PROPOSED

SMPTE RECOMMENDED PRACTICE RP 22

Specifying Graph Paper Used in Inter-Laboratory Exchange of Plotted Sensitometric Data

1. Scope

1.1 The purpose of this recommended practice is to specify a standard graph paper which could be used for the purpose of inter-laboratory exchange of sensitometric data. It is not to suggest that the use of other graph papers be discontinued but merely to specify one general kind where the size of the sheet, quality of paper, the color of ink, the density and log exposure scale sizes, and length and rulings are appropriate so that quick, easy, and accurate comparisons can be made among laboratories.

2. Size of Sheet and Quality of Paper

2.1 The overall size of the graph paper sheet shall be 8½ in. (215mm) nominal horizontally by 11 in. (279mm) nominal vertically.

2.2 The paper shall be of a thin enough quality with black reference lines for ease of comparison by overlay.

3. Density Scale

3.1 The density scale shall run vertically from 0.00 to 3.80 and the density figures shall be printed in the left and right margins of the sheet starting at density 0.20 and thereafter at intervals of 0.20.

3.2 Heavy horizontal lines shall be printed at density 0.00, 1.0, 2.0 and 3.0. These shall bear short vertical lines pointed toward the top of the sheet, 1/16 in. (1.6mm) nominal in height, except for every fifth line (starting from left density scale) which shall be ⅛ in. (3.2mm) nominal in height. These vertical lines shall be on a spacing of 0.053 in. (1.4mm) and any 100 lines shall fall within a distance of 5.34 in. (135.5mm). Each line shall represent an increment of 0.02 log exposure.

3.3 Starting at density 0.20, light horizontal lines shall be printed at intervals of 0.20 density on a spacing of 0.53 in. (13.5mm) nominal.

4. Log Exposure Increment Scale

4.1 Exposure "step number" scales shall be printed across the lower extremity of the sheet at right angles to the density scales. The "step number" scale shall carry reference numbers from 1 to 21, starting from the right density scale.

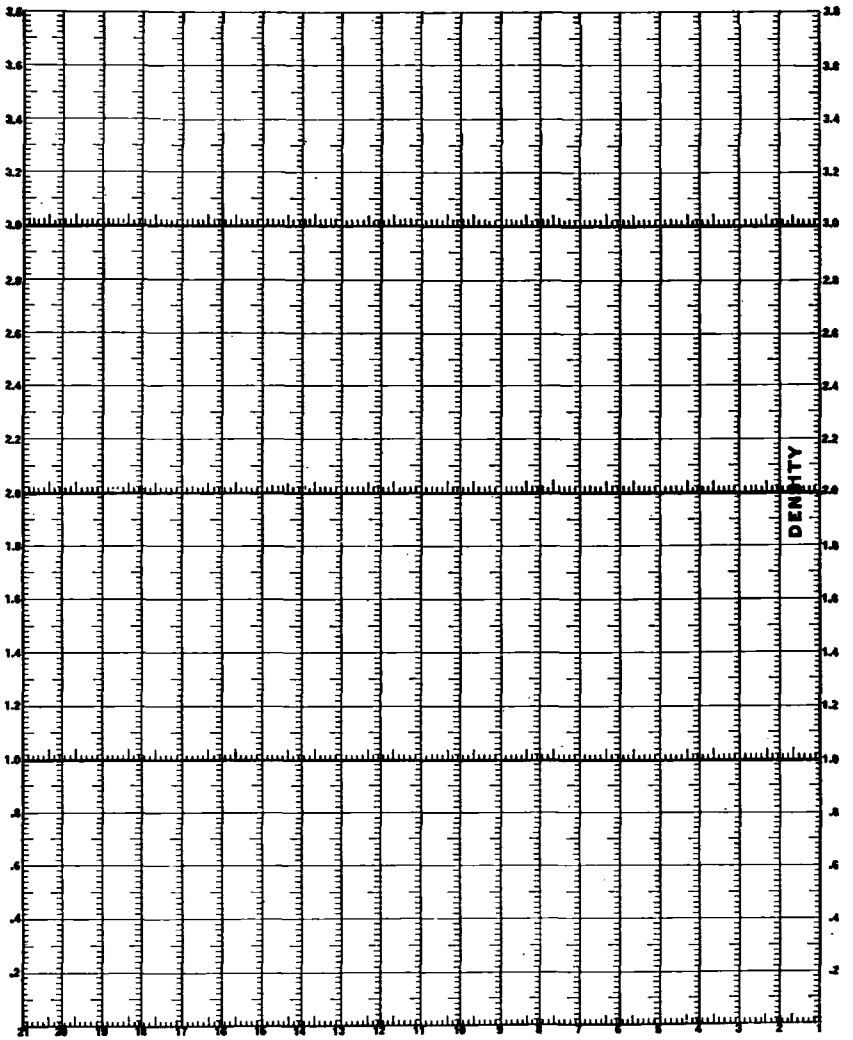
4.2 A vertical line shall run from the center of each "step number" on a horizontal spacing of 0.40 in. (10.2mm) nominal to the horizontal line at density 3.80. Each line shall represent log exposure increments of 0.15. These vertical lines shall carry 1/16 in. (1.6mm) nominal horizontal lines pointing toward the left density scale (except on the right side of the left density scale where the horizontal lines shall point toward the right) and shall represent 0.02 density except for each fifth line which shall be ⅛ in. (3.2mm) nominal long and represent 0.10 density starting at density 0.10.

