial Seminar to be held at the Ramada-O'Hare Inn on Saturday, 10 May 1980. The Chicago Section wishes to extend a cordial invitation to all officers and members of other sections to attend.

# Standards & Recommended Practices

## Proposed SMPTE Recommended Practices

Three Proposed SMPTE Recommended Practices are published here for a trial period and public review: RP 94, Gain Determination of Front Projection Screens; RP 95, Installation of Gain Screens; and RP 96, Specifications for a Subjective Reference Tape for ¾-in Type A Helical-Scan Video Tape Reproducers for Checking Receiver/Monitor Setup.

A method for measurement of screen gain is specified in RP 94. RP 95 provides optimum installation parameters for gain screens. The subjective reference tape specified in RP 96 serves a dual purpose: verifying that the video cassette playback system is operating normally and providing reference signals for adjusting the operating controls on the receiver or monitor for best picture quality. A cassette conforming to the practice is available from the Society.

Comments on the Proposed SMPTE Recommended Practices should be addressed to Alex E. Alden, Manager of Engineering Services, at Society headquarters prior to 1 December 1979. If no adverse criticism is received, they will be submitted to the Society's Board of Governors for final approval.

## Approved International Standard

The International Organization for Standardization (ISO) recently approved an International Standard, the technical content of which is published here for your information. ISO 4244-1979, Cinematography — Photographic Sound Record on 8-mm Type S Motion-Picture Prints — Position and Width Dimensions, is in agreement with American National Standard PH22.182-1978.



## One-Inch Type A Helical-Scan Video Recording

The Society's Video Recording and Reproduction Committee voted to discontinue standardization activities on all 1-in Type A video recording proposals. The decision was made because the system is no longer being manufactured. —*Alex E. Alden, Manager of Engineering Services*

# PROPOSED

# SMPTE RECOMMENDED PRACTICE — RP 94

## Gain Determination of Front Projection Screens



*Introduction*

Screen gain is a ratio of the test luminance to the luminance of a lambert diffuser under the same viewing conditions. Screen gain usually varies, depending upon the angle of view, because of the laws of reflection and the nature of the screen surface. Thus, a maximum screen gain value can be misleading because it is an incomplete description.

1. *Scope*

This practice specifies a method for measurement of screen gain.

2. *Formula*

Screen gain is a ratio:

$$\text{Gain} = \frac{\text{Luminance of test screen}}{\text{Luminance of lambert diffuser}}$$

3. *Measurement*

3.1 The test screen shall be illuminated with projector light rays perpendicular to the screen surface (see Appendix A5).

3.2 The luminance of the screen sample shall be measured at 5-degree intervals. The measurements shall be in horizontal and vertical planes that pass through the perpendicular to the screen surface.

3.3 The maximum gain shall be labeled as such. Average useful gain shall be the gain seen by the audience under projection conditions (see Appendix A1).

3.4 In testing screens already installed in theaters, the methods specified in Secs. 3.1 and 3.2 may be altered to accept the existing projection angle and seating arangement (see Appendix A1).

4. *Instruments*

4.1 The goniophotometer shall measure only the luminance of the perpendicularly illuminated area on the screen.

4.2 The photometer (see Sec. 4.1) shall have a spectral response of a standard observer with photopic vision (see Appendix A6).

4.3 A diffuse reference standard similar to a lambert diffuser, which reflects all incident light so that the luminance is the same regardless of the angle of view, shall be used and shall be specified with the screen gain. The standard could be MgO, $BaSO_4$, $MgCO_3$, standardized matte white cardboard or a matte white screen of calibrated reflectance.





### Appendix

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

A1. In order to obtain a representative gain value for a theater, one might measure the center screen luminance from the center and sides of the middle row in the audience and average these values with the luminance measured from the center of the back and front rows.

A2. When a goniophotometer is used to measure luminance, the photometer may see all of the perpendicularly illuminated spot on the screen sample at all angles. Therefore, the luminance readings may have to be corrected by dividing by the cosine of the angle. If the photometer sees only the small center of the perpendicularly illuminated area, the correction is not required.

A3. Useful angles in locating good audience coverage for a gain screen are the angles which provide the necessary recommended screen luminance (see American National Standard Screen Luminance and Viewing Conditions for Indoor Theater Projection of Motion-Picture Prints, ANSI PH22.196-1978). In most cases, the angles would be limited to those which provide more than one-half the maximum gain. In some situations, curving the screen is necessary in order to utilize screens with gain factors over 1.4.

