

# standards and recommended practices

## Proposed SMPTE Recommended Practices

Two Proposed Recommended Practices are published here for a trial period and public review. Proposed SMPTE Recommended Practice on Color and Luminance of Review Room Screens Used for 16mm Color Television Prints, RP 41, specifies the color quality of the projection illumination of 16mm review rooms used for color films for television in order to promote greater uniformity and a more desirable color balance among these films, and a more compatible balance between 16mm and 35mm films for television.

The recommendation further reflects the general international agreement recently indicated by both the EBU and CCIR organizations. It should be noted that the document is limited only to the screen luminance rather than review room conditions as being promoted by sources such as the Canadian Telecasting Practices Committee Recommendations also published in this issue.

The SMPTE Engineering Committee felt strongly that the standardization of these conditions was premature and preferred to wait until further investigation proves otherwise.

Proposed SMPTE Recommended practice on Emulsion Orientation of Super 8 Release Prints, RP 42, recommends that the emulsion position on all commercial super 8 release prints be oriented towards the projection lens. This recommendation is feasible since an intermediate optical or contact step, which would be necessary for quality reproduction, can be arranged to produce prints with this orientation which would match and could be intercut with original super 8 material.

Comments are invited and should be addressed to Alex E. Alden, Staff Engineer, at Society Headquarters prior to July 30, 1970. If no adverse criticism is received by that date, the Proposed Recommended Practices will be submitted to the SMPTE Board of Governors for final approval.—A. E. A.

## PROPOSED

### **SMPTE RECOMMENDED PRACTICE**

**RP 41**

#### *Color and Luminance of Review Room Screens Used for 16mm Color Television Prints*

Page 1 of 2 pages

#### 1. Scope

This recommended practice specifies the luminance (photometric brightness) and color quality of projection illumination for 16mm review rooms for evaluation of color film for color television.

#### 2. Luminance Level

The luminance (photometric brightness) at the center of the screen shall be  $16 \pm 2$  footlamberts (f) [ $55 \pm 7$

candelas per square meter ( $\text{cd}/\text{m}^2$ )], measured within the standard observing area with the projector in complete operation but with no film in the aperture.

#### 3. Spectral Distribution

The color quality of the projected light reflected from the screen surface shall approximate the spectral distribution of a black body at a color temperature of  $5400^\circ\text{K} \pm 450^\circ\text{K}$  ( $x = 0.3347, y = 0.3430$ ).

#### Appendix

(The Appendix is not a part of this SMPTE Recommended Practice, but is included to facilitate its use.)

It is the purpose of this recommended practice to specify more exactly the color quality of the projection illumination of 16mm review rooms used for color films for television in order to promote greater uniformity and a more desirable color balance among these films, and a more compatible balance between 16mm and 35mm films for color television.

The projection light color and screen luminance specified in this recommended practice are the same as those specified in American National Standard Screen Luminance and Viewing Conditions for 35mm Review Rooms, PH22-133-1963 (Reaffirmed 1969). Since the same apparent illuminant color is used for projection of both 35mm and 16mm color films for color television, review room conditions regarding screen luminance and color should be the same.

American National Standard Screen Luminance and Viewing Conditions for 16mm Review Rooms, PH22.100-1967, encompasses the above specifications as part of a broader set of specifications, and gives detailed descriptions of methods of measurement and surrounding conditions.

Projection of color television film produces an apparent increase of contrast of the film image as seen on the color receiver. Furthermore, most receivers are viewed with a rather high level of ambient light. The intent of the recommended practice, however, is only to provide uniform and desirable review room conditions and not to duplicate television transmission. Articles in the literature describe projection conditions which approximate television transmission of color films in luminance, color balance, and contrast. (Refer to R. J. Ross, "Better color film for color television," American Cinematographer, July 1968, as well as Canadian Telecasting Practice CTP 1-

1968, Viewing Room for Evaluation of 16mm Color Films for Television, available from L. C. Harrop, Canadian Broadcasting Corporation, Operations Department, 7925 Cote St. Luc Road, Montreal 267, P.Q., Canada.)

It is considered desirable to have within the field of view but outside the screen area a surface with a low level of illumination of the same color as that specified for the projection screen in this recommended practice. This would provide a visual reference which stabilizes the adaptation of the eye for more accurate judgment of scene-to-scene and overall color balance. Specification of size, shape, intensity, or location of such a reference in this recommended practice would be premature because of inexperience in this technique. It is important for users to distinguish between a laboratory review room whose primary purpose is to determine the best print color balance and density, and a television simulator which comes as close as possible to duplication of contrast, color balance, shape, size, luminance, and viewing conditions of home reception of color television images.

