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IES LM-41-14

Approved Method: **Photometric Testing of Indoor Fluorescent Luminaires**

Approved Method for Photometric Testing of Indoor Fluorescent Luminaires

Publication of this report has been approved by the IES. Suggestions for revision should be directed to the IES.

Prepared by the Subcommittee on Photometry of Indoor Luminaires of the IES Testing Procedures Committee

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IES Standards and Guides are developed through committee consensus and produced by the IES Office in New York. Careful attention is given to style and accuracy. If any errors are noted in this document, please forward them to Rita Harrold, Director of Technology, at the above address for verification and correction. The IES welcomes and urges feedback and comments.

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Contents

FOREWORD

This document is a revision of LM-41-98, IESNA Approved Method for Photometric Testing of Indoor Fluorescent Luminaires. The rapid pace with which new lamps and control equipment are being introduced today, as well as the many variations of these components, make it necessary that any document such as this one, concerned with the technical utilization of these products, be reviewed and updated periodically. However, it should be recognized that because of limited experience with new products, this guide may not cover all of the eccentricities exhibited by a particular product. It also should be recognized that even with frequent revisions to the guide, recently introduced components with new characteristics may not be included.

INTRODUCTION

This guide is intended to provide uniform data useful for evaluating the performance of fluorescent luminaires for general lighting. The luminaire characteristics are reported in terms of intensity distribution, flux distribution and efficiency. These performance data may be developed into factors and/or tables that allow the predetermination of illuminance and luminance for any conventional plane or boundary surface.

1.0 SCOPE

This guide provides adequate and uniform methods for determining and reporting the photometric characteristics of indoor fluorescent luminaires. It describes characteristics of luminaires and some components, as well as the requirements for the thermal environment and proper control of the electrical and mechanical systems involved. This document is also concerned with general test conditions and the testing procedure best suited for achieving accurate and consistent photometric results.

2.0 NORMATIVE REFERENCES

Nominal versions of:

- ANSI/IES RP-16-10, *Nomenclature and Definitions for Illuminating Engineering*. New York: Illuminating Engineering Society of North America.
- IES LM-9-09 *Electrical and Photometric Measurements of Fluorescent Lamps*. New York: Illuminating Engineering Society of North America.
- C78.375, *American National Standards Institute Standard Guide for Electrical Measurements of Fluorescent lamps*.
- IES LM-54-12, *Guide to Lamp Seasoning*. New York: Illuminating Engineering Society of North America.

3.0 DEFINITIONS

The units of electrical measurement used in this approved method are the volt, the ampere, and the watt (see the IES Lighting Handbook, 10th Edition). The units of photometric measurement are the lumen and the candela (see *ANSI/IES RP-16-10* or the *IES Lighting Handbook, 10th Edition*[3]). Color is specified in terms of CIE recommended systems. The industry accepted point for making an initial rating of a discharge lamp occurs after the lamp's first 100 hours of operation (ANSI C78.81).

Cold chamber or cold spot is the location inside a fluorescent lamp with the lowest operating temperature. Both the location and temperature of the cold spot are critical for optimizing lamp performance.

4.0 AMBIENT AND PHYSICAL CONDITIONS

4.1 General

Photometric values and electrical characteristics of fluorescent lamps and luminaires are sensitive to ambient temperature and air movement.

4.2 Temperature

The ambient temperature shall be measured at a point not more than 1 m from the luminaire and at the same height as the luminaire. Under standard conditions this temperature shall be maintained at 25°C±1°C. Also, the temperature sensor shall be shielded from the luminaire and radiation from any other source. Measurements at temperatures other than 25°C are considered non-standard and shall be so noted in the test report.

4.3 Air Movement

Air movement at the surface of a fluorescent lamp or luminaire under test may substantially alter electrical