A4. Some subjective gain errors may occur because a typical theater audience has a mesopic eye response, determined by how long the viewer is in the theater, the ambient light, the subtended screen size, film subject matter, and the projector lumen output. Therefore, some observers may not agree with the numerically calculated gain.

A5. Retroflective screens, such as glass-beaded screens, reflect maximum gain back to the projector, regardless of projection angle.

A6. References to instrument spectral response and required theater illumination are listed in ANSI PH22.196-1978.

# PROPOSED

## SMPTE RECOMMENDED PRACTICE — RP 95

### *Installation of Gain Screens*

1. *Scope*

This practice specifies the optimum installation parameters for gain screens. Gain determination of screens is specified in Proposed SMPTE Recommended Practice on Gain Determination of Front Projection Screens, RP 94.

2. *Considerations*

2.1 The amount of screen gain varies with changes in viewing angle.

2.2 The projection angle to the screen in the theater varies from side to side and from top to bottom of the screen.

2.3 Specular screens follow the physical law, i.e., the angle of incidence equals the angle of reflection.

3. *Formulas*

3.1 Radius of Screen. The screen shall be curved when installed to a radius of:

$$\frac{\text{Projection distance} + \text{Distance between screen and audience center}}{2}$$

3.2 Degree of Tilt. To have maximum gain aimed at the center of the audience, the screen shall be tilted as follows:

$$\frac{\text{Projection angle to screen center}}{2}$$

**Appendix**

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

A1. With gain screens, it is best to locate the audience inside the one-half maximum gain angles; good audience coverage can be attained if the audience boundaries are defined by the angles at which the gain is no less than that necessary to provide the recommended screen luminance (see American National Standard Screen Luminance and Viewing Conditions for Indoor Theater Projection of Motion-Picture Prints, ANSI PH22.196-1978).

A2. Retroflective or beaded-type screens shall have the projector as close to the center of the audience viewing areas as possible.





# PROPOSED

## SMPTE RECOMMENDED PRACTICE — RP 96

### *Specifications for a Subjective Reference Tape for ¾-in Type A Helical-Scan Video Tape Reproducers for Checking Receiver/Monitor Setup*



1. *Scope*

This practice specifies a magnetic video reference tape for subjective evaluation of receiver or monitor setup and overall performance of video and audio derived from ¾-in Type A magnetic helical-scan tape reproducers. No test instruments are required.

2. *Reference Tape*

2.1 Tape Records. The location and dimensions of the video and audio records shall be in accordance with Draft American National Standard Dimensions and Location of Records for ¾-in Type A Helical-Scan Video Tape Cassette Recording, C98.21.

2.2 Signal Parameters. The video and audio signals shall be recorded in accordance with Proposed SMPTE Recommended Practice on Reference Carrier Frequencies, Pre-emphasis Characteristic and Audio and Control Signals for ¾-in Type A Helical-Scan Video Tape Cassette Recording, RP 87.

2.3 Cassette. The test tape shall be packaged in a cassette made in accordance with Draft American National Standard Dimensions of Video Cassette for ¾-in Type A Helical-Scan Video Tape Recording, C98.22.

3. *Content of Reference Tape*

3.1 Video Information. The video portion shall contain the following scenes:

(a) A color bar signal in accordance with EIA Standard RS-189-A, Encoded Color Bar Signal, as modified by SMPTE Engineering Committee Recommendation on Alignment Color Bar Test Signal for Television Picture Monitors, ECR 1-1978.

(b) A seven-step gray scale signal.

(c) Closeups of female and male models for skin tone evaluation and general definition.

(d) Selected indoor scenes to show typical indoor color.

(e) Selected outdoor scene showing samples of sky, architecture, and human models with outdoor illumination.

(f) Patterns as specified in SMPTE Recommended Practice on Specifications for Safe Action and Safe Title Areas Test Pattern for Television Systems, RP 27.3-1972 (R1977).

(g) A crosshatch pattern video signal (with color burst) in accordance with American National Standard ANSI/IEEE Std 202-1954 (R 1976), Television: Methods of Measurement of Aspect Ratio and Geometric Distortion, to check scanning linearity.

(h) A dot pattern video signal (with color burst) as specified in ANSI/IEEE Std 202-1954 (R 1976).

(i) A full red field to check picture tube purity having the same luminance and chrominance as the red bar in a 75 percent color bar signal.

3.2 Audio Samples

(a) Commentary, recorded on audio channel 2, describing the scenes and calling attention to the reference material and its relationship to proper receiver/monitor setup.

