NEMA Standards Publication

NEMA LE 6-2009

Procedure for Determining Target Efficacy Ratings for Commercial, Industrial, and Residential Luminaires

National Electrical Manufacturers Association

NEMA LE 6

Procedure for Determining Target Efficacy Ratings for Commercial, Industrial, and Residential Luminaires

NEMA Standards Publication LE 6-2009

Procedure for Determining Target Efficacy Ratings
for Commercial, Industrial, and Residential Luminaires

Published by:

National Electrical Manufacturers Association
1300 North 17th Street, Suite 1752
Rosslyn, Virginia 22209

www.nema.org

NOTICE AND DISCLAIMER

The information in this publication was considered technically sound by the consensus of persons engaged in the development and approval of the document at the time it was developed. Consensus does not necessarily mean that there is unanimous agreement among every person participating in the development of this document.

NEMA standards and guideline publications, of which the document contained herein is one, are developed through a voluntary consensus standards development process. This process brings together volunteers and/or seeks out the views of persons who have an interest in the topic covered by this publication. While NEMA administers the process and establishes rules to promote fairness in the development of consensus, it does not write the document and it does not independently test, evaluate, or verify the accuracy or completeness of any information or the soundness of any judgments contained in its standards and guideline publications.

NEMA disclaims liability for any personal injury, property, or other damages of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, application, or reliance on this document. NEMA disclaims and makes no guaranty or warranty, expressed or implied, as to the accuracy or completeness of any information published herein, and disclaims and makes no warranty that the information in this document will fulfill any of your particular purposes or needs. NEMA does not undertake to guarantee the performance of any individual manufacturer or seller's products or services by virtue of this standard or guide.

In publishing and making this document available, NEMA is not undertaking to render professional or other services for or on behalf of any person or entity, nor is NEMA 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. Information and other standards on the topic covered by this publication may be available from other sources, which the user may wish to consult for additional views or information not covered by this publication.

NEMA has no power, nor does it undertake to police or enforce compliance with the contents of this document. NEMA does not certify, test, or inspect products, designs, or installations for safety or health purposes. Any certification or other statement of compliance with any health or safety-related information in this document shall not be attributable to NEMA and is solely the responsibility of the certifier or maker of the statement.

CONTENTS

Page

Foreword

This standards publication was developed to assist individuals purchasing or designing lighting systems for interior or exterior applications in determining the Target Efficacy Rating (TER) of a lighting product. The TER is intended to be a metric, among many other considerations, to evaluate the energy effectiveness of a lighting installation.

This standards publication was promoted by the need of the luminaire manufacturing industry to have a uniform method of determining energy effectiveness of their products. The NEMA LE 6-2009 Standard supersedes the NEMA LE 5, LE 5A, and LE 5B Standards for Luminaire Efficacy Ratings (LER).

It is not the intent of this standards publication to inhibit luminaire design or to impose arbitrary tolerances on any luminaire manufacturer. Further, it is not the intent of this standards publication to be used to regulate luminaires since many other factors related to visibility, color, contrast, glare, uniformity, and other metrics must be considered based on application requirements.

The preparation of this standards publication was done by the Luminaire Section, in close cooperation with the Lamp and Ballast Sections of the NEMA Lighting Systems Division. Input of users and other interested parties has been sought and evaluated. Inquiries, comments, and proposed or recommended revisions should be submitted to the Indoor Lighting Section of NEMA by contacting:

Vice President, Technical Services
National Electrical Manufacturers Association
1300 North 17th Street, Suite 1752
Rosslyn, Virginia 22209

This standard was developed by the Luminaire Section. Section approval of the Standard does not necessarily imply that all section members voted for its approval or participated in its development. At the time it was approved, the Luminaire Section was composed of the following members:

Acuity Brands Lighting
Arcalux Corporation
BJB Electric
Cooper Lighting
Deco Lighting
Emerson/EGS Electrical Group
EYE Lighting International
GE Consumer & Industrial Lighting Systems
Hubbell Lighting, Inc.
Juno Lighting Group
National Cathode Corp.
Philips Lighting
RAB Lighting
Ruud Lighting Inc.
Satco Product Inc.
Schneider Electric-Square D Company
TayMac Corporation
Technical Consumer Products, Inc.
Thomas & Betts Corporation
Westinghouse Lighting Solutions

Purpose

The purpose of this standards publication is to:

a. Provide the lighting design community and procurement officials with a practical and uniform method for calculating a metric to evaluate and compare the “energy effectiveness” of luminaires.

b. Provide the ability for construction or renovations focused on sustainable design to evaluate the energy performance of luminaires.

c. Provide electrical utility companies with a method to establish performance criteria for luminaires for use with energy savings rebate programs.

d. Provide a methodology for luminaires that considers lamp and ballast components as well as the effectiveness of the luminaire optics to deliver light to an intended task.

e. Define categories for types of luminaire products based on function, physical or dimensional attributes, and optical characteristics of luminaires to enable qualified energy comparisons within a category of product.

f. Preserve for the luminaire manufacturers and the lighting industry the right to use laboratory facilities, testing methods, and completed test data that currently exist and are in accordance with approved industry standards.

< This page is intentionally left blank. >

Section 1
GENERAL

1.1 SCOPE

This standards publication provides a procedure for the determination of the Target Efficacy Rating (TER) for luminaires under laboratory test conditions.

This standard describes categories or types of product used in common indoor and outdoor lighting applications.

This standard does not apply to luminaires for specialized applications, including but not limited to products intended to be aimed, accent luminaires, rough or hazardous use luminaires, or emergency lighting.

1.2 REFERENCED PUBLICATIONS

The latest editions and revisions of the following publications are adopted as indicated by reference in this Standards Publication.

American National Standards Institute (ANSI)
11 West 42nd Street, 13th Floor
New York, NY 10036

ANSI C82.2-2002	*Methods of Measurement of Fluorescent Lamp Ballasts*
ANSI C82.3-2002	*Reference Ballasts for Fluorescent Lamps*
ANSI C82.5-1990 (R1995)	*High-Intensity Discharge and Low-Pressure Sodium Lamps*
ANSI C82.6-2005	*Ballasts for High-Intensity Discharge Lamps—Methods of Measurement*
ANSI C78.81-2005	*Double-capped Fluorescent Lamps—Dimensional and Electrical Characteristics*
ANSI C78.901-2005	*Single-Based Fluorescent Lamps—Dimensional and Electrical Characteristics*

Illuminating Engineering Society of North America (IESNA)
120 Wall Street FL 17
New York, NY 10005-4001

Current versions of the following IESNA Publications apply

	IESNA Lighting Handbook
LM-66	*Single-ended Compact Fluorescent Lamps—Electrical and Photometric Measurements*
LM-45	*Incandescent Lamps—Electrical Measurements*
LM-51	*High Intensity Discharge (HID) Lamps—Electrical Measurements*
LM-46	*Photometric Testing of Indoor Luminaires using HID or Incandescent Filament Lamps*
LM-41	*Approved Method for Photometric Testing of Indoor Fluorescent Luminaires*