RP 27.4-1994
Revision of RP 27.4-1985

SMPTE RECOMMENDED PRACTICE

Specifications for an Operational Test Pattern for Checking Jitter, Weave and Travel Ghost in Television Projectors

1 Scope

This practice specifies the format, dimensions, and optical densities for a test pattern transparency to be used as an operational tool for measurement of television film projector image stability.

2 Purpose

2.1 Specifications

This practice specifies a test film to facilitate day-to-day operational checking of travel ghost, weave, and jitter in 35- and 16-mm television projectors.

2.1.1 Jitter steps

The steps at the top and bottom of the pattern are used for measuring picture jitter vertically.

2.1.2 Weave steps

The steps at the right and left of the pattern are used for measuring picture weave horizontally.

2.1.3 Central window

The central window or rectangular area in the center of the pattern shall be used for measurement of jitter and weave with a grating pattern or a line selector on an oscilloscope.

3 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 standard are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below.

ANSI IT2.19-1990, Photography — Density Measurements — Geometric Conditions for Transmission Density

ANSI/SMPTE 7-1994, Motion-Picture Film (16-mm) — Camera Aperture Image and Usage

ANSI/SMPTE 59-1991, Motion-Picture Film (35-mm) — Camera Aperture Images and Usage

ANSI/SMPTE 96-1992, Television — 35- and 16-mm Motion-Picture Film and 2x2-in Slides — Scanned Area and Photographic Image Area for 4:3 Aspect Ratio

ANSI/SMPTE 109-1992, Motion-Picture Film (16-mm) — Perforated 1R and 2R

ANSI/SMPTE 139-1986 (R1991), Motion-Picture Film (35-mm) — Perforated KS

4 Format

4.1 Pattern

A reproduction of the test pattern is shown in figure 1.

4.2 Window configuration

The windows shall be staggered so that any trailing or travel ghosts due to the projector shutter opening early or late can be seen above or below the windows.

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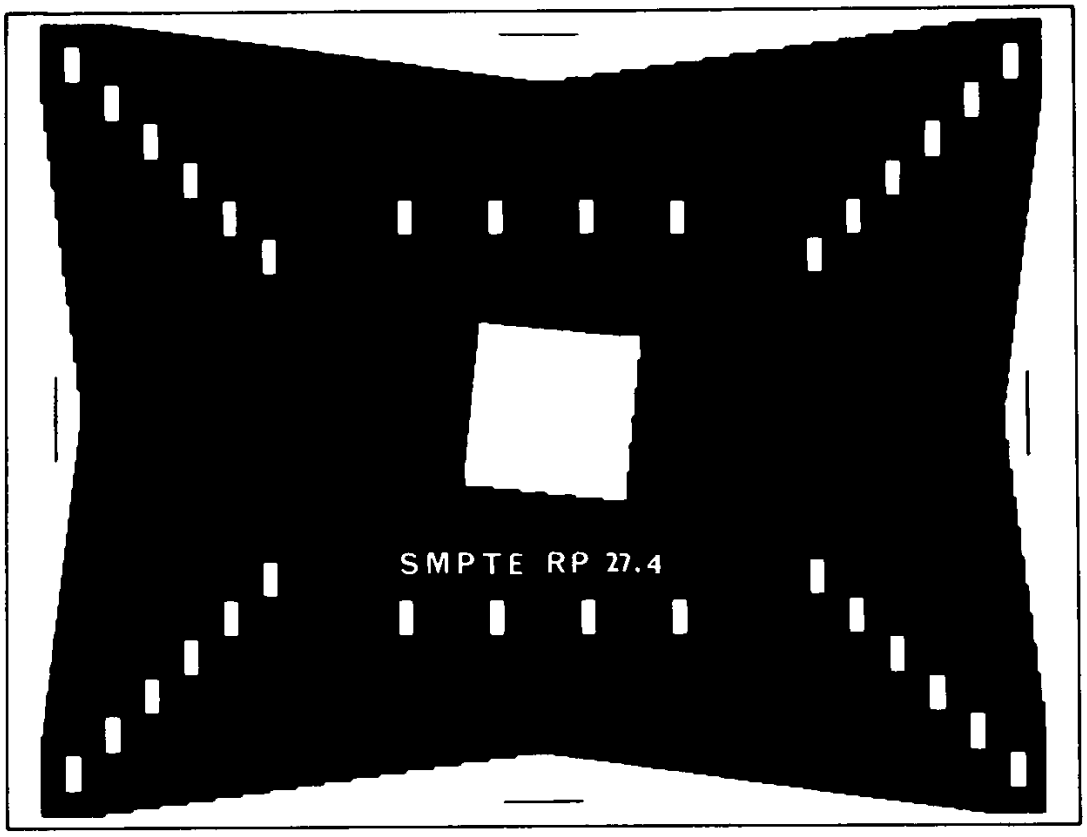

Figure 1 – Reproduction of test pattern

4.3 Pattern identification

The identification number of this practice shall appear on the projected image in the area specified in the figures.

5 Dimensions

5.1 Test pattern

The dimensions of the test pattern shall be as shown in figure 2 and table 1 in percentages of frame height and reproduced with a tolerance of ± 2% of the frame height.

5.1.1 Tolerances

The camera shall be capable of producing an image positioned in relation to the perforations within ± 0.025% of picture height for 35-mm and ± 0.05% of picture height for 16-mm film.

