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**MEASURING SCREEN GAIN IN CINEMA**

**DATA SHEET**

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## Method of measuring gain in cinema auditoria

### Introduction

Screen gain is defined as the ratio of the luminance produced by a projector beam of white light falling onto the screen surface, compared with the luminance of a reference standard with gain of 1.0. In the British Standard for gain measurement (BS 5550) the reference standard is a tile of magnesium carbonate.

Gain is normally measured on screen samples in laboratory conditions. It is difficult to reproduce these laboratory conditions when a cinema screen is located in a cinema auditorium. The following auditoria gain measurement technique can be used as an approximation to gain measurement in the laboratory.

### Equipment

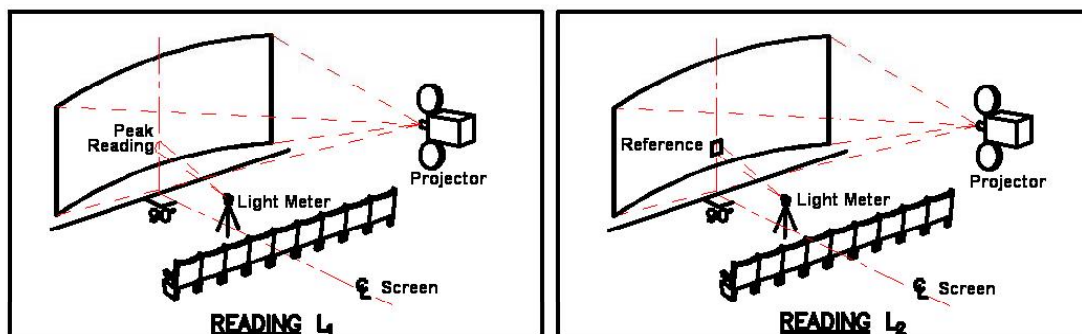
1. A tripod-mounted light meter having an acceptance angle of not greater than 2°. Recommended light meter is a Minolta LS-100 or Spectra Professional IV-A-SP.
2. White light from an installed projector.
3. Reference standard. Harkness Screens can provide A4 sized references with gain 1.0.

### Method

The luminance readings will be measured from the vertical centre line of the cinema screen. A light meter will be placed at 90 degrees to the cinema screen. The light meter will be mounted on a tripod and its angle will be adjusted in the vertical plane until a peak luminance\* reading is measured from the screen ( $L_1$ ). The unit of measurement will be ft. lbs or  $\text{cd}/\text{m}^2$ . The light meter remains in same position, and a luminance reading is then measured off the reference standard flat against the cinema screen in the same place that the peak screen reading was measured ( $L_2$ ).

The light meter should be mounted at a height at or above the screen bottom picture line. This ensures the peak luminance reading is measurable within the picture area.

$$\text{Screen Reflectance Gain} = \frac{L_1}{L_2}$$



\*This peak luminance will be the point on the screen where the angle of incidence equals the angle of reflectance for the light meter position.

Gain measurement reference: British Standard BS 5550-7.2.5:1980 Cinematography

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