(b) Orchestral music, recorded on audio channel 1, for evaluation of general audio reproduction.

3.3 General Specifications

(a) The main title shall include the issue number of the reference tape.

(b) Each cassette shall be supplied in a case and accompanied by a Wratten 47B blue filter (or equivalent) and an instruction sheet on tape usage.

(c) A suitable marking shall appear on the case and cassette indicating that they contain the official SMPTE Subjective Reference Tape.

NOTE: A reference tape made in accordance with this practice is available from the Society of Motion Picture and Television Engineers.

## Appendix

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

A1. Instructions for Setup and Playback

With the video tape reproducer set for playback, and the operator controls adjusted in accordance with the instruction book furnished with the equipment, listen to the voice of the commentator as he describes each scene and what it is intended to check. As you view the tape, observe the following:

(a) Look for an excessive amount of noise or snow—it may indicate clogged or excessively worn video heads.

(b) Note picture stability at the top and sides.

(c) Note picture sharpness and color fidelity.

(d) Listen for smooth, even music; quaver may indicate flutter.

(e) Listen for natural sound of voice.

(f) Look for excessive overscanning or underscanning.

A2. The following descriptive narration script is suggested for use with the Subjective Reference Tape, and is used on tapes available from the SMPTE:

SMPTE, the Society of Motion Picture and Television Engineers, presents Receiver-Monitor Setup Video Cassette No. 1. Its purpose is to serve two principal needs—first, to verify that your video cassette playback system is operating normally and, second, to supply reference signals useful for adjusting operating controls on your receiver or monitor for best picture quality. It is not intended for use as an alignment tape.

Before using the video cassette, be sure the SMPTE identification appears on both the cassette and its case. Absence of this identification indicates that it is an unauthorized duplicate, and can not be relied upon for its intended use.

To begin, let us first check out the receiver or monitor. If you are using a receiver, turn off all automatic fine-tuning controls and automatic color or brightness controls. Fine-tune the picture in the normal manner. Next, locate the color control, sometimes labelled "chroma," and adjust to remove all color. Now locate the contrast control, sometimes labelled "picture," and the brightness control, sometimes labelled "intensity." Turn these controls all the way down to darken the screen as much as possible. Now turn both controls up slowly until you see seven vertical bars on the top, white on the left and black on the right, and the same seven bars at the bottom but in the reverse order. Adjust your contrast and brightness controls until there is a clearly discernible difference between the brightness level of adjacent bars. The top row of bars should range from full white on the left to full black on the right. Continue adjusting until the full black bar on the top right just matches the long horizontal full black bar dividing the upper and lower rows. It should be noted that, in most receivers and monitors, there is interaction between the contrast and brightness adjustments, and that a certain amount of experimentation is necessary to find the right combination.

To set up color intensity and tint, locate the blue filter supplied with the cassette and hold it to your eye to view this color bar signal. If you are using a professional monitor, you may obtain the same result by switching off the red and green guns. In either case, you should now see four light blue bars and three dark bars in the upper two-thirds of your screen. To adjust color intensity, turn up the color control until the two outermost light blue bars exactly match the color and the intensity of the short bars directly below them.

Now adjust the tint control, sometimes called "hue" or "phase," until the two innermost light blue bars exactly match the color and intensity of the short bars directly below them. You may need to repeat this procedure several times to obtain the proper match.

When you have achieved the proper settings, set aside the blue filter or, if you have turned off the red and green guns, return them to the "on" position.

Except for subjective values involving personal preferences, your receiver or monitor should be rather well adjusted now and no further adjustments are recommended. If you prefer to touch up the skin tones or highlights, using any of the color, tint, contrast, or brightness controls, we suggest rewinding the tape and rechecking the color intensity, tint, and gray scale.

If you are hearing my voice with music, your equipment is mixing audio channels No. 1 and No. 2. Moving the audio switch on the cassette player to No. 2 should eliminate the music in the background. Or, if you prefer the music to my voice, move the switch to No. 1, and from this point on, we will increase the volume to normal level.

For further narration, be sure your cassette player is switched to audio channel No. 2 while music continues on channel No. 1.

These scenes contain brightness values throughout the full contrast range. Highlights on the ceramic cat should be bright, showing good detail. You should be seeing detail in the low lights, the slats in the background shutters, for example.



You should also be seeing good detail in the woman's hair.

A light haze is obscuring the mountains in the background of this scene.

Again, skin tones should appear natural, as should the foliage.

With the white railings and black-and-white building facades and blue sky, this scene shows the full contrast range.

