



# Procedure for Presentation and Verification of Roadway Luminaire Photometric Data

Currently in preview, click buy full version

**Procedure for  
Presentation and Verification of  
Roadway Luminaire Photometric Data**

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

Prepared by:  
The Measurements and Calculations Subcommittee  
Of the Roadway Lighting Committee

*All rights reserved.* No part of this publication may be reproduced in any form, in any electronic retrieval system or otherwise, without prior written permission of the IES.

Published by the Illuminating Engineering Society, 120 Wall Street, New York, New York 10005.

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 the Director of Standards, at [standards@ies.org](mailto:standards@ies.org) or the above address, for verification and correction. The IES welcomes and urges feedback and comments.

*Printed in the United States of America.*

ISBN # 978-0-87995-380-5

#### **DISCLAIMER**

IES publications are developed through the consensus standards development process approved by the American National Standards Institute. This process brings together volunteers representing varied viewpoints and interests to achieve consensus on lighting recommendations. While the IES administers the process and establishes policies and procedures to promote fairness in the development of consensus, it makes no guaranty or warranty as to the accuracy or completeness of any information published herein.

The IES disclaims liability for any injury to persons or property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication, use of, or reliance on this document.

In issuing and making this document available, the IES is not undertaking to render professional or other services for or on behalf of any person or entity. Nor is the IES undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances.

The IES has no power, nor does it undertake, to police or enforce compliance with the contents of this document. Nor does the IES list, certify, test or inspect products, designs, or installations for compliance with this document. Any certification or statement of compliance with the requirements of this document shall not be attributable to the IES and is solely the responsibility of the certifier or maker of the statement.

**Measurement and Calculations Subcommittee**

R. Yeager, *Chair*  
 L. Radetsky, *Vice Chair*  
 M. Bucci, *Secretary*

**Members**

C. Andersen\*  
 J. D. Armstrong  
 M. Baginski\*  
 J. Bastianpillai  
 G. Chelvanayagam  
 R. Clear  
 S. Coyle  
 J. Frey\*

R. Gibbons  
 J. Jiao  
 R. Kauffman  
 D. Keith  
 L. Leetzow  
 O. Letamendi\*  
 G. Lister\*  
 L. Livingston  
 D. Maikowski\*

M. Maltezos  
 M. Mayer  
 D. Miletich\*  
 D. Monahan  
 H. Odle  
 U. Padmanath\*  
 C.-A. Poirier\*  
 A. Reyes\*  
 J. Robinson\*

B. Roy\*  
 P. Sabau  
 A. Silbiger  
 M. Smolyansky  
 J. Snowden\*  
 R. Stemprok  
 F. Stohl\*

\* Advisory Members

**IES Roadway Lighting Committee**

W. Smelser, *Chair*  
 J. Bloomfield, *Vice Chair*  
 J. Frazer, *Secretary*  
 E. Morel, *Treasurer*

**Members**

C. Andersen  
 J. D. Armstrong  
 M. Baginski\*  
 J. Bastianpillai  
 D. Baum  
 J. Brown  
 M. Bucci  
 K. Burkett  
 D. Cavalcanti\*  
 G. Chelvanayagam  
 J. Cheung  
 N. Clanton\*  
 R. Clear  
 S. Coyle  
 C. Craig\*\*\*  
 D. Crawford\*\*  
 M. Cunningham  
 J. DaCosta\*  
 C. Dibley  
 N. Dittmann  
 M. Dudas  
 A. Duma\*  
 R. Ebber\*\*  
 G. Engstrom  
 J. Farnatis

K. Fitzmaurice  
 J. Garcia\*  
 R. Gibbons  
 R. Gupta  
 J. Hart  
 R. Harvey  
 J. Havard\*\*  
 W. Hughes\*\*  
 D. Husby\*\*  
 M. Janoff\*\*  
 J. Jewell\*\*  
 J. Jiao  
 R. Jones  
 H. Kashani  
 R. Kaufman  
 D. Keith  
 M. Kelly\*  
 C. Kerschner\*  
 E. Kramer  
 C. Kwong  
 S. Lansford  
 R. Larivee  
 G. Lauziere\*  
 L. Leetzow  
 C. Leone\*  
 O. Letamendi

R. LeVere\*\*  
 G. Lister  
 T. Lohman  
 X. Lou\*  
 P. Lutkovic\*  
 L. Lutley  
 E. MacGill  
 M. Maltezos  
 J. Marsh\*  
 M. Mayer  
 J. McCormick\*\*  
 S. McKnight\*\*  
 D. McLean  
 J. Meyers\*\*  
 P. Mitchell  
 K. Molloy  
 D. Monahan\*  
 J. O'Connor\*  
 H. Odle\*\*  
 D. Okon\*\*  
 D. Paulin  
 M. Pearse\*  
 C. Pekar\*  
 J. Petty\*  
 C.-A. Poirier  
 L. Radetsky

R. Rainer  
 M. Riebling\*  
 O. Rivera\*  
 J. Robinson  
 P. Sabau  
 M. Seppelt  
 B. Shelby\*\*  
 A. Silbiger  
 J. Simmers  
 L. Smith  
 M. Smolyansky  
 J. Snowden\*  
 R. Stemprok  
 M. Stevens\*  
 F. Stohl  
 M. Tedesco  
 G. Thiesse  
 U. Thurairajah\*  
 J. Weaver  
 S. Wegner  
 S. Wentworth  
 E. Yao\*  
 R. Yeager