Note: Where step tablets are used as exposure modulators in Type Ib (intensity scale) sensitometers, the steps may not have the required 0.15 density increments. In this instance, the actual densities of the steps should be marked off along the density scale of a sheet described herein. This density scale is then cut off and located along the log exposure scale. The reference points may be then transferred to the log exposure scale and used as an accurate "step number" scale.

5. Technical and Other Information

5.1 Technical information such as emulsion, processing time, date, etc., may be surprinted across the top of the sheet at the discretion of the user.

5.2 The name and address of the user company may likewise be surprinted.



SMPTE RECOMMENDED PRACTICE — RP 19–1965

Specifications for 8mm Registration Test Film

1. *Scope*

1.1 This recommended practice specifies the subject material and the dimensions and location of the subject material for an 8mm test film of high accuracy to assist the user in achieving several quantitative visual tests (See appendix).

1.2 The film can be used to test motion-picture projectors and printers.

2. *Dimensions*

2.1 The dimensions and location of the target areas shall be as specified in Figs. 1, 2, 3 and 4. The patterns in Figs. 3 and 4 appear in the five circular areas of the test pattern shown in Figs. 1 and 2.

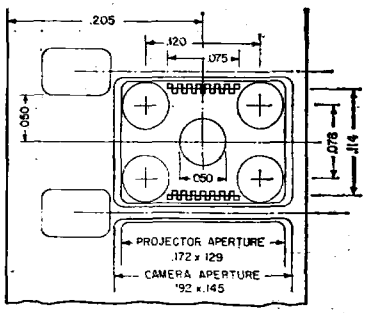


Fig. 1

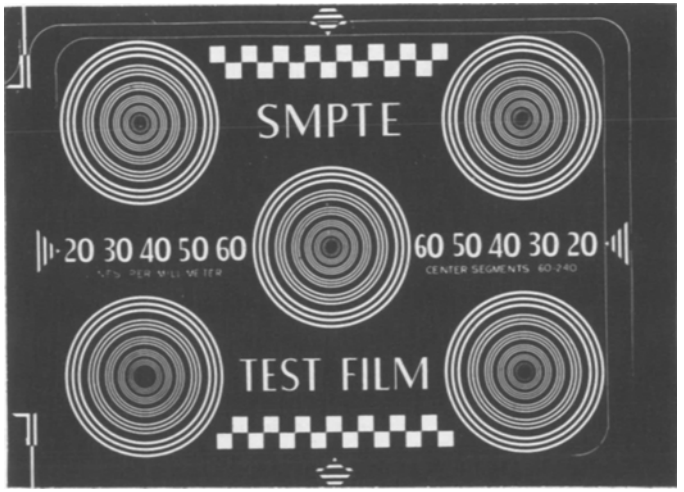


Fig. 2

Approved October 1, 1965

3. *Description*

3.1 The test film shall be produced as a camera original film photographed on high-contrast, high-definition, postive-type motion-picture stock made in accordance with American Standard Dimensions for 16mm Motion-Picture Film, Perforated 8mm, 2R-1500, PH22.17-1965.

