

American National Standard

Approved: 08/15/2014

Secretariat: National Electrical Manufacturers Association

for Lighting Equipment—

Harmonic Emission Limits— Related Power Quality Requirements ANSI C82.77-10-2014

An American National Standard implies a consensus of those substantially concerned with its scope and provisions. It is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an American National Standard does not in any respect preclude anyone, whether he has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards. Users are cautioned to obtain the latest editions. The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute.

GUIDE and DISCLAIMER: Information contained herein is informative and shall not be deemed an industry standard. The reader should explore other methods that might be suitable to their needs. This standard contains information and reference to industry standards; through reference in the text, by consent constitutes provisions of this standard. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated herein. This standard may be revised or withdrawn at any time.

American National Standard

Approval of an American National Standard requires verification by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer. An American National Standard implies a consensus of those substantially concerned with its scope and provisions. Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution. The existence of an American National Standard does not in any respect preclude anyone, whether s/he has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards. It is intended as a guide to aid the manufacturer, the consumer, and the general public.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the Committee Secretary referred to in the foreword.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.

All rights reserved.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without prior written permission of the publisher

Printed in the United States of America.

Foreword

(This foreword is not part of ANSI C82.77-10-2014.)

This is a new standard and not a revision of a previous standard.

Suggestions for improvement of this standard will be welcome. They should be sent to:

Senior Technical Director, Operations
National Electrical Manufacturers Association
1300 North 17th Street, Suite 900
Rosslyn, VA 22209

This standard was developed and approved for submittal to ANSI by Accredited Standards Committee C82 on Electric Lamp Ballasts, and a Joint Working Group on Electro-magnetic Compatibility. Approval of this standard is not meant to imply that all Accredited Standards Committee members voted to approve it.

Joe Parisella, Chair ASC C82
Ernesto Mendoza, Technical Coordinator
Karen Willis, Secretary, ASC C82
Hunter Lia Zager, Lighting Standards Editor

Table of Contents

	Foreword	iii
1	SCOPE	1
2	GENERAL CONSIDERATIONS	2
3	SPECIFIC LIGHTING EQUIPMENT EMISSION LIMITS BY PRODUCT TYPE AND APPLICATION	2
	3.1 Residential Lighting Equipment	2
	3.2 Commercial Lighting Equipment for General Lighting	4
	3.3 Industrial Lighting Equipment for General Lighting Applications	7
	3.4 Roadway, Sports Arena and Convention Center Lighting Equipment	8
	3.5 Stage and Studio Lighting Equipment	8
4	TESTING AND MEASUREMENTS—GENERAL	8
5	PRACTICAL MEASUREMENT METHODOLOGY FOR TYPE TESTING OF PRODUCTS	9
 Annexes		
	Annex A Normative	11
	Annex B Informative References	12

AMERICAN NATIONAL STANDARD

1 SCOPE

This standard specifies harmonic limits, their methods of measurement, and power factor (PF) for lighting equipment. This standard covers all types of lighting equipment that is used for general illumination (typically found in residential, commercial, and industrial applications) and which is connected to any of the following commonly distributed 60 Hz alternating current (AC) power line systems:

- 120 V, Single Phase
- 220/230 V, Single Phase
- 208/240 V, Single Phase
- 277V, 347 V, Single Phase
- 480 V Single Phase
- 480V/347 V, 3 Phase

Note: These line voltages are nominal and include commonly encountered nameplate variations of the above. As an example, products rated at either 117, 120, or 125 Volts AC would be covered as being inclusive of nominal 120 V systems.

Harmonic emission limits, where they are defined by this standard, shall include both harmonic and interharmonic emissions over the low frequency range 0 – 9 kHz. At this time, limits for interharmonics are not specified.

This standard covers lighting equipment regardless of wattage (operating input power level) or operating input current. However, emission limits will only be specified over a range of power or current deemed to be warranted at this time.

This standard supersedes the requirements for power factor (PF) and total harmonic distortion (THD) of ANSI C82.11 and ANSI C82.14.

Depending upon the specific product, harmonic limits in this standard may be expressed in terms of THD rather than individual limits for specific harmonics or interharmonics. Since there is a technical relationship between harmonic content, THD, and power factor, some products will include PF requirements where the addition of these criteria is helpful in setting a baseline for power quality impact of lighting equipment. Emphasis has been on establishing limits that are simple to assess and that are in keeping with the practices of this industry.

Lighting equipment covered under the scope of this standard which contains only passive electrical components or passive ballast circuitry is exempt from limits and need not be measured or tested, i.e. core and coil ballasts.

Note: As an example, an electronic starter (which contains an electronic component) is sometimes used in conjunction with passive ballast circuitry. The overall device or equipment would still be classified as a passive ballast circuit.