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## Passenger Reading Lights

### INTRODUCTION

The purpose of this SAE Aerospace Recommended Practice (ARP) is to recommend minimum design criteria which will lead to adequate performance standards for passenger reading lights in aircraft.

#### 1. SCOPE:

This document presents criteria for design and location of passenger reading lights in commercial aircraft.

#### 2. APPLICABLE DOCUMENTS:

The following publications form a part of this document to the extent specified herein. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, supersedes applicable laws and regulations unless a specific exemption has been obtained.

##### 2.1 RTCA Publications:

Available from RTCA Inc., 1140 Connecticut Ave., NW, Suite 1020, Washington, DC 20036.

RTCA Document No. DO-160B "Environmental Conditions and Test Procedures for Airborne Electronics/Electrical Equipment and Instruments", dated July 1984

#### 3. DETAIL RECOMMENDATIONS:

##### 3.1 Performance:

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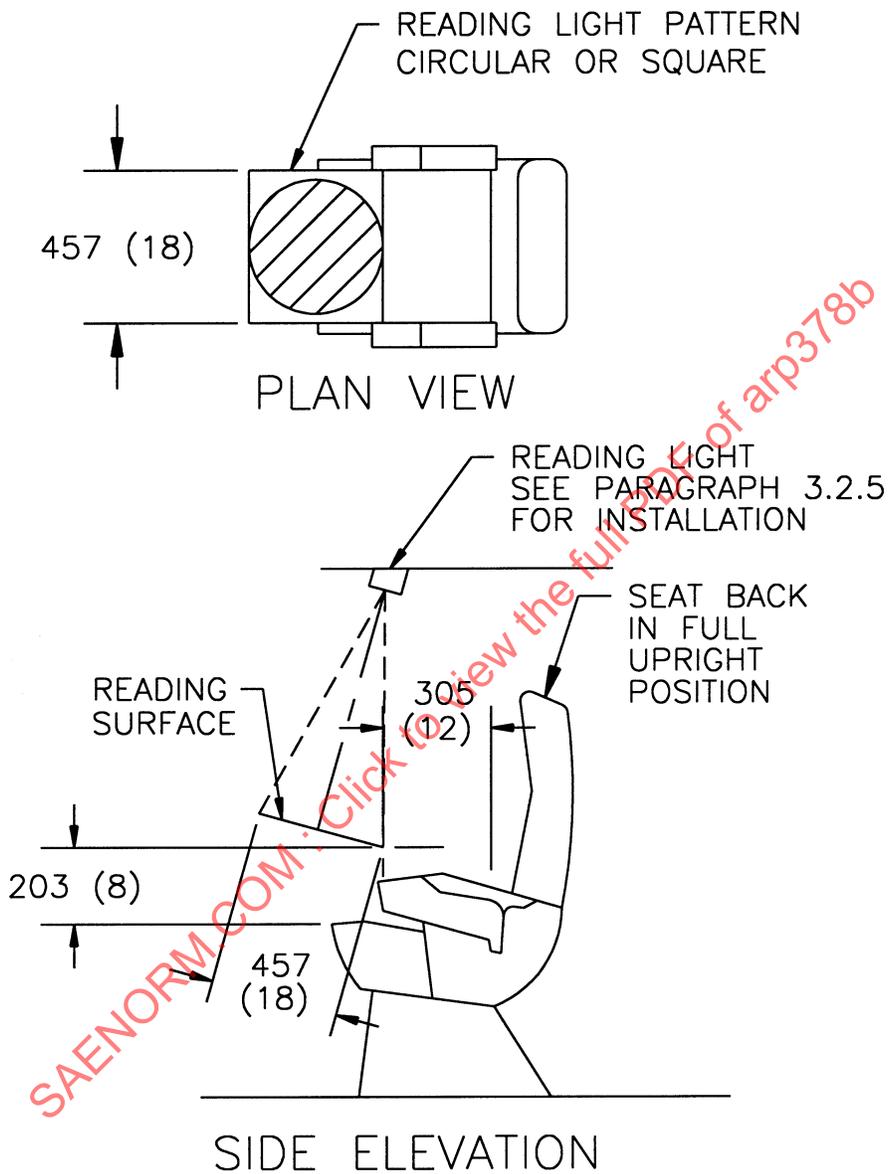
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- 3.1.1 The reading light should provide a uniform circular or square pattern of lumination on a flat inclined reading surface located 203 mm (8 inches) above seat level. The center of the light pattern on the reading surface should be located on the fore and aft centerline of the seat and 533 mm (21 inches) from the base of the seat back (see Figure 1). The width of the light pattern should be 457 mm (18 inches). Within the light pattern, the minimum intensity should be 53.8 lux (5 ft-c), and the maximum intensity should be 592 lux (55 ft-c). All intensity measurements should be made with a cosine-corrected illumination meter that is parallel to a horizontal surface oriented normal to the reading light.
- 3.1.2 Recommended illumination levels and patterns are provided in Figure 2. If the design voltage of an application is different from the manufacturer's rated voltage for the lamp, then the test voltage for the application should be the voltage that produces the luminous flux that would be produced if a lamp which produces nominal flux at the manufacturer's rated voltage were operated at the test voltage.
- 3.1.3 The reading light should be designed in such a manner so that when the reading plane is oriented normal to the light source (see Figure 1) the intensity of the light falling outside the pattern, the peripheral area beginning at a distance of 76 mm (3.0 inches) and beyond the specified pattern, will not exceed 16.1 lux (1.5 ft-c).
- 3.1.4 Should the light be adjustable, adjustment should be restricted, so that no light in excess of 16.1 lux (1.5 ft-c) would fall on the armrests of the adjacent seats or on the back of the seat forward when that seat is fully inclined.
- 3.1.5 The reading light should be designed so that the light from the lamp will be projected to and confined within the specified limits of 3.1.1.
- 3.1.6 It is not considered necessary to provide light for reading when the seat is fully reclined.
- 3.2 Design and Installation:
- 3.2.1 The light and installation should be such that lamps are easily replaceable in flight without the use of special tools and with a minimum disturbance to passengers.
- 3.2.2 To ensure uniform lighting and to enable rapid replacement of nonoperating lamps, the proper lamp numbers should be easily readable when the lamp is accessed for removal.
- 3.2.3 The light switch should be easily accessible. Legend, switch actuator shape, and switch location should be chosen to facilitate distinguishing the light switch from the attendant call switch and from light switches for adjacent seats. All switches should be flush or recessed.

