

Specifications for 16-mm Projector Alignment and Screen Image Quality Test Film



Page 1 of 6 pages

Introduction

This test film is designed to provide the same degree of performance evaluation for 16-mm projection systems that is presently available for 35-mm projection systems utilizing SMPTE Recommended Practice RP 40. It is also intended as an engineering tool to permit quantitative measurements of projector adjustments that affect the visual image.

1 Scope

1.1 This practice describes the artwork and dimensions for constructing a test chart to be used as the original subject for the manufacture of the test film.

1.2 The practice also describes the types of photographic materials and densitometry necessary to manufacture the film.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this practice. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this practice are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below.

SMPTE 7-2004, Motion-Picture Film (16-mm) — Camera Aperture Image and Usage

SMPTE 109-2003, Motion-Picture Film (16-mm) — Perforated 1R and 2R

3 Description

3.1 The test pattern on the film shall be as shown in figures 1 and 2.

3.2 The background checkerboard pattern provides a 50% transmission of the incident radiant energy, which is more nearly consistent with the projection performance of an average release print. The pattern also provides a quick reference for overall image focus and quality.

3.3 The resolution charts are modified high-contrast NBS resolution charts with a luminance ratio of 100:1 which have been trimmed to exclude low-order resolution below 34 lines per millimeter (see figure 3).

3.4 The wedge steps placed on each side and above and below the center resolution chart are designed to measure quantitatively vertical image unsteadiness and horizontal weave. The actual length of the wedges and their placement around the center resolution chart are not critical, but the total width of the wedge shall be 20% of the total width of the wedge. (One square equals 1% of the image height.)

3.5 The diamond patches (dimension E) are to be inserted as a densitometric control in the exposure and processing of the original test film.

3.6 The test chart shall be photographed as a 16-mm camera original on a film manufactured in accordance with SMPTE 109. The film shall be capable of a modulation transfer of at least 80% at 80 lines per millimeter when exposed to a high-contrast resolution chart at a reduction ratio of 25:1 and then properly processed. In preparation, the film shall be used in such equipment and with such procedures as will maintain optimum resolution and steadiness.

3.7 The chart shall be photographed with a camera aperture as specified in SMPTE 7.

3.8 The test film shall be produced as a 16-mm camera original.

3.9 The vertical centerline of the pattern shall be $0.314 \text{ in} \pm 0.002 \text{ in}$ ($7.98 \text{ mm} \pm 0.05 \text{ mm}$) from the reference edge of the film shown in SMPTE 7.

4 Dimensions

4.1 The dimensions of the original test chart shall be 25X the dimensions listed in figure 2. (This requirement is necessary because the NBS resolution test charts are designed for a 25X reduction.)

4.2 The original or 1:1 copy of the NBS resolution test charts shall be cropped as specified in figure 3. The modification shall be similar to that illustrated in figure 4.

4.3 The modified NBS resolution test charts shall be placed on the original test chart as specified by the dimensions in figure 2.

4.4 The diamond patches (dimension E) shall be at least the dimensions specified in figure 2 in order to be readable in current 1-mm aperture densitometers after a 25X reduction.

4.5 The checkerboard background on the test chart shall contain 100 squares vertically and 134 horizontally.

4.6 The horizontal and vertical lines indicating 5% and 10% reductions in image length or height shall be placed on the test target in accordance with the dimensions specified in figure 2.

NOTE – A test film conforming to this practice is available from the Society of Motion Picture and Television Engineers.