Let me call your attention to the rectangle surrounding the words "safe action area." This should appear centered on your screen.

This rectangle outlines the area in which essential scene action is displayed. Unless you are seeing both sides as well as the top and bottom of the rectangle, your receiver or monitor is cutting off some of the picture area and is in need of servicing.

In the event that you wish to examine the entire recorded video signal, this tape must be viewed on a receiver or monitor which can be underscanned.

The vertical and horizontal lines of this crosshatch pattern should appear sharp and straight out to the edges of your screen. If not, service adjustments are probably required for focus and linearity.

These dots should appear white in all areas of your screen and may have some color fringing. If the amount of colored fringes is objectionable on any of the dots in any portion of the screen, a service adjustment of convergence is probably required.

Your picture should now appear uniformly red. If other colors appear on any portion of the screen, again, service adjustments are required.

This concludes Receiver-Monitor Setup Video Cassette No. 1, produced by the Society of Motion Picture and Television Engineers. 

# Cinematography — Photographic sound record on 8 mm Type S motion-picture prints — Position and width dimensions

## 1 Scope and field of application

This International Standard specifies the lateral location and dimensions of the photographic sound record on 8 mm Type S motion-picture prints, the picture-sound displacement, and the location and width of the scanned area.

## 2 References

ISO 1700, *Cinematography — 8 mm Type S motion-picture raw stock film — Cutting and perforating dimensions.*

ISO 1781, *Cinematography — Projector usage of 8 mm Type S motion-picture film for direct front projection.*

## 3 Sound record

The lateral location and dimensions of the photographic sound record shall be as given in the figure and table.

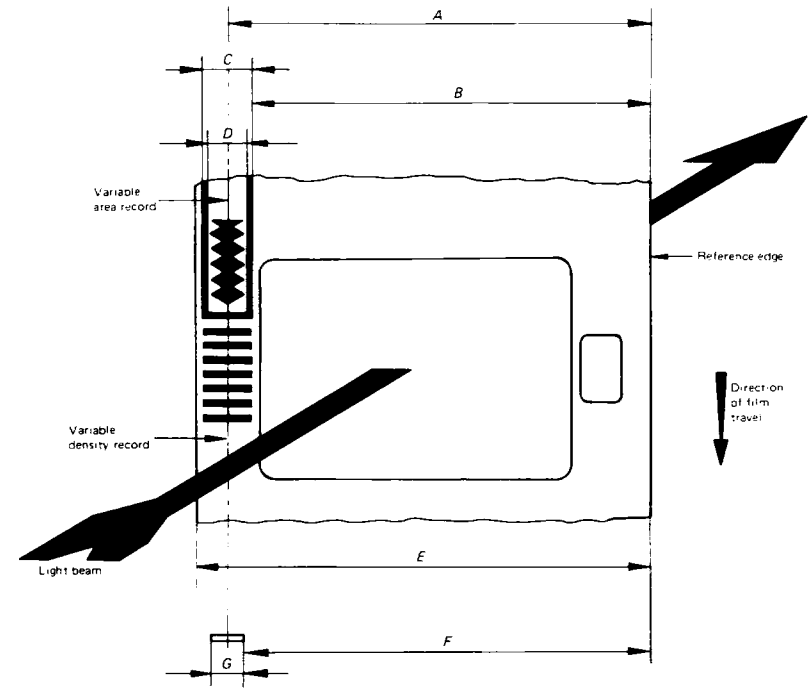
## 4 Picture-sound displacement

The recording of sound on the film shall precede the corresponding picture frame in the direction of film travel in normal projection. The distance between the centre of the picture frame and its corresponding sound record shall be 22 frames ± 1 frame.










| Dimension | mm | in |
|---|---|---|
| *A* – sound record centre line | 7,57 ± 0,03 | 0.298 ± 0.001 |
| *B*[1] | 7,19 ± 0,03 | 0.283 ± 0.001 |
| *C* min. – printed width | 0,75 | 0.030 |
| *D* max. – modulated width (100 %) | 0,50 | 0.020 |
| *E* ref. – film width | 7,975 | 0.314 |
| *F*[2] | 7,25 ± 0,03 | 0.285 ± 0.001 |
| *G*[3] – scanned width | 0,66 ± 0,03 | 0.025 ± 0.001 |

1) Dimension *B* applies to the protective strip or the variable density sound record.

2) Dimension *F* is for guidance of hardware manufacturers only.

3) The inch dimension *G* deviates from the standard conversion practice to reflect the practices in those countries where that system is used.