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NOTE: ALL DIMENSIONS ARE IN MILLIMETERS  
WITH INCHES SHOWN IN PARENTHESES

FIGURE 1 - Recommended Reading Light Installation

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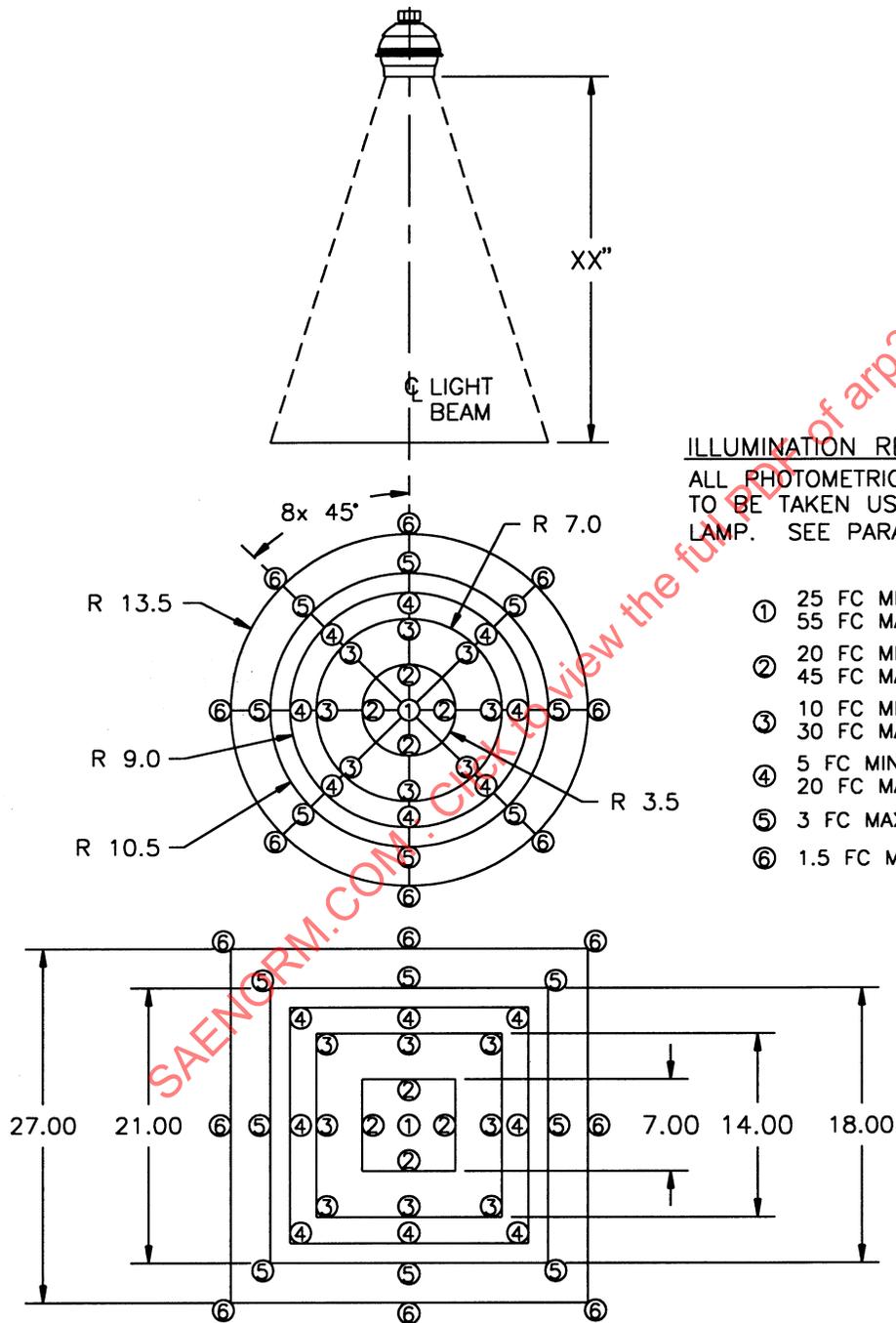


FIGURE 2 - Recommended Illumination Levels