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RP 69-2002
Revision of RP 69-1997

SMPTE RECOMMENDED PRACTICE

Specifications for Scanning-Beam Uniformity Test Film for 35-mm Motion-Picture Audio Reproducers

1 Scope

1.1 This practice describes a test film, the use of which is limited to the determination of the uniformity of scanning-beam illumination in 35-mm motion-picture audio reproducers.

1.2 This test film is not intended to be used for the determination of the correct position of the scanning beam with respect to the reference edge of 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.

ANSI/SMPTE 139-1996, Motion-Picture Film (35-mm) — Perforated KS

SMPTE 40-2002, Motion-Picture Film (35-mm) — Release Prints — Photographic Audio Records

SMPTE 223M-2001, Motion-Picture Film — Safety Film

3 Test film

3.1 The test film shall be a directly-recorded positive or a print from an original negative.

3.2 The test record on the film shall reproduce at a frequency of 1000 Hz ± 20 Hz when the linear velocity of the film is 96 perforations per second or approximately 90 ft/min (18 in or 45.7 cm/s).

3.3 At full modulation, the test record shall have a width of 0.0050 in ± 0.0005 in (0.127 mm ± 0.013 mm), as measured between opposite amplitude peaks. It shall be approximately sinusoidal.

3.4 The test record shall move laterally at a uniform rate from one edge of the scanned area to the other, as specified in figure 1.

3.5 In any one test film, the combined effect of variation in modulation width and density of the exposed and unexposed areas shall result in a signal amplitude variation not exceeding ± 0.8 dB with respect to the average signal amplitude.

Approved July 26, 2002

4 Definitions

4.1 edges: For the purpose of this practice, the edge of the test track nearest the reference edge of the film shall be called the outboard edge, and the opposite edge shall be called the inboard edge.

4.2 centerline sweep: The centerline sweep of the test track is defined as the lateral displacement of the centerline of the test track from its initial position to its final position. Dimension D is the nominal centerline sweep.

4.3 total test track sweep: The total test track sweep is defined as the sum of the centerline sweep and the overall width of the test track. Dimension C is the nominal total sweep.

5 Dimensions

The dimensions and position of the audio track shall be as specified in figure 1 and table 1. Dimension A extends to the inboard edge of the test track in its initial position. Dimension B extends to the outboard edge of the test track in its final position. Dimensions A and B shall be measured at points opposite the first image area frameline next to the start and end splice of the test record negative. Dimension C, nominal total sweep, is 0.002 in (0.05 mm) less than the width of the scanning slit to avoid scanning of the edge of the slit.

6 Film stock

The film stock, preferably polyester, shall be splice-free, of the low-shrinkage, safety type in accordance with SMPTE 223M, and cut and perforated in accordance with long-pitch dimensions specified in ANSI/SMPTE 139.

7 Density

The exposed track area shall have a minimum diffuse density of 2.0 above base density and the unexposed track area shall have a maximum density of 0.10 above base density. The longitudinal variations of these specified densities shall not result in a reproduced output variation exceeding ± 0.5 dB.

8 Width of exposed area

The overall width of the exposed track area shall exceed the maximum variation in the scanned area by no less than 0.010 in (0.25 mm) on each side of the slit. The maximum width of the scanning slit as specified by SMPTE 40 is 0.085 in (2.16 mm). This requires a minimum printed width of 0.106 in (2.69 mm) to ensure a dense area adjacent to the scanned area.

9 Test film length

Each test film shall carry three identical prints of the total length of the test record. In each, the test record shall start near the edge of the film and travel toward the image area. The length of the test record shall be approximately 30 ft (9.14 m).

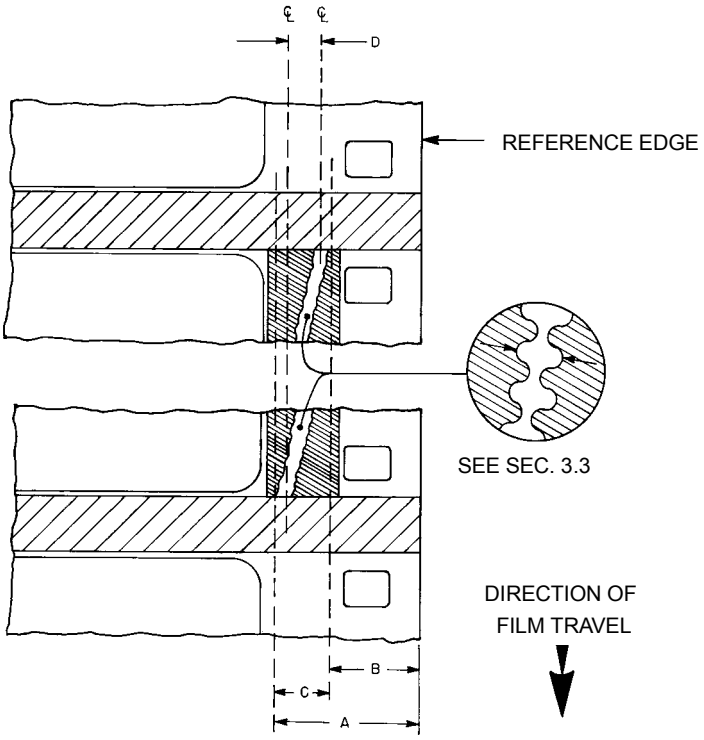

Figure 1 – Scanning-beam track position

Table 1 – Dimensions

Dimensions	Inches	Millimeters
A	0.285 + 0.000 – 0.001	7.24 + 0.00 – 0.03
B	0.203 + 0.001 – 0.000	5.16 + 0.03 – 0.00
C	0.082 nom	2.08 nom
D	0.077 nom	1.96 nom

Annex A (informative)
Additional data

Before the test film described in this practice is used, it is recommended that correct placement of the scanning beam be determined by means of a buzz-track test film as specified in SMPTE RP 68.

The uniformity of scanning-beam illumination should be measured by an rms voltmeter calibrated in decibels with an accuracy of ± 0.1 dB over the bandwidth 31.5 Hz to 16 kHz, connected to the output of the audio projector amplifier. The illumination of the scanning beam should be adjusted according to the instructions furnished by the equipment manufacturer.

Variations of the output of the meter should be observed while running the full length of one test track print, spliced into a loop, through the equipment.

Annex B (informative)
Bibliography

SMPTE RP 68-2002, Specifications for Bpzz-Track Test Film for 35-mm Motion-Picture Photographic Audio Reproducers