Color films balanced for projection on commonly used tungsten projectors are generally less dense (lighter) and more blue (colder) than prints balanced for arc projection. Since color television receiver images appear to be projected with a rather cold light, such prints will be undesirably cold and desaturated during color television transmission. Use of the projection light color specified in this recommended practice in the laboratory review room should result in the production of prints which are relatively darker and yellower (warmer) than those made for tungsten projection. These prints will have a more pleasing balance and saturation during color television transmission.

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A light source of approximately 3500°K can be corrected to 5400°K by filtration (for example, with a Wratten 80B or 80C filter). Users are cautioned, however, that gelatin filters can fade rapidly in the heat of a projector beam, and filters used in front of the projector lens can cause deterioration of the image through accumulation of dirt and finger marks. A polished glass filter is preferable; ideally, it should be located between the light source and the film rather than between the lens and the screen. Insofar as some tungsten projectors may depart considerably from a 3500°K color due to the color of the heat-absorbing filters used and other factors, the Wratten 80B or 80C filters may produce only an approximation of a 5400°K converted color. Xenon and carbon arc 16mm projectors will usually be much closer to the color temperature specified in this recommended practice than tungsten lamp projectors. However, it is recommended that such projectors conform to these specifications by the use of appropriate filters, if necessary. One method for

determining the approximate color temperature of the modified projection system is to visually compare this system to a source of 5400°K, such as those generally used in 35mm arc projection which are generally used without accessory filters.

Since many light sources, such as xenon and carbon arcs, and many filtered tungsten sources depart considerably from a black body characteristic, the use of a "two-filter" (measuring the red-to-blue ratio) color temperature meter is not a reliable method for determination of the effective color temperature of these sources.

Use of the 16mm Subjective Reference Test Film as a reference is also recommended. This film is balanced to the 35mm version and is designed for 5400°K projection illumination (see J. M. Waner and E. P. Ancona, Jr., "SMPTE color television subjective reference test films and slides—issue no. 3," Jour. SMPTE, 76: 686-688, July 1967).

## PROPOSED

### SMPTE RECOMMENDED PRACTICE

RP 42

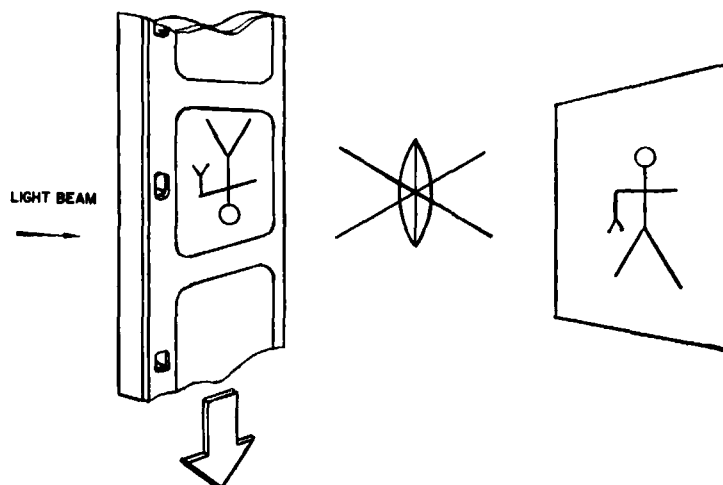
#### Emulsion Orientation of Super 8 Release Prints

##### 1. Scope

- 1.1 This recommended practice specifies the emulsion position on all super 8 commercial release prints.

##### 2. Emulsion Orientation

- 2.1 The emulsion orientation of sound or silent commercial release prints shall be toward the projection lens when the film is threaded for direct front projection, as shown in the figure.



NOTE 1: This recommendation is feasible since an intermediate optical or contact step, necessary for quantity reproduction, can be arranged to produce prints with the recommended orientation. A common emulsion orientation facilitates intercutting among super 8 release prints and reversal original super 8 material.

NOTE 2: A major consideration in the development of this recommended practice is the use of super 8 sound prints, both magnetic and photographic. Magnetic prestriped print film is commonly supplied with the stripe on the base side. Currently, magnetic sound projectors have their sound heads oriented to contact the light source side of the film (usually the base side).

In the case of photographic sound tracks, focus is extremely critical. Variation in emulsion orientation would require projector manufacturers to have a focus control (as some 16mm projectors now have) to obtain optimum results. This requirement would be an added cost to the manufacturer and confusing to the user.

NOTE 3: It is recognized that some users will require contact reversal prints from original super 8, particularly in the amateur field, but since these would not be intercut with commercial prints, picture focus should not be a problem. Reversal reduction prints can be made easily to comply with the recommended practice.

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