5.2 Test film

The test film shall be a camera original film photographed on high-definition, positive motion-picture stock made in accordance with ANSI/SMPTE 139 and ANSI/SMPTE 109.

5.2.1 The camera shall be capable of producing an image in accordance with style A dimensions specified in ANSI/SMPTE 59 and ANSI/SMPTE 7.

5.3 Projected and transmitted areas

The projected image area is represented by the outside dimensions of the jitter and weave steps. The television transmitted area is represented by the lines inside the jitter and weave steps. The area shall be in accordance with ANSI/SMPTE 96.

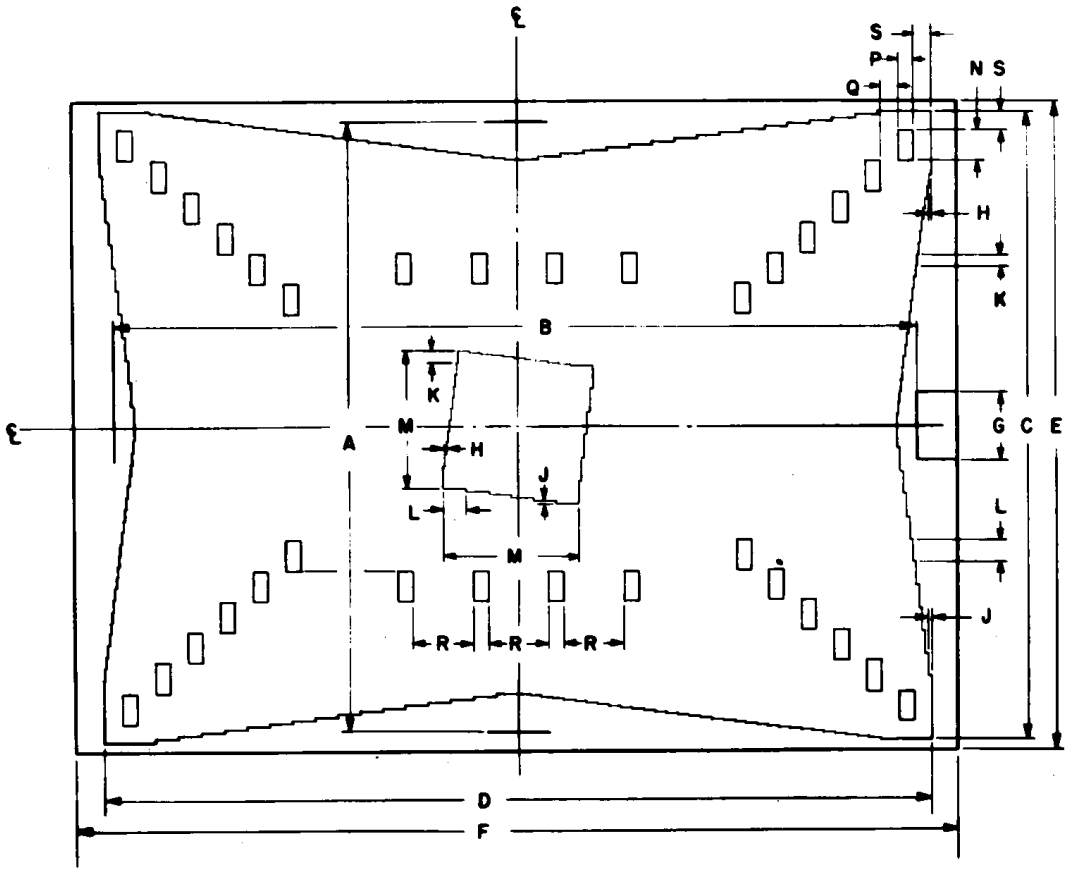

Figure 2 – Dimensional drawing of test pattern

Table 1 – Specifications

	Dimensions	Percent	Inches		Millimeters	
			35-mm	16-mm	35-mm	16-mm
A	Scanned area height	100.00	0.594	0.276	15.09	7.01
B	Scanned area width	133.3333	0.792	0.368	20.12	9.35
C	Television projector image height		0.612	0.285	15.54	7.24
D	Television projector image width		0.816	0.380	20.73	9.65
E	Camera image height		0.631	0.295	16.03	7.49
F	Camera image width		0.868	0.404	22.05	10.26
G	Line length	11.25	0.067	0.031	1.70	0.79
H	Half-step width	0.25	0.0015	0.0007	0.038	0.018
J	Full-step width	0.50	0.003	0.0014	0.08	0.036
K	Half-step length	1.875	0.011	0.005	0.28	0.13
L	Full-step length	3.75	0.022	0.010	0.56	0.25
M	Central window height and width	22.50	0.134	0.062	3.40	1.57
N	Window height	5.00	0.030	0.014	0.76	0.36
P	Window width	2.50	0.015	0.007	0.38	0.18
Q	Window spacing in diagonal row	3.00	0.018	0.008	0.46	0.20
R	Window spacing in horizontal row	10.00	0.059	0.028	1.50	0.71
S	Location of corner windows	3.00	0.018	0.008	0.46	0.20

6 Optical densities

6.1 Optical densities

All optical densities shall be measured in accordance with ANSI IT2.19.

6.2 Background

The background shall have a density greater than 1.9.

6.3 Windows and surround area

The density of the windows and surround area shall be nominally clear.

NOTES

1 The emulsion position shall correspond to the one normally used for the specific format.

2 Test material conforming to this practice is available from the Society of Motion Picture and Television Engineers.