\*Advisory Members

\*\*Honorary Members

Please refer to the IES Bookstore after you purchase this IES Standard, for possible  
Errata, Addenda, and Clarifications: [www.ies.org/bookstore](http://www.ies.org/bookstore)

## Contents

<b>1.0 Introduction and Scope</b> .....	<b>1</b>
<b>1.1 Introduction</b> .....	<b>1</b>
<b>1.2 Scope</b> .....	<b>1</b>
<b>2.0 Normative References</b> .....	<b>1</b>
<b>3.0 Photometric Test Reports</b> .....	<b>1</b>
<b>3.1 Report Contents</b> .....	<b>1</b>
3.1.1 Luminaires Using Incandescent Filament, High Intensity Discharge, Low Pressure Sodium, Induction, and Plasma Lamps .....	<b>1</b>
3.1.2 Luminaires Using Light Emitting Diode (Led) Light Sources .....	<b>1</b>
<b>3.2 Report Frequency</b> .....	<b>2</b>
<b>4.0 Sampling Procedures</b> .....	<b>2</b>
4.1 Introduction .....	<b>2</b>
4.2 Sample Size .....	<b>2</b>
4.3 Testing Verification .....	<b>2</b>
4.4 Non-Compliance .....	<b>2</b>
4.5 Trial Installation .....	<b>2</b>
<b>5.0 Field Verification</b> .....	<b>2</b>
5.1 Introduction .....	<b>2</b>
5.2 Field Verification Procedure .....	<b>2</b>
<b>Annex A – Sample Relative-Photometry File</b> .....	<b>3</b>
<b>Annex B – Prorating Procedures</b> .....	<b>9</b>
<b>Annex C – Prorating Examples</b> .....	<b>10</b>
<b>Annex D – Sample Absolute Photometry Report</b> .....	<b>11</b>

---

## 1.0 INTRODUCTION AND SCOPE

---

### 1.1 Introduction

Designers of lighting systems are often faced with wide variations in the presentation of luminaire photometric test data. Designers also occasionally find that the calculated values do not agree with measured values. This discrepancy can be attributed to a number of factors. Some of the common problems, such as improper installation methods, can be identified on site and corrected. However, discrepancies in photometric performances are often attributed to out-of-date test reports, manufacturing defects, component tolerances (lamp, ballast), and improper prorating during calculations.

Therefore, it is necessary to establish more-consistent presentations and verifications for luminaire photometric data.

### 1.2 Scope

This document provides recommendations to luminaire manufacturers for uniform presentation of test reports of printed or electronic roadway luminaire photometric data. For large installations, it recommends consideration of random sampling of luminaires for photometric testing, and it recommends procedures for prorating photometric test results for calculations where applicable. This Technical Memorandum (TM) does not specifically address computer programs that are used to read and supply formatted electronic photometric data.

---

## 2.0 NORMATIVE REFERENCES

---

- IES LM-79-08, *IES Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products*
- IES LM-50-13, *IES Approved Method for Photometric Measurement of Roadway and Street Lighting Installations*
- ANSI/IES RP-8-14, *Roadway Lighting*

---

## 3.0 PHOTOMETRIC TEST REPORTS

---

### 3.1 Report Contents

#### 3.1.1 Luminaires Using Incandescent Filament, High Intensity Discharge, Low Pressure Sodium, Induction, or Plasma Lamps

Photometric testing of incandescent, HID, induction, and plasma roadway luminaires should be carried out in accordance with IES LM-31-95, *Photometric Testing of Roadway Luminaires Using Incandescent Filament and High Intensity Discharge Lamps*. The testing report shall include the following:

- I. Luminaire description
  - A. Manufacturer's name
  - B. Catalog number and/or adequate description to identify:
    - (1) Dimensions to give a general idea of size
    - (2) Light center location; e.g., dimensions and socket setting
  - C. Other essential information, such as auxiliary reflecting devices
  - D. Goniometer center location with respect to the luminaire
- II. Lamp description
  - A. ANSI lamp type (series and designation)
  - B. Ratings in watts, volts and lamp lumens
  - C. Filament construction and light center length
- III. Photometer data: Test distance (light path distance from goniometer center to photoreceptor)

Color Data: A photometric report may also include:

- Classification of light distribution in accordance with ANSI/IES RP-8-14, *Roadway Lighting*, as well as IES TM-15-11, *Luminaire Classification System for Outdoor Luminaires*.
- An iso-illuminance diagram as outlined in **Annex A**. Mounting height should be indicated, and a conversion table for other mounting heights may be included.

An example of test report format is shown in **Annex A**.

#### 3.1.2 Luminaires Using Light Emitting Diode (LED) Light Sources

Photometric testing of LED roadway luminaires should be carried out in accordance with IES LM-79-08. The testing data presented should follow Section 14 of IES LM-79-08.

In addition, if a scotopic/photopic (S/P) comparison of LED and other light sources is needed, the S/P ratios should be reported for all light sources being compared.

An example of a test report format is shown in **Annex D**.