3.2 The diffuse density of the background area shall be 1.80 ± 0.10.

3.3 The camera and projector image areas shall be in accordance with American Standard Dimensions of 8mm Motion-Picture Camera Aperture Image, PH22.19-1964, and American Standard Projected Image Area of 8mm Motion-Picture Film, PH22.20-1957.

3.4 The resolution targets shall be photographed in a magnification which results in the concentric rings reading in lines per millimeter on the film (20, 30, 40, 50 and 60). The rosette in the center shall indicate a measurement from 60 to 240 lines per millimeter.

Note: A test film made in accordance with this recommended practice is available from the Society of Motion Picture and Television Engineers and is identified as REG-8.

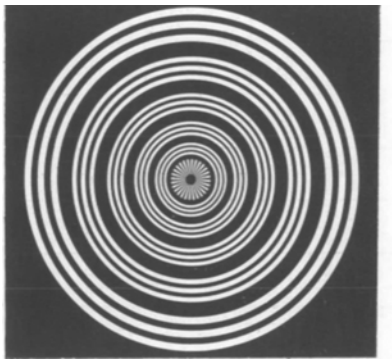


Fig. 3

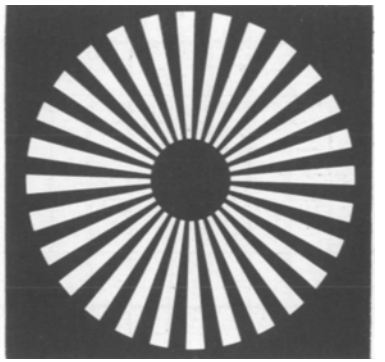


Fig. 4

Appendix

(This Appendix is not a part of SMPTE Recommended Practice RP 19-1965, Specifications for 8mm Registration Test Film, but is included to facilitate its use.)

1. The following quantitative visual tests can be performed:
   (a) projector steadiness
   (b) projector aperture alignment
   (c) projector shutter adjustment (travel ghost)
   (d) projector framing accommodation
   (e) projector focusing
   (f) optical printer alignment
   (g) optical projector focusing
   (h) contact printer resolution
   (i) contact printer weave
   (j) contact printer double-exposure alignment
   (k) contact printer (step) steadiness

2. If the film is projected to 30 x 40 in., it will be enlarged 250 times.

3. Resolution targets are spaced one in the center and one in each of the four corners. The outside diameter of target on the film is 50 mils and will fill the area covered by an average microscope using a 10 X objective.

4. The white blocks are 5 mils square and will quickly indicate travel ghost caused by incorrect shutter adjustment. They also provide a quick check on the ability to frame above and below center position.

5. The triangular areas in the centers of the vertical and horizontal framelines can be used to measure jump and weave and aperture misalignment. Each line in these areas is 1 mil (0.001 in.) wide. The lines are spaced 1 mil apart.

SMPTE RECOMMENDED PRACTICE — RP 20–1965

Specifications for 16mm Registration Test Film

1. *Scope*

1.1 This recommended practice specifies the subject material and the dimensions and location of the subject material for a 16mm test film of high accuracy to assist the user in achieving several quantitative visual tests (See appendix)

1.2 This film can be used to test motion-picture projectors and printers.

2. *Dimensions*

2.1 The dimensions and location of the target areas shall be as specified in Figs. 1, 2, 3 and 4. The patterns in Figs. 3 and 4 appear in the nine circular areas of the test pattern shown in Figs. 1 and 2.

