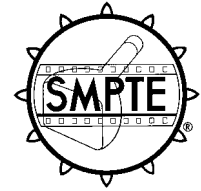


Measurement of Screen Luminance in Theaters



Page 1 of 2 pages

1 Scope

This practice specifies the procedure for a complete set of screen luminance measurements in theaters, intended to promote measured luminance uniformity that is widely acceptable to the audience.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this practice. At the time of publication, the edition indicated was 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 standard indicated below.

ANSI/SMPTE 196M-1993, Motion-Picture Film — Indoor Theater and Review Room Projection — Screen Luminance and Viewing Conditions

3 Measurement conditions

Projector operating conditions, photometer type, luminance level, spectral distribution, color temperature, stray light, and flicker shall be as specified in ANSI/SMPTE 196M.

4 Measurement points on the screen

The screen shall be considered as being divided into thirds, both horizontally and vertically; thus, the screen is considered to be divided into nine equal-size rectangles. The measurement point shall be at the center of each rectangle.

5 Measurement locations in the seating area

5.1 There shall be six measurement locations: three in the center row of the theater and three in the rear row of the theater.

5.2 The three locations within the row specified shall be left edge seat, right edge seat, and center seat. (If the center is an aisle, select the nearest aisle seat.)

5.3 At each measurement location, the photometer shall be at the eye level of the average seated audience (approximately 1.1 meters above the floor).

6 Measurements

Photometer readings shall be taken from each measurement location of each of the nine measurement points (a total of 54 readings).

7 Luminance range limits

For each of the six measurement locations, the following shall be true:

7.1 Theater screen luminance at the screen center shall be between 12 fL and 22 fL. Luminance at the screen sides shall be 75% to 90% of the screen center luminance. Review room screen luminance shall be 16 fL at the screen center. The luminance of the screen sides and corners shall be at least 80% of the screen center reading.

7.2 The readings of the remaining eight measurement points shall not be greater than the reading of the center measurement point. The readings of the four corner measurement points shall not be less than 8 fL. The readings of the remaining four measurement points,

above, below, left, and right of the center, shall not be less than 10 fL.

7.3 Excluding the center measurement point, the remaining eight measurement points shall not differ by more than 4 fL.

Annex A (informative)

Additional data

A.1 The use of gain screens can raise luminance levels for most of the audience and, at the same time, save energy. It should be pointed out, however, that with gain screens, the luminance as seen from front and side seats may not meet the level and distribution specified in ANSI/SMPTE 196M. This lower luminance may be advantageous for the front seats because flicker can be objectionable in peripheral vision which is a factor for patrons seated very close to the screen.

A.2 The rear seats in theaters without balconies normally will be within the luminance values obtained in the three readings in the center row, but more readings can be taken, if necessary, to properly curve and tilt a gain screen to obtain good pictorial quality for the maximum number of theater patrons. See SMPTE RP 95 for guidance on curving gain screens.

Annex B (informative)

Bibliography

SMPTE RP 95-1994, Installation of Gain Screens