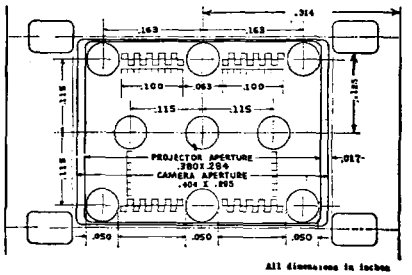


Fig. 1

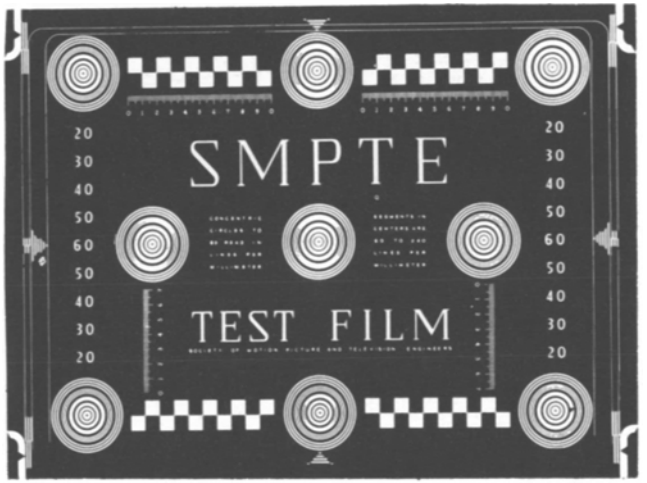


Fig. 2

Approved October 1, 1965

3. *Description*

3.1 The test film shall be produced as a camera original film photographed on high-contrast, high-definition, positive-type motion-picture stock made in accordance with American Standard Dimensions for 16mm Motion-Picture Film, 2R-2994, PH22.110-1965.

3.2 The diffuse density of the background area shall be 1.80 ± 0.10.

3.3 The camera and projector image areas shall be in accordance with American Standard Dimensions of 16mm Motion-Picture Camera Aperture Image, PH22.7-1964, and American Standard Projected Image Area of 16mm Motion-Picture Film, PH22.8-1957.

3.4 The resolution targets shall be photographed in a magnification which results in the concentric rings reading in lines per millimeter on the film (20, 30, 40, 50 and 60). The rosette in the center shall indicate a measurement from 60 to 240 lines per millimeter.

Note: A test film made in accordance with this recommended practice is available from the Society of Motion Picture and Television Engineers and is identified as REG-16.

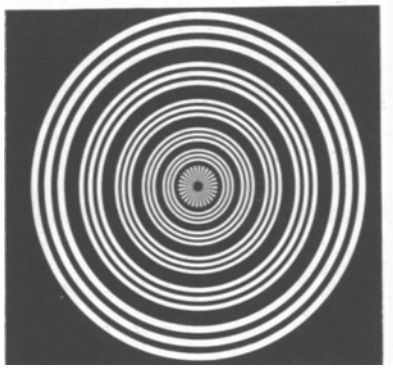


Fig. 3

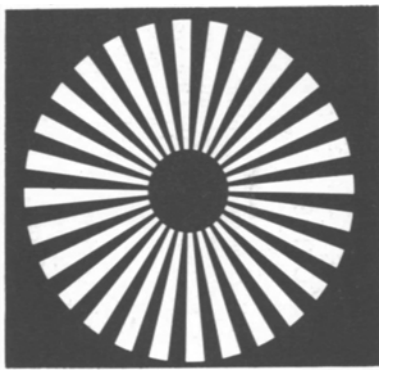


Fig. 4

Appendix

(This Appendix is not a part of SMPTE Recommended Practice RP 20-1965, Specifications for 16mm Registration Test Film, but is included to facilitate its use.)

1. The following quantitative visual tests can be performed:
   (a) projector steadiness
   (b) projector aperture alignment
   (c) projector shutter adjustment (travel ghost)
   (d) projector framing accommodation
   (e) projector focusing
   (f) optical printer alignment
   (g) optical projector focusing
   (h) contact printer resolution
   (i) contact printer weave
   (j) contact printer double-exposure alignment
   (k) contact printer (step) steadiness
   (l) title stand alignment

2. If the film is projected to 30 x 40 in., it will be enlarged 100 times.

3. Resolution targets are spaced one in the center, four equidistant from the center, and one in each of the four corners. The outside diameter of target on the film is 50 mils and will fill the area covered by an average microscope using a 10 X objective.

4. The white blocks are 10 mils square and will quickly indicate travel ghost caused by incorrect shutter adjustment. They also provide a quick check on the ability to frame above and below center position.

5. The triangular areas in the centers of the vertical and horizontal framelines can be used to measure jump and weave and aperture misalignment. Each line in these areas is 1 mil (0.001 in.) wide. The lines are spaced 1 mil apart.

6. The horizontal and vertical scales have least divisions of 1 mil. They provide useful information when film is double exposed in a printer to check registration.